

ANAPHORIC RELATIONS WITH GREEK PRONOUNS REVISITED*

Christiana Christodoulou
University of British Columbia

1. Introduction

Previous work has shown that coreference possibilities in English (Williams, 1997) as well as Greek (Christodoulou, 2007a, 2007b, 2008) are not always regulated by Binding Theory (Chomsky, 1981), as is standardly assumed. Since coreference in Greek is not always structurally determined, the main objective of this paper is to explore under which theory coreference with Greek pronouns is best accounted for. In search for an alternative analysis that could offer a more inclusive description of the anaphoric relations with Greek pronouns I propose an analysis based on precedence and linear order initially introduced by Williams (1997).

2. A Binding-Theoretic Analysis and its Problems

In this section I make a brief reference on why a Binding Theoretic analysis cannot account for the coreference possibilities in data (1a) and (1b). The core contrast I will explore in this paper is illustrated in data set (1):

- (1) a. i Tania₂ omoloyise oti [to forema pou
the Tania admit_{PAST} that the dress_{NOM} which

☞anise sti Georgia₆] [skistike sto spiti tis_{6/2}]
lend_{PAST} to-the Georgia_{ACC} rip off-_{PAST} in-the house_{ACC} her_{GEN}
'Tania admitted that the dress she had lent to Georgia got ripped in
her house.'
- b. i Tania₂ omoloyise oti [skistike sto
the Tania admit_{PAST} that rip off-_{PAST} in-the

spiti tis_{2/*6}] [to forema pou ☞anise sti Georgia₆]
house her_{GEN} the dress_{NOM} which lend_{PAST} to-the Georgia_{ACC}
'Tania admitted that the dress she had lent to Georgia got ripped in
her house.'

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The data set in (1) exemplifies that coreference is not available in a structure in which the clause that contains the pronoun precedes the clause that contains the antecedent. On the one hand, in (1a), where the relative clause contained in a DP (i.e. subordinate clause) precedes the matrix clause, coreference is allowed, thus, the pronoun *tis* can be interpreted as referring to *Georgia*. On the other hand, in (1b) where the antecedent *Georgia* in the DP is following the pronoun *tis* in the matrix clause, the possibility of coreference between *tis* and *sti Georgia* is excluded.

A Binding Theoretic analysis cannot explain the contrast seen in (1a) – (1b). In (1b) there is no offending binder (Binding Condition B does not apply for the pronoun, nor does Binding Condition C apply for the antecedent) to block the coreference between *tis* and *Georgia*.

To sum up, Binding Theory is not able to account for the distinction between (1a) and (1b), in which the same conditions should apply. This phenomenon then triggers the following question: what is responsible for the phenomenon observed in (1a) – (1b); why is coreference between *sti Georgia* and the pronoun *tis* excluded in (1b) but allowed in (1a)?

3. Alternative Analysis: Forward vs. Backward Dependence

Williams (1997) discusses English data comparable to (1a) – (1b) as a case of anaphoric dependence. He sustains that while coreference is governed by c-command and licensed based on the Binding Theory, Dependence is governed by precedence relations and linear order (pp. 588-589).

3.1 What is Dependence?

The phenomenon where a pronoun can get its meaning only by first being linked to the antecedent, before any reference to the actual individual is made is called *Dependence*. In other words, the pronoun *depends* on the antecedent, in terms of linearity and not structural/ syntactic licensing.

Thus, in an example like (2):

(2) Laura_i bought the dress for herself_i¹

The diagram shows a horizontal line with a vertical line extending upwards from the left end and another vertical line extending downwards from the right end, forming a U-shape that connects 'herself_i¹' back to 'Laura_i'.

the reflexive initially gets its reference from the antecedent, which could either be a proper name, a full DP with a common noun, or a pronoun. Once this relation is established then the pronoun can refer to the actual individual.

¹ A reflexive, instead of a non-reflexive pronoun is used here because it is easier to demonstrate dependence. Dependence, though, operates, the same way for non-reflexives in Greek, as the reflexive does here.

3.2 Forward vs. Backward Dependence

Williams argues that the distinction between sentences like (1a) – (1b) lies in the need for a pronoun to depend on an antecedent to acquire its referent. Furthermore, he supports that the contrast is created as a result of the positioning of the pronoun and the clause it is positioned in. Therefore, Williams suggests two types of dependence: forward and backward dependence.

With forward dependence any structural relation is permitted. The pronoun can either be in a matrix (3) or subordinate clause (4) with respect to the antecedent on condition that the clause with the antecedent precedes the clause with the pronoun:

- (3) Anyone can turn *his term paper*₆ in to me now [who has written *it*₆].²
 (4) Anyone [who has written *his term paper*₆] can turn *it*₆ in to me now.

Backward dependence however, is subject to another licensing constraint: here the pronoun must be in a subordinate clause relative to the antecedent, and the subordinate clause must PRECEDE the clause which contains the antecedent. Backward dependence has also been described as backward pronominalization because the antecedent is “pronominalized backward” to provide a referent to a pronoun³. This is shown in example (5):

- (5) Anyone [who has written *it*₆] can turn *his term paper* in to me now.

In the case where the pronoun in a matrix clause precedes the antecedent positioned in a subordinate clause, an additional restriction applies. In order for backward pronominalization to be grammatical, the antecedent must not receive main sentence stress. In the case that it does the co-indexing of an antecedent with a pronoun is excluded (Williams, 1997:588).

- (6) *Anyone can turn *it*₆ in to me now [who has written his TERM PAPER₆]

The source of the ungrammaticality lies in the fact that a focused or accented antecedent implies that the antecedent consists of new information in the sentence, presented in the discourse for the very first time. If the accented antecedent is new information it means that a **discourse referent** cannot have possibly been introduced and the pronoun remains without a referent. According to Selkirk (1984), when a verb receives “accent” (i.e. stress), it is because the nominal element, the complement of the verb, has been distressed. By de-accenting the antecedent and placing main sentence stress on the verb, coreference is possible and the reading is therefore “unblocked”. This change presupposes that there is a discourse referent preceding the pronoun which is

² All the English examples in this section are taken from Williams (1997:585-586).

³ Henceforth, the two terms, backward pronominalization and backward dependence, will be used interchangeably.

exactly the same as the one following the pronoun (Williams, 1997: 589). In (7) below, co-indexing of pronoun and antecedent is accessible due to stress shift:

- (7) *Context:* [I assume you recall that this course requires a *term paper*.]
 Anyone can turn *it*₆ in to me now [who has WRITTEN his *term pape*₆].

It is proposed that the de-accenting rule will have the same effects as the ones illustrated above on the Greek data presented in this paper.

Based on the English data presented in this section, Williams (1997) formulates the *General Pattern of Anaphoric Dependence* (hereinafter, GPAD). In the following four sentential configurations Williams aims in capturing co-indexing relations between a pronoun and an antecedent made available through forward dependence as well as backward pronominalization.

- (8) a. [...pro ...]_{subord} [...antec ...]_{matrix}
 b. [...antec ...]_{matrix} [...pro ...]_{subord}
 c. [...antec ...]_{subord} [...pro...]_{matrix}
 d. *[... pro ..]_{matrix} [...ANTEC...]_{subord}⁴

In the following section I am looking at the anaphoric relations of clitics, demonstratives and *pro* through the GPAD.

4. Greek Pronouns and the GPAD

In *Section 2* I concluded that for Greek data like (1a) – (1b) Binding Theory is not adequate in accounting for their anaphoric relations. On the contrary, motivated by Williams' GPAD, I ascertain that an alternative founded on precedence and linear order is more successful in establishing co-indexing possibilities for these Greek data. The following analysis predicts that all four combinations of the GPAD surface in Greek comparatively to Williams' English examples.

4.1 Anaphoric Dependence with Clitics

Below I demonstrate that the GPAD can not only account for the contrast in (1a) – (1b) but it also makes the right predictions concerning Greek pronouns for the other configurations. Looking at the original contrast between (1a) – (1b), below I show that (1a) is a case of forward dependence, with the antecedent preceding the pronoun in a subordinate clause. On the contrary, the phenomenon observed (1b) is backward pronominalization where no co-indexing between the pronoun and the antecedent is applicable because the pronoun which precedes the antecedent is positioned in the matrix clause, and receives main sentence stress. The examples are renumbered for convenience; (1a) is now (9a) and (1b) is (9b).

⁴Williams (1997) does not report the dependence combinations exactly as it's done here. However, the information as well as the general idea for the structuring of the GPAD as presented here is taken exclusively from the aforesaid article.

- (9) a. i Tania₂ omoloyise oti [to forema pou
 the Tania admit_{PAST} that the dress_{NOM} which
 [... antec ...]_{subord} matrix [... pro ...]
 anise *sti Georgia*₆] skistike sto spiti *tis*_{6/2}.
 lend_{PAST} to-the Georgia_{ACC} rip off-_{PAST} at-the house her_{GEN}
 ‘Tania admitted that the dress she had lent to Georgia got ripped at
 her house.’
- b. * i Tania₂ omoloyise oti [skistike sto spiti
 the Tania admit_{PAST} that rip off-_{PAST} at-the house
 [... pro ...]_{matrix} subord [... ANTEC ...]
*tis*_{2/*6}] to forema pou anise *STI GEORYIA*₆.
 her_{GEN} the dress_{NOM} which lend_{PAST} to-the Georgia_{ACC}
 ‘Tania admitted that it got ripped off at her house, the dress she
 lent to GEORGIA.’

In line with the GPAD, (9a) is a case of forward dependence, parallel to the (8c) combination set up by Williams (1997) and (9b) is the (8d) configuration above which qualifies as backward dependence. The sentence surfaces as ungrammatical because the pronoun *tis* preceding the antecedent *STI GEORYIA* is in a matrix clause with respect to the antecedent and the antecedent is moreover focused. Below I present the other two combinations of the GPAD.

- (9) c. i Tania₂ omoloyise oti [to forema pou
 the Tania admit_{PAST} that the dress_{NOM} which
 [... pro ...]_{subord} matrix [... antec ...]
*tis*_{2/6} anise] skistike sto spiti *tis Georgia*₆] her_{GEN}
 lend_{PAST} rip off-_{PAST} at-the house to-the Georgia_{GEN}
 ‘Tania admitted that the dress she lent her got ripped off at
 Georgia’s house.’
- d. i Tania₂ omoloyise oti [skistike sto spiti.
 the Tania admit_{PAST} that rip off-_{PAST} at-the house
 [... antec ...]_{matrix} [... pro ...]_{subord}
*tis Georgia*₆] [to forema pou *tis*_{2/6} anise]
 to-the Georgia_{GEN} the dress_{NOM} which her_{GEN} lend_{PAST}
 ‘Tania admitted that, it was ripped off at Georgia’s house, the dress
 which she lent her.’

As expected, (9c) – (9d) can be analysed in terms of forward and backward dependence. Specifically, (9c) is the other case of backward pronominalization, the combination found in (8a), where the pronoun preceding

the antecedent is located in the subordinate clause, and the antecedent follows in a matrix clause, while (9d) is a case of forward dependence comparable to (8c). Overall, the data in (9) evidence that linear order and not c-command is what establishes coreference relations in Greek.

In a case of backward pronominalization, according to the stress shift rule a pronoun (in a subordinate clause) can refer to the antecedent, only if the latter does not receive main sentence stress, as shown in (9c). However, Selkirk (1984) and Williams (1997) maintain that if main sentence stress is shifted to the verb and the antecedent is de-accented the reading becomes available:

- (9) e. i Tania₂ omoloyise oti [skistike sto spiti
 the Tania admit_{PAST} that rip off_{-PAST} at-the house

 [... pro ..]_{matrix} subord [... antec ...]
 *iis*_{2/*6}] to forema pou DANISE *sti* *Georgia*₆.
 her_{GEN} the dress_{NOM} which lend_{PAST} to-the Georgia_{ACC}
 ‘Tania admitted that it got ripped off at her house the dress she lent
 to Georgia.’

4.2 Anaphoric Dependence and Demonstratives in Greek

In this section, I am examining another category of Greek pronouns, namely demonstratives. In line with Drachman, (1994; 1997), Holton, Mackridge & Philippaki-Warburton (1997) Panagiotidis (2000), Sanoudaki (2003) and others, I consider third person “strong” pronouns in Greek to function as demonstratives. Therefore, since demonstratives in Greek, when in an object position, behave comparable to postverbal clitics we should expect that the GPAD applies to demonstratives in the same way as it does for clitics in (9).

According to Grohmann & Panagiotidis (2004:123) demonstratives in Greek combine ‘referential’ properties with a strong focus reading. In particular, a demonstrative in Greek moves to a SpecFocP. They justify this claim by suggesting that deixis accompanying demonstrative pronouns in Greek carries a “focal character” and associates the demonstrative with a referent, usually a thing or a person that is present at the surrounding of the speaker – listener (p.121). I hypothesise that this feature accompanying the demonstratives will have an effect on the co-indexing possibilities between the demonstratives and the antecedent. More specifically, I expect that we will find an effect on data where stress plays a significant role in the grammaticality of a structure. Below, data set (10) is applied to Williams’ four configurations of the GPAD to examine whether the generalisation holds for demonstratives:

Context: I am holding an ice-cream and an apple each hand.

- (10) a. [...pro ...]_{subord} [...antec...]_{matrix}
 An su are*si* *afto*₄, mporis na fas *to* *pagoto*₄.
 If you_{GEN} like_{PRES-3SG} this_{ACC} can_{2SG} SUBJ eat the ice-cream_{NOM}
 ‘If you like that one, you can eat the ice-cream.’

b. [... antec ...]_{subord} [... pro ...]_{matrix}
 An su aresi **to pagoto₄** mporis na fas **afto₄**
 if you_{GEN} like_{PRES-3SG} the ice-cream_{ACC} can_{2SG} SUBJ eat this_{NOM}
 ‘If you like ice cream, you can eat that one.’

c. [... antec ...]_{matrix} [... pro ...]_{subord}
 Mporis na fas **to pagoto₄** an su aresi **afto₄**
 can_{2SG} SUBJ eat the ice-cream_{NOM} if you_{GEN} like_{PRES-3SG} this_{ACC}
 ‘You can eat the ice-cream, if you like that one.’

d. *[... pro ...]_{matrix} [... ANTEC ...]_{subord}
 Mporis na fas **afto₄** an su aresi **TO PAGOTO₄**
 can_{2SG} SUBJ eat this_{NOM} if you_{GEN} like_{PRES-3SG} the ice-cream_{ACC}
 ‘You can eat that one, if you like ice cream.’

e. *[... pro ...]_{matrix} [... antec ...]_{subord}
 *Mporis na fas **afto₄** an sou **ARESI** **to payoto**.
 can_{2SG} SUBJ eat this_{NOM} if you_{GEN} like_{PRES-3SG} the ice-cream_{ACC}
 ‘You can eat that one, if you like ice cream.’

The data set in (10) illustrates that anaphoric relations for demonstratives are determined in the same way as for clitics. In particular, (10b) and (10c) exhibit forward dependence, and (10a) – (10d) backward dependence, exactly in the same way as the equivalent (8a-d) configurations of the GPAD. In (10d) if the antecedent *is* focalised, the structure surfaces as ungrammatical, as predicted by the GPAD. However, in (10e) it is the verb which is accented, but yet the stress shift does not surface a grammatical co-indexing contrary to what the stress shift rule (Williams, 1997; Selkirk’s, 1984) predicts. Though the stress is shifted from the antecedent *to pagoto* to the verb *ARESI* presupposes that the antecedent is now old information and can therefore be prominalised backwards, coreference in (10e) is still ungrammatical.

The focus feature carried by the demonstrative is also associated with a point in “conceptual space”, i.e. a point outside the discourse not uttered but rather “demonstrated” (Grohmann & Panagiotidis, 2004:121). This fact implies that the demonstrative has a referent prior to the appearance of the pronoun and the antecedent in the structure; most probably a visual rather than an uttered discourse referent. When using the pronoun *afto* and the item in question (i.e. ‘ice-cream’) is present, the production of the demonstrative is inevitably accompanied by a hand movement towards the object (e.g. deixis, or shaking of the ice-cream in hand). Therefore, stressing another lexical item (e.g. verb) in the sentence becomes impossible because it is as if I am contradicting what I have just enacted. Hence, attracting main sentence stress away from the demonstrative and placing it on the verb becomes impossible. While the reading in (10e) should be grammatical and (10f) shouldn’t, the reverse is true:

- (10) f. * $[\dots \text{pro} \dots]_{\text{matrix}}$ $[\dots \text{antec} \dots]_{\text{subord}}$
 Mporis na fas **AFTO**, an sou aresi **to payoto**.
 can_{2SG} SUBJ eat this_{NOM} if you GEN like_{PRES-3SG} the ice-cream_{ACC}
 ‘You can eat that one, if you like ice cream.’

I suggest that the phenomenon observed in (10e) – (10f) is primarily and foremost due to the demonstrative’s strong focal feature in combination with the deictic feature accompanying the demonstrative. This feature does not allow main sentence stress to fall on any other word in a sentence.

4.3 Anaphoric Dependence and *pro*

In *pro*-drop languages like Greek and Italian, it is possible for coreference to occur between a pronoun and a covert subject (*pro*)⁵. Here, I briefly examine the implications of the GPAD with data in which an overt pronoun is not available.

Below I demonstrated that a co-indexing relation based on linear order is established between a full NP and a *pro*. Forward and backward dependence is a phenomenon observed with not only full DPs and pronouns, not only with two pronouns but also *pro* and a full DP. This consists of an addition to the GPAD, because though Williams (1997) discusses elliptical sentences (specifically VP and N ellipsis) no reference to a covert subject is made. So far I have shown that dependence is possible with an antecedent and a demonstrative or a clitic. I now show that the four combinations of an antecedent and a *pro* surface in accordance with the GPAD and the stress shift rule.

- (12) a. $[\dots \text{pro} \dots]_{\text{subord}}$ $[\dots \text{antec} \dots]_{\text{matrix}}$
 [An exi *pro*₆ teliosi] [mpori na erθi o An⁶reas₆]
 if has subj_{3SGNOM} finish_{PAST} can_{PRES} SUBJ come the Andrew_{NOM}
 ‘If has finished, Andrew can come.’
- b. $[\dots \text{antec} \dots]_{\text{subord}}$ $[\dots \text{pro} \dots]_{\text{matrix}}$
 [An exi teliosi o An⁶reas₆] [mpori na *pro*₆ erθi]
 if has finish_{PAST} the Andrew_{NOM} can_{PRES} SUBJ subj_{3SGNOM} come
 ‘If Andrew has finished, can come.’
- c. $[\dots \text{antec} \dots]_{\text{matrix}}$ $[\dots \text{pro} \dots]_{\text{subord}}$
 [Mpori na erθi o An⁶reas₆] [an exi *pro*₆ teliosi]
 can_{PRES} SUBJ come the Andrew_{NOM} if has subj_{3SGNOM} finish_{PAST}
 ‘Andrew can come if has finished.’

⁵The positioning of *pro* in all of the following examples have been decided based upon (Spyropoulos, 1999) argumentation on the positioning of *pro*, the verb *exo*, ‘have’ and the subjunctive marker *na*.

- d. * [... pro ..]_{matrix} [... ANTEC ...]_{subord}
 [Mpori na *pro**₆ erθi] [an exi teliosi o AN⁶REAS₆]
 can_{PRES} SUBJ subj_{3SGNOM} come if has finish_{PAST} the Andrew_{NOM}
 ‘Can come, if Andrew has finished.’
- e. * [... pro ..]_{matrix} [... antec ...]_{subord}
 [Mpori na *pro*₆ erθi] [an exi TELIOSI o An⁶reas₆]
 can_{PRES} to subj_{3SGNOM} come if has finish_{PAST} the Andrew_{NOM}
 ‘Can come, if Andrew has finished.’

Data set (12) consists of an addition to Williams’ original model since it illustrates that forward, as well as backward dependence occurs with a covert subject, i.e. a *pro*. An antecedent in a matrix clause can be pronominalized backward to refer to *pro* in a subordinate clause. The stress shift rule has the same effects on the data in (12) as it does for clitics. If main sentence stress is shifted from the antecedent the possibility of it functioning as new information is eliminated and a co-indexing relation between antecedent and *pro* is now available. Having tested the data set in (12) with an Italian speaker, I suggest that the property of backward and forward dependence exhibited by *pro* is not restricted to Greek, but **could** very well be a general property of *pro*-drop languages. However, a larger set of data in other *pro*-drop languages should be examined to determine whether that is in fact the case. Considering that the GPAD is observed with not only *antecedent - pronoun* constructions but also *antecedent – pro* sentences, I propose that a revision of the GPAD is required to include these cases in order for the model to be more inclusive.

4.4 The GPAD in a V-argument – adjunct constructions

Thus far what has been presented is data that conform to the original idea of the GPAD as presented in Williams (1997). This model however, functions only with bi-clausal structures in which one clause serves as the matrix clause, and the second as the subordinate or embedded clause. Next, I demonstrate that the GPAD applies to V- argument – adjunct structures⁶ in addition to bi-clausal sentences and should be broadened to include these constructions.

- (13) a. i Liza₈ vrike [sto portofoli *tis*_{8/6}] adjunct
 the Lisa_{NOM} find_{PAST} in-the wallet_{ACC} her_{GEN}
- [mia fotoyrafia *tis* *Christinas*₆] argument
 one picture_{ACC} the Christina_{GEN}
 ‘Lisa found a picture Christina in her wallet.’

⁶ A Binding Theoretic analysis was also attempted for these examples, but coreference through this theoretical analysis was not successful.

- b. i Liza₈ [vrike [pp sto portofoli tis *Christinas*₆] adjunct
 the Lisa_{NOM} find_{PAST} in-the wallet_{ACC} the Christina_{GEN}
- [DP mia fotoγrafia *tis*_{8/6}] argument
 one_{ACC} picture_{ACC} her_{GEN}
 ‘Lisa found a picture of her in Christina’s wallet.’
- c. [i Liza₈ vrike [mia fotoγrafia *tis* *Christinas*₆] argument
 the Lisa_{NOM} find one_{ACC} picture_{ACC} the Christina_{GEN}
- [sto portofoli *tis*_{8/6}] adjunct
 in-the wallet_{acc} her_{Gen}
 ‘Lisa found a picture of Christina in her wallet.’
- d. [i Liza₈ vrike [mia fotoγrafia *tis*_{8/*6}] argument
 the Lisa_{nom} find_{Past} one_{acc} picture_{acc} her_{Gen}
- [sto portofoli tis *CHRISTINAS*₆] adjunct]
 in-the wallet_{acc} the Christina_{Gen}
 ‘Lisa found a picture of her in Christina’s wallet.’
- e. [i Liza₈ vrike [mia fotoγrafia *tis*_{8/4/6}] argument
 the Lisa_{nom} find_{Past} one_{acc} picture_{acc} her_{Gen}
- [STO PORTOFOLI tis *Christinas*₆.] adjunct]
 in-the wallet_{acc} the Christina_{Gen}
 ‘Lisa found a picture of her in Christina’s wallet.’

Data set (13) clearly illustrates that the GPAD does apply to V- argument - adjunct structures in addition to sentences with matrix and embedded clauses. Specifically, both *Lisa* and *Christinas* can be co-indexed and thence serve as referents to the pronoun *tis* for the two forward dependence cases (13b) and (13c). All three configurations involving backward pronominalization surface as the GPAD and the stress shift rule predict. In the case of (13d), the co-indexing of the antecedent *CHRISTINAS* and clitic *tis* is barred, as predicted by the GPAD. When de-accenting the antecedent and shifting stress to the PP *STO PORTOFOLI* immediately preceding the antecedent, a grammatical coreference between the pronoun and its antecedent becomes available, as shown in (13e).

Therefore, it is concluded that the general idea of anaphoric dependence appears to also apply to Greek pronouns in argument-adjunct sentences. In light of the new data and “extended application” of the GPAD I propose that Williams’ generalization needs to be extended to include not only *pro* seen in Section 4.3, but also the V-argument – adjunct sentences provided above.

Comparing the data sets with matrix –subordinate clause sentences to the one in (13) with argument-adjunct sentences I sustain that the GPAD applies in a parallel way in these two environments. Hence, the two environments are

comparable. In the following table I summarise the two environments at which the pattern has been observed. Concerning the present paper, the term ‘pro’ stands for clitics, demonstratives as well as *pro*. In addition, the antecedent can be a proper name, a full DP or even a pronoun:

(14) *The General Pattern of Anaphoric Dependence with Greek Pronouns*

Williams (1997)		C	Present Paper		C
[pro] _{subord}	[antec] _{matrix}	✓	[pro] _{adjunct}	[antec] _{argument}	✓
[antec] _{subord}	[pro] _{matrix}	✓	[antec] _{adjunct}	[pro] _{argument}	✓
[antec] _{matrix}	[pro] _{subord}	✓	[antec] _{argument}	[pro] _{adjunct}	✓
[pro] _{matrix}	[ANTEC] _{subord}	×	[pro] _{argument}	[ANTEC] _{adjunct}	×
[pro] _{matrix}	[antec] _{subord} ⁷	✓	[pro] _{argument}	[antec] _{adjunct}	✓
C: Co-indexing allowed					

Thus, coreference for the five configurations with argument-adjuncts surface analogously to matrix-subordinate sentences set up by Williams (1997), presented in *section 3.2*. However, since the GPAD needs to consider major additions to be able to account for all the new data seen in this paper I consider that a revision of the original GPAD is necessary.

In sum, in *Section 4* I provided an analysis on the phenomenon of anaphoric dependence with Greek data. The numerous sets of data examined in this section illustrate that the phenomenon of forward dependence and backward pronominalization is identified with Greek pronouns. Thus, even though Binding Theory fails to effectively and fully explain coreference relations with the Greek data presented in this paper, the GPAD is more inclusive. In addition, motivated by the data sets on *pro* and argument-adjunct sentences I argue that the GPAD must be extended to account for these new environments exhibiting forward and backward dependence. In *Section 5* I present a discussion on the implications of the GPAD, along with its revised version.

5. Implications

Motivated by the four sets of data above, I ended *Section 4* by concluding that a modification of the original GPAD is essential. The GPAD as presented in Williams (1997) is too specific to account for the entire extend of the Greek data it is found. Unquestionably, precedence and linear order still remain the foundation of the pattern. Essentially, the most important innovation that should be incorporated in the five configurations of the GPAD is one that can embrace the V-arguments and adjuncts constructions, apart from bi-clausal sentences. Further adjustments concern the re-definition of the terms ‘pro’ and ‘antec’: ‘pro’ can now refer to a pronoun, whether clitic or demonstrative, or a *pro* and ‘antec’ refers to a proper name or a full DP, or even a pronoun.

⁷ Williams (1997) does not list this last configuration in his GPAD but the presentation of his argumentation as well as the data reference allow as to consider this configuration as one inspired by his paper.

The table in (14) illustrates that a verbal argument functions parallel to a matrix clause and an adjunct similarly to a subordinate clause. Specifically, with forward dependence, on condition that the ‘antec’ precedes the ‘pro’ co-indexing is possible regardless of phrase or clause it is located in. Backward pronominalization becomes possible and co-indexing is therefore available when ‘pro’ in an adjunct or a subordinate clause precedes ‘antec’ in a V-argument or matrix clause. On the contrary, when ‘pro’ is contained in a V-argument or a matrix clause that appears before ‘antec’ in an adjunct or a subordinate clause, co-indexing is only accessible if the antecedent is NOT stressed. Based on these facts, below I suggest a *Revised* version of the *General Pattern of Anaphoric Dependence (R-GPAD)*, which captures these two parallel environments:

- (15) (a) [...antec ...] subord -XP [... pro...] primary -XP
 (b) [...antec ...] primary -XP [...pro ...] subord -XP
 (c) [...pro ...] subord-XP [...antec ...] primary -XP
 (d) *[... pro ..] primary -XP [...ANTEC...] subord -XP
 (e) [... pro ..] primary -XP [...antec...] subord -XP

In the set of configurations presented above two essential modifications transform the original GPAD into a more complete model to capture all anaphoric relations with Greek pronouns seen in this paper. The adaptations made in the terminology of certain elements of the model enable us to incorporate the new environments the GPAD is found. In the *R-GPAD* instead of using terms like clause, argument or adjunct, I make use of a more generalised term, namely ‘**XP**’ to include all the aforementioned terms. Moreover, ‘**primary**’ includes both a matrix clause and a V-argument, and the term ‘**subordinate**’ covers both an embedded clause and an adjunct.

Though no changes to the role of stress and its anaphoric nature remain the same, an additional configuration (15e), one not originally presented in Williams’ GPAD is added to exemplify and highlight the importance of stress in cases where backward dependence applies. (15 d-e) capture the stress shift rule’s excluding and “freeing” of an anaphoric relation between pronoun and antecedent. In line with Selkirk (1984) and Williams (1997), stress shift from the antecedent to another lexical item next to it, as in (13e) (or in the case of demonstratives to the demonstrative) implies that the antecedent is now old information and that a discourse referent identical to the antecedent has already been introduced. In (16) I present the final version for the revised definition for backward pronominalization:

(16) Backward Pronominalization (revised definition): if a pronoun or a *pro* is in a secondary XP (i.e. a subordinate clause or an adjunct), and the antecedent follows in a primary XP (i.e. a matrix clause or a verb complement), the two can be co-indexed. However, if a pronoun or *pro* preceding the antecedent is positioned in a primary XP and receives main sentence stress, then co-indexing is excluded, unless the antecedent is de-accented and the lexical element next to it (or when applicable the demonstrative) receives main sentence stress.

6. Conclusion

Thus far coreference possibilities were standardly assumed to be regulated by Binding Theory (Chomsky, 1981). After a failed attempt to work through a Binding Theoretical analysis, I presented an alternative analysis based on linear order and precedence under which co-indexing relations with Greek pronouns is best accounted for. Though binding can be applied in many other cases with Greek pronouns, as it does for English and other languages, nonetheless, it is not enough to explain the entire extent of all pronouns and their anaphoric relations.

The alternative approach chosen in exploring the anaphoric relations of Greek pronouns follows Williams (1997). In *Section 4* I demonstrated that the English data Williams (1997) defines in terms forward and backward dependence are comparable to (1a) – (1b). After a full analysis of numerous data sets it was confirmed that the *General Pattern of Anaphoric Dependence* and Williams' analysis on accented and de-accented antecedents is more inclusive in determining the anaphoric relations with Greek pronouns. In sum, Greek pronouns exhibit both forward and backward dependence and in case of the latter are sensitive to placement of main sentence stress.

Through this paper I was also ascertain that Williams' GPAD was not broad enough to include the whole extent of co-indexing possibilities with Greek pronouns. I illustrated that co-indexing in Greek is not limited to pronouns and antecedents in matrix and subordinate clauses. In addition to those, a pronoun and an antecedent in a verb argument and adjunct can also exhibit forward and backward dependence. Moreover, anaphoric dependence between an antecedent and a *pro* can also surface as grammatical. Finally, an additional configuration was required to better incorporate the stress shift rule. A modified version of the GPAD as well as a revised definition of the backward pronominalization definition were given in *Section 5*. Thus, the **R-GPAD** is broadened to cover a greater extend of anaphoric relations between clitics, demonstratives, *pro* and their antecedents.

In conclusion, first this paper establishes that even though Binding Theory cannot account for all antecedence relations between pronouns (or *pro*) and NPs in Greek, an alternative based on linear order and precedence is available. Second, it was determined that anaphoric relations in Greek required a more extended version of Williams' (1997) GPAD because certain environments where forward and backward dependence were observed were not included in the original model. Third, a revised model which covers a greater extent of data is offered. Forth, as Greek pronouns have never been viewed outside Binding Theory, this research has made a contribution to the literature on Greek pronouns, but also added to the literature on backward pronominalization and dependence relations in general.

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