The Mechanics of Sluicing*

Christos Vlachos
University of Patras

1. Abstract

Sluicing, traditionally argued to instantiate unpronounced structure, is presently analyzed as a self-sufficient representation, which reflects (extra-)sentential relations that make use of information provided by (morpho-)syntax and the lexicon. Three unnoticed properties of Greek sluicing support the conclusion that the interpretation is computed on the basis of surface syntax. In this sense, a prefigurement of a possible comparison of sluicing with anaphoric environments, such as E-type and Null Complement Anaphora seems justified.

* For insightful comments, enlightening discussions and challenging debates, I express my gratitude to: Artemis Alexiadou, Adrian Brasoveanu, Sandra Chung, Barbara Citko, Cleo Condoravdi, Donka Farkas, Anastasia Giannakidou, Vera Gribanova, Kleanthes Grohmann, Andreas Haida, Jorge Hankamer, Rita Manzini, Jim McCloskey, Jason Merchant, Ruth Kempson, and Anna Roussou (*sine quam non*). Moreover, I am indebted to two anonymous reviewers for extensive and constructive criticism (i.e., the lengthiest reviews I've ever received), which contributed to an in-depth revision of the paper. Furthermore, I would like to thank the audiences and participants of a) "The Optionality of *Wh*-movement" workshop (19th International Symposium on Theoretical and Applied Linguistics, Aristotelian University of Thessaloniki, 2009), and b) the Linguistics Conference for Graduate Students (National and Kapodistrian University of Athens, 2009), and c) the 9th International Conference of Greek Linguistics, University of Chicago, 2009), and d) the "Expletives (+)" workshop (University of California Santa Cruz, 2010), and e) the "S-Circle" meeting (University of California Santa Cruz, 2010), to whom fragments of the work discussed here were presented (not always clearly). Last, but not least, I am grateful to a) Joanna Nykiel, for sending me her joint paper with Ivan Sag, b) Sandra Chung (once more), for providing me with her recent paper with Bill Ladusaw and Jim McCloskey, c) Scott AnderBois, Nathan Arnett, Taylor Bell, Lindsay Butler, Judith Fiedler, Boris Harizanov, and Anie Thompson (UCSC colleagues), for useful disucssions during Fall quarter, 2010, as well as, d) 15 native Greek speakers for their patience. The work reported here has been generously supported by the research fund "K. Karatheodori" (Grant No.: C.581) of the University of Patras. All remaining errors are mine.

Linguistic Analysis, 37 1-2
2011 Linguistic Analysis
P.O. Box 2237, Vashon, WA 98070

2. Introduction

Sluicing, originally due to Ross (1969), is exemplified by representations of the form in (1).

(1) Someone left and I wonder who.

Observationally speaking, *who* in (1) surfaces after *wonder*, a position which is mostly reserved for complements, though *wonder* typically selects for full-fledged indirect *wh*-questions and not single DPs. Furthermore, *who* seems to yield the meaning of an ordinary indirect *wh*-question; that is, the speaker "wonders who that person is such that s/he left."

Three families of competing approaches have been put forward to account for the syntax and semantics of (1). Two of them, namely the PF-oriented family (see Ross 1969, Chomsky 1972[1], Romero 1998, Merchant 2001, Fox & Lasnik 2003, among others), and the LF-oriented one (see Wasow 1972, Chao 1987, Lobeck 1995 and Chung, Ladusaw & McCloskey 1995; *to appear*, among others) propose that *who* (the sluice) in (1) surfaces at the left periphery ([Spec,CP]) of a full-fledged *wh*-clause, part of which (TP) is not realized at PF, but is available at LF (cf. (2)).

(2) Someone left and I wonder [$_{CP}$ who [$_{TP}$ left]].

The third family of approaches (see van Riemsdijk 1978, Ginzburg & Sag 2001, and Culicover & Jangendoff 2005) presupposes that no further structure is available in (1) apart from the one that actually surfaces and a number of semantic/pragmatic mechanisms apply so that the interpretation of (1) is similar to that of its full-fledged counterpart in (2).

The present paper will (mainly) focus on Greek sluicing and provide a syntactically oriented analysis that incorporates the intuition of the third family of approaches. Namely, that (1) carries no additional, unpronounced structure, and the interpretation is computed at LF on the basis of surface syntax.

[1] Chomsky (1968) appears to argue against a PF-oriented approach to sluicing. I say "appears" since this information is mentioned in Ross (1969), p. 253, but I wasn't able to track the corresponding paper of Chomsky.

The paper will unfold as follows. Section 3 gives a brief overview of Greek sluicing, where three, so far unnoticed, properties are presented. After a short introduction to two widely accepted approaches to sluicing, i.e., PF-deletion and LF-copying (section 4), an alternative analysis is put forward that takes the *wh*-word/phrase to be a *wh*-fragment, whose syntax and interpretation are regulated by the combination of both local and non-local relations (sections 4.1, 4.2. & 4.3). Finally, the previously discussed Greek data provide further support to the proposed analysis (section 5), while a potential comparison of sluicing with two instances of anaphora (E-type and Null Complement Anaphora) is also considered (section 6). Section 7 concludes the discussion.

3. The Data

To start with, Greek sluicing appears to fall under the typical pattern outlined for English (see Chung, Ladusaw & McCloskey 1995, *to appear* for English as well as Giannakidou & Merchant 1998 and Merchant 2000, 2001 for a discussion of Greek), in the sense that the correlate of the sluice *wh*-word/phrase may be explicit or implicit. To give some examples, in (3a) the correlate is the realized subject of the preceding clause *kapjos* (someone) and in (3b), the adverbial PP *ja kapjon logho* (for some reason).

(3) a. Kapjos dhjavazi to piima ke anarotjeme
someone-NOM is-reading-3SG the poem-ACC and wonder-1SG
pjos.
who.NOM
"Someone is reading the poem and I wonder who."

b. O Janis efighe ja kapjon logho ke anarotjeme jati.
the John-NOM left-3SG for some reason and wonder-1SG why
"John left for some reason and I wonder why."

On the other hand, in (4a) the correlate is the implicit object of the preceding predicate *dhjavazi* (is-reading) and in (4b), the implicit adverbial of the preceding predicate *efighe* (left).

(4) a. O Janis dhjavazi ke anarotjeme ti.
the John-NOM is-reading-3SG and wonder-1SG what-ACC
"John is reading and I wonder what."

b. O Janis efighe ke anarotjeme jati.
the John-NOM left-3SG and wonder-1SG why
"John left and I wonder why."

Moreover, sluicing does not (usually) obey islands. For example, while Relative clauses are islands for extraction (cf. (5a)),[2] the sluicing counterpart is grammatical (cf. (5b)). The sluice *pja* (which), in (5b), corresponds to the DP *mia Valkaniki glossa* (a Balkan language), which is the object of the embedded predicate of the previous clause (from Merchant 2000, 42, ex. (3a,b)).

(5) a. *[$_{CP}$ Pja Valkaniki ghlosa thelun na proslavun
which Balkan language want-3PL PRT hire-3PL
[$_{\alpha}$ kapjon [$_{\beta}$ pu na milai t_{wh}]]]?
someone.ACC that PRT speaks-3SG
"*Which Balkan language do they want to hire someone who speaks?"

b. Thelun na proslavun kapjon pu na milai
want-3PL PRT hire-3PL someone-ACC that PRT speaks-3PL
mia Valkaniki ghlosa ala dhen thimame pja.
a Balkan language but NEG remember-1SG which-ACC
"They want to hire someone who speaks a Balkan language but I don't remember which."

After this concise overview, let me concentrate on three so far unnoticed properties of Greek sluicing that will lead the discussion in the following sections. To begin with, Merchant (2000, 2001) argues that if a sluice is realized as a Prepositional Phrase (PP), the preposition must be overt, as in (6) (from Merchant 2000, 55, ex. (36)).

(6) I Anna miluse me kapjon
the Anna-NOM was-talking-3SG with someone
ala dhen ksero *(me) pjon.
but NEG know-1SG with who
"Anna was talking with someone, but I don't know (with) who."

[2] For a recent discussion of islands in Greek see Kotzoglou (2005).

Nevertheless, my informants — 15 Greek native speakers — considered (6) to be grammatical with or without the presence of the preposition, though all of them showed a preference for the presence of the preposition. Furthermore, similar judgments were elicited from the participants, most of whom were native speakers of Greek, of both the workshop "Optionality of *wh*-movement" (ISTAL 2009) and the Linguistics Conference for Graduate Students (National and Kapodistrian University of Athens 2009), where (6) was presented. It was also noted that the sluice must be realized as a PP, only if the PP that it correlates with is implicit (cf. (7)).

(7) I Anna miluse ala dhen ksero *(me) pjon.
the Anna-NOM was-talking-3SG but NEG know-1SG with who
"Anna was talking, but I don't know *(with) who."

Interestingly, the same pattern arises in English where the preposition may be absent provided that the corresponding PP is realized (cf. (8a) with (8b)) (from Chung 2005, 8, ex. (19a)).

(8) a. Joe was murdered by someone, but we don't know who.
b. Joe was murdered but we don't know *(by) who.

Thus, I suggest, following Chung's observation, that in Greek as well, a preposition may be absent as long as the sluiced part correlates with an overtly realized PP.

A second property is that the sluice may optionally be present (put in parentheses in the examples to follow) if its correlate heads an embedded *wh*-interrogative clause. This is observable with subject and object correlates (cf. (9a,b)), as well as with adverbial ones (cf. (10a-c)).[3] It is crucial to note that the interpretation of the sentences with realized sluices matches that of sentences with unrealized sluices.

(9) a. I Eleni me rotise pjos efighe
the Helen-NOM me-ACC asked-3SG who-NOM left-3SG
ala dhen mporusa na tis po (pjos).
but NEG be-able-to-1SG PRT her tell-1SG who-NOM
"Helen asked me who left, but I couldn't tell her (who)."

[3] (10b) has a strict reading (how Helen could fix the car) and a sloppy one (How I could fix the car). I will not discuss such readings, but the reading can easily be

b. I Eleni me rotise pjo vivlio na
the Helen-NOM me-ACC asked-3SG which book-ACC PRT
aghorasi ala dhen iksera na tis po (pjo).
buy-3SG but NEG know-1SG PRT her tell-1SG which-ACC
"Helen asked me which book to buy but I couldn't tell her (which)."

(10) a. I Eleni ithele na mathi
the Helen-NOM wanted-3SG PRT know-3SG
pote efighe o Nikos
when left-3SG the Nick-NOM
ala dhen iksera na tis po (pote).
but NEG know-1SG PRT her tell-1SG when
"Helen wanted to know when Nick left but I couldn't tell her (when)."

b. I Eleni anarotithike pos tha mporouse
the Helen-NOM wondered-3SG how PRT could-3SG
na ftiaksi to aftokinito ala ute egho iksera (pos).
PRT fix-3SG the car-ACC but NEG I knew-1SG how.
"Helen wondered how she could fix the car but I didn't know (how) either."

c. I Eleni ithele na mathi
the Helen-NOM wanted-3SG PRT find-out-3SG
jati efighe o Nikos ala kanis dhen mporuse
why left-3SG the Nick-NOM but noone NEG could-3SG
na tis pi (jati).
PRT her tell-3SG why
"Helen wanted to find out why Nick left but no one could tell her (why)."

Interestingly, the previous examples contrast with the ones below, where the presence of the sluices leads to ungrammaticality, though their correlates head embedded *wh*-interrogatives.

(11) a. *O Vasilis me rotise ti ora itan
the Bill-NOM me asked-3SG what time was
ala dhen iksera ti.
but NEG knew-1SG what
"*Bill asked me what the time was, but I didn't know what."

---

disambiguated in favor of the strict one with the use of another predicate, such as: " I couldn't show/tell her how."

b. *O Vasilis ithele na mathi pji itan
the Bill-NOM wanted-3SG PRT know-3SG which were
i loji ja tin apofasi mu ala dhen mporusa na
the reasons for the decision my but NEG could-1SG PRT
tu po pji.
him tell-1SG which
"*Bill wanted to know what the reasons for my decision were, but I couldn't tell him what."

c. *O Vasilis apeghnosmena prospathise na anakalipsi
the Bill-NOM desperately tried-3SG PRT discover-3SG
pjo itan to onoma tu eksojiinu pu ton ihe
which was the name of-the alien who him had
apaghaji ala dhen mporuse na vri pjo.
abducted-3SG but NEG could PRT find-out-3SG which.
"*Bill desperately tried to discover what the name of the alien who had abducted him was, but he couldn't find out what."

The contrast between the examples in (9-10) and (11) suggests that the sluice may optionally be present only if its correlate denotes an individual variable, which may range over *persons* in (9a), *things* in (9b), *times* in (10a), *manners* in (10b) or *reasons* in (10c).[4] Otherwise sluicing is ungrammatical, as shown in (11a) through (11c), where the sluice *ti* (what) corresponds to the predicate in the preceding clause *ti ora itan* (what the time was), *pji* (which) to *pji itan i loji* (what the reasons were) and *pjo* (what) to *pjo itan to onoma tu eksojiinu pu ton apighaje* (what the name of the alien who had abducted him was) respectively.

To put the previous together, Greek sluicing is possible with overt and implicit argument/adjunct correlates, and it is grammatical with relative clause islands. Moreover: a) the sluice need not project as a PP if its correlate is a realized PP, and b) the sluice may optionally be present if its correlate denotes an individual variable. If the sluice corresponds to a predicate in the preceding clause, sluicing is ungrammatical.

[4] It may not be correct to call the variables produced by *wh*-adverbs "individual" ones. After all, it is not clear what sort of "individuality" is entailed by adverbs like "why," "when," or "how." Nevertheless, I will leave this matter open and continue using the term "individual variable" for ease of exposition.

In what follows, I only concentrate on the data summarized in (a) and (b) above. First, I present the two widely accepted approaches to sluicing and then I elaborate on my proposal.

4. Previous Accounts and Proposal

The long held consensus regarding sluicing has been that it involves a certain amount of unpronounced structure and the question that arises is where this structure is generated. As regards the PF-deletion approach, Merchant (2001) argues that the relevant structure is generated in the computational component. Specifically, *who* in (12) is derived by ordinary movement to [Spec,CP]. Subsequently, (what I presently notate as) TP_{α} and, in particular, every (non)terminal node of this TP, is deleted at PF (deletion sites will be shown as strikethroughs) if and only if TP_{β} and TP_{α} "entail" each other. Crucially, entailment is not structural but semantic under the light of well-formed sluicing examples such as (13) (from Ross 1969, 275, ex. (69)), where no structural identity can be maintained between the two TPs.

(12) $[_{CP}\,[_{TP\beta}$ Someone left]] and I wonder $[_{CP}$ who $[_{TP\alpha}$ ~~<who> left <who>~~]].

(13) $[_{CP}\,[_{TP\beta}$ Bill mentioned his plans to do away with someone]], but he didn't say $[_{CP}$ who $[_{TP\alpha}$ ~~he was planning to do away with~~]].

In more technical terms, TP_{α} is deleted because [E] (i.e., E-feature; I assume "E" stands for E-llipsis/-lision/-lide, though this is not discussed by Merchant, to the best of my knowledge) projects on C, with the following properties (from Merchant 2004, 670-672):

(14) PROPERTIES OF [E]:
  a. SYNTAX: [E] = [uWh*], [uQ*]
  b. PHONOLOGY: [E] = $\varphi_{TP} \rightarrow$ Ø/E Δ
  c. SEMANTICS: $[\![E]\!] = \lambda p$: e-GIVEN(p) [p]

In terms of syntax, movement is obligatory, since the features of [E] ([Wh] and [Q]) must be locally valued by C, reflecting the fact that [E] is strong (thus the asterisk notation).[5] Regarding phonology, [E]

[5] Feature strength is proposed in Chomsky (1995), while the asterisk notation is used in Roberts & Roussou, unpublished ms.

instructs PF not to parse its complement TP, if TP is semantically e-GIVEN, an idea mainly modeled on Schwarzschild's (1999) theory of GIVENESS.

As an example of how the PF-deletion (usually) accounts for the grammaticality of sluicing with islands, consider (15), where (Left Branch) extraction of the *wh*-phrase is illicit (cf. (15a)), as opposed to its sluicing counterpart (cf. (15b)). Merchant argues (partly reviving Chomsky 1972) that Left Branch islands are PF-islands, literally meaning that deletion at PF repairs the violation caused by *wh*-extraction (cf. (15c)) (from Merchant 2001, 164, ex. (6a)).[6]

(15) a. *I don't know [$_{CP}$ how detailed [$_{TP}$ he wants <how detailed> a list]]
b. He wants a detailed list but I don't know how detailed.
c. He wants a detailed list but I don't know [$_{CP}$ how detailed ~~[$_{TP}$ he wants <how detailed> a list]]~~

On the other hand, for Chung, Ladusaw and McCloskey (1995) (henceforth: CLM), the syntax of the sluice provides a phonetically "unfilled" structure (cf. (16a)), which is handed over at LF, where the relevant parts of the previous clause are to be "copied" (cf. (16b)). More precisely, as illustrated in (16b), *who* is base-generated in [Spec,CP] and LF copies all the necessary material from the previous TP to the relevant projections of the phonetically impoverished one. This copying process, called RECYCLING, also includes the indefinite *someone*, which occupies the position that would otherwise be occupied by the copy of *who* if *wh*-movement had taken place.

(16) a. [$_{CP}$ [$_{TP}$ Someone left]] and I wonder [$_{CP}$ who [$_{TP}$ [$_{vP}$]]].
b. [$_{CP}$ [$_{TP}$ Someone left]] and I wonder [$_{CP}$ who$^{x}_{i}$ [$_{TP}$ left [$_{vP}$ someone$^{x}_{i}$]]]

CLM follow Kamp (1981) and Heim (1982), who argue that a certain class of indefinites (or indefinite determiners), such as *someone*, are not quantificational, but simply provide a free variable, which is able to be unselectively bound by an operator. Thus, in (16b), the same *wh*-operator binds both *someone* and *who* (also an indefinite), under

[6] Another class of islands is handled at LF. Since the antecedent and the elided TP must match in interpretation and do not need to be syntactically isomorphic, an island, which is in the antecedent TP, is not necessarily generated in the sluiced one, as long as both TPs are semantically equivalent.

an operation called MERGE, which reflects both syntactic and semantic binding and is represented at LF by co-super/subscripting. Furthermore, in line with Berman's (1991) semantics for *wh*-interrogatives, a Question operator projects on C (not shown here) and ranges over the whole clause at LF.

Immunization of sluicing to islands seems straightforward.[7] I give an example in (17).

(17) They want to hire someone who speaks a Balkan language, but I don't know $[_{CP}$ [which Balkan language]$^{x}_{i}$ $[_{TP}$ they want to hire someone who speaks [a Balkan language]$^{x}_{i}$]]

In particular, under the lack of movement, there is no *wh*-extraction. Instead, the indefinite *a Balkan language* is copied into the base-generated position of *which Balkan language* and both variables are bound by the same *wh*-operator. Therefore, islandhood is obviated on the assumption that binding is island free.

Obviously, although the PF-deletion and LF-copying approaches make substantially different assumptions, they both support a complete matching view between sluicing and indirect *wh*-interrogative clauses, by attributing to sluicing a (unpronounced) full fledged *wh*-structure, either in the syntax proper or at LF. The approach to be defended below assumes instead that both the distribution and interpretation of sluicing is computed on the basis of "surface" syntax, with no additional structure being necessary. In that sense, sluicing is argued to make use of devices reserved for both a) indirect *wh*-questions and b) extrasentential (pronominal) anaphoric dependencies.

4.1. Local selection and non-local dependence

To begin with, consider (18), which exemplifies the proposal. *Who* is directly selected by the predicate *wonder*, while no additional structure is present either in syntax or at LF (see van Riemsdijk 1978, Ginzburg & Sag 2000 and Culicover & Jackendoff 2005 for a similar view).[8]

[7] Nevertheless, see CLM for the ungrammaticality of sluicing with implicit antecedents under a number of islands. I will not discuss these issues here.

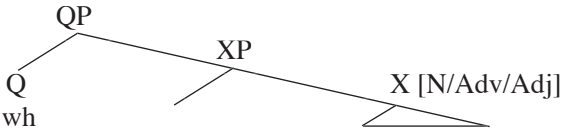
[8] The approach to be developed does not take into account (though it may potentially be modified to capture) pragmatically controlled sluices, as exemplified in (i) (from Ginzburg & Sag 2000, 298, ex. (5b))

(i) [Milling around on first day of conference, participants ignorant of location

(18) $[_{CP}\ [_{TP}$ Someone left]] and $[_{CP}\ [_{TP}$ I $[_{v}$ wonder $[_{V}$ <wonder> who]]]]

To be more precise, first, following Tsai's (1994) proposal, I maintain that interrogative *wh*-elements, in English-type languages, project a Q-operator as their specifier (cf. (19), modelled on Tsai 1994, 22: (17)). X stands for either Noun (e.g., *who*), Adverb (e.g., *why*) or Adjective (e.g., *how tall*) and accordingly XP for the relevant phrase.

(19)



Second, along with the PF-deletion and LF-copying accounts, I argue that sluicing is only possible with predicates like *wonder*, *ask* or *know*, which may select for a *wh*-constituent (see especially Ross 1969 and Merchant 2001). In particular, the relevant predicate, either through its lexical semantics, like *wonder* (cf. (18)) or *ask* (cf. (20a)), or in association with some other licensing operator, like *know,* plus negation or question (cf. (20b)) selects for the *wh*-constituent and licenses its Q-operator.[9]

(20) a. I heard that someone left and I really want to ask you who.
b. Someone left but I don't know who. / Do you know who?

The selection that I am proposing is a function of the semantic and syntactic properties of the participants involved. Specifically, the relevant predicate s(emantically)-selects for a Question (see Grimshaw 1979, 1981) and the *wh*-constituent syntactically projects a Q-operator, which is then licensed by the predicate. Third, the predicate

---

of talks go up to harried organizer:] Hey, could you tell us which room so we can go in and wait for things to start?

It does, however, extend to sluices which do not seem to be coordinated with the proposition containing their antecedents, under an overtly realized Boolean operator (e.g., *and*), as in (ii).

(ii) Someone left. Guess who!

[9] See Adger & Quer (2001) for a recent discussion of the licensing of Selected and Unselected Embedded Questions, and Roussou (2010) for an implementation on Greek. Note also that as regards Greek, Q does not need to be licensed since wh-words/phrases are intrinsically interrogative (see Sinopoulou 2009, Alexopoulou & Baltazani to appear, Vlachos 2010), while possibly English equivalents need to be licensed, since interrogative wh's (usually) pattern with relative ones.

does not syntactically determine the formal properties of the *wh*-constituent, i.e., phi-features (person, gender and number) or case, or its syntactic category. From this perspective, the *wh*-constituents in (18) and (20a,b) are selected and licensed in the same way as indirect *wh*-questions are. The only difference is that the *wh*-constituent in sluicing is instantiated in the form of a "*wh*-fragment" (see van Riemsdijk 1978). Note that by "fragment" I do not imply that the *wh*-constituent is "an isolated or incomplete part" (in the sense of Stainton 2006, 124), since no structural ellipsis is assumed. Nevertheless, I will keep using this term in order to highlight the contrast with structural approaches, though somewhat misleadingly.

Next, I propose that sluicing is a case of an anaphoric dependency that I take to be defined in terms of Williams (1997). More precisely, Williams argues that pronouns are licensed by their antecedents under linear ordering. Furthermore, linearity is regulated by the General Pattern of Anaphoric Dependence (henceforth, GPAD), as given in (21), where pro stands for "pronoun" and antec for "antecedent" (from Williams 1997, 588: (26)).

(21) General Pattern of Anaphoric Dependence (GPAD)

a. $[\ldots\text{pro}\ldots]_{\text{subord}}$ $[\ldots\text{antec}\ldots]_{\text{subord}}$

b. *$[\ldots\text{pro}\ldots]_{\text{matrix}}$ $[\ldots\text{antec}\ldots]_{\text{matrix}}$

c. $[\ldots\text{antec}\ldots]_{\text{matrix}}$ $[\ldots\text{pro}\ldots]_{\text{subord}}$

d. $[\ldots\text{antec}\ldots]_{\text{subord}}$ $[\ldots\text{pro}\ldots]_{\text{matrix}}$

In line with (21), a pronoun can be licensed only if it linearly follows its antecedent (cf. (21c,d)), or if it is in a subordinate clause preceding its antecedent (compare (21a) with (21b)). Moreover, the case in which the pronoun precedes the antecedent (i.e., (21a,b)) is dubbed *backward dependence*, while the one in which the antecedent precedes the pronoun (i.e. (21c,d)) is an instance of *forward dependence*. As an example of the sort of data discussed by Williams, consider a case of backward dependence violation, given in (22) (his (23b)), which falls under (21b) (I use numeric subscripts to exemplify the dependency).

(22) *$[\text{He}_6$ won the race$]_{\text{matrix}}$ and [we welcomed home $\text{JOHN}_6]_{\text{matrix}}$

The pronoun *he*, which surfaces inside the first conjunct, literally precedes *John* which appears in the second conjunct. In line with Williams, *John* is capitalized in order to show that it itself is not anaphoric to any other NP that has already been introduced in the discourse. Backward dependence then requires a relation of true subordination, which is not respected in (22). Crucially, if the pronoun is in a subordinate clause preceding the antecedent, this clause must depend on the clause containing the antecedent, as shown by the ungrammatical (23), where *there*, by being subordinate to the first conjunct, cannot depend on its antecedent in the second conjunct (from Williams 1997, 588: (25c)).

(23) *[[If he is there$_6$], John will try to visit Mary]$_{conjunct1}$, and [John will probably be in NY$_6$]$_{conjunct2}$

Let me now turn to the anaphoric dependency that I assume holds in sluicing between an antecedent and the *wh*-fragment, as illustrated in (24), where *who* depends on *someone*, but not vice versa.

(24) [$_{CP}$ [$_{TP}$ [$_{DP}$ Someone]$_6$ left]] and [$_{CP}$ [$_{TP}$ I [$_{vP}$ wonder [$_{VP}$ <wonder> [$_{DP}$ who]$_6$]]]].

The dependency in question has two requirements (to which I return shortly): a) the antecedent literally precedes the *wh*-fragment (forward dependence), or the *wh*-fragment superficially precedes the antecedent (backward dependence) and b) the *wh*-fragment formally matches its antecedent.

Formal matching (cf. (b)) will enter the discussion in the next section. Here, I concentrate on (a), namely the requirement on precedence and the dimension of the dependence. Consider (25) and (26), which are instances of forward dependence. In (25) the antecedent *kapjos* (someone) is in a matrix clause, preceding *pjos* (who), which surfaces inside a complement clause, as illustrated by the relevant bracketing.

(25) [Kapjos paretithike]$_{matrix}$ ala epemenan [oti akoma dhen
someone-NOM resigned-3SG but insisted-3PL that yet NEG
prepi na mathis pjos]$_{subord}$
should PRT learn-2SG who-NOM
"Someone resigned, but they insisted that you shouldn't learn who, yet."

In (26), the antecedent *kapjos* (someone) appears in a subordinate clause (i.e., relative clause), preceding *pjos* (who), which is in a matrix clause.

(26) Thelun na proslavun kapjon [pu na milai mia
want-3PL PRT hire-3PL someone-ACC that PRT speaks-3SG a
Valkaniki glosa]$_{subord}$ ala [dhen thimame pja]$_{matrix}$
Balkan language but NEG remember-1SG which-ACC
"They want to hire someone who speaks a Balkan language but I don't remember which."

(25) and (26) show that the antecedent can be in a matrix or subordinate clause as long as it precedes the *wh*-fragment, in line with (21c,d). On the other hand, backward dependence, where the *wh*-fragment precedes the antecedent, is quite restricted, in analogy to (anaphoric) pronouns discussed by Williams. Consider the ungrammatical (27) which complies with (21b). In particular, both *pjos* (who) and *kapjos* (someone) surface at matrix clauses, which are coordinated under *ke* (and). The *wh*-fragment, which appears in the first conjunct, literally precedes the antecedent.

(27) *[Anarotjeme pjos]$_{matrix}$ ke [kapjos efighe]$_{matrix}$
wonder-1SG who-NOM and someone-NOM left-3SG
"* I wonder who and someone left."

Interestingly, *pjos* (who), in the grammatical (28) which follows the pattern in (21a), appears inside a subordinate clause, preceding *kapjos* (someone), which is also inside a subordinate clause.

(28) [An ke dhen thimate pjos]$_{subord}$
if and NEG remember-3SG who-NOM
ine sighuri [oti kapjos su tilefonise]$_{subord}$
is-3SG sure that someone-NOM you-CL called-3SG
"Though she doesn't remember who, she's certain that someone called you."

I take the *wh*-fragment in (28) to superficially precede the antecedent, since the left-peripheral position of the clause containing the fragment is a "derived" position, which is confirmed by the counterpart in (29).[10]

(29) [Ine sighuri [oti kapjos su tilefonise]$_{subord}$
is-3SG sure that someone-NOM you-CL called-3SG
[an ke dhen thimate pjos]$_{subord}$
if and NEG remember-3SG who-NOM
"She's certain that someone called you, though she doesn't remember who."

Moreover, it is not the case that the *wh*-fragment may appear inside any subordinate clause, but this clause must be subordinate to the clause containing the antecedent (on a par with (23)). So, as shown in the ungrammatical (30), *pu* (where) is subordinate to the first conjunct (cf. the bracketing) and it cannot depend on *kapu stin Eladha* (somewhere in Greece), which surfaces inside the second conjunct.

(30) *[[An ke dhen thimame pu akrivos]$_{subord}$
if and NEG remember-1SG where exactly
[o Janis tha prospathisi na milisi sta pedhia]]$_{conjunct1}$ ke
the John will try-3SG PRTtalk-3SG to-the guys and
[pithanon na vriskete ja lijes meres
probably PRT be-3SG for a-few days
kapu stin Eladha]$_{conjunct2}$
somewhere to-the Greece
"*Although I don't remember where exactly, John will try to talk to the guys and he will probably be for a few days somewhere in Greece."

As follows from above, then, the *wh*-fragment may only superficially precede the antecedent if the former appears inside a subordinate clause which depends on the clause containing the antecedent. Any other structural relation is barred.

To sum up so far, the relevant predicate in sluicing selects for an interrogative complement, which is realized in the form of a

[10] See Barros & Vicente (2009) for the same observation, though from the viewpoint of structural ellipsis.

wh-fragment. The *wh*-fragment behaves as a non-intrinsic anaphor that depends on an (extrasentential) antecedent. The dependence is regulated by antecedence, which is structurally confined under precedence.

The next section examines the formal properties of the *wh*-fragment.

4.2. Formal link

Recall that the relevant predicates do not determine the phi-features or case or the syntactic category (i.e. Determiner Phrase (DP), Prepositional Phrase (PP), Adverbial Phrase (AdvP), etc.) of the *wh*-fragment. Instead, the idea pursued here is that the dependency examined above is evaluated after Spell-Out, at the interpretive systems and it requires that certain morpho-syntactic information of the *wh*-fragment and its antecedent match (probably for reasons of anaphora resolution). More precisely, the fragment is selected from the lexicon carrying a valued set of phi-/D-features (in the sense of Chomsky 1995), where applicable, that match those of its antecedent. For instance, in (31), *pji* (which) matches in person, gender and number with *kapji fili* (some friends).

(31) Kapji fili tu irthan
some friends-3PL-MASC his came-3PL
ala dhen ksero pji
but NEG know-1SG who-3PL-MASC
"Some of his friends came, but I didn't see which."

Whether the phi-/D-features of the *wh*-fragment are a (superficial) reflex of the dependency established, or contribute further to semantics (which depends on the way one may see the relation between syntax and morphology) is an important question that is not particular to sluicing (see Heim 2008 for a discussion, though not from the point of view of sluicing). This question touches on much broader issues concerning bound-variable interpretations between antecedents and pronouns, extrasententially construed (cf. (32), from Roberts 1989, 717; see also Elbourne 2008).

(32) Each degree candidate$_i$ walked to the stage. He$_i$ took his diploma from the Dean and returned to his seat.

The pronoun *he* (and *his*) matches in phi-features with its quantificational antecedent (*each degree candidate*). It is reasonable to believe that the way one approaches (32) will naturally be extendible to (31), probably with some modifications because (32) involves a pronoun (*he*) while (31) a *wh*-proform.

With respect to morphological case, the *wh*-fragment carries the same value as its antecedent, a phenomenon quite obvious in morphophonologically rich languages such as Greek (see Merchant 2000, 2001 for Greek, and Ross 1969 for a first discussion of case issues). For instance, in (33), *pjos* (who) must carry Nominative, while any other case, say Accusative or Genitive, is ungrammatical.

(33) Enas kirios efighe ala
a gentleman-NOM left-3SG but
den ksero pjos/ *pjon / *pju
NEG know-1SG who-NOM / *ACC/ *GEN
"A gentleman left but I don't know who."

It is generally assumed that (abstract) case-features must be valued, under Merge, by a local (functional) head (see Chomsky 1981, onwards, and Lasnik 2008, for an interesting overview). Under the current approach to sluicing, however, I do not take the case of the *wh*-fragment to be an abstract feature that is locally licensed. This is because, for instance, *pjos* (who), in (33), carries Nominative, while *ksero* (know) (usually) assigns Accusative to its non-clausal complement (cf. (34)).

(34) Ksero ton kirio / *o kirios
know-1SG the gentleman-ACC / the gentleman-NOM
"I know the gentleman."

Instead, I argue that the morphological case of the *wh*-fragment, be it Nominative, Accusative or Genitive is dependent on that of its antecedent. By "dependent," I mean that morphological case marking on the *wh*-fragment is a by-product of the fact that it matches in phi-/D-features with its antecedent. In other words, I take case to lexicalize the phi-/D-features of the *wh*-fragment, which match that of the antecedent. Moreover, since the relevant case feature is not locally valued, the *wh*-fragment may also surface with predicates that do not (usually) value case, such as adjectival ones. This has long been

observed for English sluicing, as exemplified in (35) (from Merchant 2001, 46: (26b)), where the *wh*-fragment merges with the predicate *clear* that does not (usually) case-mark its complements.

(35) One of these approaches is correct but [it isn't clear which of them]

Morphological case matching between two constituents is also observed in small clauses in Greek, discussed by Spyropoulos (2005), where one of the two constituents does not value its case under Merge with a local case licenser, but it depends on the other constituent with which it must match in case (and phi-/D-features).[11] In particular, Spyropoulos argues that the Accusative in (36) (*his* (19)) must be shared (in his terminology) between the subject of the small clause (SC) *ti Maria* (the Mary) and the DP predicate *to kalitero koritsi* (the nicest girl).

(36) Theori [$_{SC}$ ti Maria [$_{DP}$ to kalitero koritsi]]
considers-3SG the Mary-ACC the nicest girl-ACC
"He considers Mary the nicest girl."

The same is true when the SC surfaces as an adjunct/modifier. For instance, in (37) (from Spyropoulos 2005, 22: (17a)), the adjectival predicate *telefteos* (last) must match in case with the subject of the higher clause. Case sharing is mediated by agreement that holds between the null subject of SC (i.e. [e]) and the subject of the higher clause *o Nikos* (the Nick) (cf. the coindexing).

(37) O Nikos$_j$ heretise tus kalesmenous [$_{SC}$ [e$_j$] telefteos]
the Nick-NOM greeted-3SG the guests-ACC last-NOM
"Nick was the last one to greet the guests."
(lit. "Nick greeted the guests last.")

[11] Spyropoulos provides examples of secondary predication, but his argument holds for predication in general, as in (i).

(i) O Janis ine eksipnos
the John-NOM is-3SG clever-NOM
"John is clever."

Another instance of case-matching is discussed by Caponigro & Heller (2007), who examine connectivity effects in specificational (pseudocleft) sentences (such as, What John is, is proud of himself) in various languages. The authors show that in Hebrew the post-copular phrase is marked with the case assigned to the gap position in the pre-copular phrase.

The previous examples show that case morphology may mark dependent constituents, one of which may not merge with a case-licensing head. Also, (37) independently shows that case marking may take place at a distance (under binding), as with sluicing which takes place under anaphoric dependence.

Let me now turn to the syntactic category of the *wh*-fragment. It has been observed for English, since Ross (1969), and the same holds for Greek, that the *wh*-fragment may be realized as a DP (cf. (38a)), but it may also be realized as a Prepositional (PP), or an Adverbial Phrase (AdvP) (cf. (38b)), among others.

(38) a. [$_{DP}$Kapjos] efighe ala dhen ksero [$_{DP}$ pjos]
someone-NOM left-3SG but NEG know-1SG who-NOM
"Someone left, but I don't know who."

b. O Janis efighe [$_{PP}$ ja kapjon logho]
the John-NOM left-3SG for some reason
ke anarotjeme/ ala dhen ksero/ ala dhen ine ksekatharo
and wonder-1SG/but NEG know-1SG/but NEG is clear
[$_{PP}$ja pjon logho/ [$_{Adv}$ jati]
for which reason] / why
"John left for some reason and I wonder/but I don't know/but it's not clear for which reason/why."

In line with the previous discussion, I suggest that the *wh*-fragment is minimally represented in syntax, where its syntactic category may sometimes pattern with its lexical one, as is the case with the adverbial *jati* (why) in (38b). In this manner, there is no one-to-one matching between the category of the *wh*-fragment and that of its antecedent, as long as the dependence is interpretable at the interfaces. In particular, *jati* (why) in (38b) is realized as an AdvP, while its antecedent is a PP, which syntactically occupies an adjunct position. Furthermore, if the *wh*-fragment projects with a functional head, such as P, this head must be the same as the one that its antecedent projects with. This is because the *wh*-fragment must morpho-syntactically "not contradict" the grammatical function of its antecedent, which derives from the event structure of the proposition in which the antecedent is integrated. For instance, in (38b), the *wh*-fragment depends on a PP, which is headed by the preposition *ja* (for) and serves as the modifier of the predicate *efighe* (left). The preposition that the fragment may merge

with must be *ja* (for). This is because the fragment is correlated with and picks up the same referent as its antecedent PP.

It is worth noting here that for structural approaches, such as the PF-deletion, the morpho-syntactic information of the *wh*-word/phrase (e.g., its case or syntactic category) is locally computed by a relevant head, under the full structure hypothesis. Interestingly enough, though, van Craenenbroeck (2008), who adopts the PF-deletion account, suggests that some sort of morphological matching ("morphological anchoring" in his terms, reflected in case morphology and the overt realization of the preposition, as discussed with respect to (38b)) between the correlate and the sluice is also required. This appears to be quite surprising, since Merchant (2001) argues that semantic entailment, but not morpho-syntactic identity, is all that is required for successful representations of sluicing (see also section 4). In the approach defended here, on the other hand, case matching is not a "reflex" (or at least it does not have to be), but it is a lexicalization process of certain phi-/D-features that match between two dependent terms.

To put the previous together, the dependence between the *wh*-fragment and the antecedent, which is evaluated at the interpretive systems, requires that the participants formally match (i.e., in phi-/D-features). Furthermore, the *wh*-fragment is minimally represented in syntax, sometimes surfacing with its lexical category. Or it may project in a phrase, which must coincide with the one in which its antecedent is projected, while its case is dependent on that of its antecedent.

In the next section, I will examine the way LF interprets the *wh*-fragment (for space reasons, I will hereafter present examples in English and will return to Greek only when necessary).

4.3. Interpretation

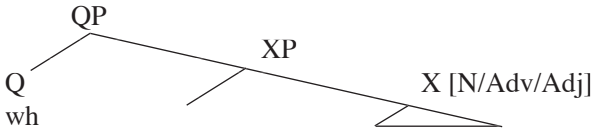
This section will be concerned with the following question.

(39) How do overt syntax and LF interact so that the *wh*-fragment yields the available interpretation?

I will answer (39) as follows: the interrogative reading is a function of: a) the selecting predicate and the *wh*-fragment; and b) the anaphoric relation between the *wh*-fragment and its antecedent. This function provides all the necessary information at LF.

To start with, recall from section 4 that a Q-operator projects as the specifier of the *wh*-fragment (cf. (40) repeated for convenience), which is licensed by the relevant predicate (in a manner already discussed).

(40)



Regarding the interpretation of (indirect) *wh*-questions, Karttunen (1977) proposes that a Q-operator projects (usually at a designated C-head) and ranges over a set of (true) propositions (see also Berman 1991). In a similar vein, I suggest that in sluicing, the Q-operator in (40) is available at LF and quantifies over the variable produced by the *wh*-fragment (adapting Karttunen's proposal).

Let me now examine the content of the variable produced by the *wh*-fragment. It has long been proposed that *wh*-words/phrases are represented as (existential) indefinites, patterning in this respect with *some*-indefinites or (basic) noun phrases introduced by the indefinite determiner *some* (for details, see Chomsky 1964, Katz & Postal 1964, Klima 1964, Karttunen 1977, Tsai 1994 and Reinhart 1995, 2006, among others). Maintaining that *wh*-words/phrases pattern with such indefinites, I want to suggest that the *wh*-fragment in sluicing yields a free function variable *f* which contains an implicit argument *x* that is anaphorically bound by an (quantificational) antecedent.

More precisely, consider (41a) represented under choice functions in (41b). *Which* is represented as a free function variable *f* that maps the set "books" into a choice function that is defined for just one argument, the set of all books, and picks that "book" from that set. That is, *f* returns a member of that set. Furthermore, *f* contains an implicit argument *x*, represented as a subscripted variable of *f*, which is able to receive a bound variable interpretation.

(41) a. John bought some book and I wonder which book.
b. John bought some book and I wonder $(x, f_x(\text{book}))$.

Some book anaphorically binds the implicit argument of *f* (i.e., *x*) and this binding ensures that the member that *f* returns necessarily corresponds to "the book that John bought". The function variable will

then be bound by the relevant Q-operator, as informally illustrated in (42a). The question denotes the set of true propositions P, each stating that for some function variable (f_x), if x, which is the implicit argument of f, equals to "some book bought by John", then P asserts that John bought the book selected by f (cf. (42b)).

(42) a. John bought some book and I wonder for which f_x, x a book that John bought, it is true that John bought f(book).

b. John bought some book and I wonder {P|f_x(CH(f_x) & x = {x|book(x) & John bought x} → P = ^ (John bought f(book)) & true (P))}.

To put it differently: LF "fills-in" the necessary information, which is provided by the available output, without the need to structurally recover any part of the previous clause.[12]

I want to show as well that the anaphoric binding proposed above also permits certain interpretations that pattern in interesting respects with interpretations that have been observed for (a certain class of) indefinites, including those introduced by *some*. In particular, Kratzer (1998) argues that such indefinites are able to yield three possible readings in terms of scope: a) quantificational, b) specific and/or c) intermediate. When quantificational, they do not take scope outside their clause; when specific, they appear to instantiate "widest-scope" properties; and when intermediate, they fall under the scope of another quantifier. For the present purposes, I will concentrate on the intermediate reading, exemplified in (43) (from Kratzer 1998, 5: (5a)).

(43) Every professor rewarded every student who read *some book* she had reviewed for the *New York Times*.

The (italicized) indefinite *some book* yields a "pair-list" (i.e., intermediate) interpretation, where different choices of *professors* correspond to different restrictor sets for *some*. In order to capture such readings, Kratzer puts forward a parameterized choice-function approach (building on Reinhart 1995, 2006), similar to the one proposed above for sluicing. Consider (44), which I represent in terms of Kratzer's choice functions.

[12] This argument also summarizes my point of departure from CLM's (1995) account of sluicing.

(44) [Every professor]$_i$ rewarded every student who read (x,f_x(book)) she$_i$ had reviewed for the *New York Times*.

The indefinite determiner *some* equals a free function variable *f* which is contextually valued and applies to the (non-empty) set "book," returning a member of that set. The presence of the pronoun *she*, which is bound by *every professor* (cf. the indexing) and surfaces in the restrictive clause of the indefinite *some book*, forces *x* to be anaphorically related to *every professor*. Consequently, the choice from the set "book" depends on the values one may give to "every professor".

Interestingly, quite a similar reading to (44) seems to arise in the sluicing equivalent, which I give in (45) (the same holds for Greek).

(45) [Every professor]$_i$ rewarded every student who read some book she$_i$ had reviewed for the *New York Times*, but I don't know which book.

In particular, the value of *which book* varies according to the value of *every professor*, yielding again a "pair-list" reading.[13] According to Kratzer, the "pair-list" reading of (47) becomes marginal under the presence of a different pronoun (here *I*) that cannot be bound by *every professor* (cf. (46a), from Kratzer 1998, 6: (5b)). This also appears to be the case with the corresponding sluicing sentence that I give in (46b), where the value of *which book* does not depend on that of *every professor*.

(46) a. Every professor rewarded every student who read some book I had reviewed for the *New York Times*.

b. Every professor rewarded every student who read some book I had reviewed for the *New York Times*, but I don't know which book.

The above evidence confirms that the *wh*-fragments in sluicing pattern with a certain class of indefinites, which yield bound variable interpretations, extrasententially construed.

[13] See Agüero-Bautista (2001, 2007) who discusses "pair-list" readings in sluicing in terms of the PF-deletion approach.

To support further the hypothesis made previously that a Q-operator quantifies over a variable produced by a constituent other than CP, I want to draw a parallel with the so-called Concealed Questions (henceforth, CQs). For instance, and abstracting away from the exact position of the Q-operator in CQs, the interpretation of the DP in (47a) appears to be associated with that of the full-fledged *wh*-interrogative in (47b).

(47) a. I don't know [$_{DP}$ the time]
b. I don't know [$_{CP}$ what the time is]

Although there have been analyses (mainly by Baker (1968) and Ross (1971)), which treat CQs as deriving from the structure underlying *wh*-questions, there is convincing evidence that CQs are genuine DPs and not CPs (see Grimshaw 1979, Nathan 2006, Romero 2005, among others). A reviewer correctly points out that sluicing and CQs differ at least in distribution. For instance, to repeat one of the reviewer's examples, CQs may not serve as complements to *wonder*-type predicates contrary to sluicing (cf. (48a,b), *his/hers* (24a,b)).[14]

(48) a. *Steve bought something. I wonder that thing. (CQ)
b. Steve bought something. I wonder what. (sluicing)

I agree with the reviewer and I add that if CQs and sluicing show similarities, this does not necessarily mean that one reduces to the other. So, the hypothesis that in both cases grammar predicts that a "smaller" constituent is able to yield the interpretation of a "larger" one under the scope of a Q-operator, is valid no matter how the two structures differ. In that sense, it is a welcome but not a necessary observation that sluicing and CQs may also pattern, since the interpretation of both the *wh*-fragment in sluicing and that of the DP in CQs is associated with that of a full-fledged *wh*-question. For instance, sluicing in (49a) and the CQ in (49b) appear to approximately equal the paraphrasis in (49c).

[14] The reviewer also claims that CQs may not surface as subjects, contrary to the *wh*-fragment in sluicing. Nevertheless, this is not correct for CQs on the basis of examples such as "[$_{CP}$ [$_{DP}$ The height of the building] wasn't clear] (= what the height of the building was wasn't clear) (from Grimshaw 1979, 300: (83)). The alleged subject position of the *wh*-fragment in sluicing is examined in section 5.

(49) a. John said that he will come sometime tomorrow, but I don't know what time.
b. John said that he will come sometime tomorrow, but I don't know the time.
c. John said that he will come sometime tomorrow, but I don't know what time/the time (he said) he will come tomorrow.

I conclude then that as regards sluicing Q quantifies over the variable produced by the *wh*-fragment and facilitates an interpretation reminiscent of that of full-fledged *wh*-interrogatives.

To sum up so far, the relevant predicates with the *wh*-fragment yield an interrogative interpretation. The *wh*-fragment, which patterns with *some*-indefinites, contains an implicit argument (*x*) that is anaphorically bound by its antecedent. This anaphoric relation is enough for LF to identify the propositional content of the fragment, yielding the effect of "ellipsis".

Next, I illustrate how the data discussed in section 3 provide empirical support to the present approach to sluicing. Some further issues are also considered.

5. Predictions and Implications

In this section I first address two issues that have been raised in the relevant literature (two reviewers also point them out) against non-structural approaches to sluicing of the kind currently pursued, and then I examine in turn: a) islandhood immunization, b) preposition omission, c) optional presence of the *wh*-fragment under certain environments, and d) obligatory absence of the *wh*-fragment under other environments.

To start with, the direct selection of the *wh*-fragment by the relevant predicates raises the following issue.[15] Although *know* or *ask* may select for non-clausal complements (cf. (50a,b)), *wonder* appears not to, unless a preposition is present (cf. (50c)).

[15] The matter is quite general and involves the tension between c(ategory)-selection (see Bresnan 1972, Chomsky 1973) and/or s(emantic)-selection (see Grimshaw 1979, 1981) which, due to space limitations, will not be discussed here.

(50) a. I don't know the time.
b. I asked the time.
c. I wonder *(about) the time.

Thus, contrary to *know* or *ask*, *wonder* is alleged to violate its selectional properties in sluicing, because it directly selects for a non-clausal complement (i.e., the *wh*-fragment). Nevertheless, it is rather misleading to assume that *wonder* may never select for non-clausal complements, without the mediation of a preposition. For instance, as shown in (51) (from Nathan 2006, 42: (23) & (24); the data are also grammatical in Greek), *wonder* directly selects for the demonstrative *that* in (51a), for the DP *the same thing* in (51b), for the free relative *which* in (51c) and for the interrogative *what* in (51d) and (51e).

(51) a. Kim wondered who left, and Sally wondered *that* as well.
b. Kim wondered who left, and Sally wondered *the same thing*.
c. John told Mary who left, *which* she had wondered for some time.
d. *What* Mary wondered was who had left.
e. *What* is Mary wondering now?

Though it is not discussed by Nathan, note also that in (51a-c) the preposition *about* may optionally be present, i.e., *about that/the same thing/which*, while in (51d-e) it is obligatorily absent, i.e., **about what Mary wondered was who had left/*about what is Mary wondering now?* Nathan argues that *wonder* selects and case-marks its non-clausal complements in (51). Although the explanation of the relevant data is a topic for a different paper, I believe that if *wonder* generally case-marked its non-clausal complements, (50c) would be grammatical without the presence of the preposition. Instead, it appears that *wonder* may directly select for a non-clausal complement if that complement is anaphorically interpreted with respect to an interrogative clause. This is evident in (51a-c), where the relevant complements correspond to the embedded *wh*-interrogatives *who left* and in (51d-e), where *what* corresponds to the post-copula *wh*-interrogative *who had left* (cf. (51d)) and to a *wh*-interrogative clause apparently available in the discourse (cf. (51e)). This is a similar case to sluicing, where *wonder* selects for a (interrogative) *wh*-fragment, which is anaphorically interpreted and corresponds to a full clause.

An additional issue that has been raised involves cases where the *wh*-fragment appears to be in a subject position, as in (52) (from Merchant 2001, 42: (12b)).

(52) Some of these problems are solvable, but [[$_{DP}$ which problems] is/*are not obvious].

The argument goes like this: if, under the present non-structural proposal, the plural DP *which problems* in (52) is the subject of the clause, it should agree with the copula in number. Nevertheless agreement is impossible (see Ross 1969 and Merchant 2001 for discussion). Following van Riemsdijk (1978), who adopts Koster's (1978) approach to subject sentences, I maintain that *wh*-fragments in sluicing do not occupy subject positions. This is because apart from DPs (cf. (52)), APs and PPs also appear to occupy subject positions in sluicing (cf. (53a,b)), though they (usually) do not project in such positions (from van Riemsdijk 1978, 246).

(53) a. His house is quite big, but [[$_{AP}$ how big] isn't clear].
b. John left, but [[$_{PP}$ with whom] isn't clear].

Instead the *wh*-fragments in cases like (52) and (53) are base-generated in left-dislocated positions, while an anaphoric element *that*, which is usually not present, occupies the subject position, as shown in (54a-c). (54d,e) illustrate that *that* may also be anaphoric to plural DPs quite independently from sluicing (compare with (54a)). *That* agrees with the copula in number and anaphorically renders the *wh*-fragment as the subject of the clause (from van Riemsdijk 1978, 246).

(54) a. Some problems are solvable, but [which problems, [that isn't clear]]
b. His house is quite big, but [how big, [that isn't clear]]
c. John left, but [with whom, [that isn't clear]]
d. A few more good squibs, that would be nice.
e. All those evasive answers, that's where the real danger lies.

I would also like to add that the (short) pause (represented as a comma marker in (54)), which is observable between the left-dislocated *wh*-fragment and the predicate, or the anaphoric *that*, if present, is

characteristic of left-dislocated (or Topicalized) constituents and not of ordinary subjects.

Let me now turn to the data in section 3. Consider first islands (cf. (5) repeated as (55)). It is predicted that in the absence of any relevant structure there is no island, as in (55b). Thus (55a) is not comparable to (55b).

(55) a. *[$_{CP}$ Which Balkan language do [$_{TP}$ they want to hire [$_{DP}$ someone [$_{CP}$ who speaks <which Balkan language>]]]]?
b. They want to hire someone who speaks a Balkan language but [$_{CP}$ I don't know which (Balkan language)].

The *wh*-fragment is directly selected by *know* and it is dependent on the antecedent *a Balkan language*, both matching in phi-/D-features and case morphology. The *wh*-fragment, which is bound by the "Balkan language" in the manner described in section 4.3, yields the relevant propositional reading. The analysis proposed here does not make any assumption concerning Merchant's (2001) categorization of islands to PF-/LF-islands (see section 4). Whether his reasoning is on the right track or not is a totally different matter, tangential to the present view of sluicing.

As regards preposition omission, consider (56) (repeated from (6)).

(56) I Anna miluse me kapjon ala
the Anna-NOM was-talking-3SG with someone but
dhen ksero (me) pjon.
NEG know-1SG with who-ACC
"Anna was talking with someone, but I don't know who."

A full structure approach (either in terms of the PF-deletion or LF-copying) would have to assimilate (56) to some sort of P(reposition)-stranding, comparable to English (cf. the translation). Thus, while Greek is a non P-stranding language, it would have to be assumed that in sluicing the *wh*-word surfaces in a left peripheral position leaving the preposition stranded, which is then deleted at PF. Under the present line of reasoning, (56) is not comparable to the language-specific conditions of the formation of *wh*-questions, such as P-stranding. Instead, the dependence between the *wh*-fragment and its antecedent makes use of the most minimal (morpho-syntactic and semantic)

resources necessary for the successful interpretation of the anaphoric relationship.[16] For instance, the DP *pjon* (who) in (56) does not need to project with a P, since there is an overt antecedent DP (i.e., *kapjon* (someone)) on which the fragment depends.[17] Interestingly, Nykiel & Sag (2009; 2010) (see also Nykiel 2010 and Nykiel, to appear), also favoring a non-additional structure account of sluicing, have conducted a number of experiments using Polish stimuli (a non P-stranding language; see Szczegielniak 2008), which show that preposition omission in sluicing "exhibits signs of gradient linguistic knowledge. Preposition omission depends on the ease with which a sluice's correlate may be recovered from the preceding antecedent." Certainly, such tests strongly suggest that cases like (56) have to do with broader parsing issues involving anaphoric dependencies, and that language-specific conditions on P-stranding are orthogonal to sluicing, despite appearances. That parsing is particularly relevant is also confirmed by the fact that Greek native speakers have shown a preference for the use of the preposition *me* (with) in (56), while no one has considered its absence ungrammatical (see section 3). In that sense, it is also reasonable to expect that language-specific properties may determine "how much" morpho-syntactic/semantic information is needed for successful representations of the form (56). In Greek (and Polish; or Brazilian Portuguese (see Almeida & Yoshida 2007)), (56) is grammatical, under the absence of P, because this much information is required by Greek grammar for the dependence to be interpreted. But equivalents of (56) may or may not be permitted in other grammars.

Consider now sentences where the *wh*-fragment is optionally present. One such case, namely (9a) repeated as (57) suffices to illustrate the argument.[18]

[16] Perhaps, a different wording may appear to be more accurate. In particular, it may prove to be correct that the more complex the antecedent is, the less complex the *wh*-fragment may need to be and vice versa (see Nykiel & Sag 2009, 2010, Nykiel 2010, and Nykiel, to appear). I will leave this to future research.

[17] The fact that the *wh*-fragment must be realized as a PP if its antecedent is implicit as in "Joe was murdered, but we don't know *(by) who" (cf. the discussion in (7)-(8), and Chung 2005) touches on issues concerning the (syntactic/semantic) status of implicit constituents which are not discussed here. For an account in terms of the PF-deletion see Merchant (2007).

[18] I was able to find only one similar example in English, given by Merchant (2001, 58: (66b)), which is judged with double question marks (cf. (i)).

(i) ?? Ben knows who she invited but Charlie doesn't know who.

Of course, I have no reason to doubt Merchant's judgment and it may be the case that not all English equivalents are felicitous.

(57) I Eleni me rotise [$_{CP}$ [$_{DP}$ pjos] efighe]
the Helen-NOM me-ACC asked-3SG who-NOM left-3SG
ala dhen mporusa na tis po ([$_{DP}$ pjos]).
but NEG be-able-to-1SG PRT her tell-1SG who-NOM
"Helen asked me who left, but I couldn't tell her (who)."

I suggest that if the complement of the relevant predicate can be exhaustively recovered at LF by the semantic type of the antecedent (i.e. *pjos* (who) in (57)), the *wh*-fragment may literally be absent. In particular, the complement of *po* (tell) in (57) is anaphorically identified by the previous DP which is of the form [wh].[19] (57) is consequently contrasted with normal cases of sluicing, where the *wh*-fragment cannot be absent because the antecedent is not of the form DP[wh] (cf. (58)).

(58) Kapjos efighe ala dhen idha *(pjos)
someone-NOM left-3SG but NEG saw-1SG who-NOM
"Someone left but I didn't see *(who)."

Moreover, the relevant predicate must typically allow for its complements to be absent. Thus (59) is ungrammatical, contrary to (57), because *anakalipsi* (discover) does not permit null complements (cf. (59a)), though it selects for *wh*-interrogatives (cf. (59b)).[20]

[19] It may be interesting to examine how this hypothesis interacts with the one made earlier about instances of preposition omission. For instance, in Greek, if the antecedent is of the form PP[wh], heading an embedded *wh*-interrogative, the *wh*-fragment must be realized as a PP. That is, the preposition cannot be absent (cf. (ia)), though the whole *wh*-PP may go "missing" (cf. (ib)). I have nothing to contribute to this.

(i) a. I Maria ithele na mathi me pjon milusa
the Mary wanted-3SG PRT know-3SG with who was-talking-1SG
ala dhen mporusa na tis po *(me) pjon.
but NEG could-1SG PRT her tell-1SG with who
lit: "Mary wanted to know who I was talking with, but I couldn't tell her *(with) who."

b. I Maria ithele na mathi me pjon milusa
the Mary wanted-3SG PRT know-3SG with who was-talking-1SG
ala dhen mporusa na tis po.
but NEG could-1SG PRT her tell-1SG
lit: "Mary wanted to know who I was talking with, but I couldn't tell her."

[20] See Grimshaw (1979, 296-297) for a similar discussion of the properties of *discover* in English.

(59) a. *O astinomos Sainis dhjatahthike na vri
the inspector Gadget-NOM was-ordered PRT find-out-3SG
pjos dholofonise ton James Bond
who-NOM murdured the James Bond
ala dhen mporuse na anakalipsi
but NEG could-3SG PRT discover-3SG
"*Inspector Gadget was ordered to find out who murdered James Bond, but he couldn't discover."

b. O astinomos Sainis dhen mporuse na anakalipsi
the inspector Gadget-NOM NEG could-3SG PRT discover-3SG
pjos dholofonise ton James Bond
who-NOM murdered-3SG the James Bond
"Inspector Gadget couldn't discover who murdered James Bond."

The previous discussion naturally leads to cases such as (15), repeated in (60), where the presence of the *wh*-fragment renders the sentence ungrammatical.

(60) *O Vasilis ithele na mathi pji itan i loghi
the Bill-NOM wanted-3SG PRT know-3SG which were the reasons
ja tin apofasi mu ala dhen mporusa na
for the decision my but NEG could-1SG PRT
tu po pji.
him tell-1SG which
"*Bill wanted to know what the reasons for my decision were, but I couldn't tell him what."

The difference between (57) and (60) is that the *wh*-fragment in (57) yields an individual variable that is bound by an antecedent. This is not the case in (60), where *ti* (what) corresponds to the predicate in the previous clause (as already discussed in section 3). In other words, *ti* (what) in (60) does not yield the individual interpretation that the (existential) indefinite *ti* (what) yields in (61).

(61) O Janis aghorase kati
the John-NOM bought-3SG something-ACC
ala dhen ksero ti
but NEG know-1SG what-ACC
"John bought something but I don't know what."

To sum up, it is independently attested in grammar that the predicates that select for *wh*-fragments are generally able to select for non-clausal complements. Also, *wh*-fragments do not surface at subject positions, and under the lack of the relevant structure, sluicing is not comparable to illicit cases of *wh*-extraction out of islands. What is more, preposition omission is regulated by general laws of anaphora resolution that impose certain morpho-syntactic requirements on the participants of the dependence. Finally, the *wh*-fragment may literally be absent (assuming that the relevant predicate permits null complements), if it is exhaustively recoverable by the semantic type of its antecedent: a *wh*-word/phrase that yields an individual variable.

Obviously, sluicing, as presently viewed, is a representation that relies heavily on anaphoric mechanisms. In the following section, I compare sluicing with other anaphoric representations available in grammar, with the aim to provide further support to the current proposal. I will limit myself to a rather sketchy discussion, avoiding a more thorough analysis for reasons of space.

6. The View from Anaphora

To start with, (60) becomes grammatical as in (62).

(62) O Vasilis ithele na mathi pji itan i loghi
the Bill-NOM wanted-3SG PRT know-3SG which were the reasons
ja tin apofasi mu ala dhen mporusa na tu po.
for the decision my but NEG could-1SG PRT him tell-1SG
"Bill wanted to know what the reasons for my decision were, but I couldn't tell him."

Grismhaw (1979, 306) argues that in the English equivalent of (62) (cf. the translation), which is an instance of Null Complement Anaphora (henceforth, NCA), the dropped clausal complement of the predicate *tell* has no internal structure and it is fully recoverable at LF because it matches up with the semantic type of the preceding complement clause. Furthermore, Hankamer & Sag (1976) propose that NCA is directly contrasted with sluicing, where the *wh*-fragment is alleged to have internal structure (see also Depiante 2000). The two phenomena are supposed to stand for "deep anaphora," as regards NCA and "surface anaphora," as regards sluicing.

Abstracting away from a thorough discussion of NCA due to space limitations, I want to examine the following working hypothesis. If sluicing, as currently viewed and as Hankamer & Sag argue, is reducible to an instance of anaphora (although "surface" anaphora for Hankamer & Sag, it is still anaphora), it may carry properties observable in other anaphoric environments, such as NCA. Consider the minimal pair in (63) (repeated from (57) and (62) respectively and given in English for ease of illustration).

(63) a. Helen asked me who left but I couldn't tell her.
b. Bill wanted to know what the reasons for my decision were, but I couldn't tell him.

If in both (63a) and (63b) the "missing" complements are recoverable through the preceding environments, then the two representations may differ as to the content of the variable that must be identified, i.e., individual in sluicing (cf. (63a)) and predicative in NCA (cf. (63b)).[21] So in (63a), sluicing makes use of anaphoric devices reserved for NCA. Note here that the way one approaches (63a) depends on the way one approaches sluicing. In particular, for the present account, (63a), which is a case of sluicing, yields an individual variable (optionally present at PF) and it might be contrasted with certain comparable instances of NCA which yield a predicative variable. For structural approaches, on the other hand, if the *wh*-word is present, as in the Greek case in (57), it is derived by sluicing, and if the *wh*-word is not present, as in (57) (and (63a)), it is an instance of NCA. Still though, (63b), which only allows for NCA and not sluicing (compare with the ungrammatical (60)), would have to be attributed to some sort of difference between the variables involved at LF, under a similar line of reasoning to the one developed here.

To further test the aforementioned working hypothesis, I explore the possibility that sluicing may also resemble other instances of anaphora besides NCA. Below, I present six possible fields of comparison between sluicing and E-type anaphora. For space reasons, I do not go into any analysis, except giving the facts (mainly in English).

First, E-type pronouns do not surface in the same clause as their antecedents (see Evans 1977a,b, Reinhart 1987, Heim 1990, Neale 1990, Chierchia 1992, Lappin & Francez 1994, Elbourne 2001,

[21] But see Haynie (2009) who proposes that the complement in NCA may yield an individual variable.

among others), as shown in (64a) (from Evans 1977a, 470: (6)), where *them* anaphorically refers to *some sheep*. This is also the case with the *wh*-fragment in sluicing (cf. (64b)) where *who* is bound by *someone*, as discussed previously.

(64) a. John owns some sheep and Harry vaccinated them last July.
b. Someone left and I wonder who.

Second, E-type pronouns are not inherently definite. Instead, as in (64a), the pronoun is bound by *some sheep*, which is a non-referring DP, in the sense of Heim (1982). Thus the value of the pronoun depends on the value of *some sheep*. Nonetheless, E-type pronouns are usually paraphrased as definite descriptions (cf. (64a) paraphrased as in (65); from Evans 1977a, 498).

(65) John owns some sheep and Harry vaccinated the sheep that John owns last July.

Interestingly, it is a salient property of sluicing that the *wh*-fragment, which is by no means definite, is paraphrasable as a definite description. Consider, for instance, (66).

(66) a. Someone left and I wonder who (= which is the person that left).
b. John bought some book but I don't know which book (= which is the book that he bought).

The value of the *wh*-fragment depends on the value of its antecedent, which is a non-referring DP (e.g., *some book* in (66b)). This sort of definiteness effect is due to the fact that the *wh*-fragment must be interpreted with respect to its antecedent.

Third, E-type pronouns carry the same phi-features as their antecedents, also permitting some sort of variation with respect to Number. Consider (67) (from Heim 1990, 169: (90)), where the pronouns *they* and *them* yield a plural reading facilitated by the presence of the universal quantifier *every* scoping over their antecedents *child* and *cookie*.

(67) Almost every child got a cookie. They ate them right away.

A similar situation holds for Greek sluicing. Consider (68), where the *wh*-fragment *posa pedhja* (how many children) is plural, while its antecedent *pedhi* (child), which is under the scope of *every*, surfaces in singular.

(68) Shedhon kathe pedhi pire apo ena biskoto
almost every child-NOM-SG got-3SG from a cookie
ala dhen metrisa posa pedhja
but NEG counted-1SG how-many children-NOM-PL
"Almost every child got a cookie, but I didn't count how many children."

Fourth, the antecedent of an E-type pronoun must be "existential in force" (Evans 1997a, 533; also Heim 1990, 37). To put it differently, the object (or objects) that pronouns denote must not cancel the presupposition of existence that pronouns yield. Consider (69), where *them* denotes an entity (*sheep*) that is cancelled under the scope of *no* (from Evans 1977a, 498).

(69) *John owns no sheep and Harry vaccinates them.

A similar requirement holds for sluicing, where the antecedent must take wider scope than negation, which is observable either with overt (cf. (70a) from CLM 1995, 255: (36a)) or implicit antecedents (cf. (70b), from Merchant 2001, 226: (196a)).

(70) a. *They never talk to any students. It's unclear who/which.
b. *Nigel never hunts but I don't remember what.

Fifth, related at some point with the fourth instance, the antecedent of E-type pronouns may not be quantificational DPs (cf. (71a), from Evans 1997, 494). This is also the case in sluicing (cf. (71b), from CLM 1995, 253: (30a)).

(71) a. *Socrates owns every dog and it bit Socrates.
b. *She said she had spoken to everybody, but he wasn't sure to who.

Sixth, E-type environments may allow for "pair-list" readings, where the value of the pronoun changes in tandem with the value

of its antecedent, if the antecedent is under the scope of a quantifier like *every* (*farmer*) (cf. (72a) from Evans 1997a, 504; see also Neale 1990, Heim & Kratzer 1998). Such readings are also available in sluicing (cf. (72b) repeated from (49b)).

(72) a. Every man who owns a donkey, beats it.
b. Every professor rewarded every student who read some book she had reviewed for the *New York Times*, but I don't know which book.

To put the preceding instances of NCA and E-type environments together, sluicing appears to make use of anaphoric mechanisms that are observed in NCA and E-type anaphora. Like NCA, the complement of sluicing may literally be absent if it is recoverable by the semantic type of the antecedent. Unlike NCA, though, the sluice may only yield an individual but not a predicative variable. What is more, a number of conditions (not exhaustively discussed here) that have been suggested to facilitate or block the licensing of an E-type pronoun also appear to facilitate or block the licensing of the sluice.

The preliminary, incomplete comparison of sluicing with E-type anaphora and NCA (and to some extent with CQs) supports the approach currently examined that sluicing may utilize anaphoric devices that are facilitated/conditioned by morpho-syntactic information. The question is then where do such devices operate? Is it in PF, triggering some form of deletion, or in LF (and discourse), presupposing some sort of dependency? An approach based on deletion entails that "more" in syntax may become "less" along the way to the interpretive systems, while an account relying on LF (and discourse) argues for going in the opposite direction, which is the view of sluicing that has been presented in this paper.

7. Conclusion

The present paper has dealt with (Greek) sluicing. After presenting various unnoticed properties, I have proposed that the sluiced *wh*-words/phrases are fragments, void of additional structure. In terms of syntax, the *wh*-fragment projects a Q-operator as its specifier, which is licensed by a predicate that may select for ordinary

indirect *wh*-questions. The *wh*-fragment anaphorically depends on an antecedent with which the fragment matches in phi-/D-features, while its morphological case and syntactic category are regulated by the dependence. As regards interpretation, the Q-operator, which is available at LF, ranges over the variable produced by the *wh*-fragment, which is anaphorically bound by the antecedent. Due to this anaphoric relation, LF recovers the "missing" propositional interpretation of the *wh*-fragment, albeit the absence of the relevant structure.

Finally, the empirical data that has been considered, has provided further support to the present analysis which leads to the hypothesis that sluicing may carry properties comparable to E-type and Null Complement Anaphora.

Works Cited

1. Adger, D., & J. Quer. 2001. The syntax and semantics of unselected embedded questions. *Language* 77, 107–133.
2. Agüero-Bautista, C. 2001. *Cyclicity and the scope of wh-phrases*. Doctoral dissertation, Massachusetts Institute of Technology.
3. —. 2007. Diagnosing Cyclicity in Sluicing. *Linguistic Inquiry*, 38:3, 413-443.
4. Alexopoulou, T. & M. Baltazani, to appear. Focus in Greek *wh*-questions. In *Contrasts and Positions in Information Structure*, ed. by I. Kucerova & A. Neeleman.
5. Almeida, D. & M. Yoshida. 2007. A problem for the Preposition Stranding Generalization. *Linguistic Inquiry*, 38:2, 349-362.
6. Baker, C. L. 1968. *Indirect Questions in English*. Doctoral dissertation, University of Illinois, Urbana, Illinois.
7. Barros, M. & L. Vicente. 2009. Backward…ellipsis? Rutgers University & Universität Potsdam, unpublished manuscript.
8. Berman, S. R. 1991. *On the semantics and logical form of Wh-clauses*. Doctoral dissertation, University of Massachusetts.
9. Bresnan, J. 1972. On Complementizers: Toward a Syntactic Theory of Complement Types. *Foundations of Language*, 6: 297-321.
10. Caponigro, I. & D. Heller. 2007. The Non-Concealed Nature of Free Relatives: Implications for Connectivity in Specificational Sentences. In *Direct Compositionality*, ed. by C. Barker & P. Jacobson. Oxford University Press, 237-263.

11. Chao, W. 1987. *On ellipsis*. Doctoral dissertation, University of Massachusetts: Amherst.
12. Cheng, L. 1991. *On the typology of wh-questions*. Doctoral dissertation, Massachusetts Institute of Technology.
13. Chierchia, J. 1992. Anaphora and Dynamic Binding. *Linguistics and Philosophy*, 15: 111-183.
14. Chomsky, N. 1964. *Current Issues in Linguistic Theory*. Mouton, The Hague, Paris.
15. —. 1968. Deep structure, surface structure, and semantic interpretation. In *Semantics: An interdisciplinary Reader in Philosophy, Psychology, Linguistics and Anthropology*, ed. by L. Jakobovits & D. Steinberg. Urbana, Illinois: University of Illinois Press.
16. —. 1972. Some empirical issues in the theory of transformational grammar. In *Goals of linguistic theory*, ed. by Paul Stanley Peters, 63-130. Englewood Cliffs, N. J.: Prentice-Hall.
17. —. 1973. Conditions on Transformations. In *A Festschrift for Morris Halle*, ed. by S. R. Anderson & P. Kiparsky. Holt, Rinehart & Winston, New York, 232-286.
18. —. 1980. On binding. *Linguistic Inquiry*, 11: 1–46.
19. —. 1981. *Lectures on Government and Binding*. Dordrecht: Forris.
20. —. 1995. *The Minimalist Program*. The MIT Press.
21. Chung, S. 2005. Sluicing and the lexicon: the point of no return. Unpublished manuscript, University of Santa Cruz.
22. Chung, S., W. Ladusaw and J. McCloskey. 1995. Sluicing and Logical Form. *Natural Language Semantics*, 3: 239–282.
23. —. to appear. Sluicing(:) Between Structure and Inference. In *Representing Language: Essays in Honor of Judith Aissen*, ed. L. Mikkelsen, E. Potsdam, and R. Gutiérrez-Bravo, Linguistics Research Center Publications.
24. Van Craenenbroeck, J. 2008. More Ado About Nothing. Sluicing, copular clauses and case. Paper presented at Linguistics Colloquium, UC Santa Cruz, USA.
25. Culicover, P.W. & Ray Jackendoff. 2005. *Simpler Syntax*. Oxford University Press.
26. Depiante, M.A. 2000. *The Syntax of Deep and Surface Anaphora: A Study of Null Complement Anaphora and Stripping/Bare Argument Ellipsis*. Doctoral dissertation, University of Connecticut.
27. Elbourne, P. 2001. E-type Anaphora as NP-Deletion. *Natural Language Semantics*, 9: 241-288.

28. —. 2008. The interpretation of pronouns. *Language and Linguistic Compass*, 2:1, 119-150.
29. Evans, G. 1977a. Pronouns, Quantifiers and Relative Clauses (I). *Canadian Journal of Linguistics*, 7:3, 467-536.
30. —. 1977b. Pronouns, Quantifiers and Relative Clauses (II). *Canadian Journal of Linguistics*, 7:4, 777-797.
31. Fox, D. & H. Lasnik. 2003. Successive cyclic movement and island repair: The difference between sluicing and VP-ellipsis. *Linguistic Inquiry*, 34:1, 143-154.
32. Giannakidou, A. and J. Merchant. 1998. Reverse sluicing in English and Greek. *The Linguistic Review*, 15: 233–256.
33. Ginzburg, J. & Ivan Sag. 2000. *Interrogative Investigations. The form, Meaning and Use of English Interrogatives*. CSLI Publications: Stanford, California.
34. Grimshaw, J. 1979. Complement Selection and the Lexicon. *Linguistic Inquiry*, 10: 279–326.
35. —. 1981. Form, Function and the Language Acquisition Device. In *The Logical Problem of Language Acquisition Device*, ed. by C. L. Baker and J. McCarthy. Cambridge: MIT Press, 165–182.
36. Hankamer, J. and I. A. Sag. 1976. Deep and Surface Anaphora. *Linguistic Inquiry*, 7: 391–428.
37. Haynie, H. 2009. Null complement anaphora: Why syntax matters. Paper presented at The 83rd LSA Meeting, San Francisco, CA.
38. Heim, I. 1982. *The Semantics of Definite and Indefinite Noun Phrases*. Doctoral dissertation, University of Massachusetts at Amherst (Published in 1989 by Graland, New York).
39. —. 1990. E-type pronouns and Donkey Anaphora. *Linguistics and Philosophy*, 13, 137-177.
40. —. 2008. Features on bound pronouns. In *Phi Theory. Phi-Features across Modules and Interfaces*, ed. by D. Harbour, D. Adger & S. Béjar, 35-56.
41. Heim, I. & A. Kratzer. 1998. *Semantics in Generative Grammar*. Blackwell Publishers.
42. Kamp, H. 1981. A theory of truth and semantic representation. In *Formal Methods in the Study of Language*, ed. by J. Groenendijk et. al. Amsterdam: Mathematical Centre.
43. Karttunen, L. 1977. Syntax and Semantics of Questions. *Linguistics and Philosophy*, 1: 3–44.
44. Katz, J. & P. Postal. 1964. *An Integrated Theory of Linguistic Descriptions*. Cambridge: The MIT Press.

45. Klima, E. 1964. Negation in English. In *The Structure of Language*, ed. by J.A. Fodor & H. Katz. Prentice Hall: Englewood, NJ.
46. Koster, J. 1978. Why subject sentences don't exist. In *Recent Transformational Studies in European Linguistics*, ed. by S. Keyser. Cambridge, MA: The MIT Press, 53-74.
47. Kotzoglou, G. 2005. *Wh-extraction and locality in Greek*. Doctoral dissertation, University of Reading.
48. Kratzer, A. 1998. Scope or Pseudoscope? Are There Wide Scope Indefinites? In *Events in Grammar*, ed. by S. Rothstein. Dordrecht: Kluwer, 163-196.
49. Lappin, S. & N. Francez. 1994. E-type pronouns, I-Sums and Donkey Anaphora. *Linguistics and Philosophy*, 17: 391-428.
50. Lasnik, H. 2008. On the development of Case Theory: Challenges and Triumphs. In *Foundational Issues in Linguistic Theory. Essays in Honor of Jean-Roger Vergnaud*, ed. by R. Freidin, C. P. Otero & M. R. Zubizarreta, 17-41.
51. Lobeck, A. 1995. *Ellipsis*. Oxford: Oxford University Press.
52. Merchant, J. 2000. Islands and LF-movement in Greek sluicing. *Journal of Greek Linguistics*, 1: 41–64.
53. —. 2001. *The syntax of silence: Sluicing, islands and the theory of ellipsis*. Oxford: Oxford University Press.
54. —. 2004. Fragments and Ellipsis. *Linguistics and Philosophy*, 27: 661–738.
55. —. 2007. The syntactic representation of implicit arguments. Paper presented at the "Funny" indefinites workshop, Zentrum für Allgemeine Sprachwissenschaft.
56. Nathan, L. E. 2006. *On the interpretation of concealed questions*. Doctoral dissertation, Massachusetts Institute of Technology.
57. Neale, S. 1990. *Descriptions*. Cambridge, MA: The MIT Press.
58. Nykiel, J. 2010. Preposition Omission Under Sluicing: supporting a nonstructural approach. Paper presented at Linguistic Evidence 2010 conference. University of Tübingen, Germany.
59. —. to appear. Whatever happened to English sluicing. In *Studies in the History of the English Language V. Variation and Change in English Grammar and Lexicon: Contemporary Approaches*, ed. R.A. Cloutier, A. M. Hamilton-Brehm & W. A. Kretzschmar, Jr. Berlin: Walter de Gruyter.
60. Nykiel, J. & I. Sag. 2009. Preposition omission under sluicing. Paper presented at The Fourth Brussels Conference on Generative Linguistics: Ellipsis (BCGL4), University-College Brussels (HUB).

61. —. 2010. Sluicing and Stranding. Unpublished manuscript.
62. Reinhart, T. 1987. Specifier and Operator Binding. In *The Representation of (In)Definiteness*, ed. E. Reuland & A. ter Meulen. Cambridge, MA: The MIT Press, 130-167.
63. —. 1995. Interface Strategies. *OTS Working Papers in Linguistics*, TL- 95-002. Utrecht: Utrecht University.
64. —. 2006. *Interface Strategies*. Cambridge, MA: The MIT Press.
65. Van Riemsdijk, H. 1978. *A Case Study in Syntactic Markedness: the binding nature of prepositional phrases*. Lisse: The Peter de Ridder Press.
66. Roberts, C. 1989. Modal subordination and pronominal anaphora in discourse. *Linguistics and Philosophy*, 12, 683-721.
67. Roberts, I. & A. Roussou. Interface Interpretation, unpublished ms.
68. Romero, M. 1998. *Focus and reconstruction effects in wh-phrases*. Doctoral dissertation, University of Massachusetts, Amherst.
69. —. 2005. Concealed Questions and Specificational Subjects. *Linguistics and Philosophy*, 28: 687-737.
70. Ross, J. 1969. Guess Who? *In Proceedings of ClS*, ed. R. Binnick, A. Davison, G. Green and J. Morgan, 252–286.
71. —. 1971. Conjunctive and Disjunctive Questions, unpublished ms.
72. Roussou, A. 2010. Selecting Complementizers. *Lingua*, 582—603.
73. Schwarzschild, R. 1999. Givenness, Avoid F and other constraints on the placement of accent. *Natural Language and Linguistic Theory*, 7: 141-177.
74. Sinopoulou, O. 2009. Απλές ερωτήσεις με ερωτηματική λέξη in situ: Η περίπτωση των Ελληνικών [Simple Questions with *Wh*- in situ: The Case of Greek]. *Proceedings of the 8th International Conference of Greek Linguistics*: 1118-1132 (CD-ROM). [Also online at http://www.linguist-uoi.gr/cd_web/arxiki_en.html.]
75. Spyropoulos, V. 2005. Agreement and multiple case licensing. In *Advances in Greek Generative Syntax*, ed. M. Stavrou & T. Arhonto. *Linguistik Aktuell/Linguistics Today*. Amsterdam: John Benjamins Publishing, 15—39.
76. Stainton, R. J. 2006. *Words and Thoughts. Subsentences, ellipsis, and the Philosophy of Language*. Oxford: Oxford University Press.
77. Szczegielniak, A. 2008. Islands in Sluicing in Polish. *Proceedings of the 27th West Coast Conference on Formal Linguistics*, ed. N. Abner & J. Bishop. Somerville, MA: Cascadilla Proceedings Project, 404-412.

78. Tsai, W-T. 1994. *On Economizing the Theory of A-bar Dependencies*. Doctoral dissertation, Massachusetts Institute of Technology.
79. Vlachos, C. 2010. *Wh*-in situ: the case of Greek. In *Movement and Clitics: Adult and Child Grammar*, ed. V. Torrens, L. Escobar, A. Gavarró and J. Gutiérrez. Cambride: Cambridge Scholars Publishing, 84-111.
80. Wasow, T. 1972. *Anaphoric Relations in English*. Doctoral dissertation, Massachusetts Institute of Technology.
81. Williams, E. 1997. Blocking and Anaphora. *Linguistic Inquiry*, 28, 4: 577—628.