2   The syntax of sluicing

In this chapter I examine the structural conditions on sluicing and investigate its external and internal syntax. The first issue, the external syntax, is by far the easier to tackle, and the answer reached there is straightforward: the 'sluice' is a CP. The second, which requires investigating the structure of ellipsis, that is, the syntax of silence, can only be approached by more indirect means and is therefore much more difficult; the answer defended here is that the ellipsis site contains syntactic structures of the kind familiar from overt syntax.

This chapter proceeds roughly in order of analytic difficulty. I begin with the simplest task, identifying the category of the sluice by looking at what the external distribution of sluiced wh-phrases is. The conclusion is unambiguous: sluices behave as CPs. This leads to the hypothesis that the sluice consists of a CP in which the sentential part, the IP, has gone missing. With this in mind, I turn to the more difficult question of what mechanisms in the grammar license this silent IP. We will see that the conditions are fairly parochial, being limited to certain feature combinations on the C sister to the null IP. To capture these, I propose a mechanism for triggering deletion at PF based on feature movement to C. I conclude by tackling a vexing analytic question raised by a novel generalization established in section 2.2.2: nothing but the wh-phrase itself can appear overtly in the C-system under sluicing. I suggest that this fact is related to other, probably prosodic, limitations on the kinds of null elements that can immediately follow complementizers.

## 2.1   External syntax: The sluice is an interrogative CP

I begin by investigating the external syntax of the sluiced material; that is, by addressing the following question: how does the wh-phrase that appears in sluicing behave with

respect to the surrounding syntactic material? The arguments presented here, marshalled from selectional facts, number, case, syntactic positioning, and prosody, will support the *opinio communis* on this question, namely that what appears to be a simple wh-phrase in isolation is in fact a CP. This is perhaps not a surprising conclusion, but it is one that has been challenged and must be established before we can move on to the elliptical puzzles it raises.
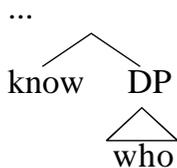
Many of the arguments originate with the initial investigation of sluicing, Ross 1969. Since much of the literature takes his conclusions for granted, I will attempt not to belabor the point here. But it has sometimes been specifically argued that sluicing need not involve a CP, most notably by van Riemsdijk 1978, and to some extent by Ginzburg 1992. What is at issue is whether a sluice like (1) has the structure of a CP as in (2), which I will defend here, or a more impoverished structure like the one in (3), defended in van Riemsdijk 1978 in particular, where wh-fragments are generated on their own, here as a complement to the verb *know*.

(1)   Anne invited someone, but I don't know who.

(2)   Sluices as interrogative CPs:
        ...

        know   CP
              who   C'

                    C⁰   IP
                    [+Q] |

                     | |
                     e   e
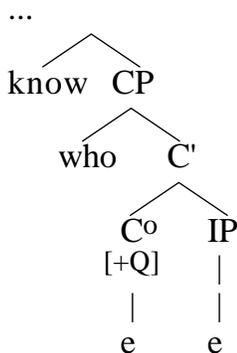
(3)   Sluices as 'wh-fragments':
        ...

        know   DP

                 who

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As we will see immediately, the sluiced wh-phrase behaves by all measures not as a direct argument of an embedding predicate, but as a full interrogative CP.

2.1.1 Selection

As Ross 1969 pointed out, the generalization about which predicates allow sluicing in their complements and which do not is quite simple to state:

(4)　　All and only predicates that s-select questions and c-select CPs allow sluiced wh-phrases.

Although *know* in (1) above allows both interrogative and non-interrogative complement CPs, when we examine a verb like *wonder* which only takes interrogative complements, as the contrast between (5a) and (5b) shows, we see that sluicing is possible, as in (6).

(5)　　a.　　* I wonder {the time/the answer/the question}.
　　　　b.　　I wonder {what time it is/what the answer is/what Ben asked/who's coming}.
(6)　　a.　　Ben wanted to ask something. I wonder what.
　　　　b.　　Abby said someone's coming to dinner. We're all wondering who.

Indeed, when we examine predicates that are lexically ambiguous, like *know* or *remember*, we find that the sluiced reading is often the only one that is available in a given context. Although these can take DP objects as in (7) as well as CP complements as in (8), when the context requires sluicing, what would otherwise be ambiguous strings are disambiguated in favor of the embedded CP reading, as in (9).

(7)　　a.　　Jack knows Guard Mulligan.
　　　　b.　　Jill remembers the important announcement from yesterday.

(8) a. Jack knows which guard was present.

     b. Jill remembers what I told you yesterday.

(9) a. He claimed one of the guards had been present. Who knows which?

     b. I told you something important yesterday. Which of you remembers what?

In the context given, (9a) for example has only the sluiced CP reading of (10a), not that of a multiple DP question as in (10b). In other words, possible answers to (9a) are those in (11a), not those in (11b).

(10) a. (9a) = Who knows which guard he claimed had been present?

      b. (9a)   Who knows which guard?

(11) a. Jack does. / Jack knows which.

      b. # Jack knows Guard Mulligan, Bill knows Guard Keeley, etc.

          # Everyone knows the guard outside his cell.

The difference between a sluicing interpretation of a wh-DP 'object' of one of these predicates, and a regular, true argument interpretation of the same would be completely mysterious under van Riemsdijk's proposal, which collapses the two. Instead, the relevant readings for (9a,b) indicate that we are dealing with a usual CP complement to these verbs.

2.1.2 Number agreement

A second point made by Ross 1969 is that the agreement on the main verb which appears with a sluiced wh-phrase is the typical agreement seen with CP subjects, and is independent of the number marking on the wh-phrase itself. Just as the CP subject in (12a) requires singular agreement on the verb (see McCloskey 1991c and references therein), so does the sluiced plural wh-phrase in (12b).

(12) a.   [$_{CP}$ Which problems are solvable] {is/*are} not obvious.

      b.   Some of these problems are solvable, but [which problems] {is/*are} not obvious.

2.1.3 Case

Ross credits George Williams for noting that the "question-word must ... agree in case with some NP in a preceding clause" (p.253).   He illustrates this with the verbs *schmeicheln* 'flatter', which assigns dative to its object, and *loben* 'praise', which assigns accusative, as in (13) and (14):

(13)   Er will   jemandem schmeicheln, aber sie   wissen nicht, {wem / *wen}.
       he wants someone$_{dat}$ flatter   but   they know   not   who$_{dat}$ / who$_{acc}$
       'He wants to flatter someone, but they don't know who.'

(14)   Er will   jemanden loben, aber sie   wissen nicht, {*wem/   wen}.
       he wants someone$_{acc}$ praise but   they know   not   who$_{dat}$ / who$_{acc}$
       'He wants to flatter someone, but they don't know who.'

These examples illustrate as well that the case of the sluiced wh-phrase is independent of the case that would be assigned to an object of the embedding predicate, if this predicate can assign case. *Wissen* 'know', when transitive, assigns accusative to its object, as in (15). Nevertheless, the sluiced wh-phrase in the accusative is impossible if a verb like *schmeichlen* is understood, as in (13).

(15)   Sie wissen {*der Antwort / die Antwort } nicht.
       they know   the answer$_{dat}$ / the answer$_{acc}$ not
       'They don't know the answer.'

The following example from Greek illustrates the same point with respect to the nominative case required by subjects in (16a), which contrasts with the accusative case normally assigned by the verb *ksero* 'know' as in (16b).

(16)　a.　Kapjos　irthe, alla dhe ksero　{pjos　/ *pjon}.
　　　　　someone came, but not know.1sg who$_{nom}$ / whom$_{acc}$
　　　　　'Someone came, but I don't know who.'
　　　b.　Dhe ksero　{*i apantisi　/　tin apantisi}.
　　　　　not know.1sg the answer$_{nom}$ / the answer$_{acc}$
　　　　　'I don't know the answer.'

Similar facts can be found with English prenominal genitives:

(17)　Somebody's car is parked on the lawn, but we don't know {whose/*who}.

With *whose*, however, it is not possible to be sure that we are dealing only with a case-marked wh-phrase, since it is more likely that we have NP-ellipsis as well, as in *[Whose [$_{NP}$ car]] is parked on the lawn?* and *[Ben's [$_{NP}$ car]] is parked on the lawn* (see Lobeck 1995). But the basic point is unaffected by such invisible pied-piping: the case of the wh-phrase itself must correspond to that of its antecedent (*somebody's* in (17)), and cannot vary. We will return to these facts in chapter 3.

But it is not the whole story to state only that the case of the wh-phrase must "agree" with an antecedent — this is only the case when there *is* an antecedent. When no overt antecedent for the wh-phrase is available, the case properties of the sluiced wh-phrase are nevertheless not free, and in particular, are completely independent from any case that the embedding predicate may assign to nominal objects of its own. The case found on the sluiced wh-phrase will always correspond to the case its non-elliptical counterpart would have shown in a full CP. I state this correlation in (18).

(18)   The wh-phrase shows only the case-marking from the elliptical IP-internal case
        position, not that of the embedding predicate.

        We can see this in the absence of an antecedent DP in an example like (19):

(19)   A car is parked on the lawn, but we don't know {whose/*who}.

This is also visible in cases where a verb assigns a particular case to its object, but can
appear intransitively as well, as German *helfen* 'help', which assigns dative to its object.

(20)   Er meinte,   er hätte   geholfen, aber wir wüßten   nicht, {wem / *wen}.
        he thought he had.SUBJ helped   but   we knew.SUBJ not   who $_{dat}$ / who $_{acc}$
        'He claims he helped, but we wouldn't be able to say who.'

        In all of these cases, the sluiced wh-phrase appears in the case assigned by the
elliptical predicate or in the case required by its function in the elliptical clause, and not
in the case that would be assigned by an embedding predicate.
        Another case-related argument against the bare-complement analysis comes from
adjectives which allow embedded questions under certain conditions, such as *obvious,
clear, certain*, etc. (essentially, these allow CP complements, with the licit illocutionary
force of the CP being determined by the matrix clausal characteristics: see Adger and
Quer 1997 and references therein). One of these is illustrated in (21):

(21)   Somebody had called, but it wasn't clear who (had called).

        It is standardly assumed, however, that these adjectives cannot assign case,
accounting for the deviancy of (22a). In fact, even if case considerations could be
argued to not play a role, as in a *there*-insertion context like (22b), a DP complement to
clear is impossible.

(22)   a.   * It wasn't clear his idea(s).

        b.   * There weren't clear his ideas.

The contrast between the sluiced version of (21) and these sentences militates against the wh-fragment analysis. Even an adjective like *worth*, which can assign case (see van Riemsdijk 1983) but does not license CP complements, cannot license sluicing:

(23)   a.   The watch is worth five dollars.

        b.   * The watch isn't worth which bonds he cashed in.

        c.   * He cashed in some bonds, but I don't think the watch is worth which.

All of these cases indicate that the sluiced wh-phrase must receive case from a case-assigner internal to the elliptical IP, and not from the embedding predicate.

2.1.4 Positional distribution

Another powerful argument that sluices are CPs comes from the positional distribution of sluiced wh-phrases in a variety of languages. The basic generalization is that given in (24):

(24)   The positions available to a sluiced wh-remnant are always the same as the positions available to full interrogative CPs, not the positions available to non-moved wh-phrases.

Ross 1969 examines the facts of extraposition in English; his findings are given in the next subsection. I give further arguments of a similar nature from German, Dutch, Irish, and Hindi in subsection 2.1.4.2.

2.1.4.1   *Extraposition in English*

Ross 1969 notes that contrasts like those in (25) and (26) are mysterious if the sluiced wh-phrase is not dominated by a CP. In (25) we see that the adjectival predicate *clear* does not license 'extraposition' of a DP argument.

(25)   a.   The correct approach wasn't clear.
        b.   *It wasn't clear the correct approach.

Nevertheless, exactly this pattern seems to occur with a sluiced wh-DP, as in (26b).

(26)   a.   One of these approaches is correct, but [which of them] is not clear.
        b.   One of these approaches is correct, but it's not clear [which of them].

Of course, under the CP view, this simply reflects the fact that interrogative CPs can occur both as subjects and in extraposition contexts:

(27)   a.   [$_{CP}$ Which of these approaches is correct] is not clear.
        b.   It's not clear [$_{CP}$ which of these approaches is correct].

Ross also gives examples with wh-PPs and adverbials phrases, which cannot occur as arguments of *clear* in any case:

(28)   a.   * {With Bob/Quickly} wasn't clear.
        b.   * It wasn't clear {with Bob/quickly}.

But of course wh-phrases of these categories can appear in sluicing:

(29)   a.   We know that he was eating, but {with whom/how rapidly} isn't clear.
        b.   We know that he was eating, but it isn't clear {with whom/how rapidly}.

These patterns would be mysterious if the wh-phrase were somehow generated directly as an argument of *clear*.

2.1.4.2 $SO_{DP}VO_{CP}$ languages

Another argument from positional distribution comes from languages in which nominal arguments (including wh-phrases) occur on one side of the predicate, while sentential arguments (including interrogative CPs) occur on the other. German, Dutch, Hindi, and Irish are languages with this property: all are SOV with respect to nominal arguments under some circumstances (German and Dutch only in embedded clauses; Irish only in nonfinite clauses), but in general require CP arguments to appear to the right of the verb (or topicalized, as we will see). The varying predictions of the two analyses under consideration are clear: if sluiced wh-phrases are just base-generated wh-fragments in the clause like other non-sentential arguments, they should appear to the left of the verb (in the Mittelfeld). If the CP analysis is correct, sluiced wh-phrases should appear to the right of the verb (in the Nachfeld). I concentrate here on German to begin with, though the facts in Dutch are parallel. Hindi and Irish enter the discussion at the end.

In German, wh-phrases can occur clause-internally in multiple wh-questions, as in (30):

(30)   Wann hat Elke gestern   {was / welches Auto} repariert?
       when has Elke yesterday what /which   car   repaired
       'When did Elke fix {what/which car} yesterday?'

These wh-phrases are generally assumed not to be able to scramble like other DPs (Fanselow 1990, Müller and Sternefeld 1993), giving rise to the contrasts in (31). In

(31a) we see that an object DP can scramble to precede the subject and an adverbial, yet in (31b) the corresponding wh-phrase cannot.[1]

(31) a. Wann hat [das Auto]$_1$ Elke gestern t_1 repariert?
          when has the car   Elke yesterday repaired
          'When did Elke repair the car yesterday?'

     b. * Wann hat [{was/welches Auto}]$_2$ Elke gestern t_2 repariert?
          when has what / which car   Elke yesterday repaired
          ('When did Elke fix {what/which car} yesterday?')

The data in (32) show that DPs to the right of the final verb (in the Nachfeld) are degraded: wh-phrases, if anything, are worse here than definites like *das Auto* (cf. similar restrictions on Heavy XP Shift in English).

(32) a. * Wann hat Elke gestern t_1 repariert [das Auto]$_1$?
          when has Elke yesterday repaired the car

     b. * Wer hat gestern t_2 repariert [welches Auto]$_2$?
          who has yesterday repaired which car

Full embedded interrogative CPs, on the other hand, cannot appear clause-internally—they must either be extraposed as in (33a), or in SpecCP (the Vorfeld) as in (33d) (see Büring 1995b, Müller 1995 for evidence that CPs are generated clause-internally and reach their observed positions by movement):[2]

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[1] This picture is somewhat simplified: wh-phrases seem to behave like indefinites with respect to scrambling; see Beck 1996 for examples.

[2] Note that in this respect, embedded questions behave differently from embedded propositions, whose positional possibilities are a function of the embedding predicate (see Webelhuth 1992, Büring 1995b). The fact that [+wh]CPs pattern with the propositional CP complements of verbs like *sich freuen (über)* 'be happy (about)' (CP/PP-Vs, i.e. verbs that take CPs and PPs as complements) and not *verstehen* 'understand' (CP/DP-Vs — verbs that take CP or DP complements) comes as something of a surprise under Büring's insightful analysis of extraposition. In general, CP/PP-Vs require extraposition of the CP when no PP correlate is present, whereas CP/DP-Vs allow their CP complements to remain in the Mittelfeld:

(i) a. Ich habe mich *(darüber) [daß er kommt] gefreut.
         I   have REFL   thereabout that he comes   been.pleased

(33) a.   Wir haben nicht gewußt, [welches Auto Elke repariert hat].

we have not known, which car Elke repaired has

'We didn't know which car Elke repaired'

      b.   * Wir haben [welches Auto Elke repariert hat] nicht gewußt.

      c.   * Wir haben nicht [welches Auto Elke repariert hat] gewußt.

      d.   [Welches Auto Elke repariert hat] haben wir nicht gewußt.

The same holds for Hindi (thanks to R. Bhatt for discussion and data):

(34) a.   Mujhe nahi\$i\$ pataa   [ki Gautam ne kis se   baat kii   thii].

I.DAT NEG   knowledge that Gautam ERG who with talk do.PFV PAST

'I don't know who Gautam talked to.'

      b.   * Mujhe nahi\$i\$ [ki Gautam ne kis se baat kii thii] pataa.

      c.   * Mujhe [ki Gautam ne kis se baat kii thii] nahi\$i\$ pataa.

      d.   [Gautam ne kis se   baat kii   thii], mujhe (yeh) nahi\$i\$ pataa.[3]

Gautam ERG who with talk do.PFV PAST I.DAT it$_{CP}$ NEG knowledge

---

    b.   Ich habe [daß er kommt] verstanden.
         I   have   that he comes   understood
But even though most of the predicates that embed [+wh]CPs also allow DP complements, and in fact
disallow PP correlates, extraposition is nevertheless obligatory:
  (ii) a.   Ich habe nicht verstanden, [warum er gegangen ist].
         I   have not   understood   why   he left   is
    b.   Ich habe seine Gründe nicht verstanden.
         I   have his   reasons not   understood
Note that even predicates that allow PP correlates with propositional CPs do not allow them with
interrogative CPs:
  (iii) a.   Wir haben (*davon) gewußt, [warum er gegangen ist].
         We have   thereof known   why   he left   is
  cf. b.   Wir haben (davon) gewußt, [daß er gegangen ist].
         We have   thereof known   that he left   is
These differences can presumably be reduced to the semantic type of the two CPs, which determines
whether an object expletive can be associated with the CP in question. A full development of this
approach must be left for further research.
[3] For independent reasons, the complementizer *ki* cannot appear in fronted finite clauses:
(i)   * [ki Gautam ne   kis se   baat kii   thii], mujhe (yeh) nahi\$i\$ pataa.
             that Gautam ERG who with talk do.PFV PAST I.DAT   it$_{CP}$ NEG knowledge

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Crucially, sluiced wh-phrases in German and Hindi appear in the same positions as embedded [+wh]CPs, and not clause-internally as wh-phrases in situ do:

[Daß Elke ein Auto repariert hat] haben wir gewußt, aber...
 that Elke a   car   repaired has have we known   but
'We knew that Elke repaired a car, but...'

(35)   a.   wir haben nicht geahnt,   [welches].
            we have   not   suspected which
            'we had no idea about who.'

       b.   * wir haben [welches] nicht geahnt.

       c.   * wir haben nicht [welches] geahnt.

       d.   [welches] haben wir nicht geahnt.

Gautam ne   kisi   se   baat kii   thii,   lekin
Gautam ERG someone with talk do.PFV PAST but
'Gautam talked with someone, but...'

(36)   a.   mujhe nahi$i$ pataa   [kis   se].
            I.DAT NEG   knowledge who with
            'I don't know with who.'

       b.   * mujhe [kis se] nahi$i$ pataa.

       c.   * mujhe nahi$i$ [kis se] pataa.

       d.   [kis se] (yeh) mujhe nahi$i$ pataa.

The data in (35) and (36) are entirely expected under the hypothesis that the sluiced wh-phrase occupies the specifier of a full CP, but not if the wh-phrase is simply base-generated in the matrix clause.

Exactly the same kind of argument comes from Irish, which, while lacking the full range of possibilites seen in German and Hindi, also exhibits a difference in the positions occupied by CP vs. DP complements in some environments. (Thanks to J. McCloskey for these data.) In nonfinite clauses, a DP object must precede the verb, as in (37).

(37)   Rinne sé socrú   le   duine den   dís,
       made he arrangement with person of.the two

       a.   ... ach níl   sé sásta   [rud ar bith] a inseacht dúinn.
              but not.is he willing anything   tell[-FIN]   to.us

       b.   ... * ach níl sé sásta a inseacht dúinn [rud ar bith].

       'He made an arrangement with one of the two people, but he won't tell us
       anything.'

Embedded CPs, however, must appear clause-finally:

(38)   a.   ... * ach níl   sé sásta   [caidé a tá ar bun]   a inseacht dúinn.
              but not.is he willing what C is going-on tell[-FIN] to.us

       b.   ... ach níl sé sásta a inseacht dúinn [caidé a tá ar bun].

       '... but he won't tell us what's going on.'

Again, sluiced wh-phrases appear where the CP appears, clause-finally, not clause-
internally as a DP argument would:

(39)   a.   ... * ach níl   sé sásta   [céacu ceann] a inseacht dúinn.
              but not.is he willing which of.them tell[-FIN]   to.us

       b.   ... ach níl sé sásta a inseacht dúinn [céacu ceann].

       '... but he won't tell us which of them.'

       These data again support the identification of sluiced wh-phrases with CPs.[4]
Note also that these data show that whatever regulates the clause-peripherality of CPs

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[4]   Judith Aissen (p.c) informs me that it should be possible to make a similar argument on the basis
of the distribution of certain enclitic elements in Tzotzil, which attach to the right edge of an
intonational phrase.   CPs, but not DPs, can extrapose, giving rise to the order *... enclitic CP* but not
... enclitic DP. In this regard, sluiced wh-phrases should behave just like full, extraposed clauses,
not like DPs, as in the following hypothetical data she provided:
       (i)   [Someone left...]
                a.   pero mu sna'   li Xun-e   buch'u (ibat).

in these languages, simply appealing to phonological weight as measured by number of syllables or the like will not suffice. Instead, these data clearly indicate that, if such positioning is driven by prosodic considerations as is often assumed, these prosodic rules must be sensitive to higher prosodic structure, and not necessarily to the content. In other words, if say, intonational phrases (IntP) must extrapose, but not perhaps smaller prosodic phrases, then the syntactic category CP must itself directly project IntP by virtue of its syntactic structure. This conclusion seems to me a welcome one, though I will not pursue the algorithms necessary for deriving the prosodic exponence from syntactic categories here.

2.1.5 German wh-stress shift

My last argument is based on the contrast in stress possibilities for wh-phrases in German noticed by Höhle 1983 and discussed in Reis 1985. These authors point out that certain multisyllabic wh-words can have variable stress in SpecCP of a matrix clause, as in (40) and (41); stress can fall either on the operator part of the wh-word (*wV–*) or the non-operator part (the incorporating preposition, essentially). In an embedded clause, however, these wh-words only permit stress on their non-operator portion, as in (42) and (43). My concern here will not be to account for this contrast, but simply to point out that sluiced wh-phrases pattern with wh-phrases in embedded contexts.

(40) a. Warúm ist Elke gekommen?

  b. Wárum ist Elke gekommen?

  why   is Elke come

(41) a. Worán hat Elke gedacht?

---

   but NEG he.knows the Juan-ENC who   left
   'but Juan doesn't know who (left).'
   b. * pero mu sna'   li Xun buch'u-e.
   but NEG he.knows the Juan who   -ENC

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      b.   Wóran   hat Elke gedacht?
               what-on has Elke thought

(42)   a.   Wir haben nicht gewußt, [warúm Elke gekommen ist].
       b.   * Wir haben nicht gewußt, [wárum Elke gekommen ist].
             we have   not known why   Elke come   is
(43)   a.   Wir wollten gerne wissen, [worán Elke gedacht hat].
       b.   * Wir wollten gerne wissen, [wóran   Elke gedacht hat].
             we would   gladly know   what-on Elke thought has

Note that this stress contrast is sensitive to depth of embedding, not simply sentence-initial position, since a wh-phrase in the specifier of a topicalized CP still cannot take initial stress:

(44)   a.   [Warúm Elke gekommen ist] haben wir nicht gewußt.
             why   Elke come   is have we not   known
       b.   *[Wárum Elke gekommen ist] haben wir nicht gewußt.
(45)   a.   [Worán   Elke gedacht hat] wollten wir gerne wissen.
             what-on Elke thought has would we gladly know
       b.   *[Wóran Elke gedacht hat] wollten wir gerne wissen.

Initial stress can also sometimes occur in wh-phrases in clause-internal positions (*pace* Reis 1985); this stress pattern is found for example in echoic multiple wh-questions:

(46)   a.   Wer will   wohín   fahren?
       b.   Wer will   wóhin   fahren?
             who wants where.to to.drive

If these data are correct, they also indicate that the sluiced wh-phrase is internal to a CP. See Aissen 1992 for more discussion of these enclitics.

(47) a.   Wer ist warúm gestorben?

      b.   Wer ist wárum gestorben?
             who is why   died

Note that even in wh-expletive constructions[5] (see McDaniel 1989, Müller 1995), wh-words which presumably are in the initial SpecCP at LF but not at Spell-Out cannot take initial stress:

(48) a.   Was hast du nochmal gesagt, worán ich dich erinnern sollte?

      b.   * Was hast du nochmal gesagt, wóran ich dich erinnern sollte?
             what have you again   said   what-on I you remind should

    Crucially, the wh-phrase in a sluice only has the final stress found in embedded clauses ((49) and (51)), even when topicalized ((50) and (52)):

(49) a.   Elke ist gekommen, aber wir haben nicht gewußt [warúm].

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[5] Sluicing over a wh-expletive itself is impossible, even when the corresponding question would be well-formed, as in (ii):

  (i)   * Du hast mir gesagt, ich sollte dich an jemanden erinnern, aber ich weiß nicht mehr,
         you have me told   I   should you on someone remind   but I   know not longer
        [was^x [~~du mir gesagt hast, an wen^x ich dich erinnern sollte~~]]
        what you me told have on who I you   remind should
        ('You told me to remind you about someone, but I can't remember who.')
  (ii)   Was^x hast du mir gesagt, an wen^x ich dich erinnern sollte?
        what have you me told   on who I   you remind   should
        'Who did you tell me to remind you about?'
  This is the result of the fact that the remnant wh-phrase in the sluice would have to be focussed, but wh-expletives, and expletives in general, cannot be; cf.:
  (iii)   a.   * IT was raining.
         b.   * THERE are prisoners in the yard.
         c.   * IT is obvious that I'm right.
         d.   * WAS hast du gesagt, an wen ich dich erinnern sollte?
  This clash of requirements presumably is also at work in ruling out bare wh-R-pronouns under sluicing, as in the Dutch example in (iva):
  (iv)   a.   * Hij rekent ergens   op, maar ik weet niet, waar.
           he counts something on but I know not   what
         ('He is counting on something, but I don't know what.')
  cf.   b.   * Ik weet niet, WAAR hij op rekent. [only constrastive on WAAR]
           Ik weet niet, waar   hij OP rekent.
           I know not what   he on counts

b. * Elke ist gekommen, aber wir haben nicht gewußt [wárum].

Elke is   come   but we have   not known why

(50)   Elke ist gekommen, aber

a. [warúm] haben wir nicht gewußt.

b. * [wárum] haben wir nicht gewußt.

why   have   we not   known

(51) a. Elke hat an etwas gedacht, und wir würden gerne wissen [worán].

b. * Elke hat an etwas   gedacht, und wir würden gerne wissen [wóran].

Elke has on something thought and we would   gladly know   what-on

(52)   Elke hat an etwas gedacht, und

a. [worán] würden wir gerne wissen.

b. * [wóran] würden wir gerne wissen.

what-on would we gladly know

Again, this is entirely expected if the wh-phrase in a sluice is in the specifier of an embedded CP, but quite mysterious otherwise.

2.1.6 Summary

We have seen five reasons to believe that sluiced wh-phrases are the audible part of a CP whose sentential domain is elliptical, and that these sluiced XPs are not simply fragment XPs generated by the grammar and inserted in place of CPs as proposed by van Riemsdijk 1978. For the remainder of this dissertation, then, we can take it that sluices have at least the structure in (53). This structure supposes that the wh-XP occurs in SpecCP, which I take to be the null hypothesis based on the overt manifestations of interrogative structures in the languages examined above. The question whether such movement must be overt will briefly re-engage our attention later when we examine data

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See Gussenhoven 1983: ch. 5 and Hoekstra 1995 for discussion of accent placement in these elements.

from wh-in-situ languages, but in general I will proceed on the assumption that the wh-remnant is immediately dominated by CP.

(53)   CP
        ╱‾‾‾‾╲
    XP$_{[+wh]}$ ...
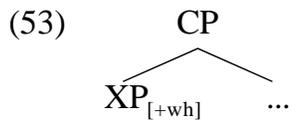
Having established what the external syntax of the sluice is, let us turn now to the more difficult question of its internal syntax.

2.2   Internal syntax: The hidden structure of the sluice

Discerning the internal syntax of the sluice means investigating the structure of silence: attempting to determine what structure must be present in order to generate the perceived interpetation of elliptical phrases. I take it for granted that the primary desideratum of any theory of the interpretation of ellipsis is providing the appropriate material for interpretation. Within the theory assumed here, this means providing appropriate structures to LF, though of course these will be supplemented by interpretational mechanisms that do not rely on structural conditions. I will assume that the level of LF should be transparent to the semantics in the sense of Heim and Kratzer 1998 and others, and that all semantically relevant material must be represented there. Since LFs are structural, consisting of phrase markers, this view entails that ellipsis resolution is of a different nature than general processes of inferential deduction (assuming such processes do not operate on syntactic structure *sensu stricto*).

For sluicing in particular, this means that the missing IP must be supplied by the syntax, either by being present throughout the syntactic derivation with the ellipsis being deletion at PF or by copying of phrase markers at LF. This point cannot be emphasized enough — it is fair to say that one of the major results of the data presented in this dissertation is to show that ellipsis is *structural*, that is, that an ellipsis site contains syntactic structures of the kind familiar from overt syntax.

This is not a trivial basis to start from, of course, and some researchers have sought to do without it (see for instance Ginzburg 1992, in preparation). But doing without it entails complicating the syntax-semantics interface in ways that, while clearly needed for the interpretation of certain elements which take parts of their meaning from the context (indexicals, deictics, gradable adjectives, etc.), are not so clearly needed for the interpretation of ellipsis. Sluicing in particular, in contrast to the more often studied VP-ellipsis, clearly shows syntactic dependencies which require that certain structures which are not audible nevertheless be present in the syntax. The alternative would be to burden the semantics with information about idiosyncratic case assignment and whether or not a language allows preposition stranding, as we will see in detail in the next chapter. I take it that it is desirable to construct a theory in which such information is not available to the semantics sensu stricto, and is available in the derivation only as late as LF, a syntactic structural level.

This brings us back to the point made above—if ellipsis is indeed structurally represented, we have two choices: either the structure is provided by the syntax as usual, and the grammar does something unusual to it (that is, it issues instructions not to pronounce any of it), or the structure that provides the input to phonology itself contains no phonologically relevant material in the ellipsis site, requiring that structure be provided after Spell-Out on the LF-side of the derivation. As has been noted in the literature (see Lobeck 1995 for discussion and references), the former view requires a kind of communication between the distinct levels of PF and LF which might seem problematic. But this kind of 'communication' is necessary in any case, to account for the distribution of deaccenting phenomena, where appeal to copying procedures is irrelevant in principle[6]. In much of what follows, whether one adopts a copy or deletion approach will not be crucial, the evidence being compatible with either approach. In later sections, however, anticipating the data and conclusions of chapter 3, I will phrase the analytical options in terms that implement the generalizations using deletion at PF.

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[6] This 'communication' is also required to account for semantic focus and pitch correlations, and indeed for the fact of sound-meaning correspondence in general.

2.2.1 Licensing conditions on IP ellipsis

The elliptical IP in sluicing is licensed only in certain environments, as has long been noted in the literature, going back to Ross 1969. It is not generally the case that IPs can be elided, as the examples in (54) show for IP complements to the complementizer *that*.[7]

(54) a. She was there, but Ben didn't know [CP that [IP she was there]].
     b. * She was there, but Ben didn't know [CP that [IP *e*]].

The embedded IP in example (54a) for instance is preferably pronounced with the 'low-flat' intonation characteristic of repeated material in English. This deaccented intonation is often taken to be in essentially free variation with complete phonological reduction, that is, deletion. But while deaccenting is possible here, ellipsis is not. This means that we must postulate some additional, grammatical requirement on this kind of ellipsis which goes beyond simply allowing the phonology to interpret given structures either as 'deaccented' or 'unpronounced'.

Exactly the same holds for *that* in all other environments as well:

(55) a. It was painted, but it wasn't obvious [CP that [IP it was painted]].
     b. * It was painted, but it wasn't obvious [CP that [IP *e*]].
(56) a. It was painted, but [CP that [IP it was painted]] wasn't obvious to the casual observer.
     b. * It was painted, but [CP that [IP *e*]] wasn't obvious to the casual observer.
(57) a. She had arrived, but [CP that [IP she had arrived]], they didn't tell us.
     b. * She had arrived, but [CP that [IP *e*]], they didn't tell us.

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[7] This holds of course for the complementizer *that* in (54b), not for the demonstrative *that*. In languages such as Greek where there is no homophony between these elements, the relevant examples are unambiguously ungrammatical (*oti* is the complementizer 'that', while *afto* is the demonstrative):
    (i)   a.   Itan ekei, alla o Petros dhen iksere [CP oti [IP itan ekei]].
                  was there but the Petros not   knew   that   was there
   'She was there, but Peter didn't know she was there.'

As noted by Ross 1969, the complementizers *whether* and *if* also fail to license null IP complements:

(58)   * The Pentagon leaked that it would close the Presidio, but no-one knew for sure
       [$_{CP}$ {whether / if} [$_{IP}$ *e*]].

The same holds for the complementizer *for*, as pointed out by Lobeck (1995:46):

(59)   * Sue asked Bill to leave, but [$_{CP}$ for [$_{IP}$ *e*]] would be unexpected.

Lobeck, adapting the CP projection of Chomsky 1986, gives the structure in (60) for sluicing:

(60)   CP
          /   \
     XP$_{[+wh]}$ C'
                  /   \
           C$^{o}_{[+Q]}$ IP
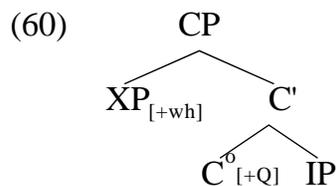
Lobeck 1995 further discusses a number of cases which indicate that the null IP in sluicing is subject to quite strict licensing and identification requirements. To begin, null IPs do not occur when lexically governed, as in (61) and (62) (Lobeck 1995: 56):

(61)   a.   * Even though Mary doesn't believe [$_{IP}$ *e*], Sue expects Hortense to be
            crazy.
       b.   * John appears to be smart, and Mary also seems [$_{IP}$ *e*].
       c.   * Mary doesn't expect Bill to win, but she wants [$_{IP}$ *e*].
(62)   a.   * John talked to Bill, but before [$_{IP}$ *e*], Mary called.
       b.   * Mary ate peanuts during the game, and while [$_{IP}$ *e*], the home team made
            four runs.

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       b.   * Itan ekei, alla o Petros dhen iksere [$_{CP}$ oti [$_{IP}$ *e*]].

Lobeck proposes that the null IP must be properly head-governed by an agreeing head, here C^o, which must be specified [+wh]. This correctly rules out cases of 'partial' sluicing, as in (63) (her (54), p.56), since the embedded C^o is not [+wh].

(63)   I know someone likes Mary, but
      a.   * who do you think $[_{CP}$ t $[C^o$ $[_{IP}$ e]]?
      b.   who do you think $[_{CP}$ t' $[C^o$ $[_{IP}$ t likes her]]?

However, even if the embedded complementizer is [+wh], such partial sluicing is still impossible:

(64) a.   * They wondered if Marsha would invite someone, but I don't remember
             who they wondered whether $[_{IP}$ e].
cf.   b.   ? Who did they wonder whether Marsha would invite?

Lobeck's system rules this out as well, by stipulating that the licensing C^o must be coindexed with a lexical wh-phrase in SpecCP. However, even if this condition is met, embedded sluicing may still be impossible, as in Williams's (1986) example:[8]

(65)   * John knows how to do something, but I don't know what he knows how
       $[_{IP}$ e].
      (i.e., ... I don't know what he knows how to do.)

      What seems to be causing the degradation of the 'partial' ellipsis examples in (64)-(65) is a prohibition on eliding less than possible: partial ellipsis as in (64)-(65)

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[8] I will not go into Williams' account of the ungrammaticality of this example, since it relies on the incorrect assumption that distinct operators may not bind into an ellipsis site, from Williams 1977 and Sag 1976. Such an restriction on alphabetic variance incorrectly rules out examples like (i):
     (i)   I know what I like and what I don't.

requires that redundant material be destressed adjacent to an ellipsis site. It is this constraint[9] that seems to play a role in the unexpected oddness of examples like (66b):

(66) a. Ben knows who she invited, but Charlie doesn't.
      b. ?? Ben knows who she invited, but Charlie doesn't *know who*.
      c. Ben knows who she invited, but Charlie doesn't *know who she invited*.
cf.   d. ?? Ben knows who she invited, but Charlie doesn't *know who she did.*

To return to the conditions on the C-system in sluicing: simple agreement with a [+wh] operator in SpecCP is not enough to license the null IP, since sluicing is not possible in relative clauses (example (c) is Lobeck's (57b), p.57).

(67) a. * Somebody stole the car, but they couldn't find the person who.
      b. * The judge gave 5 years each to the adults who participated in the riot, but she hasn't yet sentenced the minors who.
      c. * Although the place where is unclear, the time when the meeting is to be held is posted on the door.

Lobeck assumes that the complementizer that occurs in relative clauses with overt relative operators is [-wh], citing Rizzi 1990. This allows her to maintain that the

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[9] This restriction on 'partial' deletions, or mixing ellipsis with wh-operators and deaccenting, also extends to the problematic example discussed by Tancredi 1992:123:
    (i)   A: I wish I knew who brought what to the party.
            B: I wish I did too. I have no IDEA   a.   * *who did*.
                                                   b.   *who brought what (to the party)*.
    Something like Tancredi's stipulation limiting this to interactions involving wh-operators seems necessary, given the well-formedness of the following examples with VP-ellipsis:
    (ii)   a.   Abby knew that he had quit, but Beth didn't *know that he had*.
            b.   Abby asked if he had quit, but Beth didn't *ask if he had*.
These examples contrast for some speakers with examples where the ellipsis site contains, under standard assumptions, the origin site of the fronted adjunct *when*.
    (iii)   a.   ?? Abby knew when he had quit, but Beth didn't *know when he had*.
            b.   ?? Abby asked when he had quit, but Beth didn't *ask when he had*.
    These contrasts raise interesting questions about the interaction between deaccenting, ellipsis, and wh-extraction which I will not go into here. The interested reader should see the discussion in Lobeck 1995: §6.3 and Johnson 1997, as well as Winkler 1997. I will set them aside here, and return to the core data any theory of IP-ellipsis should aim to cover.

'strong' feature (value) [+wh] is sufficient to license and identify the null IP. In fact, however, Rizzi's 1990 system makes a slightly different division than the one Lobeck claims, though one that can be modified to her purposes easily enough. For Rizzi, the complementizer in relative clauses can be either [+wh], co-occuring with overt wh-relative operators, or [-wh], co-occuring with the null operator. The former is always null in English, while the latter varies, subject to conditions not of interest here. Both C°s, however, are [+pred], while the [+wh] C° that occurs in interrogatives is [-pred]. Adapting this to Lobeck's system, we must claim that only the null [+wh, -pred] C° of interrogatives will license the null IP.

Similar reasoning extends to the cleft examples in (68):[10]

(68) a. * We thought it was Abby who stole the car, but it was Ben who.

      b. * Somebody stole the car, but no-one knew that it was Ben who.

Lobeck's earlier licensing and identification requirements were meant to have much in common with the Empty Category Principle, and as such relied crucially on the notion of head government. In a more recent approach to these requirements on ellipsis, consonant with the Minimalist Program's program to eliminate government as a theoretical device, Lobeck 1999 has proposed that the null category undergoes movement into the specifier of the licensing head. Her discussion is confined to the case of VP-ellipsis: in this approach, the null VP (a maximal and minimal null element similar to *pro*) moves into SpecTP to check a strong agreement feature, since feature checking requires a spec-head configuration, by hypothesis. She assumes that SpecTP is free for this VP, the subject being in SpecAgr$_S$P. Whatever the merits of this approach, it is clear

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[10] Interestingly, pseudoclefts seem to allow sluicing to some extent:
      (i)   a.   ? Ben stole something — [what] was a car.
            b.   ? He left, and when was yesterday.
I use the order [wh-phrase]-[pivot] to avoid the distracting presence of such collocations as the following:
      (ii) a.   What did Ben steal? A car is what! *What is a car.
            b.   What's he doing? Dancing a jig is what! *What is dancing a jig.
The availability of sluicing in pseudoclefts is expected if these are 'self-answering' questions, as proposed in Higgins 1973 and den Dikken et al. 1998, and less free-relative-like; free-relatives, like regular relative clauses, do not license sluicing:

that extending it to sluicing is impossible: in sluicing, a wh-phrase occupies SpecCP, blocking movement of the null IP.

It seems instead that, if we are to capture the intuitions behind the government approach to licensing in a Minimalist framework dispensing with government per se, we should locate the necessarily local relation between the licensing head C and the elided category IP not in a spec-head relation, but in a head-head relation[11]. We can employ the same conditions on licensing identified by Lobeck, recasting them as featural matching requirements in a head-head relation, the other structural relation available for feature checking. What is needed is a feature on I that can only be checked by a [+wh, –pred] C head, and which triggers deletion of the IP at PF. Call this feature E. E moves from I to C, along the lines discussed above, being checked in C[12]. E issues an instruction to the PF system to skip its complement for purposes of parsing and production. Here I am assuming a strictly left-to-right algorithm for PF: at each syntactic node, the features on that node trigger operations in the phonological component, whether these be lexical insertion or construction of prosodic categories, etc. For example, a CP node must be mapped onto some higher level prosodic category (perhaps an intonational phrase) regardless of how many syllables occur inside CP, as discussed in §2.1.4. While some features on nodes may indicate that they are to be prosodically incorporated into their sisters, the E feature will indicate the opposite: its sister is not to be prosodically incorporated into the PF structure at all.

Modulo the resolution of independent questions about how one implements semantic composition for complex heads which I will ignore, we can also give the semantics for E: essentially, E is the feature that imposes the Focus condition defined in chapter 1. The simplest way of implementing this, assuming that E will combine with IP (again, how the independent contribution of C is implemented is a separate question, not unique to the current issue), is to assimilate the failure of deletions that do not respect the Focus condition to a kind of presupposition failure. Under this approach, we would

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(iii)   * He's up to something again, and I don't like [what]!
[11] Or feature-feature relation, to the extent these differ.
[12] Equivalently, the feature could start on C, not being moved there from I at all. In this case, we would state the checking requirement of E as a feature compatibility requirement. I see no reason to choose between these alternatives here.

have a partial identity function for the meaning of E, following the implementation of Heim and Kratzer 1998:244:

(69)   [[E]] = p : p is e-GIVEN . p

By giving a semantics for E, the licensing (the local featural requirements of E) and identification (the semantic condition E imposes on its complement) requirements on ellipsis can for the first time be linked.

This view of the mechanism of ellipsis retains the advantage of the government approach in requiring a very local relation to hold between the head which checks the E feature ('licensing' the ellipsis, in traditional terms) and the category affected by E, while at the same time integrating this with a more restrictive view of the possible relations employed in the syntax. Note that this particular implementation leaves open the exact nature and number of the checking features, and the requirements of E to be checked, allowing for cross-linguistic variation in this domain if necessary. This seems to me to be a promising line of attack, opening the way to a reformulation of Lobeck's notion of 'strong agreement'.

At this point, however, we still have little in the way of concrete empirical evidence which of the general approaches examined here is to be preferred: the data thus far are compatible either with the view that treats ellipsis sites as empty categories in the syntax, or with the view that takes ellipsis as the result of deletion at PF.

2.2.2   The COMP system in sluicing

This section examines that area of structure traditionally known as COMP: material dominated by CP but external to IP, in a structure like (70):

(70) $[_{CP} \; \underline{XP_{[+wh]} \; C^o} \; [_{IP} \dots]]$

"COMP"

Languages differ widely on what sort of material can appear in the COMP field and under what circumstances. It is not my aim here to give a review of the literature that deals with how languages differ in this respect and how the various patterns are to be accounted for. My aim here will be limited to examining the behavior of the COMP field under sluicing, and in extracting the significance of the data presented for the proper analysis of the syntax of sluicing. The data that I will present can be described in a very simple and surprising generalization, given in (71):

(71) **_Sluicing-COMP generalization_**
In sluicing, no non-operator material may appear in COMP.

Here, let us understand 'operator' as 'syntactic wh-XP', as in (70) above. By 'material' in (71) I mean simply any pronounced element. This is meant to include complementizers, verbs, clitics, agreement morphemes, and the like. The claim is that only segments directly associated with the syntactic operator—the wh-XP—will be found overtly in sluiced interrogatives.

The generalization as stated subsumes two separate subcases, which I will examine independently below. The first subcase concerns elements which are usually analyzed as originating within IP and moving into COMP or cliticizing parasitically onto elements base-generated there. These include I^o-to-C^o verb movement in the Germanic languages, complementizer agreement, Wackernagel clitics in South Slavic and other Balkan languages, and a variety of 'second position' phenomena in general. The second subcase concerns elements that are usually assumed to be base-generated in the COMP system, namely complementizers themselves (as well as wh-expletives in some languages, see footnote 5, and wh-operators that bind resumptive pronouns, see chapter 4 §4.3).
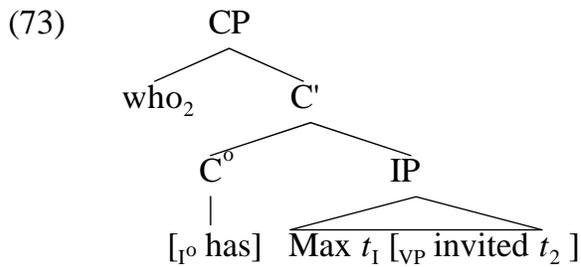
The conclusion reached is that although the facts from this domain (to the extent they have been discussed at all) have been taken to support a the null-category approach to ellipsis over the deletion approach, upon closer inspection these facts are fully compatible with the deletion approach, and may provide the basis for interesting conclusions on the nature of feature-driven movement as well. Finally, the restrictions on elements in sluicing seem best thought of as operative at the PF interface, similar in some respects to the COMP-trace effect.

2.2.2.1   *Non-operator foreign elements in COMP*

I begin with an examination of the facts from English, Dutch, German, and Danish main-clause sluicing (to the best of my knowledge, these facts are identical in the other Scandanavian languages as well). As is well known (see Vikner 1995 for discussion and references), all of these languages exhibit verb-second (V2) in unembedded interrogatives, as shown in (72). Though they differ in whether they require V2 in non-interrogative main clauses, such structures will not be of interest here, since sluicing is limited to interrogative structures only.

(72)   a.   Who has   Max invited?   [English]

          b.   Wen   hat   Max eingeladen?   [German]

          c.   Wie   heeft Max uitgenodigd?   [Dutch]

          d.   Hvem har   Max inviteret?   [Danish]

This is standardly analyzed as I°-to-C° movement, illustrated in (73) for English (I assume for simplicity that this movement is substitution and not adjunction, the ordering of inflectional elements within a 'complex head' being determined by principles of morphology and not directionality of adjunction):

(73)

```
              CP
          ╱        ╲
       who₂         C'
               ╱        ╲
             C⁰          IP
             |        ╱      ╲
        [ᵢ° has]   Max t_I [_VP invited t₂ ]
```

Given the structure in (73), we might expect that main-clause sluices in these languages would consist of the wh-XP followed by some moved verb, especially if the IP ellipsis in sluicing is simply phonological deletion of the material remaining in the IP at PF. This expectation is not borne out:

(74) a.   A: Max has invited someone.   B: Really? Who (*has)?   [English]

      b.   A: Max hat jemand eingeladen.   B: Echt?   Wen (*hat)?   [German]

      c.   A: Max heeft iemand uitgenodigd.   B: Ja?   Wie (*heeft)?   [Dutch]

      d.   A: Max har inviteret en eller anden. B: Ja?   Hvem (*har)?   [Danish]

One might wonder whether such structures really consist of sluices at all—after all, fragment questions clearly exist, in echo functions, and indeed need not even display wh-forms, though this is certainly also possible.

(75)   A: Superman tricked Mr. Mxlplckx.

      a.   B: Who?

      b.   B: Mr. who?   c.   B: Superman tricked Mr. who?

But it is easy to see that such bare-echo wh-XPs differ considerably from the matrix sluices in (74). First, the intonational contour on the wh-phrase in (75a) is the same intonation that the questions in (75b,c) bear, namely a rise (L*H; though see Gunlogson in prep. for a much fuller picture). The sluiced wh-phrase in (74a), on the other hand, bears the contour assigned to full questions in this context: a fall, as in *Who did he trick?*. As signalled by the differing pitch contours, the status of bare echo wh-

XPs like (75a) and that of matrix informational question (sluiced) wh-XPs as in (74) are completely different.

Note also that the illocutionary modifier *really* that precedes the matrix sluice in the examples in (74) in not possible before an echo question:

(76)   A: Superman tricked Mr. Mxlplckx.

                    L*H

        B: # Really? Who?

This derives from the fact that *really* here indicates that B has accepted the content of A's utterance into the common ground (though perhaps signalling some surprise). This uptake is obviously not possible if B has not understood the content of A's utterance to begin with, as indicated by the use of the rise contour.

A second, syntactic piece of evidence for keeping main-clause sluicing and fragment wh-questions separate comes from the limited use of R-pronoun inversion in English sluices.[13] We can observe that some wh-operators can invert with a governing preposition in English sluicing, as illustrated in (77):

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[13]   Space prevents a full discussion of this phenomenon here, but I note that it is also found in the Scandinavian languages (thanks to P. Svenonius for the Norwegian and L. Mikkelsen for the Danish):

        (i)   Per har   gått på kino,   men jeg vet   ikke hvem med.   [Norwegian]
               Per er   gået i biografen, men jeg ved   ikke hvem med.   [Danish]
               Per has/is gone to cinema   but   I   know not   who   with
               'Per went to the movies but I don't know who with.'

In English at least, this inversion is limited to the 'minimal' wh-operators *who*, *what*, *where*, and *when*. Despite this, it not (just) prosodically conditioned, since *which* and *whose* are impossible while —as pointed out to me by J. Itô (p.c.)— compounds with *the hell* are possible (though not generally in sluicing; see chapter 4 §4.2.2 (3)):

        (i)   a.   He was talking to one of those guys, but I don't know which (*to).
               b.   He was talking to somebody's mom, but I don't know whose (*to).
               c.   He was talking, but God knows who the hell to.

Previous investigators have linked the available of this inversion to the R-pronoun inversion in continental West Germanic (as in German *wovon*, Dutch *waarvan* 'where-from'; see van Riemsdijk 1978 and Chung et al. 1995). Still, numerous differences distinguish the two phenonema. In English, it seems the most adequate account is to take the wh-words that participate in these to be heads that have raised to P ('minimal maximal' Xs, like clitics, in Chomsky's 1995 terms). Head-to-head movement picks out exactly this class (ruling out *which*, assuming that excorporation is banned). See chapter 4 §4.2.2 (7) for additional data.

If this suggestion is correct, a modifier like *the hell* must either be head-adjoined or a lexical affix. This seems correct — this modifier occurs on monomorphemic words/heads as in *{who/where/why} the hell / how the hell long / what the hell book* (Pesetsky 1987:111 (40a)), but not

(77)   Lois was talking (to someone), but I don't know [who to].

This is of course not possible in non-sluiced interrogatives:

(78)   a.   * I don't know [who to] Lois was talking.
          b.   * [Who to] was Lois talking?

This inversion can thus be taken as sluicing-specific, for reasons that will not concern us yet. Crucially, such inversion appears also in matrix sluicing:

(79)   A: Lois was talking (to someone). B: Really? Who to?

But this inversion is not possible in echo-wh-fragments:

(80)   A: Lois was talking to Mr. Mxlplckx.

                          L*H
          a.   B: To who?
                         L*H
          b.   B: *Who to?

With inversion, the presence of a moved auxiliary in C is impossible, parallel to (74a) above:

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on phrases: * *what book the hell* / * *how long the hell*. Many questions remain, of course (for example, the difference between *the hell* and similar modifiers like *on earth* which also occur in inverted sluices like (ic) remains to be elucidated).

    The remaining question, which has never been addressed, is why this is possible only under sluicing in English (R-pronoun inversion in German and Dutch being much more general). Clearly this possibility must be linked to the absence of prosodic material in IP (and C, as we will see below), perhaps indicating that this head movement occurs at PF; at this point, I can only suspect that this fact should inform our theory of recursive stress assignment and prosodic constituency.

(81)   A: Lois was talking (to someone). B: Really? Who to (*was)?

　　　This brief excursus has been simply to establish the point that sluicing occurs in matrix clauses as well, *pace* Ross 1969 and Klein 1977, but in agreement with Bechhofer 1976a,b, 1977 (see the latter for further evidence). This leaves the pattern in (74) mysterious for the moment.

　　　A similar puzzle comes from the South Slavic languages which have 'Wackernagel' clitics, such as Slovene, Bulgarian, Serbo-Croatian, and Macedonian. In these languages, a certain class of elements —auxiliaries, negation, and certain pronominals— are subject to positional restrictions on their distribution which places them adjacent to wh-phrases. In essence, these elements, like inflected matrix verbs in V2 languages, must occur in 'second' position, where 'second' is defined either prosodically, with respect to the first prosodic word, or structurally, with respect to the first syntactic constituent. See Rudin 1985 for discussion, and Anderson 1996, 1998 for a recent approach which attempts to bring the V2 facts into consideration as well. The account of this phenomenon and its variations is tangential here: of interest is only the fact that under certain circumstances, these elements may appear within or between complex wh-XPs in the CP system. This is illustrated for Slovene in (82), from Marvin 1997, where the element of interest is the aspectual auxiliary *je*, which obligatorily cliticizes onto the embedded wh-phrase as seen (see also Browne 1974, Boskovic 1995 for Serbo-Croatian; and Legendre 1997 for Macedonian):

(82)   Peter se   je   spras&eval, kako$_1$ je S&pela popravila t_1.   [Slovene]
　　　　P.   REFL AUX asked   what AUX Spela fixed.
　　　　'Peter wondered what Spela fixed.'

This also holds for multiple fronted wh-phrases; in such cases, the auxiliary *je* cliticizes onto the first of the wh-phrases:

(83)   a.   Nisem   vpras&al, kaj$_1$ je   komu$_2$ S&pela kupila t_1 t_2.

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NEG.I.AUX asked   what AUX whom Spela bought
'I didn't ask what Spela bought for whom.'

b.   * Nisem   vpras&al, kaj₁ komu₂ je S&pela kupila t_1 t_2.

Under no circumstances, however, can such a cliticized element survive under sluicing (thanks to T. Marvin for judgments):

(84) a.   S&pela je   popravila nekako,   a   nisem   vpras&al, kako (*je).
           Spela AUX fixed   something but NEG.I.AUX asked   what AUX
           'Spela fixed something, but I didn't ask what.'

b.   S&pela je   kupila nekaj   nekomu,   a   nisem   vpras&al,
      Spela AUX bought something someone.DAT but NEG.I.AUX asked
      kaj (*je) komu.
      what AUX who.DAT
      (lit.) 'Spela bought something for someone, but I didn't ask what for who.'

Another kind of data that is relevant in this regard comes from the various manifestations of non-wh-agreement in the C-system found in several languages. Such complementizer agreement systems are particularly well-attested within the Germanic family. The term complementizer agreement, as used in the Germanic literature, refers to manifestations of agreement with certain features of an embedded subject only, and should not be confused with complementizers which agree with wh-phrases, as are found in Austronesian and Celtic. The details of Germanic complementizer agreement will not be my concern here (see Zwart 1993:3.3 for discussion and references); of interest here is only the fact that this agreement appears equally well when there is a wh-phrase in SpecCP, as illustrated in (85) (Luxemburgish, from Zwart 1993:163) and (86) (Bavarian, from Lobeck 1995:58).

(85) ... mat wiem (datt) s   de   spazéiere ganng bas.   [Luxemburgish]
           with who   that 2sg you walk   gone   are.2sg

80

'... with whom you went for a walk.'

(86) Du woidd-st   doch kumma, owa mia wissn ned wann-st   (du) kumma woidd-st.
      you wanted-2sg PRT come   but   we know not when-2sg you come wanted-2sg
      'You wanted to come, but we don't know when you wanted to come.'
      [Bavarian]

Lobeck 1995:59 points out that although complementizer agreement can phonologically cliticize onto a wh-phrase in SpecCP when no overt complementizer is present, and though sluicing is generally possible in these dialects, nevertheless such agreement cannot appear in sluicing (her (65)):

(87) Du woidd-st   doch kumma, owa mia wissn ned wann (*-st).   [Bavarian]
      you wanted-2sg PRT come   but   we know not   when -2sg
      'You wanted to come, but we don't know when.'

She relates this fact to the fact that when the verb bearing the matching agreement features is not present, as in phrasal comparatives, complementizer agreement is likewise impossible. The data are from Bayer 1984:

(88) a.   Der Hans is gresser (als) wia -st   du bist.   [Bavarian]
            the Hans is taller   than how-2sg you are-2sg
            'Hans is taller than you are.'
      b.   Der Hans is gresser (als) wia(*-st) du.
            the Hans is taller   than how-2sg you
            'Hans is taller than you.'

Lobeck makes a similar point based on the distribution of the complementizer *som* in Norwegian, which appears obligatorily in embedded questions with subject

extraction, as in (89a) (modified slightly from Rizzi 1990:57, see also Taraldsen 1986 and Vikner 1991; likewise for Danish *der* in spoken registers, if *der* is indeed in C^{14}):

(89) Vi vet   hvem *(som) snakker met Marit.   [Norwegian]
       Vi ved   hvem ??(der) snakker med Marit.   [Danish]
       we know who   C°   talks   with Marit
       'We know who is talking with Marit.'

Lobeck points out that this *som* is nevertheless impossible in sluicing, shown in (90) (her (68), p.60); she suggests that this is because *som* must agree with INFL (in order to license the subject trace), which on her account is missing. This assumption assimilates the deviancy of (90a) to that of the lack of complementizer agreement seen above. The Danish example in (90b) shows the same contrast (again, if *der* is in fact in C).

(90) a.   Noen   snakker met Marit, men vi vet   ikke hvem (*som). [Nor.]
      b.   En eller anden snakker med Marit, men vi ved   ikke hvem (*der). [Dan.]
          someone   talks   with Marit but we know not   who   C°

If this assumption regarding the nature of the relation between *som* (and *der*) and INFL is correct, then, it provides another case of an illicit non-operator dependency holding between an element in the C-system and a position or element internal to the missing IP.

All of the data presented in this section have one thing in common: under usual assumptions, the non-operator elements which appear in the C-system originate within the clause. Consider the first case discussed above, and the most familiar one: V2 in matrix questions in the Germanic languages. The standard analysis takes the fronted elements to originate inside IP, either in I° itself (for the English modals and pleonastic *do*), or within a lower VP, raising into I° (for *have* and *be* in English; in the other

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[14] Thanks to L. Mikkelsen for the Danish data.

languages, almost all verbs can raise). V2 is then triggered in different configurations in the various languages (in all matrix clauses in all the languages besides English; in matrix questions, imperatives, 'negative inversion', and other very restricted contexts for English) — crucial here is only that such fronting is I^o-to-C^o raising (or into whatever heads the projection whose specifier is the landing site for wh-movement in these languages). Complementizer agreement, too, is usually analyzed as involving movement of a functional head or some of its features (I^o for Hoekstra and Marácz 1989, Agr_S^o for Zwart 1993) from within the IP to C^o. (Whether the Norwegian *som* facts fall into this line of analysis is unclear; it could be that the problem here is related to the facts described in the next section.) Finally, for the purposes of the syntax, it is clear that the Wackernagel clitic elements must originate within the IP: the pronominals satisfy selectional restrictions, and the auxiliaries determine the form of their verbal complements. How these clitics come to occupy their observed positions is immaterial, whether via syntactic (presumably head movement, as is sometimes supposed), or via phonological mechanisms, as argued persuasively by Anderson 1996, 1998.

The fact that none of these elements occur in sluicing has a number of possible explanations.

The first is to maintain, as Lobeck 1995: 58-60 does for the facts from Norwegian and Bavarian, that these facts support a null IP empty category in the syntax. Her reasoning, which extends equally well to the V2 cases, is straightforward: in the syntax, there is only $[_{IP}\ e\ ]$, hence these elements, in I^o, will not be present at all to raise in the first place. This reasoning is also applicable to the C-agreement facts, as she points out, if "morphologically realized agreement in COMP ... is contingent on agreement with embedded INFL" (p. 60). 'Contingent' here translates directly into those approaches which take V2 and C-agreement to express parallel relations of (head-)movement into C^o. Identical reasoning applies to the Wackernagel clitic placement facts of the South Slavic languages: their origin site is IP-internal, and if IP is empty, by hypothesis, these elements simply will not be available for either syntactic or phonological operations to manipulate.

While this argument seems reasonable, it rests on a very questionable assumption. Recall that under the empty structure approach, the wh-phrase is base-generated in SpecCP, and binds nothing at S-structure (or, perhaps, binds the IP empty category itself, to extend Haïk's 1987 proposal that the relative operator in antecedent-contained deletions binds the VP empty category: see Kennedy and Merchant 1997 for discussion). But if this is the case, what prevents us from base-generating any of the non-operator elements in their landing sites or 'moved' positions external to IP, fully parallel to the case of the wh-phrase? It would seem that we would have to stipulate a difference between operator binding, which can be voided at S-structure (or Haïk-bind a categorially distinct empty category), and head-binding (for V2, complementizer agreement, and possible the S.Slavic Wackernagel clitics).
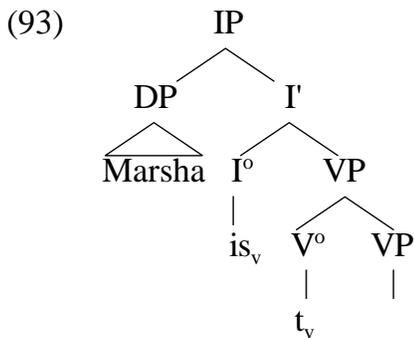
But such a distinction seems mostly unmotivated. One might argue that the difference is not in the category but in the level of the category: the wh-phrase is an XP, and by hypothesis binds the empty XP (IP), while the heads X^o cannot do so. If this were so, however, taken in conjunction with Lobeck's 1995 analysis of VP-ellipsis as also consisting of a null VP ($[_{VP}\ e\ ]$), we might expect VP-ellipsis with 'raised' auxiliaries in I^o to be impossible, assuming that these elements are heads exceptionally base-generated in I^o (usually, of course, the auxiliaries in question —aspectual *have*, and progressive, passive, and copular *be*— must originate in a lower V^o projection). This is incorrect:

(91) a. I've been writing, and Bill has, too.
     b. Frank is learning Swahili because Marsha is.
     c. Max was arrested, but Andy wasn't.
     d. Cathy is a doctor, and so is her husband.

Under Lobeck's analysis, these have the structure in (92):

(92)

```
              IP
            /    \
          DP      I'
         /  \    /  \
     Marsha  Iº   VP
             |    |
             is
```
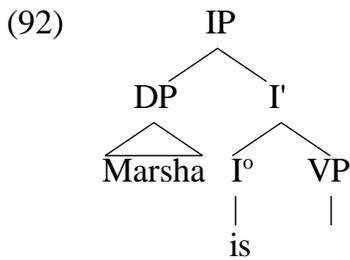
The force of this objection, however, is very little, since Potsdam 1996 has shown that a structure like that in (92) is incorrect for the sentences in (91). He argues convincingly that such sentences derive from the following structure (1996: 83-88):

(93)

```
              IP
            /    \
          DP      I'
         /  \    /   \
     Marsha  Iº    VP
             |    /   \
            is_v Vº    VP
                 |     |
                 t_v
```

The objection does go through, however, for the Irish data discussed in McCloskey 1991a (and the Hebrew data in Doron 1990, 1999). McCloskey argues that Irish displays a phenomenon of predicate-ellipsis similar to VP-ellipsis in English; the difference arises from the fact that Irish subjects remain low (not in SpecIP), while Irish verbs raise (say, to Iº). 'VP'-ellipsis applied to such a structure will yield apparently verb-only sentences, as in (94):

(94) Cheannaigh siad teach?
      bought   they house
      'Did they buy a house?'
      a.   Cheannaigh.
            bought
            '(Yes,) They did.'

b.   Níor   cheannaigh.
      NEG.PAST bought
      '(No,) They didn't.'

These elliptical answers, McCloskey argues, have the structure in (95) (updating his 1991a proposal slightly to reflect his 1996 arguments for a (slightly) VP-external subject, though it is unclear whether an elided VP-internal subject might not be able to avoid overt raising in any case, parallel in some respects to *There were rabbits in the garden today, though there weren't yesterday*):
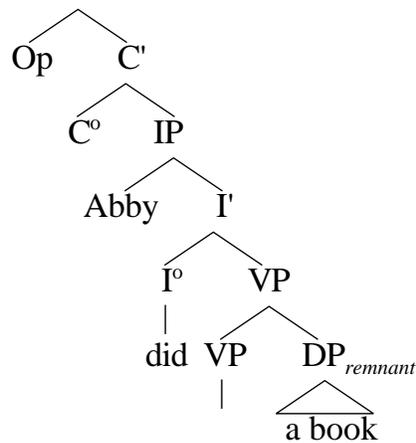
(95)

```
        IP
       /\
          I'
         / \
       Iº    FP
       |      |
   cheannaigh_v
```
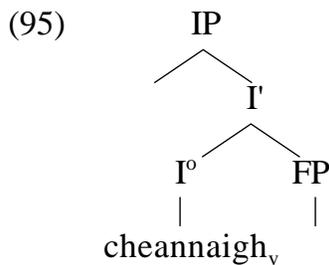
If such 'displaced' heads need to bind an empty element before LF-reconstruction, then head-binding of a maximal (empty) category must be countenanced. If such head-binding is simply not a requirement whatsoever, and if only true operators must bind an empty category at every stage of the derivation (as in Koopman and Sportiche 1982), then the ungrammaticality of the sluicing cases above cannot follow from this line of argument.

Another possible strategy would be to claim that while such head-binding is licit, the problem in the sluicing cases is that more than one element —the wh-phrase and the head-material— must bind the empty IP category simultaneously. Any version of Koopman and Sportiche's Bijection Principle would then rule out such multiple 'displacements'. However, this logic too fails to go through consistently, given the data discussed in Kennedy and Merchant 1997. There, it is shown that comparative ellipsis is licit with pseudogapping, as shown in (96a), with the presumed structure in (96b) (where the order of the remnant and null VP is irrelevant):

(96) a. Jack read a longer magazine than Abby did a book.

  b. ... than CP

```
              CP
             /  \
           Op    C'
                /  \
              C°    IP
                   /  \
                Abby   I'
                      /  \
                    I°    VP
                    |    /  \
                   did  VP   DP_remnant
                        |     /\
                            a book
```

What this entails on the base-generation view of ellipsis is that the VP-external remnant must bind the VP empty category at the same time the DegP operator in SpecCP does (this argument rests upon the idea that 'displaced' remnants would have to 'bind' the ellipsis site like other 'displaced' elements, parallel to the head cases in sluicing above; again, if only operators are subject to the requirement, these facts are irrelevant).

In sum, under the standard null IP category approach to sluicing, there seems little reason to believe that whatever mechanism licenses the base-generation of a wh-phrase in SpecCP with concomitant later satisfaction (at LF, under standard assumptions) of its binding requirements wouldn't also license the base-generation of heads, agreement, or Wackernagel clitics in these 'displaced' positions in exactly the same way.[15]

Under the deletion approach pursued here, on the other hand, the data fall out under an ordering solution: if deletion of the IP material precedes the (head) movement

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[15] The Wackernagel clitics present a special case, since it seems clear that the mechanisms regulating their ordering are phonological, and not syntactic, so it is possible to give an independent argument ruling them out in sluicing structures, along the following lines. Assume Anderson 1996 and Legendre 1997 are correct: Alignment constraints at PF require these clitics to be as close to the left edge of the clause as possible, with other constraints making sure that 'as close as possible' is realized as either one prosodic word or one XP (prosodic phrase) removed from the actual left edge. This prosodic material is supplied by the syntax, but, by assumption, the syntax does not impose any particular order on these elements beyond what is required for auxiliaries, negation, and arguments in general. If this is the case, then under sluicing, we would have to have exceptional base-generation of these elements (which I will assume are heads, not phrases) external to IP. Given constraints on adjunction, this means that they would have to occur in or adjoined to C°, since neither CP, IP, nor the wh-phrase in SpecCP, being maximal projections, are licit adjunction sites for a head.

and prosodic reordering operations responsible for the appearance of IP-internal morphology in the C-system, none of this material will appear. The question to be asked at this point is whether there is a principled way to derive this ordering, beyond simply stipulating it. Some considerations suggest that there is. First, a general point: it seems that such prosodic reordering operations are fairly 'late' processes, fed by syntax but not necessarily generated by syntax (this is most obvious for the case of clitics, though similar remarks apply to I-to-C movement as well).

Theoretically, this state of affairs seems to be a reflection of economy (both of economy of derivation and of representation, to the extent that these differ). Simply put, if deletion is possible with these elements, it is preferred. Consider the case of I-to-C movement. This movement is usually thought to be driven by some strong feature of C which must be checked by a matching feature on I (see Holmberg and Platzack 1995, etc.). Under normal conditions, movement of I into C can be non-overt (occurring at LF) only if this feature is weak — in this case, only the feature itself need move at LF, since PF pied-piping considerations will not apply. Under this theory, PF requirements force 'pied-piping' when a strong feature is checked. This is usually thought to be because the bare feature would not be able to be spelled out at PF. But it might just as well be the case that the PF crash is caused by the lack of an item corresponding to the feature bundle remaining in I, now lacking the moved feature. There seems no way to decide between these alternatives.

But now consider the case where ellipsis can apply as well. One way to interpret the facts above, consistent with the standard approaches to I-to-C movement, is to assume that it is indeed the remnant feature bundle which is causing the PF crash. Under IP ellipsis, minimal feature movement out of I into C will be possible without pied-piping the rest of I, since the remnant feature bundle left behind in I will not need to be pronounced; this was implicit in the proposal regarding the ellipsis feature E above. Note that this turns Chomsky's 1995 'feature'-pied-piping convention on its head: it is the partial remnant which triggers the PF-crash, not the bare feature itself, which has no

phonological content by itself. This line of analysis is also in line with the general idea that I-to-C movement occurs at PF, as mooted in Chomsky 1995.[16]

Another interpretation of the facts would be to suggest that contrary to standard analyses, it is a strong feature in I that drives I-to-C movement. Since unchecked strong features cause a PF crash, this will force overt I-to-C movement in the regular range of cases. But again an interesting exception emerges under ellipsis: if the IP is deleted, the strong feature on I does not reach the PF interface, avoiding the crash. (This is exactly the logic that will be applied to several cases in chapter 5.) At this stage, I see no compelling reason to adopt one of the interpretations of the evidence over the other, both appearing equally viable for the case at hand, and will leave the question open.[17]

To summarize, the fact that IP-internal elements that usually appear in the C-system do not appear there under sluicing is compatible with the deletion account pursued here, and do not, as sometimes assumed, support a null-category approach over deletion.

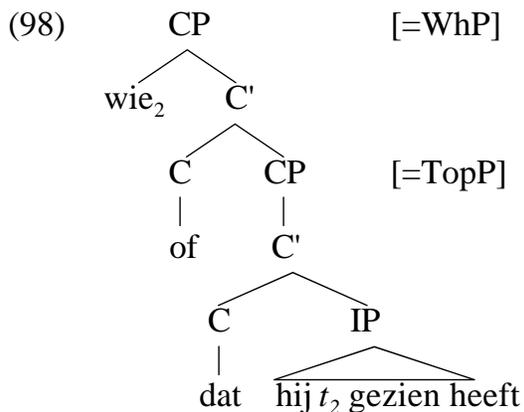### 2.2.2.2 *Base-generated COMP-internal elements*

The logic applied to elements moved into the C-system above does not extend to the data to be considered in this section. Here, I will consider material that is usually analyzed as being base-generated in COMP, in the C^o head. While English will be of no use here, due to the effects of the Doubly-Filled Comp-Filter, we can examine languages that do not obey this filter, languages that allow an overt complementizer to co-occur with a wh-phrase in SpecCP. Certain varieties of Dutch present one example, as the following examples show ((97a) modified from Bennis 1986: 234, (97b) from Zwart 1993: 169; see also den Besten 1978: 647, 1989).

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[16] Though this idea has some familiar difficulties, including the licensing of negative polarity items in subject position by a negative auxiliary raised to C, as shown in McCloskey 1996:89 (102). Perhaps PF movement is triggered in these cases by a feature which prefigures a parallel raising in the LF component.

[17] Note that at least the $C^o_{[+wh]}$ must be present to trigger the attested wh-movement; if the [+wh] on C is strong as usually assumed for English, we have evidence that the deletion targets IP, not C' — if C'

(97) a. Ik weet niet, wie (of) (dat) hij gezien heeft.   [(esp. Southern) Dutch]
           I know not who if that he seen has
           'I don't know who he has seen.'

      b. Hy freget wa (of) *('t)   jûn   komt.   [Frisian]
           he asks who if   that.CL tonight comes
           'He's asking who's coming tonight.'

The example (97a) has the structure given in (98) (whether or not the displaced *wie* has moved through the specifier of *dat* is immaterial, here, though see Zwart 1993:sec. 5.2.2 for evidence that it does not). In this tree, I use recursive CP labels for simplicity; the different projections have been identified as WhP and TopP (see Müller and Sternefeld 1993, Zwart 1993, Rizzi 1995, and below).

(98)
```
        CP              [=WhP]
       /  \
   wie₂    C'
          /  \
         C    CP        [=TopP]
         |    |
        of    C'
             /  \
            C    IP
            |   /  \
           dat hij t₂ gezien heeft
```

Given this structure, we might expect that either the CP headed by *dat* (TopP) or the IP complement to *dat* might be elidable. If the presence of *of* in (97) is simply the overt counterpart to the null C°[+wh] complementizer in English embedded questions, as is usually supposed, then it should bear all the relevant features to license an elliptical complement. Similarly, if *wie* moves through the specifier of *dat*, we might expect that it could bear the relevant agreement features that could license a null IP complement.

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were targeted, the offending [+wh] feature would be eliminated without triggering wh-movement into SpecCP.

However, as we see in (99) and (100), neither of these possibilities is attested; the only grammatical sluice is one in which only the wh-phrase itself remains (Jelle Gerbrandy, p.c.):

(99) Hij heeft iemand gezien, maar ik weet niet   [Dutch]
     he   has   someone seen   but   I   know not
     a.   wie.
     b.   * wie of.
     c.   * wie dat.
     d.   * wie of dat.
             who if that
     'He saw someone, but I don't know who.'

(100) Ien   komt jûn,   en hy freget   [Frisian]
      someone comes tonight and he asks
      a.   wa.
      b.   * wa of.
      c.   * wa 't.
      d.   * wa   of 't.
              who if   that.CL
      'Someone's coming tonight, and he's asking who.'

A similar case is provided by Slovene, as discussed in Marvin 1997. As in Dutch, Slovene also allows for complementizers to co-occur with fronted wh-phrases; whether the complementizer is the interrogative C *ali* 'whether' or the declarative C *da* 'that' is determined by the matrix predicate. The following examples are from Marvin 1997: 50.

(101) a.   Rad bi   vedel, koga da   je   Peter videl.
              glad SUBJ know whom C[-wh] AUX Peter seen
              'I would like to know who Peter saw.'

91

b. Spras&ujm se, koga ali S&pela ljubi.
   I.ask REFL whom C[+wh] Spela loves
   'I wonder who Spela loves.'

c. Nisem ga vpras&al, komu kaj da zameri.
   not him I.asked whom what C[-wh] blames
   'I didn't ask him who he blames for what.'

In no case, however, can any of the complementizers co-occur with the remnant wh-phrase(s) in sluicing (T. Marvin, p.c.):

(102) a. Peter je videl nekoga in rad bi vedel, koga (*da).
   Peter AUX seen someone and glad SUBJ know whom that
   'Peter saw someone and I would like to know who.'

b. S&pela ljubi nekoga, a nisem vpras&al, koga (*ali).
   Spela loves someone but I.not.AUX asked who if
   'Spela loves someone, but I didn't ask who.'

c. Nekomu nekaj ocita, a nisem ga vpras&al, komu
   someone.DAT something he.blames but not.I.AUX him asked who.DAT
   kaj (*da).
   what that
   'He blames someone for something, but I didn't ask him who he blames for what.'

Likewise for the various complementizers that can co-occur with operators in Irish (J. McCloskey, p.c.):

(103) Cheannaigh sé leabhar inteacht ach níl fhios agam céacu ceann (*a / *ar).
   bought he book some but not.is knowledge at.me which one C_{trace} / C_{pro}
   'He bought a book, but I don't know which.'

And for stacked complementizers in (some registers of) Danish (L. Mikkelsen, p.c.), which I gloss simply as 'C' (see Vikner 1991):

(104) Vi ved   hvem (som) (at) der snakker med Marit.   [(colloq.) Danish]
we know who   C   C   C   talks   with Marit
'We know who is talking with Marit.'

(105) En eller anden snakker med Marit, men vi ved   ikke
someone   talks   with Marit but we know not
    a.   hvem.
    b.   * hvem som.
    c.   * hvem som der.
    d.   * hvem at.
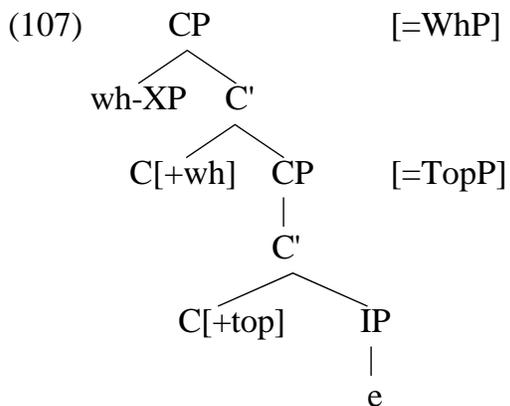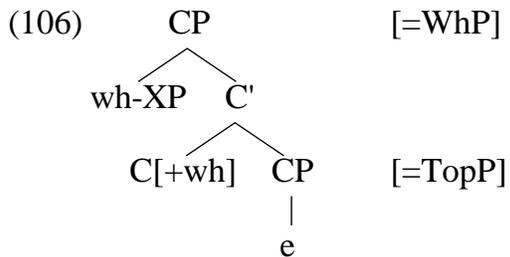   e.   * hvem at der.
    f.   * hvem som at der.

In these cases, appealing to an IP-internal origin for the non-operator material, as Lobeck does for the Bavarian and Norwegian cases reviewed above, obviously cannot help.

Given the split CP system, then, two questions arise for a Lobeck-style analysis: first, why can't the IP complement of Top elide leaving Wh^o, Top^o, or both intact, and second, why can TopP elide only if C[+wh] is empty?

Under Lobeck's system, the answer to the first question comes from the hypothesis that a head that licenses the null IP-proform must agree with a wh-XP in its specifier position: since the wh-XP in these examples never passes through SpecTopP, the necessary spec-head relationship is never established, and the Top head does not have the appropriate features to license a null complement.

The answer to the second question is more involved. If we assume that the projection of functional structure is uniform across languages (as in Cinque to appear, for example), then what we have been assuming for the structure of sluices has been too

simple. Instead, we have two options for the phrase structure of sluices, illustrated in (106) and (107):

(106)   CP   [=WhP]
        wh-XP   C'
              C[+wh]   CP   [=TopP]
                        |
                        e

(107)   CP   [=WhP]
        wh-XP   C'
              C[+wh]   CP   [=TopP]
                        |
                        C'
                   C[+top]   IP
                               |
                               e

The second structure, in (107), bears more resemblence to the structure traditionally assumed for sluices, as in (2) above, in that it posits an empty IP node. But if the wh-XP does not move through SpecTopP, we do not expect such a null element to be licensed.

An immediate side question arises, of course: could the fronting of a topic-XP to SpecTopP license such a null complement? Answering this question is complicated by the fact that in general, topicalization in the languages that provide the best evidence for such a phrase structure (the continental West Germanic varieties) cannot co-occur with a fronted wh-XP:

(108) a.   * Wann   {hast} den Wagen {hast} du gemietet?   [German]
      b.   * Wanneer {heb} de   auto {heb} je gehuurd?   [Dutch]
              when   have   the car   have you rented
            ('When did you rent the car?')

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(I use a weak pronoun subject in German here to ensure that the object has not scrambled over the subject; object-over-subject scrambling is not possible in Dutch in any case.) Since overtly filling both SpecWhP and SpecTopP seems to be impossible in these languages, for unclear reasons, this side question cannot be answered, at least on the basis of Dutch or German.

Still, the absence of a Doubly-Filled Comp Filter effect in Dutch, Frisian, and Slovene leaves the ill-formedness of (99), (100), and (102), respectively, mysterious. One possibility is that the ill-formedness of this kind of example is related to, or indeed the same as, classical COMP-trace effects like those in (109).

(109) a.   * Who did Lex say that __ kissed Lois?
       b.   * Which guy did Jimmy wonder if __ had kissed Lois?

If the COMP-trace effect is a PF effect, as several lines of evidence suggest (see chapter 5, § 5.2.2), then sluicing structures will trigger a violation just as examples like those in (109). For concreteness, let us assume a filter of the form in (110), while recognizing its limitations (in subject relatives, inapplicability to *pro*-drop languages, etc; see Perlmutter 1971).[18]

(110) * [$_C$] [$_x$ ...] , where *x* is a prosodic constituent containing no phonetic exponence, if   is phonetically null

This seems to work at first sight for Dutch and Frisian, where (111) is bad:

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[18]   See also Kayne 1994:94 for the suggestion that something like the COMP-trace effect applies to rule out overt Cs in relative clauses in Amharic and other languages with N-final relative clauses (which for Kayne have the structure [IP$_2$ [*the* [$_{CP}$ [$_{NP}$ *picture*] [C [$_{IP}$ t$_2$]]]]], with the IP complement to C fronted past the determiner head. Unfortunately, this suggestion runs directly counter to his analysis of final complementizers on p. 53, where he analyzes [IP C] orders in languages like Japanese as the result of IP movement into SpecCP: [$_{CP}$ IP$_2$ [C [$_{IP}$ t$_2$]]]. In these latter cases, the C can be overt.

(111) a.   * Wie vraag je je   af of __ hem heeft gezien?   [Dutch]

      b.   * Wa fregest   dy   ôf oft __ hem   sjoen hat?   [Frisian]

             who ask   *you REFL PRT if*   *him has* *seen*   *has*

             ('Who were you wondering if __ saw him?')

But in fact the deviance of (111) cannot be distinguished from the fact that in these languages, as in German, argument extraction from any position out of embedded questions leads to greater deviancy than in English:

(112) a.   * Wie vraag je je   af of zij __ heeft gezien?   [Dutch]

      b.   * Wa fregest   dy   ôf oft se __   sjoen hat?   [Frisian]

             who ask   *you REFL PRT if she*   *has*   *seen*   *has*

             ('Who were you wondering if she saw __?')

In fact, Dutch and Frisian do *not* exhibit the classical case of the COMP-trace effect, namely with extraction of subjects of non-wh CPs:

(113) a.   Wie denk   je   dat __ komt?   [Dutch]

      b.   Wa tinkst   dat __ komt?   [Frisian]

             who think.2sg you that   *comes*

             'Who do you think that __ is coming?'

Such an account runs into an identical problem in Slovene, which also lacks the *that*-trace effect (Marvin 1997:51):

(114) Kdo je   Peter mislil,   da je   pris&el?

      who AUX Peter thought that AUX come

      'Who did Peter think that __ came?'

One can salvage this approach by relativizing the filter to apply only to [+wh] complementizers:

(115)   * $C_{[+wh]}$ [$_x$ ...] , where x is a prosodic constituent containing no phonetic

       exponence, if $C_{[+wh]}$ is phonetically null

This would correctly rule out all the desired cases, while applying superfluously in cases like (111).

Another possibility would be to appeal to inherent cliticization properties of the C^os in question: if it could be shown that these elements must cliticize onto phonological material to their right, we would have an independent explanation for the ill-formedness of (99b,c). It is certainly true that complementizers show a high degree of susceptibility to prosodic incorporation into following domains, at least in right-branching languages (see Shlonsky 1988 and McCloskey 1996 for discussion of rightward dependencies in the C-domain in Hebrew and Irish, respectively).[19]

Note that both of these alternatives locate the ill-formedness of examples with complementizers under sluicing at PF.[20] The first —assimilating these to some kind of generalized COMP-trace effect— might even extend to much of the data discussed in the previous section. Although only further work will determine if these suggestions

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[19] This also recalls the suggestion sometimes made (see Lightfoot 1998 for a recent version) that reduced auxiliaries in English morphosyntactically cliticize to their right (though prosodically to their left), accounting for the impossibility of getting these before ellipsis and movement sites. But see Pullum and Zwicky 1997 for a serious complication in this picture based on the contrast in (i), among others:

     (i)   a.   He is SO going!
            b.   * He's SO going!

[20] These have the pleasant side effect of perhaps being able to accommodate certain ameliorations to apparent 'if/whether' sluices when these are followed immediately by certain elements, as in (i), modified slightly from Winkler 1997: 30 (33c) (see also Klein 1993), and in reverse sluicing examples like (ii) as analyzed in Giannakidou and Merchant 1998.

     (i)   Bitte laß mich hören, wie Ralf   reagiert und ob *(überhaupt).
           please let me   hear how Ralf reacts and if   at.all
           'Please let me know how R reacts if at all.'
     (ii)   Magdalena worried about whether and how to break the news to her father.
           (Giannakidou and Merchant 1998: 239 (18a))

These facts recall the 'adverb intervention' improvements to COMP-trace effects; see chapter 5, §5.2.2.

bear fruit independently of accounting for the data discussed here, they do seem to me to place the problem in the correct arena, even if they do defer formalization until more is known about the processes that operate at the PF interface. These solutions strike me as more likely to be on the right track than, say, a structural solution that would stipulate that sluicing deletes a C', not an IP, given that it is difficult to identify other instances of rules that target non-maximal projections. Note that the these proposals also have the salutory effect of reducing the demands on the nature of the material in the C-system: unlike Lobeck's 1995 proposal, we do not need to stipulate that SpecCP must be overtly filled (a strange stipulation even in her system, since no similar requirement is found for 'strong agreement' in the NP or VP ellipsis cases she discusses).

I conclude this section with a brief remark on the only potential counterexample to the sluicing-COMP generalization in (71) known to me, from Hungarian. In wh-questions in Hungarian, the wh-phrase does not move into SpecCP overtly, occurring instead in a 'focus' position immediately preceding the verb (see Puskás 1998 for discussion and references; I only consider non-multiple wh-questions here). This wh-phrase can co-occur with the complementizer *hogy* 'that', as seen in (116) (thanks to D. Farkas and G. Puskás for judgments):

(116)   Nem emlékszem, (hogy) kivel   találkoztak a   gyerekek.
        not   I.remember that   who.with met   the children
        'I don't remember who the kids met with.'

Somewhat surprisingly, from the above perspective, the same options appear under sluicing: while the complementizer may be omitted, it may also be retained:

(117)   A gyerekek találkoztak valakivel   de nem emlékszem, (hogy) kivel.
        the children met   someone.with but not I.remember that   who.with
        'The kids met with someone, but I don't remember who.'

Hungarian therefore represents a prima facie counterexample to the generalization in (71) — there seems no reason not to assume that *hogy* in (117) is in its usual C position.[21] The difference between this case and those discussed above is of course that in (117) the wh-phrase itself is not in COMP, remaining low in the structure, presumably in the position it occupies in (116). It might seem that the sluicing-COMP generalization only applies if the wh-phrase itself has moved to SpecCP. But notice that if either of the above prosodic approaches suggested above are correct, this state of affairs is exactly what we expect, since in Hungarian, the (sluiced) wh-phrase will follow the complementizer, satisfying either of the above mooted constraints. Especially the ban on complementizers in sluicing seems to be related to the fact that these complementizers would end up adjacent to the ellipsis site, which is not the case in Hungarian.[22]

2.3 Summary

There are two main results to be taken away from this chapter. First, the wh-phrase that appears in sluicing is not a floating ghost, a mysterious fragment XP integrated in some

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[21] Similarly for the Japanese [+wh] complementizer *ka* in (118) below, if these structures are indeed parallel to true sluicing as in English in the first place.

[22] The case of Hindi seems to be slightly more complicated — while it is like Hungarian in placing wh-phrases in a 'focus' position preverbally, it nonetheless disallows complementizers in sluicing, as in English, Dutch, etc. A further wrinkle is introduced in that the presence of the complementizer, unlike in Hungarian, is not wholly optional. Embedded CPs in Hindi, as in German, can occur either 'extraposed', clause-finally, or 'topicalized', clause-initially; see section 2.1.4.2. In final position, the presence of the complementizer *ki* is highly preferred, while in initial position it is impossible:

(i) a. mujhe nahi$i$ pataa   thaa [$_{CP}$??(ki) Gautam ne kis se baat kii thii].
         I.DAT NEG knowledge PAST   that Gautam ERG who with talk do.PFV PAST

     b. [$_{CP}$ (*ki) Gautam ne kis se baat kii thii], mujhe (yeh) nahi$i$ pataa   thaa.
         that Gautam ERG who with talk do.PFV PAST I.DAT it NEG knowledge PAST
         'I didn't know who Gautam had talked to.'

    While it is thus unsurprising that fronted sluiced CPs also disallow *ki*, shown in (iib), the fact that final sluices as in (iia) also prohibit *ki* is unexpected:

(ii) a. Gautam ne kisi se baat kii   thii lekin mujhe nahi$i$ pataa [(*ki) kis se].
         Gautam ERG someone with talk do.PFV PAST but I.DAT NEG knowledge that who with

     b. Gautam ne kisi se baat kii   thii lekin [(*ki) kis se] mujhe nahi$i$ pataa.
         Gautam ERG someone with talk do.PFV PAST but   that who with I.DAT NEG knowledge
         'Gautam talked with someone, but I don't know who.'

Thanks to R. Bhatt for these data and discussion.

strange and unspecified way into the surrounding syntax. Instead, the sluiced wh-phrase sits in its usual position, in SpecCP, and occurs exactly in those circumstances where we would expect an interrogative CP. This conclusion leads us to the second main result: that there is a missing IP in sluicing and some structure internal to this missing IP — CP must dominate IP, and the wh-phrase must originate somewhere. This second result requires that we develop a theory of the distribution —the licensing— of such null IPs. It was seen that the conditions under which an IP can go missing are sensitive to the kind of features present on the C sister of the IP. Although such a relation has usually been treated in terms of government, an alternative based on local feature distribution (implemented either by base-generation or featural/head movement) is equally up to the task, and allows us to state the theory of ellipsis in terms of deletion at PF, which we will see has very desirable consequences. Happily, stating the licensing conditions in terms of a feature also gives us a hook to hang our semantics on, unifying for the first time the licensing and identification requirements. Finally, a range of new facts were brought to light, embodied in the Sluicing-COMP generalization: in sluicing, no non-operator material may appear in COMP. This surprising fact seemed to fit in best with the view of ellipsis advocated here: that prosodic constraints, acting in league with economy constraints, serve to restrict the kinds of material that can occur outside, adjacent to, the target of deletion.

Appendix: Wh-in-situ languages

An obvious question is posed by wh-in-situ languages. Do such languages have sluicing in the form found in languages with wh-movement, the focus of our attention throughout? If so, what mechanisms drive the movement that feeds the deletion? How is it that this movement is seen only with sluicing, and not otherwise (since wh-movement in these languages does not generally occur overtly)? While these questions are interesting and important, it is beyond the scope of the present inquiry to be able to delve deeply into them. The literature on these questions is most extensive for Japanese, where several approaches to the relevant data have been pursued. An example of 'sluicing' in Japanese is given in (118); data of this sort were apparently first noted in Inoue 1976, 1978.

(118) Abby-ga   dareka-o   mi-ta   ga, watashi-wa dare ka wakaranai.
       Abby-NOM someone-ACC see-PAST but I-TOP   who Q know.not
       'Abby saw someone, but I don't know who.'

There have been several approaches to this kind of data. Takahashi 1994 proposes that there is, exceptionally, a kind of wh-movement in Japanese ('scrambling' to SpecCP), followed by deletion, giving structures essentially equivalent to their English congeners. His analysis has been widely criticized, however, both from analysts who follow an LF- or post-LF copying approach (Nishigauchi 1998; and for one sort of sluicing, Fukaya 1998 and Hoji and Fukaya 1999) and those who defend an analysis of 'sluicing' as a reduced cleft structure (Shimoyama 1995, Kuwabara 1996, Nishiyama et al. 1996, Kizu 1997, Merchant 1998a, and for another sort of sluicing, Hoji and Fukaya 1999; see chapter 4, §4.2 for reasons why such an approach is not tenable for English).

My own limited exploration of this kind of data in Japanese and Chinese suggests a similar conclusion, namely that what appears to be sluicing in these languages is the result of operations different from the movement + deletion derivation found in

languages with overt wh-movement. This dovetails with the conclusions of Nishiyama et al. 1996 and Kizu 1997 for Korean and Chinese as well.

The situation in languages like Hungarian, Hindi, and Turkish is somewhat less clear. In these languages, wh-phrases occur in a specified position adjacent to the verb; in Hindi and Turkish, which are strong SOV languages, this means that the wh-phrase typically occurs clause-internally, following other sentence-internal elements. Here the limited data available to me are mixed. While Hindi does seem to possess structures that at least superficially resemble sluicing in English (see for example the data in section 2.1.4.2), Kizu 1997 has claimed that Turkish lacks these, requiring instead some form of the copula. My own limited informant work has indicated that while such cleft-like structures are clearly preferable, it is not clear whether more English-like sluicing structures are completely unacceptable. For multiple sluicing, for example (see chapter 4, §4.1 for a brief discussion), the copula can be absent.

One possibility is that Hindi and Turkish, to the extent that sluicing structures pattern with those found in overt wh-movement languages like English, are employing a scrambling-type movement to create the input structures for deletion, and not using 'true' wh-movement to SpecCP (i.e., scrambling as adjunction to IP, followed by deletion of the lower IP segment). Another possibility is that whatever constraint prevents overt movement into SpecCP is ameliorated by the deletion itself, however such an idea is implemented (one possibility, following the reasoning concerning I-to-C movement above, would be to argue that the traces of wh-movement in these languages would trigger some kind of PF crash that deletion repairs, for example).

These questions seem to me to be fairly straightforward ones of fact and analysis. Unfortunately, I will not be able to resolve these issues at this point, and leave them to specialists in the relevant languages; important though is that nothing from these languages seems inherently incompatible with the overall approach taken here.