THE LICENSING OF PARASITIC GAPS

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1. INTRODUCTION

The parasitic gap phenomenon may be illustrated by the well-known example in (1). Besides the gap created by wh-extraction, indicated by t, there is a second gap, indicated by e, which is parasitic on the first one:

(1) Which articles did you file t_i without reading e_i ?

One of the syntactic characteristics attributed to parasitic gaps in the literature is that they require the presence of an S-S variable (i.e. the trace of movement to an A'-position). This licensing variable (t_i in (1) above) must not c-command the parasitic gap. In this paper I argue that an operator/variable pair is not the only essential environment allowing the licensing of parasitic gaps in Spanish at S-S contrary to what happens in English, where only variables license these constructions. Evidence from *tough* and clitic constructions in Spanish and other Romance languages as well as whin-situ with echo readings in Spanish support this claim.

2. AN ANALYSIS OF PARASITIC GAPS AND *TOUGH* CONSTRUCTIONS

Chomsky (1986) proposed an analysis of parasitic gap constructions according to which a null operator within the adjunct clause moves to the [Spec, CP] of that clause, and then enters into a composed chain with the overt licensing operator. A similar null operator analysis is proposed by Chomsky (1981, 1986) for *tough* constructions. These analyses are illustrated in (2) and (3) for English:

- (2) This book is difficult (to convince students) to read [This book]_i is difficult [$_{CP}$ Op_i ([PRO to convince students [$_{CP}$ t'_{i}) [PRO to read t_{i}]]]]
- (3) Which articles did you put on reserve without convincing the students to read? [Which articles]_i did you put $[e]_i$ on reserve [without $[CP]_i$ [PRO convincing the students $[CP]_i$ [PRO to read $[t]_i$]]]]]
- (2) and (3) illustrate successive movement of the null operator from a more deeply embedded clause to the highest [Spec, CP]. Now it has been frequently observed that Romance *tough* constructions are clause-bounded, a feature which carries over to parasitic gap constructions, as shown in (4):¹
 - (4) a. *Ese libro es dificil de convencer a los estudiantes de leer b. *¿Qué artículos pusiste en reserva sin convencer a los estu-diantes de leer?

If parasitic gap constructions and *tough* constructions in Romance languages are analyzed as movement of a null operator, as in English, one would not expect these long-distance dependencies to be ungrammatical in those languages.

In the light of these locality constraints, it is proposed in García Mayo (1993) that there is an important difference in the nature of the null operator in English and its counterpart in Romance. In Romance, the null operator is base-generated in [Spec, CP]. At D-S this operator lacks an index, given that

it is generated in an A' rather than an A-position. Assuming that the null operator, like other empty categories, must be licensed and identified, the following condition on null operator indexing (along the lines of Stowell 1985) was posited:

- (5) Condition on Null Operator Indexing (CNOI)
 - A null operator α receives an index if
 - (i) α is head-governed by β , β a lexical head, and
 - (ii) α is identified by a coindexes category XP, where XP is subjacent to α

Thus, the null operator is licensed by means of head-government and identified by a coindexed category. As for the empty category in object position bound by the null operator, it is proposed, following Cinque (1990) that it is *pro*. This *pro* must be identified in its own clause, hence the clause-boundedness effect. This analysis is illustrated in (6):²

(6) a. [Este libro]_i es
$$[AP$$
 difficil de $[PRO$ leer Pro_1]]]

b. [Qué artículos]_i archivaste
$$t_1$$
 [PP sin [PP Opi PRO leer pro_i]]

The essential insight behind this analysis is that languages which otherwise license *pro* in object position, as do the Romance languages, will also have *pro* in parasitic gap constructions and hence display clause-boundedness. English, which does not have recourse to *pro*, can only utilize a strategy based on movement of a null operator base-generated in a A-position, and so has cases of long-distance dependencies as in (2) and (3).³

3. A'-BOUND PRO LICENSING PARASITIC GAPS

As we have just seen, evidence from parasitic gap and *tough* constructions in Spanish in contrast with their English counterparts, has led us to posit the structure in (6) above, with a base-generated operator binding a pronominal variable. Now, what we observe in the data in (7) is that an A'-bound *pro* is able to license parasitic gaps:

(7) a. Esta teoría
$$_{\rm i}$$
 es dificil de $[_{\rm CP}\ Op_{\rm i}\ [_{\rm IP}\ PRO\ [_{\rm VP}\ [_{\rm VP}\ explicar\ pro_{\rm i}]]$ $[_{\rm PP}\ sin\ [_{\rm CP}\ Op_{\rm i}\ [_{\rm IP}\ PRO\ entender\ pro_{\rm i}]]]]]]$

b. Esta carne i es difícil de [
$$_{\mathrm{CP}}$$
 Op_{i} [$_{\mathrm{IP}}$ PRO [$_{\mathrm{VP}}$ [$_{\mathrm{VP}}$ tragar pro_{i}] [$_{\mathrm{PP}}$ sin [$_{\mathrm{CP}}$ Op_{i} [$_{\mathrm{IP}}$ PRO masticar pro_{i} cuidadosamente]]]]]]

What I would like to claim is that a similar structure, with *pro* bound from an A'-position, exists in other constructions in Spanish, specifically, in clitic constructions which also license parasitic gaps.

A characteristic of certain clitic constructions with third person clitic pronouns in Spanish is that, unlike their French counterparts, they license parasitic gaps. The data in (8)-(10) show a contrast between the two languages regarding the licensing of parasitic gaps by clitics:

- (8) a. Voilà le livre_i que vous avez rangé t_i sans avoir lu e_i

 Here is the book that you put away without having read b.*Vous l_i'avez rangé ______i sans avoir lu e_i

 You put it away without having read

 (Tellier 1991:135)
 (9) Lo_i puse ______i sin estirar ______i bien
 (10) *Lo_i puse ______i sin bañar ______i antes
- In (8) we observe that parasitic gaps in French are licensed in the operator/variable environment but are not licensed in a clitic structure. (9) shows that parasitic gaps in Spanish are licensed in clitic structures when the clitic refers to a [-animate] argument and the parasitic gap appears in an infinitival adjunct clause. However, clitics that are [+animate] cannot license parasite gaps, as (10) shows.⁴ A situation parallel to (9) is found with dative clitics; the data in (11) show that [+animate] dative clitics do not license parasitic gaps:

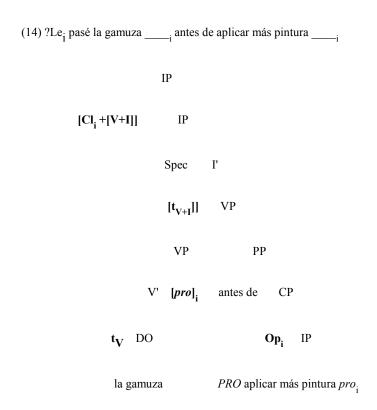
When the c	dative clitic	refers to a	a [-animate]	entity, th	ne sentences	are accept-
able:						

(12)	a.	?Le _i pasé la	gamuzai	antes de aplicar más pintura	——і
	b.	?Siempre le _i	cambio la rueda	ai antes de poner más	aceite
		——i			

Let us go back to our sentences (9) and (12), with a parasitic gap licensed by an accusative clitic in the former and a dative clitic in the latter. The structure we posit for them is given in (13) and (14) (these structures are slightly different but they have the same coindexing relationships):

(13)
$$\text{Lo}_i$$
 puse $\underline{\hspace{1cm}}_i$ sin estirar $\underline{\hspace{1cm}}_i$ bien IP
$$[\text{CI}_i + [\text{V} + \text{I}]] \qquad \text{IP}$$
 $\text{Spec} \qquad \text{I'}$
$$[\text{t}_{\text{V} + \text{I}}]] \qquad \text{VP}$$
 $\text{VP} \qquad \text{PP}$
$$\text{t}_{\text{V}} \quad [\text{pro}]_i \qquad \qquad \text{P} \qquad \text{CP}_{\text{sin}}$$
 $\text{Op}_i \qquad \text{IP}$

PRO estirar pro_i bien



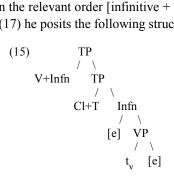
In (13) and (14) I assume the possibility of head adjunction to IP⁵ along the lines of Kayne (1991); Kayne argues for this kind of adjunction to account for differences in the order [clitic + infinitive] in Italian vs French (I will re-

turn to this point shortly). If head adjunction to IP is possible in infinitival clauses in Italian (and Spanish), head adjunction could be an option in finite clauses in those languages as well.

Now, neither the structure in (13) nor the one in (14) has a licensing variable; yet, the parasitic gap is allowed in that environment. In those structures the clitics in the complex head [Cl+V+I] identify *pro* in object position and provide it with an index (*i* above). This identification is similar to what one finds in instances of V-to-I movement where the verb in the [V+I] segment identifies its trace (cf. Baker 1988). The *pro* in object position is thus identified from the A'-position in which the complex head [Cl+V+I] functions like an operator. My claim is that *pro* bound from an A'-position is what licenses the presence of a parasitic gap construction.

What about the parasitic gap null operator? Following the CNOI (cf. (5) above), the null operator will be head-governed by the preposition *sin* in (13) and by *antes de* in (14) and will be identified by the clitic in the IP-adjoined position. Once the null operator is identified, it will in turn identify the empty category in object position (*pro*) in the adjunct clause. A chain of identification will be established between the clitic in IP-adjoined position, the null operator and *pro* in object position of the adjunct clause. Therefore, a parasitic gap is licensed in Spanish in an environment with a *pro* bound form an A'-position.

As I mentioned before, Kayne (1991) posited head-adjunction to IP to account for differences in the order [clitic + infinitive] in Italian vs. French. To obtain the relevant order [infinitive + clitic] that we see in Italian (16) and Spanish (17) he posits the following structure:⁶



- (16) Parlargli sarebbe un errore
- (17) Hablarle sería un error

In (15) the infinitive adjoins to Infn and [V+Infn] adjoins to TP. The clitic can now adjoin to the free node T, a node that the infinitive can skip because it does not need to merge with Tense or Agreement. French infinitives, on the other hand, will involve raising of V to Infn but the verb will not move any further; the clitic will adjoin to [V+Infn] resulting in the surface order [clitic+infinitive]:

(18) a. **Lui** parler serait une erreur b.*Parler**lui** serait une erreur

Now, if the possibility of V+I adjunction to IP is what allows the licensing of parasitic gaps, languages like Catalan and Italian, with the order [infinitive+clitic] (and with evidence, then, for adjunction of a head to IP vs. French), should share with Spanish the same judgments regarding clitic licensing of parasitic gap constructions. This prediction is borne out as the data in (19)-(23) illustrate. (19) and (20) show that both Catalan and Italian allow the licensing of parasitic gaps in clitic structures. (21) illustrates that these languages also exhibit the restriction that we saw for Spanish, i.e. parasitic gaps are not licensed in clitic structures when the clitic refers to a [+animate] entity (obviously, (21) is grammatical in Spanish, Catalan and Italian with the corresponding accusative clitic after the infinitive bañar).

(19) a. La _i enviéi sin firmari como indicaban las instrucciones
b. El _i vaig enviari sense signari como indicavan les
instrucciones
c. L _i 'ho speditoi senza firmarei come indicato nelle in-
struzioni
(20) a. Lo _i cocinéi sin meteri en el horno
b. El _i vaig cuinari sense posari al forn
c. L_i 'ho cucinato senza mettere al forno
(21) a.*Lo _i vestíi sin bañari
b.*El _i vestiri sense banyari
c.*L.'ho vestito; senza lavar;

Let us consider now the relevant data with dative and locative (ci in Italian) clitics:

(22) a. ?Le _i pasé la gamuzai antes de aplicar más pinturai
b. ?Li, vaig passar la baietai abanse de posar mès pinturai
c. ?Ci; ho passato le straccio; prima di mettere piu vernice
(23) a.*Le _i hablé por teléfonoi antes de mandar la cartai
b.*Li, vaig parlar per telèfoni abans de enviar la cartai
c.*Gli $_i$ ho dato la notizie $_i$ prima de parlar di persona $_i$

(22) shows that a parasitic gap reading is allowed both in Catalan and Italian when the dative/locative clitic refers to a [-animate] entity; on the contrary, when the dative clitic refers to [+animate] entities, as in (23), the parasitic gap is not acceptable.

There exists, therefore, an interesting correlation between the infinitive+clitic order and the licensing of parasitic gaps in Spanish, Catalan and Italian and the order clitic+infinitive and the non-licensing of parasitic gaps in French. The [+/-animacy] distinction is yet to be accounted for.

We have seen then how an A'-bound *pro* allows the existence of parasitic gap constructions in [-animate] accusative and dative clitic constructions in Spanish, Catalan and Italian. The claim that an operator/variable pair is not the only essential environment allowing parasitic gaps is thus supported.⁷

4. WH-IN-SITU

In English, unlike in Spanish, a wh-in-situ with an echo reading cannot license parasitic gaps:

(24) a. ¿Mandaste QUÉ CARTA sin certificar debidamente? *You sent WHICH LETTER without certifying properly? b.*Kim filed WHICH ARTICLES without reading?

Wh-words in situ with an echo reading in English seem to be grammatical in exam-type questions but apparently not even this type licenses parasitic gaps:

(25) a. Winston Churchill appointed WHICH MINISTERS to his cabinet?

b.*Winston Churchill appointed WHICH MINISTERS to his cabinet without interviewing?

Dumitrescu (1990) claims that all wh-echo phrases are instances of D(iscourse)-linked wh-phrases (cf.Pesetsky 1987). Their only well-chosen answer is forced by context and they, therefore, do not need to move at LF. Independent evidence for her claim seems to come from the following data in Spanish:

Whereas weak crossover effects appear in (26a), no such effects show in (26b); if wh-echo questions do not need to move at LF, no weak crossover effects are expected. Also, the data in (26) should be contrasted with (27):

(27) shows that Quantifier Raising (movement at LF) does cause weak crossover effects.

Let us now provide the structure corresponding to the wh-echo question in (28b), given in (29), along the lines of Dumistrescu (1990):

In (29) the wh-echo word is directly generated in the D-Structure of the recapitulatory echo question, like all other constituents. The structure posited for these echo questions is a two level CP structure; 8 this structure consists of a higher CP which takes as a complement another CP marked as interrogative by a null operator base-generated in the topmost specifier position. This base-generated interrogative discourse operator is lexically null but it is realized phonetically as the rising intonation characteristic of recapitulatory echo questions of the wh-type. The role of the operator is twofold: through a coindexing mechanism, it assures that the structure at LF is interpreted as a recapitulatory echo question and that in PF this structure acquires the corresponding contour. As for the Co of the higher CP, Dumitrescu assumes that it contains a non-overt complementizer with quotative function which can be filled with material optionally (cf. Spanish qué in "(Que) si soy qué?") or remain null as in English. Dumitrescu's claim is that wh-echo words, due to their D-linked nature, are not quantifiers and, therefore, do not need LF movement to be interpreted. Their interpretation comes, as we see in (29), by coindexing of the wh-echo word in situ with the discourse operator in the higher CP and the quoted CP itself.

So far we have seen that wh-in-situ words with echo readings do not behave in the same way as normal wh-in-situ; wh-in-situ with echo readings can be interpreted without any movement at LF because they are linked to a higher discourse operator at S-Structure. The basic question that one needs to answer is what makes Spanish wh-in-situ with echo readings different from their English counterparts regarding the ability of the former to license parasitic gap constructions.

The data in Spanish in (30)-(33) show different combinations of moved and in-situ wh-phrases and parasitic gap constructions; these data will shed some light on the contrast between English and Spanish as to the licensing of parasitic gap constructions by wh-in-situ with echo readings in the latter language:

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(30) ¿A quién; viste t; sin Op; saludar e;?
(31) a. *¿A quién; lo; viste ec;?
b. ¿Lo; viste A QUIÉN;?
c. ¿Lo; viste A QUIÉN; sin saludar _____;?
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- (32) *¿Viste a quién; sin Op_i saludar ___;?

 *¿You saw who(m) without greeting?
- (33) ¿Viste A QUIÉN; sin Op_i saludar ____; *¿You saw WHO(M) without greeting?

(30) is a standard parasitic gap construction in which the parasitic gap e is licensed by a variable at S-S. (31a) might be ruled out by some principle along the lines of the Parallelism Constraint on Operator Binding: an operator is binding a pronominal element (lo) and a variable (cf. Suñer 1988). (32) shows that wh-words in-situ do not license parasitic gaps in Spanish: a $qui\acute{e}n$ is a true wh-in-situ and, as such, moves at LF. LF movement does not license parasitic gaps in Spanish, as (34), a sentence with Quantifier Raising (movement at LF), shows:

(34) *Archivé [cada artículo] sin leer

One crucial difference, however, between (32) and (33) is that *a quién* at S-S in (32) is not coindexed in any way with an A'-position whereas in (33) it is coindexed with a discourse operator.

Obviously, the same can be said of the English counterpart of (33). What makes the difference then? The difference lies in the nature of the licensing mechanism. In English only S-S variables (i.e. traces of wh-movement to an A'-position) license parasitic gaps. In Spanish, however, we have already seen evidence to the contrary. Thus, besides the 'standard' parasitic gap construction licensed, as in English, by an S-S variable (cf. (30)), we have seen parasitic gaps in Spanish licensed by an A'-bound *pro*, both in *tough* and in clitic constructions.

The structure we posit for a wh-in-situ with an echo reading licensing a parasitic gap in Spanish is given in (35) (irrelevant structure omitted):

Spec IP

pro VP

mandaste $\mathbf{QU\acute{E}}$ $\mathbf{CARTA_k}$ \mathbf{Sin} \mathbf{CP} $\mathbf{Op_k}$ \mathbf{IP} \mathbf{PRO} \mathbf{VP} $\mathbf{Certificar}$ $\mathbf{pro_k}$...

In this case we find a parasitic gap construction licensed by an A'-bound whphrase in-situ with an echo reading. The parasitic gap null operator is headgoverned by the preposition *sin* and identified by the higher discourse operator. Once the null operator is identified, it will in turn identify the *pro* in object position in the adjunct clause. There exists a parallelism between the two level CP structure in (35) and the double IP structure posited for clitic constructions: a wh-in-situ with an echo reading in the former and a *pro* in the latter are bound *from an A'-position* and license parasitic gap constructions.

Parasitic gap constructions licensed by a wh-in-situ with an echo reading are, therefore, another instance of our claim that an operator/variable pair is not the only essential environment allowing the licensing of parasitic gaps in Spanish; an A'-bound *pro* in *tough* and clitic constructions as well as echo wh-in-situ words A'-bound at S-S can license these constructions as well. In English, however, an A'-bound echo wh-in-situ does not have the possibility of licensing parasitic gaps because no movement is involved and, as is well-known, an S-S variable is the only gap allowed to license those constructions in this language.

5. CONCLUSION

In this paper we have presented evidence from *tough* constructions in order to show that an analysis relying on the idea of movement of a null operator to the [Spec,CP] position in this kind of structure, as proposed by Chomsky (1981) for English, must be rejected for Romance. The clause-boundedness characteristic of Romance *tough* constructions, a feature which carries over to parasitic gap constructions, leads us to propose that both *tough* and parasitic gap constructions are characterized by a base-generated null operator in [Spec,CP]. This base-generated operator is coindexed at S-Structure with a *pro* in object position. The standard movement of a null operator to [Spec,CP] is maintained for English, with a structure of [*Op* variable].

We have also presented evidence arguing against the claim that parasitic gaps are exclusively licensed by an S-S variable (i.e. the trace of movement to an A' position). An A'-bound *pro* licenses parasitic gaps in Spanish *tough* and clitic constructions. An echo wh-in-situ, bound by a discourse operator, allows the licensing of parasitic gaps in Spanish in contrast to their English counterparts.a

NOTES

1. Data from other Romance languages:

Italian

a.*Il livro é facile da convincere la gente da leggere

b.*Quale articolo hai catalogato dopo haber convinto la gente a leggere?

Romanian

a.*Cartea este usor sa convingi oamenii de citit

b.*Ce articole ai clasificat dupa ce ai convius oamenii sa citeasca?

Portuguese

a.*O livro é facil de convencer as pessoas de ler

b.*Que artigos voce arquivou depois de convencer as pessoas de ler?

French

a.*Ce livre est facile à persuader les gens de lire

b.*Quel article avez-vous classé sans convaincre les gens de lire?

2. It might appear that the clause-bounded effect can be 'subverted' by subsequent movement of the base-generated operator to a higher CP, resulting in a structure such as (i):

(i)[
$$_{\mathbf{pp}}$$
 P [$_{\mathbf{CP}}$ $Op_{_{\mathbf{i}}}$ [$_{\mathbf{IP}}$ [$_{\mathbf{CP}}$ $t_{_{\mathbf{i}}}$ [$_{\mathbf{IP}}$ $pro_{_{\mathbf{i}}}$ ]]]]]

García Mayo (1993) rules out such structure by a proposed parallelism condition on operator binding, along the lines of Safir's (1984) Parallelism Constraint on Operator Binding. This condition rules out an operator binding two elements which do not agree for the feature $[\alpha \text{ pronominal}]$.

- 3. A strong prediction that our analysis makes is that if a language has access to *pro* in object position, that language has to use a base-generated null operator strategy in parasitic gap and *tough* constructions and these, therefore, will be clause-bounded. This prediction works for Romance languages and for Basque, which also has access to *pro*.
 - a. Zein artikulou gorde zenituen irakurri gabe? which article-pl file aux read without Which articles did you file without reading?
 - b.*Zein artikulou gorde zenituen ikasleen buruan irakurtzeko ideia sartu gabe? which article-pl file aux students-gen head-loc read of idea put without Which articles did you file without convincing students to read?
 - (ii) a. Liburu hau irakurtzeko erreza da book this read- of easy is This book is easy to read
 - b.*Liburu hau jendearen buruan irakurtzeko ideia sartzeko erreza da book this people-gen head-loc read of idea keep of easy is This book is easy to convince people to read
- 4. One has to be careful with the sequence *sin*+infinitive in Spanish because it can act as an adjectival modifier clause (cf. (ia)) or, one could even say, as an adjectival small clause (cf. (ib)):
 - (i) a. La carne sin aliñar no me gustab. Prefiero [el café sin calentar]

Three different readings can be provided for a sentence like "Lo archivé sin leer":

(ii) a. a parasitic gap reading
Lo archivé sin leer(lo)
b. an adjectival reading
Lo archivé sin leer (I filed it unread)
c. an intransitive reading
#Lo archivé sin leer (otra cosa)

The adjectival reading in (iib) cannot be adverbially modified, as (iii) shows:

(iii) *Lo archivé sin leer cuidadosamente *I filed it unread carefully

The intransitive reading in (iic) is grammatical but highly implausible. When we use the sequence *sin*+infinitive we are careful to use an adverb to avoid the adjectival reading.

- 5. This claim is against Barriers where it is posited that heads can only adjoin to heads.
- 6. TP in (15) is the maximal clause projection. Following Raposo (1987), Kayne takes the infinitival *-r(e)* suffix of Italian and French to correspond to a 'functional head having nominal properties somewhat like English *-ing*" and refers to it as *Infn* (Kayne 1991:651).
- 7. Campos (1991) argues for an analysis of clitics licensing parasitic gaps in Spanish in which the gap related to the clitic is a silent operator [+WH] *OP* which is coindexed with a silent topic as shown in (i) and moves at LF:

(i)
$$[_{\text{TOPIC}} X_{i} [_{\text{CP}} [_{\text{IP}} \text{ lo archivaron } Op_{i} \text{ sin leer } e]]]$$

One argument against this analysis is that when OP moves the gap left is a variable and one would then expect Condition C effects; however, those effects are not found, as (ii) indicates:

(ii) El vestido, está arrugado porque lo puse _____ sin estirar _____

This lack of Condition C effects supports our analysis of a pronominal variable instead of a pure variable as the empty category coindexed with the clitic.

- 8. A two-level CP structure has also been posited by Suñer (1991a) to account for Spanish indirect interrogatives of the type in (i):
 - (i) Me preguntaron [que] [a quién] invitarás tú al concierto

The two-level CP structure accounts for (i) by providing the appropriate position for both the complementizer *que* and the wh-phrase that cooccurs with it. See also Plann (1982) for a two-level S'

9. One will have to assume that the matrix CP is not a barrier for identification of the parasitic gap null operator (there is already a barrier (PP)) or that the operator receives an index from the quoted CP.

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