

The Interfaces

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Volume 61

The Interfaces: Deriving and interpreting omitted structures

Edited by Kerstin Schwabe and Susanne Winkler

The Interfaces

Deriving and interpreting
omitted structures

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John Benjamins Publishing Company
Amsterdam/Philadelphia



The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences – Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

Library of Congress Cataloging-in-Publication Data

The interfaces : deriving and interpreting omitted structures / edited by Kerstin Schwabe, Susanne Winkler.

p. cm. (Linguistik Aktuell/Linguistics Today, ISSN 0166-0829 ; v. 61)

Includes bibliographical references and indexes.

1. Grammar, Comparative and general--Ellipsis. 2. Grammar, Comparative and general--Syntax. 3. Semantics. I. Schwabe, Kerstin. II. Winkler, Susanne, 1960- III. Linguistik aktuell ; Bd. 61.

P291.3 I58 2003

415-dc21

2002034217

ISBN 90 272 2784 5 (Eur.) / 1 58811 330 2 (US) (Hb; alk. paper)

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John Benjamins Publishing Co. · P.O. Box 36224 · 1020 ME Amsterdam · The Netherlands
John Benjamins North America · P.O. Box 27519 · Philadelphia PA 19118-0519 · USA

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Exploring the interfaces from the perspective of omitted structures*

Susanne Winkler and Kerstin Schwabe

1. Introduction

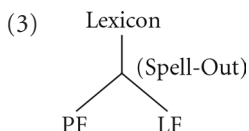
The investigation of the structure and the precise nature of the interfaces which connect the sound and the meaning components to the core computational system has been located at the center of the research in contemporary generative linguistics. Traditionally, the interfaces comprise the syntax-semantics and the syntax-phonology interfaces. In recent years, however, the scope of investigation has been considerably expanded by asking how the syntax-semantics and the syntax-phonology interfaces connect with the discourse and the information structural component. The prevailing questions are: What exactly counts as evidence, and what counts as an argument for a particular set-up of the interfaces? This is where the enterprise of this book begins: the investigation of elliptical phenomena provides crucial data for the theories that are concerned with the architecture of the interfaces, because ellipsis lacks form and still has meaning. The theories of ellipsis in this volume are concerned with questions of the representation and interpretation of ellipsis and the functions of information structure. The most crucial question is: How do the syntax-phonology, the syntax-semantics, and the information structural component interact in the context of ellipsis? Although the research in this area has grown to incorporate a greater variety of data, it has become increasingly clear that many questions about the architecture of grammar cannot be answered by following a strict syntactic, semantic, phonological, or discourse account. The theoretical complexity of the study of interfaces and the rapid changes in leading theories like the Principles and Parameters Framework (Chomsky 1981) and the Minimalist Program (Chomsky 1995) require that syntacticians, semanticists, and phonologists collaborate in the exploration of the interfaces. Collaboration is needed in the investigations of the whole range of available data, including evidence from focus and intonational data. The development of a comprehensive theory of meaning which also incorporates insights from the study of information

structure is essential for a comprehensive theory of ellipsis. The chapters in this volume bring together the expertise of semanticists and syntacticians with long-standing interests in the syntax-semantics-phonology interfaces and particularly their interrelatedness with focus and information structure.

In the classic view set out by Chomsky (see Chomsky 1965, 1995, 2000, 2001), the syntactic component of the grammar (also called the *computational system*) accounts for the matching of sound and meaning (see Jackendoff 1998; Platzack 2000; López in preparation, for opposite views). Under this conception, one of the most central issues has been to find an explanation of how it is possible for speakers and listeners to interpret ellipsis in the absence of form, in some sense or other, such as in the case of VP ellipses in English, as in (1), or in the case of gapping in German, as exemplified by (2).

- (1) a. John voted for himself and his lawyer did too.
b. John voted for himself, because nobody else did.
- (2) *Die Hella hat mir geschrieben, dass sie sich langweilt ohne mich;*
the Hella has me written that she herself is-bored without me;
ich mich auch.
I myself too
'Hella has written that she is bored without me; me too.'

In this respect the mere occurrence of ellipsis is a challenge to our understanding of the architecture of grammar (in current syntactic terms as in (3)), where the most powerful constraint (the former Projection Principle) is that grammatical information cannot simply be lost on its way from the computational system to the interfaces, in (3) referred to as phonological form (PF) and logical form (LF).



Part of the answer to the question of how words or phrases can be understood without being pronounced (or otherwise referred to) already lies in the way that we assume elliptical material is represented and where. Within the current theory of grammar, three prevailing research paradigms can be isolated: the phonological deletion theory, the so-called syntax-first approach, and the semantic theory. The phonological deletion theory assumes that elliptical material is fully syntactically represented, but deleted at a certain point in the derivation of the sentence. The syntax-first approach investigates the computational system proper and aims at an answer to the question of whether ellipsis can be reduced to movement or other independently existing syntactic processes. Although the starting point of any syntax-

first methodology is, as the name says, essentially syntactic, the goal is to find out exactly which parts of the analysis of omitted structures must be handed over to the interfaces. The semantic theory assumes that semantic mechanisms governing the recovery of meanings from discourse can be put to work in the analysis of elliptical constructions (e.g., the proform theory).

Closely connected to the question of how ellipsis is represented is the question of how information structure and focus contribute to the interpretation of ellipsis. Assuming the grammatical model in (3), it is difficult to see how and exactly where the information structural component and the theory of focus should come into play. There are basically four different approaches that address the integration of the information structural component in the theory of grammar: The first approach is essentially syntactic and assumes that focus movement, like *wh*-movement, is interpreted at the syntax-semantics interface (see Platzack 2000; Uriagereka 1999). The second is an essentially semantic approach and finds its instantiation either in Rooth's (1992b) theory of Alternative Semantics or in Schwarzschild's (1999) theory of GIVENNESS, both of which operate at the semantic component of grammar. The third approach assumes that the semantic component interfaces with information structure (e.g., Vergnaud & Zubizarreta 1992; Zubizarreta 1998; see Winkler & Göbbel 2000). Vallduví (1992), finally, assumes that the information structural component is an interface separate from PF and LF, possibly also located outside the grammatical model proper (see also Vallduví & Vilkuna 1998).

The contributions in this volume fall into three groups. The groups are arranged according to their theoretical point of view and according to the interface problem that they investigate and solve. The papers in the first group (Kennedy, Hartmann, Merchant, and Wilder) pursue a PF-deletion account. Kennedy's paper starts out by directly addressing the question of how much syntax, how much phonology and semantics are involved in ellipsis. On the basis of the interaction of ellipsis with several different grammatical constraints he proposes that elided constituents have syntactic structure that is deleted at PF. At PF, deletion is understood as an instruction to bypass morpho-phonological instantiation in the sense of Wasow (1972). The papers by Merchant, Wilder, and Hartmann discuss different types of elliptical constructions (*comparative deletion*, *antecedent-contained deletion* and *right node raising*) and show that their specific behavior can only be adequately accounted for under a PF-deletion account.

The second group (Donati, Lechner, Sauerland, López & Winkler) explores the possibility that certain kinds of ellipsis should be analyzed using the well-known machinery of syntactic displacement. Donati investigates the idea that movement and ellipsis may turn out to be the same operation. Lechner addresses a similar problem. He suggests that *VP-fronting* and *VP-deletion* are essentially the same, and that their apparent differences are derivable from principles of economy.

Sauerland assumes that one type of relative clauses, namely the *matching relative clause*, involves ellipsis and not movement. López and Winkler take up Johnson's (1997a) suggestion that *gapping* does not involve deletion, but rather Across-The-Board (ATB) movement of the verb and use it as a platform to investigate possible sources of linguistic variation.

The third group of papers sets out to explore the semantic component and its connection to focus and discourse structure (Hardt, Romero, Schwabe, Tomioka, and Gretschi). In contrast to the PF-deletion accounts, Hardt rejects the claim that unpronounced material has a syntactic representation, and he suggests that a *semantic matching condition* that has access to discourse structure governs the recovery of the meaning of the elliptical site. Romero and Schwabe investigate constructions such as *sluicing* and *reduced conditionals* and claim that semantic restrictions on their wellformedness can be explained in terms of the semantics of questions and focus. Tomioka studies the nature of phonologically silent pronouns in Japanese. He proposes that they are simply property anaphora and that their different uses correspond to the same semantic operations that affect full-fledged NPs. Gretschi investigates the gaps in operatorless questions such as *The keys are _?* and proposes that what is missing in these sentences is the focus of the question.

The major emphasis of each contributor has been placed on developing a theory of how syntactic conditions on chains and copies, semantic identity conditions, and discourse and focus conditions interact in the deletion process. The syntactic accounts are couched in the generative framework of Chomsky (1995, 2000), and the semantic accounts are set in Discourse Representation Theory and Alternative Semantics. The range of evidence involves new data on ellipsis from English, German, Japanese, Italian and French, as well as new intonational data.

2. Burning issues in the study of ellipsis

The goal of this volume is to present an overview of the current state of the art in the research of ellipsis and omitted elements. Certainly, this cannot be done without also taking into account the changes in the research paradigms of the leading theories over the last three decades. The leading idea of this section is that we are witnessing a paradigm change from the so-called syntactic deletion theories, integrated in the early generative theory of transformational grammar, to the licensing theories of ellipsis within the Principles and Parameters Framework, and back again to phonological deletion theories hosted within the Minimalist Framework, also basically a generative theory.

In the second part of this section, we take up the question of what counts as an argument for a particular set-up of the interfaces. There we shall take a look at one

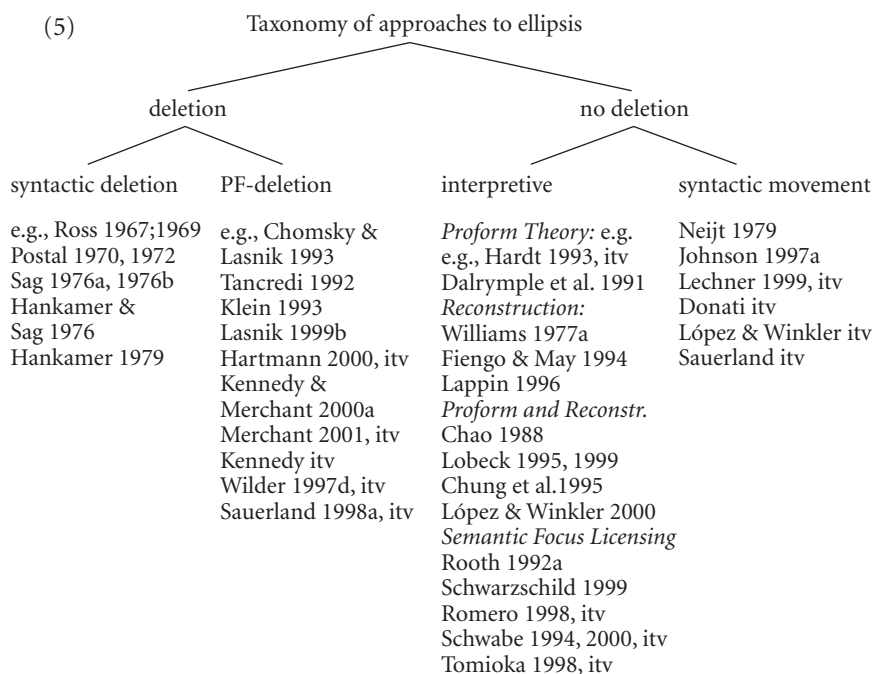
single piece of evidence from gapping that undermines the hypothesis of a *simple* version of the PF-deletion account.

2.1 A historical perspective

A central issue in the research on elliptical constructions has been to find out what sorts of representations are involved in the resolution and licensing of elided material. The three central questions are given in (4):

- (4) i. Does ellipsis have internal structure?
- ii. How is ellipsis interpreted?
- iii. What role does information structure play in the structural representation and interpretation of ellipsis?

Two lines of thought, differing in their assumptions about the role of syntax in the ellipsis, have been predominant: deletion approaches vs. non-deletion approaches. The deletion approaches comprise the syntactic deletion vs. the PF-deletion approach, in essence, a historical distinction which reflects the paradigm change within the generative theory. The non-deletion approaches comprise interpretive accounts and syntactic movement accounts. The different approaches are listed schematically in (5):¹



The earliest generative approaches to anaphora and ellipses were syntactic deletion approaches in the pre-Aspects model proposed by, e.g., Ross (1967, 1969) and Postal (1970, 1972). The proponents of this approach, which is also called *the strict transformational position*, claim that “all anaphoric processes are transformations that involve deletion” (Hankamer & Sag 1976:394). This deletion process is assumed to occur in the derivation of S-structure and not, as is proposed by the more recent deletion approaches, at the level of PF.

The strict transformational position is opposed by the proponents of the *strict interpretive position*, whose strongest arguments against the transformational position include: the Bach-Peter Paradox (Bach 1970); Bresnan’s (1970) arguments showing that certain rules (such as *there-insertion*, *dative movement*, *particle movement*, and the *nuclear stress rule*) are sensitive to properties that differentiate full NPs from pronouns; Dougherty’s (1969) observations that a transformational account of pronominalization whose antecedents contain quantifiers is problematic; and also Wasow’s (1979) observation that a transformational approach to pronominalization derives certain ungrammatical sentences which violate Binding Principle C. The core idea of the strict interpretive position (cf. Wasow 1972, 1979; Shopen 1972) is that “all anaphors (pronominal or null) are present in the underlying representation, and that no anaphors are derived transformationally” (Hankamer, & Sag 1976:394). Wasow (1979) aims at an unified approach of all anaphora types, including the so-called null-anaphora type. His basic claim is “that null-anaphora underlie the same restrictions as other anaphors with the difference that null-anaphors are generated with no phonetic realization” (p. 105). Trying to avoid the criticism advanced against Akmajian’s (1968) non-expansion hypothesis, which claims that “null anaphora Δ have no internal structure” (cf. Ross 1969), Wasow proposes the empty structure hypothesis, which assumes that “null anaphors have all the structure of their antecedents, lacking only phonetic material” (p. 109). If we consider Wasow’s proposal from today’s perspective, we can conclude that it classifies as a direct historical precursor of the modern PF-deletion proposals. More generally, modern discussion of omitted structures recapitulates to a certain extend the discussion of the very early approaches to ellipsis.

The strict transformational and the strict interpretive positions were superseded by the mixed approaches, most notably Hankamer and Sag’s (1976) *deep* vs. *surface anaphora* proposal and Williams’ (1977a) discourse vs. sentence grammar proposal. Hankamer and Sag’s proposal is based on the insight that anaphoric processes fall into two classes, the deep anaphora cases and the surface anaphora cases. Only the latter, which are syntactically controlled, are claimed to be derived by a deletion process, whereas the former, which are pragmatically controlled, are base-generated elements subject to an interpretive process. *Pronominal* anaphora, sentential *it*, and *null complement* anaphora are categorized as deep anaphora, whereas *VP-ellipsis*, *sluicing*, *gapping*, *stripping*, and *so-anaphora* are categorized as surface

anaphora. That is, most types of ellipses (except the null complement anaphora) are assumed to be derived by a deletion process.

In addition to the fact that there are various well-known counterexamples to the classification proposal of the mixed approaches (see Williams 1977b; Chao 1988; Hardt 1993), one feature of this proposal has come under particularly heavy attack, namely, the fact that the different types of anaphora do not receive a uniform treatment. This is the point at which Williams' (1977a) *discourse vs. sentence grammar* proposal steps in. Instead of assuming different derivational processes for different types of anaphora, he adopts Wasow's (1972, 1979) empty structure hypothesis, which applies to all types of anaphora, and proposes that they are subject to different rule types which operate on two distinct subsystems of the grammar:

Those rules like Comparative Deletion and Gapping that are sentence-bound and obey Ross's constraints are called Sentence Grammar rules. These rules define the form and meaning of sentences. Those rules which, like VP Deletion, apply across sentences in a discourse and which do not obey Ross's constraints we will assign to a component called Discourse Grammar.

(Williams 1977a: 102)

Williams explicitly opposes the deletion approach and argues in favor of the interpretive hypothesis, which assumes that an empty element in the surface representation receives its interpretation at the newly introduced level of LF by copying the lexical material of the antecedent into the position of the empty element. The idea is that sentence grammar (SG) comprises the processes at DS and SS, including the rules deriving LF representations. Discourse grammar (DG) rules, on the other hand, apply exclusively to LF representations provided by sentence grammar. Thus, gapping and comparative ellipsis count as phenomena of SG and are subject to a rule of semantic interpretation whereas VP-ellipsis counts as a rule of DG that establishes an anaphoric relation between a string minimally including an empty V and the V in the preceding conjunct and copies the material of the antecedent V into the empty V at LF.

The level of LF in this model forms an interface representation between SG and DG, at which Williams' representation of ellipsis is situated. Many later works on ellipsis concentrate on the study of either the SG component (Zagona 1982; Chao 1988; Lobeck 1995; Chung et al. 1995) or the DG component (Klein 1987; Hardt 1993; Dalrymple et al. 1991) of specific elliptical constructions. Some of the contributions in this book present their own proposals (López & Winkler, Romero, Schwabe, Hardt, Tomioka), which characterize VP-ellipsis, IP ellipsis, NP ellipsis and gapping as being located at the interface between SG and DG, like Williams' original proposal. Translated into a modern framework, these proposals are situated at the syntax-semantics interface.

Since Williams (1977a), a third component has come into play, whose relation to both SG and DG is subject to much discussion. This component is PF, and the arguments of the studies which propose that the deletion process involved in ellipsis is situated at this level are as strong as those for the original syntactic deletion accounts. Moreover, the PF-deletion process assumed in Chomsky and Lasnik (1993), Chomsky (1995), Tancredi (1992), and Klein (1993), among others, has the advantage that it leaves the syntactic representation of the sentence completely intact for the interpretation at LF. PF-deletion accounts rest on the assumption that ellipsis has abstract features of phonetic and phonological representation, but that grammar contains a means of blocking its pronunciation in the surface form (here understood as the actual realization).

Although this approach seems close to being unrefutable (since the assumption that every type of ellipsis involves the absence of phonological form is trivially true), there are still some questions unsolved: What exactly triggers the (optional) deletion process? Are the triggers syntactic or pragmatic wellformedness conditions? If the trigger is pragmatic, does that mean that PF has access to the information structural component? Furthermore, when does PF-deletion actually apply? Before or after verb movement, quantifier movement, focus phrase movement? What is the exact order between movement and PF-deletion? Many of these questions are investigated in the context of this book.

Before we turn to the individual proposals in this book, let us briefly address the question of what counts as an argument for a particular arrangement of the interfaces. A paradigmatic case is presented in the next Section 2.2.

2.2 Evidence for the architecture of the interfaces from ellipsis

In this section, we present a puzzling case from gapping and focus that, to our knowledge, has not been observed so far. Let us take up the three central questions from above, repeated in (6), and look at the relevant gapping example in (7) (capitalization signals focus):

- (6) The three central questions are:
 - i. Does gapping have internal structure?
 - ii. How is gapping interpreted in the semantic component?
 - iii. What role does information structure play in the structural representation and interpretation of gapping?
- (7) She wrote long [...] letters, which she sent to her SISTER and SHE to my MOTHER.
(Ruth Praver Ihabrala (1975) *Heat and Dust*)

The first question – does gapping have internal structure – can be straightforwardly answered in the affirmative. Two arguments underlie this assumption: one based

on the Parallel Structure Hypothesis, the other based on the traditional Island Constraints (Ross 1967). The first argument is based on the assumption that if the antecedent of a gap in the first conjunct contains a *wh*-trace, the gap itself contains a *wh*-trace, as is the case in (8) (missing material appears in strike-through):

- (8) She wrote long letters_i, which_i [she_k [sent t_i] to her SISTER_j] and [SHE_j [~~sent~~ t_i] to my MOTHER].

The second argument is based on the observation that gapping is subject to island constraints and must therefore contain syntactically represented material, just like *wh*-constituents. The ungrammaticality in (9b) results from the violation of the Complex NP Constraint.

- (9) a. SHE asked which LETTERS we wrote and HE which BOOKS.
b. *SHE discussed my question which LETTERS we wrote and HE which BOOKS.

It is not possible for a *wh*-phrase to be moved out of a complex NP in (9b). Island Constraint violations are generally assumed to constitute a strong argument for movement, and if movement out of an elliptical construction is barred, it is an argument for the assumption that the elided material still has a syntactic effect.

Now let us turn to questions (6ii-iii) above: How is ellipsis interpreted, and what role do focus and information structure play. Consider (10), a gapping example derived by a corpus-based search of the Penn Treebank (cf. Marcus et al. 1993):

- (10) It's probably true ... that the system is so hierarchical that only the assistant manager can talk to the manager and the manager to the general manager... *(Penn Treebank, #...wsj_0037.mrg 805)*

A typical pitch extraction contour is given in Figure 1. The contour shows that there are four focus accents in the utterance: a falling accent on *ASSISTANT* and on *MANAGER* in the first conjunct, and a falling accent on *MANAGER* and on *GENERAL manager* in the second conjunct. The Beckman and Elam (1997) notation is given in (11) below (the reflex of pitch accents is signaled by capitalization):

- (11)

H* L-	H* L- L%	
only the ASSISTANT manager can talk to the MANAGER		
H* L-	H* L-	L%
and the MANAGER to the GENERAL manager		

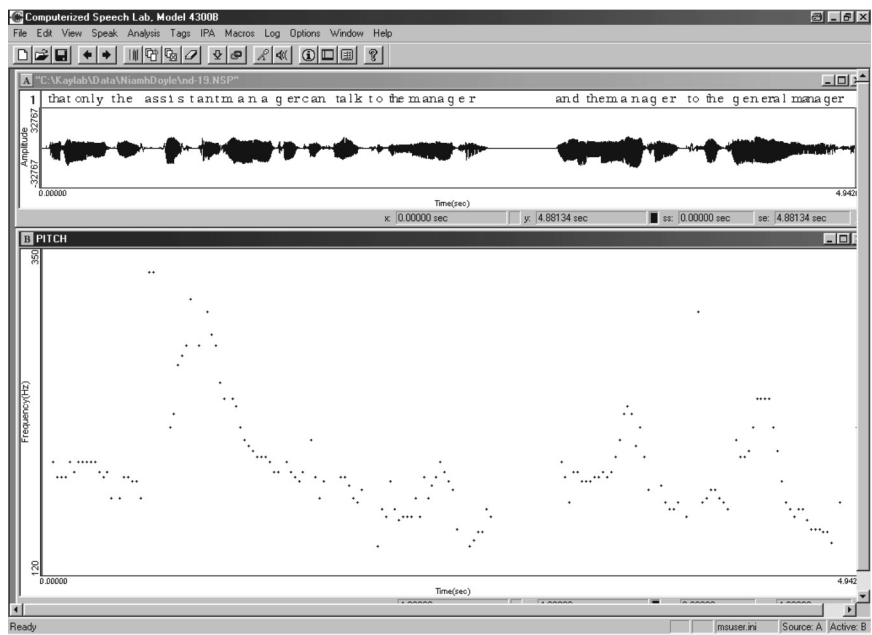
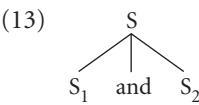


Figure 1.

The result of either a syntactic deletion account (e.g., Ross 1970) or a PF-deletion account (e.g., Hartmann 2000, and in this volume) would suggest for (12) the simplified structure in (13):

- (12) $[[_{S1/TP} \dots \text{the ASSISTANT manager can talk to the MANAGER}] \text{ and } [_{S2/TP} \text{ the MANAGER can talk to the GENERAL manager}]]$.



In (13), two clauses are coordinated. It is generally assumed that in addition to a parallel syntactic structure gapping also requires a parallel focus structure, as expressed in the contrastive focus principle in (14):

- (14) CONTRASTIVE FOCUS PRINCIPLE:
In gapping, the deleted elements must belong to the background. The remnants must occur in a contrastive relation to their correlates.
(adopted from López & Winkler, in this volume)

Principle (14) applied to the manager example in (10) provides the following picture: There are parallel foci, and the remnants (MANAGER, GENERAL manager) occur in a contrastive relationship to their correspondents in the first conjunct (ASSISTANT manager, MANAGER).

Within the PF-deletion account it is possible to argue that the given part of a sentence is phonologically reduced, or *p-reduced*, as proposed by Klein (1993):

- (15) Exactly those lexical elements that constitute a maintained topic can be p-reduced. (Klein 1993:791; our translation)

The term maintained topic refers to the background of the sentence and is generated by replacing the focused constituents with a variable and building up the resulting structure at LF. The maintained topic in example (10) is the string *can talk*, as seen in (16).

- (16) It's probably true ... that the system is so hierarchical that only
[x can talk to y and y ~~can talk~~ to z]...

A straightforward test that shows that the modal verb *can* and the matrix verb *talk* are actually maintained topics in Klein's sense is shown when (12) is used as an answer to a multiple *wh*-question, as in (17):

- (17) A: Who *can talk* to whom?
B: The ASSISTANT manager ~~can talk~~ to the MANAGER and
the MANAGER ~~can talk~~ to the GENERAL manager.

The *wh*-phrases in (17) specify the sets of alternatives from which the relevant set must be chosen; in the case of (17B), the answer specifies two pairs namely the pair *assistant manager* and *manager* and the pair *manager* and *general manager*.

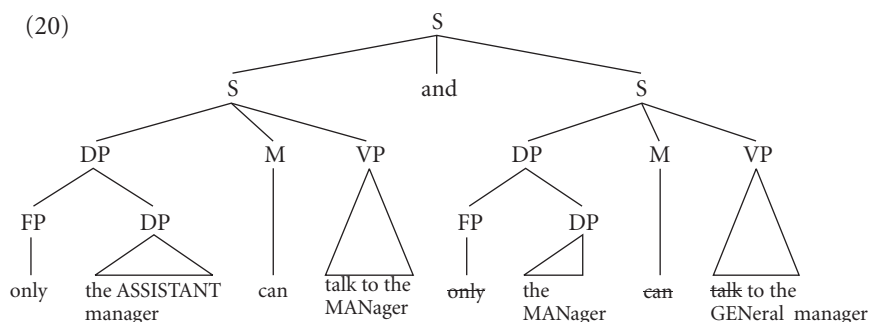
Up to this point, we have intentionally ignored the function of *only* in (10). Let us look at it more carefully, as represented in (18).

- (18) It's probably true ... that the system is so hierarchical that **only** the ASSISTANT manager can talk to the MANAGER and the MANAGER to the GENERAL manager...

It is generally assumed that the focus sensitive particle *only* is associated with the focus (cf. semantic works ranging from Jacobs 1983, 1986, over Rooth 1985, 1992b, and Tancredi 1990, to von Stechow 1991, and syntactic works ranging from Anderson 1972, over McCawley 1996 and Kayne 1998, to Buring & Hartmann 2001). That is, *only* is a focus particle that takes as its associated focus a prosodically marked element that is implicitly contrasted with alternatives, as for example in (19):

- (19) a. Only John came. (but not BILL)
 b. John only introduced Bill to Sue. (but not his MOTHER)

Under the assumption that p-reduction of the maintained topic at PF in (18) depends upon the focused remnants in the second conjunct, then it could be assumed that the complete syntactic representation is handed over to the LF-component. A simplified structure of example (18) is provided in (20). Note that the representation follows Rooth's (1985:28, Chapter 3) original assumption that *only* is part of the NP (DP) constituent:



In (20), p-reduction, according to Klein, would affect the focus particle *only*, the modal verb *can* and the main verb *talk* in the second conjunct.

The question that we have not addressed so far is: What is a possible paraphrase of the manager example as represented in (20)? A natural paraphrase is given in (21):

- (21) P1: As for the MANAGER, only the ASSISTANT manager can talk to him;
 and as for the GENERAL manager, only the MANAGER can talk to him.

If the paraphrase in (21) models our interpretation, then this sentence contains a pair of contrastive foci, as well as two foci that are associated with *only*. However, for most informants example (18) allows only the paraphrase, which is given in (22):

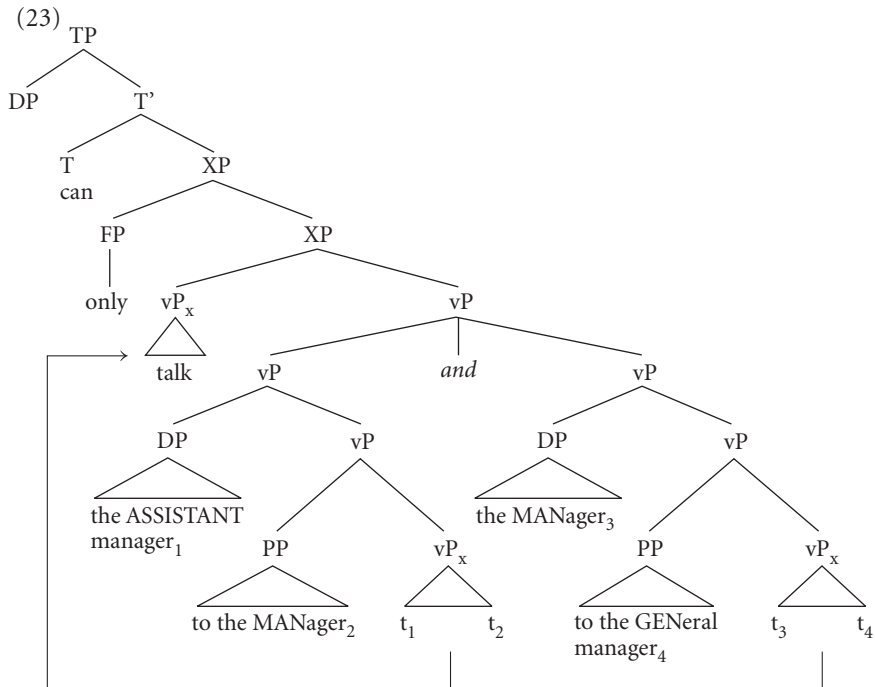
- (22) P2: There are only two pairs (x, y) with the property that *x can talk to y* – namely, the pair (assistant manager, manager) and the pair (manager, general manager) and no other pair.

We can see immediately that the paraphrases P1 and P2 actually differ when we test them with an additional focus pair, such as the pair (assistant manager, executive director). This pair is excluded by the paraphrase P2, but not by P1.

The relevant observation is the following: the reading P2 cannot be explained under a straightforward PF-deletion account, as it is represented in (20).² However,

it can be explained under the so-called syntax-first approach that assumes that a contrastively focused phrase must be moved to an A-bar position in overt syntax and is then interpreted at the syntax-semantics interface. A very brief sketch of such an account of (18) is given below.

The idea is the following: Independent evidence suggests that gapping involves the coordination of vPs and not of sentences (see Johnson 1997a as well as López & Winkler, in this volume). Thus, gapping is derived by two independent movement operations: focus movement in a Spec,vP-position with subsequent ATB-movement of the vacated vP. The focus particle *only* in (18) does not take a DP, but functions as a quantifying sentential adverb in the sense of Jacobs (1983) and Büring and Hartmann (2001) and is adjoined to vP in (23). From this position, *only* has scope over the coordination and therefore over the pairs (assistant manager, manager) and (manager, general manager).



Note that the structure in (23) is not the surface structure of (18). The subject *the assistant manager* and the focus particle *only* must somehow form a phrase and move to the canonical subject position in English.

The above exemplary discussion of a single example is not intended to show that there is no PF-deletion. PF-deletion is needed for many different deletion operations. The question, however, is how much of the explanatory force do we

actually need to load onto the PF-component in the discussion of elliptical phenomena, and how do the deletion operations interact with the information structural component and focus? These are two of the major questions addressed by the contributors to this volume.

3. The chapters

3.1 Towards the exploration of PF-deletion accounts

Since Chomsky and Lasnik (1993) as well as Tancredi (1992) introduced the *phonological reduction hypothesis* as an explanation for ellipsis, various different approaches to how this hypothesis could be implemented have emerged. One branch of research is inspired by Lasnik (1995b, 1999b) and investigates various syntactic principles that operate at PF (Kennedy, Merchant, Wilder, in this volume), another branch of research, inspired by Klein (1993), assumes that pragmatic well-formedness conditions apply at PF and trigger deletion processes (Hartmann, in this volume).

Chris Kennedy: *Ellipsis and syntactic representation*

On the traditional view outlined in (3), the syntactic representation feeds the two performance systems, the sensori-motor system and the system of thought. That is, the pairing of sound and meaning is essentially driven by syntactic representation.

Kennedy, as part of a general research program, puts this view on test using the case of ellipsis. He addresses a question that has been of interest to researchers on ellipsis phenomena since the very early days of generative grammar: Do constituents targeted by various types of ellipsis operations have syntactic structure at some level (or levels) of representation, or can the various properties of ellipsis constructions be accounted for purely in terms of recovery of meaning, without assuming an intermediate level of syntactic representation? Kennedy argues that while semantic (and discourse) factors clearly play an important role in licensing ellipsis, it is nevertheless the case that elided constituents must also have syntactic representation. To support this claim, he focuses on the interaction of ellipsis (*VP-ellipsis*, *attributive comparative deletion*, *pseudogapping*) and several different grammatical phenomena and constraints, including *parasitic gaps*, *binding theory*, and *island constraints*, which he shows provide clear evidence that ellipsis constructions are sensitive to configurational constraints on syntactic representations. However, Kennedy points to a phenomenon that seems to challenge this result: attributive comparative deletion seems to be insensitive to Ross' Left Branch Constraint (LBC), as is shown by the ungrammatical **Jones produced as successful a film as Smith produced a play*. The solution to this problem lies in the assumption that the LBC holds at PF and not at LF (as argued in Kennedy & Merchant 2000). More

precisely, if the LBC is hypothesized to apply to morpho-phonological properties of lexical items at PF, then the constraint is inactive if ellipsis has taken place.

The prediction on ellipsis and syntactic representation involves two cases: If ellipsis involves deletion of syntactic structure, then elided constituents should be sensitive to syntactic constraints in general. However, since ellipsis (by definition) does not require pronunciation of the “missing” structure, elided constituents should be insensitive to syntactic constraints that derive from morpho-phonological properties of the lexicon. The second part of this prediction is based on the understanding that ellipsis always requires deletion of syntactic structure (where deletion can be formalized either as actual elimination of syntactic structure, or as elimination of morpho-phonological information only).

The above prediction requires as the next step in the research program the identification of further ellipsis constructions that have properties of structures that could not appear overtly. In other words, the task is to find in ellipsis constructions evidence for the presence of objects that do not appear in other (well-formed) constructions of the language (such as the F^0 [+wh] head in English). Initial support for this conclusion comes from Merchant’s (2001) work on *sluicing* and Kennedy and Lidz’s (2001) work on *sloppy* vs. *strict* readings of *comparative stripping* constructions. Merchant’s paper on *subject-auxiliary inversion* in comparatives in this volume constitutes further support for this prediction.

Jason Merchant: *Subject-auxiliary inversion in comparatives and PF output constraints*

The paper “Subject-auxiliary inversion in comparatives and PF output constraints” contributes to the discussion of ellipsis by tackling a very important and long overlooked phenomenon: the required cooccurrence of *subject-auxiliary inversion* (SAI) with VP-ellipsis in comparative constructions. Merchant proposes an explanation of this phenomenon within the PF-deletion account of VP-ellipsis that attributes the requirement of VP-ellipsis under SAI to an interaction of properties of head movement involved in SAI with the licensing of traces of *wh*-movement involved in comparative clause formation. More precisely, it is assumed that A' -movement out of VP with the destination of SpecCP proceeds via adjunction to that VP, as is also argued in López and Winkler (in this volume). Moreover, A' -traces – including the intermediate trace adjoined to VP – are subject to the Empty Category Principle (ECP), reformulated as a condition operating at PF. Crucial to the explanation of why SAI in comparatives requires VP-ellipsis is the assumption that in comparatives the intermediate trace constitutes a violation of the ECP just in those cases where I-to-C movement has occurred. The logic is that a violation due to an illformed/ungoverned trace at PF can be remedied by deleting the VP and with it the offending trace.

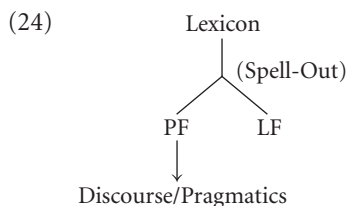
Chris Wilder: *Antecedent-containment and ellipsis*

Wilder reexamines *antecedent-contained-deletion* (ACD) constructions in the light of new empirical evidence from sentences involving ‘wide scope’ VP-ellipsis, as, for example, in *John said that more trees had died than Mary did*, which has the wide scope reading *John said that more trees had died than Mary said had died*. Wilder’s empirical interest is to establish a valid paradigm of ACD constructions. His primary theoretical interest is to find out whether the wide scope ACDs provide evidence for either of the hitherto assumed LF movement processes, namely, A'-movement (Quantifier Raising, May 1985), or A-movement of objects in English (Hornstein 1994). In fact, the wide scope VP-ellipsis cases provide strong support for the following three claims: (i) ACDs involve A'-movement, (ii) an independent PF principle is at work (“A VP-ellipsis site E may not be linearly contained in its antecedent site”), and (iii) not all cases of alleged ACDs are indeed ACDs, but are rather the results of pseudogapping (*It’s harder to persuade the Americans of this than it is _ the English*) or backward deletion (*Go from the last town north to the first town south of that mosquito-infested river*) or both (*John gave whoever he could _two dollars*).

Katharina Hartmann: *Background matching in right node raising constructions*

Hartmann’s paper also sets out to explore the question of whether ellipsis is the result of syntactic processes or whether it is the result of phonological deletion (cf. Klein 1993; Chomsky 1995; Lasnik 1995b) and arrives at an essentially different PF-deletion account. While Kennedy, Merchant, and Wilder formulate syntactic principles that hold at PF, Hartmann formulates a pragmatic wellformedness condition (for *background matching* on the basis of GIVENNESS) that functions as a licensing condition on ellipsis at PF. The paper investigates the *right node raising* (RNR) construction in German. On the basis of a detailed analysis of the interaction of grammatical processes that license elliptical constructions, Hartmann argues against the traditional movement accounts (cf. Postal 1974) and for an *in situ* theory that claims that RNR is derived by phonological deletion without modification of the syntactic structure. However, although she proposes that deletion takes place at PF, the principles that license deletion are not phonological but pragmatic. The relevant condition states that an utterance is pragmatically licensed if it has a *background match*, where background match is defined as GIVENNESS in the sense of Schwarzschild (1999). More precisely, Hartmann shows that the interaction of information structure, a parallel syntactic configuration and a specific intonational pattern licenses phonetic deletion in RNR. This is the point at which she departs from the model in (3) and from the straightforward Lasnik-type PF-approach to ellipsis.

In a nutshell, while the Kennedy, Merchant and Wilder approaches hypothesize that essentially syntactic principles and reflexes trigger PF-deletion, Hartmann suggests that essentially pragmatic principles cause PF-deletion. In terms of our original model of grammar in (3), Hartmann proposes that the PF component also interfaces with a pragmatic component. Although not explicitly stated, the model she proposes for RNR could be hypothesized to have the form in (24) where PF has direct access to the pragmatic component.



Hartmann's paper, then, argues that RNR does not involve syntactic movement, but is best analyzed in terms of phonological reduction, where PF-reduction is licensed by the specific focus structure of RNR which is defined in terms of a specific pragmatic filter.

3.2 From the computational system to the syntax-semantics interface

All four papers in this group investigate the question of whether a special process of ellipsis must be added to the system of grammar or whether the existing means are sufficient to account for the different kinds of ellipses. More precisely, the first three papers explore the differences between movement and ellipsis, and the fourth paper proceeds from the hypothesis that gapping, in fact, is a special form of movement. This hypothesis forms the basis of an investigation of crosslinguistic syntactic variation, explaining it as variation at the syntax-semantics interface.

Caterina Donati: *Merge copy*

Donati's paper explores the null-hypothesis that ellipsis can be reduced to movement. It thereby challenges the standard view on ellipsis that perceives of ellipsis as an interface phenomenon. In essence, the paper proposes that ellipsis is not an interface phenomenon; rather, it is a purely syntactic phenomena. As all syntactic phenomena, ellipsis gets interpreted at the interfaces, but it is not in itself an interface process.

The paper starts out by analyzing the fundamental similarities and differences between well-established movement operations and ellipsis. Donati points out that the *copy theory of movement* already makes available a deletion operation which is defined independently of standard ellipsis cases, such as in *wh*-movement where

the lower copy is deleted at PF. With respect to the phonological reduction of elements, which are interpreted without being pronounced, ellipsis doesn't seem to be anything special. Grammar is already equipped with a general *copy-deletion* mechanism. Donati hypothesizes that in ellipsis contexts, the lower of two identical constituents (i.e., copies) is deleted at PF and this is simply due to a uniform deletion operation applying on copies. The paper further investigates the possibility of reducing ellipsis to movement altogether. The discussion, however, shows that the process *merge copy* has two instantiations: movement (e.g., *wh*-movement) and reduplication (e.g., ellipsis). In movement contexts, the copies are links of the same chain, where the moved copy is the goal of an agreement relation (feature checking); in the ellipsis contexts, in contrast, the copies are members of different chains and no agreement relation is involved (no feature checking). Reduplication is understood as a free operation, applying freely in the derivation like any other instance of *merge*.

Winfried Lechner: *Phrase structure paradoxes, movement and ellipsis*

Lechner's paper studies *VP-fronting* and *pseudogapping*, two constructions which superficially seem to differ only in the mechanism (movement vs. ellipsis) which removes the missing VP. At first sight, both constructions look very similar. They have in common a phonologically silent VP followed by a remnant: VP-fronting, as in (26) (Pesetsky 1995; Phillips 1996, to appear), and pseudogapping, as in (27):

- (26) John intended to give the books to the children, and
 [_{VP} give the books to them_i] he did on each other_i's birthdays.
- (27) John gave the books to the children on Monday, and Mary did on Friday.

Parting from earlier analyses (Phillip's 1996 account of the type of phrase structure paradoxes discussed by Pesetsky 1995), Lechner argues for a movement analysis of PS-paradoxes, which postulates extraction of the remnant PP prior to topicalization. Thus, VP-fronting as in (26) receives an analysis analogous to the pseudogapping example in (27) (cf. Jayaseelan 1990; Johnson 1997a; Lasnik 1995b), the only difference being that the VP in VP-fronting is removed from its base position by movement and not by ellipsis.

Lechner investigates various interpretive differences between VP-fronting and pseudogapping which manifest themselves in the complex scope and binding properties of remnants: On the one hand, he demonstrates that certain disparities between traces and ellipsis copies can be derived from the assumption that (VP) adjuncts may be merged in any position in which they are interpretable by the principles of type driven interpretation; On the other hand, he shows that the actual point in the derivation at which adjuncts are inserted is (indirectly) determined by economy conditions (Fewest Step). This elegant analysis of the contrasts between

VP-fronting and pseudogapping entails two consequences: First, it generates an argument for the view that economy not only restricts possible movement relations, but also regulates the second structure building operation, *merge*. Second, it follows as a corollary that the metric which evaluates derivations cannot operate on a strictly local basis, but needs to be able to compare larger units of information (such as phases). He attributes these disparities to the interaction between economy conditions and the assumption that adjuncts may be merged with the root at different stages of the derivation.

Uli Sauerland: *Unpronounced heads in relative clauses*

Sauerland's paper investigates English relative clauses, such as in *The pandas that we saw t at Ueno were cute*, and tries to identify and explain the semantic relation between the relative clause internal trace position *t*, the position of the complementizer, and the head of the relative clause, here *pandas*. There are basically two hypotheses (cf. Carlson 1977a) that describe this relation in syntax: the *matching hypothesis* and the *raising hypothesis*. The matching hypothesis assumes that there is no direct transformational relationship between the head NP and the relative clause internal trace position. The raising hypothesis assumes that there is a transformational connection.

Sauerland's contribution to this discussion is threefold: First, he uses the diagnostics for *wh*-movement (reconstruction) that have been developed in recent years (Chomsky 1995; Fox 1998, 1999; Heycock 1995; Huang 1993; Lebeaux 1991, 1998; Sauerland 1998a, and others) and applies them to *relative clauses* (RCs). He thereby shows that indeed both types of RCs exist: a matching RC is shown in (28a) and a raising RC in (28b). The relevant factor to distinguish the two are reconstruction effects. An RC is a matching RC if the head NP must not be reconstructed. An RC is a raising RC if the RC must be reconstructed.

- (28) a. The relative of John_i that he_i likes lives far away.
- b. The relative of his_i that everybody_i likes lives far away.

Second, he concentrates on matching RCs and argues that matching RCs, like raising RCs, have complex heads. Third, Sauerland proposes that the relation of the silent internal head and the external head in matching RCs is best described as a process, called *relative deletion*, defined as follows: In matching RCs, the internal head must not be pronounced. Furthermore, the external head must be the antecedent of the internal head.³

Sauerland analyzes *relative deletion* as an obligatory ellipsis process, and shows that the standard assumption that *vehicle change* is possible in ellipsis, but not in movement chains, accounts for the special properties of reconstruction in relative

and comparative clauses. Thus, the novel claim of this paper is that the material in the trace position is related to the head not by movement but by ellipsis.

The goal of the fourth paper in this group is an explanation of crosslinguistic variation in terms of syntax-semantics interface.

Luis López and Susanne Winkler: *Variation at the syntax-semantics interface: Evidence from gapping*

López and Winkler investigate *gapping* in English and propose that it is a focus construction which is the result of two movement operations: first, remnant movement to a stacked A-bar position in the coordinated vP, and second, subsequent ATB-movement of the verb (cf. Johnson 1997a). The first type of movement is a version of contrastive focus movement; the second movement corresponds to the information structural function of defocusing

López and Winkler use this gapping analysis as a platform to investigate the sources of cross-linguistic syntactic variation within Chomsky's (1995, 2000) model of grammar. Within the Minimalist Program, the computational system should be conceived of as an autonomous system of composition and manipulation; its properties are therefore fixed and cannot be the locus of variation. The paper identifies two possible sources of variation: The first is the lexicon, where features of functional categories in particular have been identified as triggering movement (cf. Borer 1984). The second is the syntax-semantics interface, where it is hypothesized that rules of interpretation can be subject to variation. More specifically, López and Winkler have argued that the differences concerning *wh*- and focus movement between Western Bade and English cannot be traced to a property of a functional category, but rather to rules of interpretation. The same holds true if the variation occurs within a language, as in Chinese, where foci and *wh*-phrases surface in different positions.

The first provisional hypothesis is that the parameter that distinguishes Western Bade from English involves interpretive rules (INT): While Spec,v receives INT in Western Bade, Spec,C receives INT in English, where INT is an interpretive rule that assigns *wh*-phrases and foci an interpretation. However, evidence from gapping in English shows that Spec,v can be a place where foci and *wh*-phrases can be interpreted even in English. In contrast to the sentential coordination plus deletion accounts (Ross 1970, among others), gapping is analyzed as vP coordination plus ATB-movement. The close investigation of the movement processes involved provides evidence for the claim that the focused remnants must occur in Spec,v in English.

The authors conclude that the difference between Western Bade and English cannot be a fixed parameterized rule. Rather, they propose that interpretive rules are universal but ranked according to markedness. That is, the syntax-semantics

interface is free to assign INT to the edges of phases. The exact choice of where INT is assigned is the source of parametric variation.

3.3 The semantic component and its connection to focus and discourse structure

The papers of this group focus on the semantics of the silent elements in the ellipsis site. Hardt, Romero, Schwabe, and Tomioka explore anaphoric elliptical material. Gretsche, in contrast concentrates on elliptical expressions that have an interrogative function in that they occur in a cataphoric relationship to their term answers.

Daniel Hardt: *Ellipsis and the structure of discourse*

Hardt's paper explores the relation that holds between an ellipsis site (here VP-ellipsis) and its antecedent, and how the ellipsis site is interpreted in the absence of form. Many authors have suggested that ellipsis and other processes of reduction require a certain similarity or parallelism between the ellipsis clause and some antecedent clause in discourse (Dalrymple et al. 1991; Rooth 1992b). In this paper, Hardt argues that this matching condition on ellipsis must be applied in accordance with discourse structure, where discourse structure is assumed to be a post-LF-component that can be freely accessed by semantics. This results in a stronger condition on ellipsis: The matching clauses must also participate in a discourse relation. The effect of this condition can be clearly observed in examples involving multiple ellipsis, where discourse structure plays a key role in determining possible readings.

The paper begins by considering two types of approaches to the matching condition: the *semantic matching approach*, exemplified by Rooth (1992a), and the *path identity approach* (originally due to Fiengo & May 1994 and modified by Asher et al. 2001). Hardt's approach is that *semantic matching* must be applied according to discourse structure. He shows that in the case of multiple potential antecedents, discourse relations determine the correct choice. With respect to sloppy identity, discourse relations limit the possible readings.

Maribel Romero: *Correlate restriction and definiteness effects in ellipsis*

This paper investigates two ellipsis constructions – *reduced conditionals* in German and *sluicing* – and shows that both constructions are subject to a restriction on possible antecedent phrases for the remnants of ellipsis and to a definiteness effect that makes nondefinite phrases behave semantically as definites in ellipsis sites. Interestingly, these two properties are found only in German reduced conditionals, as in (29) and in sluicing, as in (30):

- (29) a. *Wenn ich jemanden besuche, dann immer den Peter.*
 if I somebody visit then always the Peter
 ‘If/whenever I visit somebody, then Peter/it’s Peter’
 b. **Wenn ich den Karl besuche, dann immer den Peter.*
- (30) a. I know that four students came to the party, but I don’t know who.
 b. *I know that four students came to the party but I don’t know how many.

Both restrictions are shown to follow from the semantics of focus. Romero brings together Rooth’s theory of focus with Schwarzschild’s *Avoid Focus Constraint*. Rooth distinguishes two felicity conditions: (i) the subset condition, which is relevant for reduced conditionals, and (ii) the membership condition, which holds for sluicing. The subset condition typically occurs in question-answer pairs (cf. Rooth 1992b) and licenses free focus (non-operator focus, according to von Stechow 1991), which typically occurs in question-answer pairs. According to Rooth (1992b), the denotation of the question (in Hamblin’s 1973 formalism) must be a subset of the semantic value of the answer. The membership condition licenses contrastive focus, that is, contrastive focus is licensed if there is an alternative to the focused element which is different from the element itself. Schwarzschild’s *Avoid Focus Constraint* (economy constraint) is needed to fulfill the membership condition. Romero proposes two generalizations. The first one is a generalization on proper remnants and involves two parts: (i) A remnant with free focus introduces an exhaustivity implicature; (ii) A remnant with contrastive focus must contrast with its correlate phrase. The second one is a descriptive generalization operating on the antecedent of the *wh*-remnant: An NP is a good correlate for a sluiced focused *wh*-phrase if its clause expresses (the answer to) a question that *contrasts* with the question expressed by the sluiced interrogative.

Romero claims that the *definiteness effect* in sluicing follows from the interaction of the semantics of questions and focus. The key intuition is that the *wh*-phrase *who* in a full interrogative like *I just heard that a student in your class likes most professors in this school. I need to find out who likes most professors here/in this school* may range over a wider set of people than the sluiced *WHO* in *I just heard that a student in your class likes most professors in this school. I need to find out WHO* __, where focused *WHO* can only stand for *which student in your class*.

Basically, focus requires that the question implied by the A-constituent and the question expressed by the E-constituent match semantically and that they only differ in the denotation of the focused material.

The first question asks about the existence of a particular type of student and the second question asks about the identity of that same type of student. This is required by the subset condition plus *Avoid Focus*. Since the student is the same in

both questions, the (unique) majority of professors that he likes is also the same in both questions. Hence the definiteness effect.

This is the point at which Romero's and Schwabe's approach to sluicing meet.

Kerstin Schwabe: *Focus marking and specificity in sluicing constructions*

This paper puts forward a novel and integrated analysis of two factors that play an important role in the semantic licensing of *sluicing* constructions, namely, the *focus restriction* on the antecedent and the *specificity restriction* on the antecedent. The basic claim is that the correlate of the *wh*-phrase must allow a specific interpretation and that the restriction as well as the nucleus scope of the *wh*-phrase must be given within the antecedent clause.

The focus analysis is based on Schwarzschild (1999) and Merchant (2001) and shows that in cases where the antecedent clause of the sluicing clause is not a judgment, a process of accommodation must be assumed. With respect to the specificity restriction on the antecedent, Schwabe proposes a solution within the theory of von Stechow (1997, 2000). She analyzes specific indefinite expressions as denoting a discourse referent that is anchored to an accessible discourse participant and shows that the specificity restriction of the indefinite in sluicing depends on the semantics of *wh*-phrases. She shows that the semantics of the *wh*-phrases presupposes (i) that the entity denoted by the indefinite in the first conjunct must not be anchored for a discourse participant *a*, and (ii) that it must be anchored for some other discourse participant *b*. The first presupposition prevents the entity from being in the background and/or from being expressed by a definite expression. The second presupposition prohibits the entity from occurring in contexts that do not allow a specific interpretation such as thematic embedded clauses and the scope of certain quantificational or modal phrases. Finally, the paper shows in various applications that the focus restriction and the indefinite restriction are two mutually dependent conditions.

Satoshi Tomioka: *The semantics of Japanese null pronouns and its crosslinguistic implications*

Tomioka investigates the nature of phonologically *silent pronouns* in Japanese and shows that they can receive a wide variety of semantic interpretations. One of his main claims is that different interpretations of pronouns do not come from semantic ambiguities of pronouns themselves. Four out of the six interpretations of null pronouns in Japanese (namely, E-type, (definite) laziness pronoun, indefinite pronoun, and property anaphora) are due to the inherent semantic flexibility of full-fledged bare NPs in Japanese. Bare NPs in Japanese appear freely in argument position, and their in/definiteness is achieved secondarily by means of semantic operations. Tomioka proposes that the four aforementioned uses of Japanese null

pronouns are simply property anaphora (type $\langle e, t \rangle$), and that their differences are the results of the same semantic operations that affect full-fledged NPs. Additional crosslinguistic evidence for Tomioka's analysis comes from Chinese, Korean and Modern Greek. Chinese and Korean, which allow Bare NPs and employ the same interpretive strategies as Japanese, show exactly the same range of semantic variability of null pronouns as Japanese. Modern Greek allows null pronouns only when the antecedents are 'weak' quantifiers. Such selectiveness is easy to analyze within Tomioka's proposal. The existential quantification of those weak quantifiers does not come from determiner quantification but rather is due to a covert semantic operation. Then, Greek null pronouns with weak antecedents are analyzed as property anaphora, just like the Japanese counterpart.

Given the view that there is crosslinguistic variation in the availability of the semantic tools which play an important role in the interpretation of null pronouns, an entirely new question arises: Does semantics have something to do with what has been known as the *pro-drop parameter*? Tomioka's answer to this question is 'Yes'. His argument is based on two crosslinguistic generalizations. The first generalization is about *discourse pro-drop* languages, which permit null pronouns when a certain contextual familiarity condition is met: Discourse pro-drop languages allow robust bare NP arguments. The second generalization is that phonologically null NP anaphora, also known as *N-bar-deletion/NP ellipsis*, seems available in most, if not all, languages. Tomioka points out that phonologically null arguments and N-bar-deletion/NP ellipsis would have the identical outcome in languages with NP arguments. The hypothesis forwarded in this paper is that they are indeed the same: Null pronouns in discourse pro-drop languages are simply the result of N-bar-deletion/NP ellipsis without determiner stranding. In Chierchia's (1998) theory, the availability of bare NP arguments is determined by the *nominal mapping parameter*, which dictates what basic semantic types each language assigns to nouns. Discourse pro-drop crucially relies on the availability of bare NPs in argument positions, which is determined by the semantic parameter of nouns. Thus, semantics has a great deal of influence on the pro-drop parameter.

The paper concludes by pointing out two questions for further research: First, why is it that although all discourse pro-drop languages seem to allow bare NP arguments, the reverse is not true? Not all bare NP languages are discourse pro-drop. Second, what is the nature of this null NP anaphora? Is it a pro-form or an instance of ellipsis/deletion? These open questions need to be explored further.

Petra Gretschn: *Topic and focus in focal ellipsis*

Gretschn's paper constitutes a novel exploration of what can possibly count as an instance of ellipsis. She investigates operatorless questions such as *The keys are _?*, called the *focal ellipsis* (FE) construction and proposes that focal constituents actually can be omitted, which results in an erotetical utterance. She suggests that the

gap in the FE construction constitutes the focus of the question which challenges the common view on the information structure of elliptical constructions where the gap corresponds to the given constituents. Using German, Korean and Chinese data, Gretsche argues that there are different types of FEs (contrastive and presentational FEs) and proposes that the appearance of contrastive FE is universal, but that the occurrence of presentational FE is restricted to languages which allow for morphologically unmarked topics.

The above abstracts show that the papers of this volume connect in at least four important respects: First, all the papers investigate the fine structure of the syntax-semantics-phonology interfaces. Second, they look at different types of ellipses or deletion processes with the goal of finding an answer to the theoretical questions posed in (4) above. Third, the papers build on current investigations in the theory of grammar and information structure and mirror an important shift in the theoretical approaches to ellipsis. The shift from syntactic deletion to PF-deletion is counterbalanced by many researchers who investigate the interface between syntax and semantics in the search for an answer to many of the intricate questions of ellipsis. And last but not least, the papers reflect the cooperation of a group of researchers whose recent investigations into the interfaces from the perspective of omitted structures have yielded important results.

Notes

* We would like to thank the participants of the joint workshop of the ZAS (Berlin) and the University of Tübingen on *Ellipsis and Information Structure*, which took place in Berlin in November 1999 and the SFB441-colloquium participants at the University of Tübingen in the summer of 2001 for stimulating discussions of the ideas and issues discussed here. Particular thanks go to Werner Abraham, Ralph Albrecht, Mechthild Bernhard, Kirsten Brock, Paul David Doherty, Bernie Drubig, Remus Gergel, Daniel Hardt, Jutta Hartmann, Katharina Hartmann, Winnie Lechner, Luis López, and Uli Sauerland for comments on an early draft. Remaining errors of interpretation and analysis remain ours solely.

1. The list of authors referred to in (5) is exemplary and non-exhaustive. Since ellipsis is an interface phenomenon and a nonuniform phenomenon, there are cross-classifications to be expected that are worked out in the individual contributions to this volume. The abbreviation *itv* stands for “in this volume”.

2. A further problem for the PF-deletion account stems from the observation that *only* in the second conjunct can only be understood if *can talk* is deleted. A similar observation has been made by Johnson 2000 with respect to VP-adverbs.

- (i) It's probably true ... that the system is so hierarchical that only the ASSISTANT manager can talk to the MANAGER –
 - a. and the manager can talk to the general manager (as everybody else does).
 - b. and the manager can talk to whoever he wants.

3. Relative deletion is modeled after comparative deletion (Bresnan 1973, 1975; Lechner 1999), which also involves the deletion of “an internal copy of the head that doesn’t seem to be related by movement to the external head”.

I. Towards the exploration of PF-deletion accounts

Ellipsis and syntactic representation

Christopher Kennedy

This paper addresses a question that has been of interest to researchers on ellipsis since the very early days of work in generative grammar: do constituents targeted by various types of ellipsis operations have syntactic structure at some level (or levels) of representation, or can the various properties of ellipsis constructions be accounted for purely in terms of recovery of meanings, without positing syntactic representation at the ellipsis site? Focusing on the interaction of ellipsis and several different grammatical phenomena and constraints, including parasitic gaps, binding theory, and extraction islands, I will present evidence that ellipsis constructions are sensitive to configurational constraints on syntactic representations, but not to constraints that are based on morphophonological properties of lexical items, thus supporting a view of ellipsis as deletion of syntactic material.*

1. The representation of nothing

Since at least Hankamer and Sag 1976a, a central question in research on ellipsis has been what sorts of representations are involved in the resolution and licensing of unpronounced linguistic information? Two lines of thought have predominated, which differ in their assumptions about the role of syntax in ellipsis. The first approach, which has a long tradition in generative grammar, postulates that elided material has syntactic structure at some level of representation, but the grammar contains a means of blocking its pronunciation in the surface form. The second approach rejects the claim that unpronounced material has syntactic representation, hypothesizing instead that general mechanisms governing the recovery of meanings from context can be put to work to resolve ellipsis. The purpose of this paper is to provide arguments in favor of a version of the first approach, and to show that an analysis in which ellipsis involves only the recovery of meanings, without reference to syntax, fails to provide an empirically adequate account of the facts. Before making an argument in favor of this position, however, I will present an overview of the positive and negative aspects of several approaches that are representative of these different answers to the question of representation.

1.1 Syntactic analyses of ellipsis

The hypothesis that ellipsis involves syntactic representation can be implemented in two ways: deletion of syntactic material from the representation that is the input to the phonological component or recovery of syntactic structure at some level of logical representation. The former approach goes back to the very early days of generative grammar, and has been revitalized in recent work in the Principles and Parameters framework (see e.g. Hankamer 1979; Sag 1976a; Tancredi 1992; Wilder 1995b; Merchant 2001; Kennedy & Merchant 2000a); the latter approach has also appeared in different forms over the past twenty-five years (see e.g. Wasow 1972; Williams 1977a; Haik 1987; Kitagawa 1991; Fiengo & May 1994). The crucial assumption that both sorts of syntactic analyses share is that elided material has syntactic structure at some level of representation. A central result of such approaches, therefore, is that they can account for syntactic effects within the ellipsis site.

For example, the fact that island effects appear under ellipsis, as shown by the contrast between the (a) and (b) examples in (1) and (2), receives a straightforward explanation: if ellipsis involves deletion, then the (b) sentences are derived from the representations in (1c) and (2c) (where struck-through text indicates material deleted from the pronounced form), which involve extraction out of an island (indicated by a subscript I).

- (1) a. Sterling criticized every decision that Lou did.
 b. *Sterling criticized every decision that Doug was upset because Lou did.
 c. *Sterling criticized every decision [*wh_i* that Doug was upset [_I because Lou did ~~*t_{VP}* criticized *t_I*~~]].
- (2) a. Dogs, I understand, but cats, I don't.
 b. *Dogs, I understand, but cats, I don't know a single person who does.
 c. *Cats_i I don't know [_I a single person who does ~~*t_{VP}* understand *t_i*~~]].

Note that in the absence of an A'-dependency into the ellipsis site, the relation between an elided VP and its antecedent is not sensitive to island constraints, as originally observed by Ross (1967).

The appearance of Binding Theory effects in the ellipsis site is another property that is expected in a syntactic analysis. For example, the fact that (3a) strongly disfavors a 'strict' interpretation, in which Sterling also blames Doug for the band's collapse, follows from the fact that it is derived from (3b): the strict reading would violate Condition A, which requires a reflexive pronoun to find its antecedent locally. Likewise, the disjoint reference effect in (4a) is a direct consequence of Condition B of the Binding Theory, which rules out coreference between a pronoun and a co-argument.

- (3) a. Doug blamed himself for the band's collapse, and Sterling did too.
 b. Doug blamed himself for the band's collapse, and Sterling did
~~[_{VP} blame himself]~~ too.
- (4) a. *Kim takes care of him_i because he_j won't.
 b. Kim takes care of him_i because he_j won't ~~[_{VP} take care of him_i]~~.

Finally, a syntactic approach to ellipsis, augmented with sufficiently strict requirements on the type of identity relation that licenses deletion, provides the basis of an account of the unacceptability of examples involving syntactic nonidentity.

- (5) a. ??Only 43 percent of registered voters did.
 b. ??A lot of this material can be presented in a fairly informal
 and accessible fashion, and often I do.

There appear to be a number of serious problems for a syntactic account of ellipsis, however, the most important of which is the fact that there are contexts in which syntactic effects within the ellipsis site seem to disappear. One such context involves comparatives constructed out of attributive adjective phrases, such as those in (6).

- (6) a. *The Cubs start a more talented infield than the Sox start an outfield.
 b. *Jones produced as successful a film as Smith produced a play.

Kennedy & Merchant (2000) demonstrate that the unacceptability of the examples in (6) is due to the Left Branch Constraint (LBC), which blocks movement of left branch attributive modifiers (see also Pinkham 1982). Assuming that comparatives are derived through an operation of A'-movement that targets the compared constituent in the *than-clause* (Ross 1967; Chomsky 1977b), the syntactic structures assigned to the examples in (6) are those in (7), which, just like the questions in (8), violate the LBC.

- (7) a. *The Cubs start a more talented infield than [~~wh_i~~ the Sox start an *t_i* outfield]
 b. *Jones produced as successful a film as [~~wh_i~~ Smith produced a *t_i* play].
- (8) a. *How talented_i do the Sox start an *t_i* outfield?
 b. *How successful_i did Smith produce a *t_i* play?

The problem for a syntactic theory of ellipsis comes from examples like (9a) and (9b), which appear to indicate that island effects *disappear* under ellipsis, contrary to what we saw above in (1b) and (2b). If ellipsis involves deletion, then (9a) and (9b) should be derived from (10a) and (10b), respectively, which should be just as ill-formed as (7) and (8) above.

- (9) a. The Cubs start a more talented infield than the Sox (do).
 b. Jones produced as successful a film as Smith (did).

- (10) a. The Cubs start a more talented infield than [~~wh_i~~ the Sox (do)
 [_{VP} start [_{DP} a *t_i* infield]]].
 b. Jones produced as successful a film as [~~wh_i~~ Smith (did)
 [_{VP} produced [_{DP} a *t_i* film]]].

A second problem for syntactic analyses of ellipsis is that there are also contexts in which binding effects seem to disappear. (11a), for example, can clearly have a strict reading, despite the fact that it should be derived from (11b), which does not support such a reading.

- (11) a. Doug blamed himself for the band's collapse because everyone else did.
b. Doug blamed himself for the band's collapse because everyone else did ~~from blame himself~~.

Similarly, (12a) fails to show the disjoint reference effect that we would expect to see if it were derived from the representation in (12b), which does not permit coreference between the pronominal arguments in the second clause.

- (12) a. Most Americans expected him_i to be acquitted, and obviously he_i did too.
b. Most Americans expected him_i to be acquitted, and obviously he_i did ~~not expect him_i to be acquitted~~.

Finally, although it is the case that syntactic non-identity typically results in judgments of unacceptability, it is a fact about English that many such examples are attested. In particular, both of the examples presented above in (5) are naturally occurring sentences:

- (13) a. In yesterday's elections, only 43 percent of registered voters did.
(heard on National Public Radio by CK in November 1996)
- b. A lot of this material can be presented in a fairly informal and accessible fashion, and often I do.
(Chomsky 1982:41; cited in Dalrymple et al. 1991)

1.2 Semantic analyses of ellipsis

A second approach to ellipsis claims that elided constituents have no syntactic representation at all, but rather can be fully explained in terms of a more general theory of information retrieval (see e.g. Dalrymple et al. 1991; Hardt 1992, 1999; Jacobson 1992; Hendriks & de Hoop 2001). In the higher-order unification approach advocated by Dalrymple et al. (1991), for example, a structure like (14a) is assigned a semantic representation of the sort in (14b), where *P* is a free variable over prop-

erties that needs to be resolved. The problem of ellipsis is the problem of solving the value of P, which is done by abstracting over parallel elements in some previous clause to generate a property-denoting expression, as shown in (14c), and substituting this expression for P.

- (14) a. Sterling quit the band because Lou did.
 b. *quit*(Sterling, the band) BECAUSE *P*(Lou)
 c. $P = \lambda x. \textit{quit}(x, \textit{theband})$
 d. *quit*(Sterling, the band) BECAUSE $\lambda x. \textit{quit}(x, \textit{theband})(\textit{Lou})$

One obvious positive aspect of this type of approach is that it doesn't run into the problems associated with purely syntactic accounts: because ellipsis does not involve syntactic representation, we should not expect to find syntactic effects inside the ellipsis site. However, this advantage is also its disadvantage: as noted above, there are a number of contexts in which we do find clear evidence of syntactic effects within the ellipsis site.

In order to account for facts like those discussed in Section 1.1, we would need to significantly weaken assumptions about the nature of the syntax-semantics interface. For example, we could adopt Haik's (1987) position that the ellipsis site itself can serve as the "gap" for a syntactic operator, as illustrated in the following examples.

- (15) a. *Sterling criticized every decision [_{CP} ~~that~~_{*t_i*} that Doug was upset [_{AdvP} because Lou did *t_i*]].
 b. *Dogs, I understand. Cats_{*i*} I don't know [_{DP} a single person who does *t_i*].

Since this approach requires us to abandon the assumption that semantic type of a bound variable corresponds to syntactic category of a corresponding gap (the bound variable in the interpretation of the relative clause in (15a) has the type of an individual, but the syntactic category of the gap in the syntactic representation is VP), it should be adopted only if a less costly approach fails to materialize.

1.3 A "mixed" analysis

In recent work, Andy Kehler (1995, 2000) attempts to account for the apparently paradoxical sensitivity of ellipsis to syntactic constraints by developing a "mixed" syntactic/semantic analysis, in which whether an elided constituent has internal syntactic structure or not depends on the discourse context in which it appears. In particular, Kehler argues that the requirement for syntactic representation in ellipsis depends on the type of "coherence relation" an elided VP participates in (see Kehler 1995; Hobbs 1979). Coherence relations determine coherence between

sentences in a discourse, which in turn affects acceptability. The two types of coherence relations that are relevant to ellipsis are CAUSE-EFFECT relations and RESEMBLANCE (parallelism and contrast) relations, the action of which is illustrated by the following coherent (acceptable) and incoherent (unacceptable) discourses.

- (16) CAUSE-EFFECT relations (coherent)
 - a. Smith is a politician. He's bound to be dishonest.
 - b. Smith is dishonest because he's a politician.
 - c. Jones is a politician, but she's honest.
- (17) CAUSE-EFFECT relations (incoherent)
 - a. ??Smith is a politician. He's bound to wear long underwear.
 - b. ??Smith is dishonest because he wears long underwear.
 - c. ??Jones is a politician, but she has a nice daughter.
- (18) RESEMBLANCE relations (coherent)
 - a. Smith likes to play golf. Jones enjoys surfing the net.
 - b. Smith stepped up to the podium. His critics stepped into their offices.
 - c. Jones seems unbeatable, while her opponent seems beaten.
- (19) RESEMBLANCE relations (incoherent)
 - a. ??Smith likes to play golf. Jones ate lunch.
 - b. ??Smith stepped up to the podium. Jones bought a new Mercedes.
 - c. ??Jones seems unbeatable. The Senate is being painted.

Kehler suggests that an elided expression that contained in a sentence that is part of a CAUSE-EFFECT relation does not require syntactic representation, but an elided expression that is part of a RESEMBLANCE relation must have syntactic representation. The reasoning underlying this proposal is that RESEMBLANCE relations are, to a large extent, at least, identified on the basis of syntactic structure, while CAUSE-EFFECT relations care only about propositional content (see Kehler 2000: 540–543). The prediction of this analysis, then, is that syntactic effects should show up only in the context of RESEMBLANCE relations.

This seems to be exactly right for some of the cases that are problematic for a syntactic approach, such as examples involving syntactic non-identity (20)–(21) and the absence of Condition A effects (22)–(23) (but see also Hestvik 1995).

- (20) a. ??This problem was looked into by Kim, and Lee did too. (RESEMBLANCE)
 b. ?This problem was looked into by Kim, even though Lee already had.
 (CAUSE-EFFECT)
- (21) a. ??The letter from the Dean provoked a response from the Chair, and the Provost did too. (RESEMBLANCE)

- b. ?The Dean's actions provoked a response from the Chair, despite the fact that the Provost already had. (CAUSE-EFFECT)
- (22) a. Doug₂ blamed himself_i for the band's collapse, and everyone else did too. (RESEMBLANCE; strict reading difficult)
- b. Doug blamed himself for the band's collapse, because everyone else did. (CAUSE-EFFECT; strict reading possible)
- (23) a. John wouldn't introduce himself to everyone, but Mary did. (RESEMBLANCE; no strict reading)
- b. Since John wouldn't introduce himself to everyone, Mary did. (CAUSE-EFFECT; strict reading possible)

However, Kehler's proposal also suffers from the same problems that afflict a purely semantic account of ellipsis: there are contexts in which an elided VP clearly occurs in a constituent that participates in a CAUSE-EFFECT relation, yet also appears to be sensitive to syntactic constraints. For example, both (24a) and (25a) manifest CAUSE-EFFECT relations, yet the elided VPs inside the relative clauses are sensitive to the Adjunct Island Constraint (islands enclosed in brackets). (24b) and (25b) demonstrate that ellipsis is possible in these examples as long as the elided VP is not in an island.

- (24) a. *Sterling criticized every decision that Doug was upset [because Lou did].
- b. Sterling criticized every decision that Lou did.
- (25) a. *Max refused to buy the shirt that I picked out even though it was less expensive than the one that the salesperson complimented him [after he did].
- b. Max refused to buy the shirt that I picked out even though it was less expensive than the one that he did.

Similarly, (26a) and (26b) show that Condition B effects arise in CAUSE-EFFECT environments.

- (26) a. *Kim takes care of him_i because he_i won't.
- b. *His closest allies supported him_i throughout this ordeal, even though he_i probably wouldn't have.

In addition to these empirical problems, there is a third, more general problem with a mixed approach such as Kehler's. If a purely semantic analysis is available in some examples, then it ought to be in principle available in all examples, even if a syntactic analysis is preferred. In other words, an approach that allows for the possibility of semantic recovery of VP meanings without concomitant syntactic representation of an elided VP predicts that examples like (27a) and (28a) should