pro as a Minimal *n*P: Towards a Unified Approach to pro-drop

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Abstract

The paper examines the properties of the partial Null Subject Languages (NSL] when compared to the consistent and the discourse pro-drop languages and argues that the same basic mechanism underlies pro-drop in partial as well as discourse pro-drop, namely null NP anaphora, as originally proposed in Tomioka 2003 for discourse pro-drop. In the two sets of languages there is a correlation between the occurrence of null arguments and the availability of a bare nominal in argument position. It is suggested that the null element is a default, minimally specified nominal, in fact the same item that arguably appears as a complement of D in pronouns (Postal 1966, Panagiotidis 2002, Elbourne 2005). It is a proform that minimally consists in the categorizing head *n*, lacking a root, the meaning of which is 'entitiy' (a property that is trivially true of any individual in the domain). *n*P introduces a variable that may be bound under Existential Closure, yielding the impersonal

interpretation, or else its denotation is type-shifted to an individual (*Iota*) under the appropriate conditions. The crosslinguistic differences found in the interpretation of the null subject depend on the resources available in the language for application of *Iota* type-shifting: the (bare NP) languages that lack the resources required for this operation to apply only have quasi-argument and impersonal null subjects (semi pro-drop languages). The paper concludes with a reexamination of the consistent NSLs in light of the present results. It is shown that the idea that *pro* reduces to $[_{n\mathrm{P}}\, e]$ can also be sucessfully extended to the consistent NSLs as well, provided it is assumed that, in this type of NSL, the head bearing agreement morphology bears a D feature and interpretable ϕ-features.

1 Introduction

Even though it has become clear over the years that a variety of factors may condition pro-drop both within a language and crosslinguistically, it is possible to isolate at least four typological patterns of Null Subject Languages (NSL):

1. Languages with rich subject agreement morphology (henceforth *consistent* NSLs, after Holmberg (2005)), such as Italian, Greek, among others; subjects are freely dropped under the appropriate discourse conditions.

2. Languages with agreement and referential null subjects whose distribution is restricted (*partial* NSLs), such as Hebrew, Finnish, Russian, Brazilian Portuguese.

3. Languages that lack agreement, such as Chinese, Japanese and Korean. These have been described as allowing any argument to be dropped, not just subjects. They will be labeled *discourse* pro-drop languages.

4. Languages that only have impersonal and quasi-argumental null subjects (Icelandic, Faroese, a range of creoles), generally referred to as *semi* pro-drop.

In recent years, there has been a return to Perlmutter's l971 insight that the implicit subject in the NSLs is a fully specified pronoun that is deleted in PF or fails to have a PF realization (Holmberg 2005, Neeleman and Szendrői 2007, Roberts 2010, Saab 2009, 2016). This view has been motivated in part by the observation that the classic GB theory of *pro*, according to which *pro* is a minimally specified nominal whose features are supplied by Infl, is incompatible with the approach to feature theory developed in the Minimalist Program (Chomsky 1995, 2001 and subsequent work). In this framework, the ϕ-features in T are assumed to be uninterpretable, hence unvalued. This raises a problem for the idea that subject *pro* is inherently unspecified for ϕ-features. The PF deletion analysis circumvents this problem.

Concomitantly, recent theories of the nature of pronouns (Elbourne 2005) have posited a phonologically null NP as a complement of D in every pronoun (an NP affected by deletion, in the case of E-type pronouns, or a default, nearly semantically empty nominal $[_{\mathrm{NP}}\, e]$, in the case of regular pronouns). This proposal, which goes as far back as Postal 1966, reintroduces the need to posit a null, minimally specified NP in the grammar, thus reopening the issue of

whether *pro* can be reduced to an instance of $[_{\text{NP}}\, e]$. This paper offers an analysis of different types of subject pro-drop that attempts to reduce *pro* to the very same $[_{\text{NP}}\, e]$ that occurs as complement of D in pronouns or is independently attested in cases of null NP anaphora (in the spirit of Tomioka 2000, 2003).

The paper is organized as follows. In Section 2 I compare Type 1 and Type 2 languages and conclude that the former are best captured under the assumption that the head bearing agreement is interpretable (or pronominal), as proposed in Barbosa 1995, Pollock 1997, Alexiadou and Anagnostopoulou 1998, Ordónez and Treviño 1999. Section 3 introduces Tomioka's (2000, 2003) generalization that relates discourse pro-drop with the availability of bare nominals in argument position. The author proposes that, in the discourse pro-drop languages, *pro* reduces to null NP-anaphora. Section 4 extends S. Tomioka's analysis to the partial NSLs and proposes an analysis of non-anaphoric (impersonal) and anaphoric null subjects in the partial NSLs and in the discourse pro-drop languages that relies on the idea that the null NP is a default, minimally specified nominal, in fact the same item that appears as a complement of D in pronouns, as suggested in Postal 1966, Panagiotidis 2002 and Elbourne 2005. It is proposed that this item minimally consists in the categorizing head n, lacking a root (for a similar proposal, see Ruda 2017). Section 5 examines the anaphoric null subject and shows that, since this minimal n is ϕ-feature deficient, it behaves like a subject anaphor, and this is why it is sensitive to locality constraints. The remainder of Section 5 is dedicated to the examination of crosslinguistic variation regarding the locality effects observed. Section 6

presents a summary of the main results and Section 7 revisits the consistent NSLs in light of these results. It is shown that the idea that *pro* reduces to $[_{n\mathrm{P}}\, e]$ can also be sucessfully extended to the consistent NSLs.

2 Consistent NSLs *versus* partial NSLs

2.1 Key properties that distinguish the partial NSLs from the consistent NSLs

Some languages, such as Finnish, BP, Marathi and Hebrew, have systematic null subjects, but their pattern of distribution differs from that of the consistent NSLs of the Italian type in two ways: (i) the null subject is optional in some contexts in which it is nearly mandatory in a consistent NSL; (ii) the null subject is excluded in many contexts in which it is possible in a consistent NSL. These two facts can be illustrated by comparing the European and Brazilian varieties of Portuguese. Consider the following examples:

(1) a. O João disse que ele comprou um computador.
the João said that he bought.3SG a computer
'John said that he bought a computer.'

b. O João disse que comprou um computador
the João said that bought.3SG a computer
'John said that he bought a computer.'

In the European variety of Portuguese (EP), the null subject option (1b) is used when the embedded subject takes the matrix subject as an antecedent. Unless it is emphatic, an embedded overt pronoun in examples such as (1a) in EP

is preferably interpreted as noncoreferential with the matrix subject (the Avoid Pronoun Principle of Chomsky 1981). In Brazilian Portuguese (BP), by contrast, the overt pronoun in (1a) may be coreferent with the matrix subject; in fact, both options (1a,b) are available whenever the embedded subject and the matrix subject corefer. The same observation holds for Finnish, Marathi (Holmberg, Nayudu, and Sheehan 2009), Russian (Lindseth 1998) and Hebrew (Borer 1989).

Now consider an example in which there is an intervening potential antecedent standing between the null subject and its antecedent:

(2) [O João]$_i$ disse que os moleques acham [que [—]$_i$ é esperto]]
the João said that the boys believe that is smart
'João says that the children believe that he is smart.'

(2) is fine in EP. In colloquial BP, however, it is reported to be ungrammatical (Modesto 2000, Rodrigues 2004) and an overt pronoun must be used[1]. Similar facts hold in Finnish, Marathi and Hebrew (Holmberg 2005).

The partial NSLs discussed by Holmberg 2005 show an asymmetry between the 3rd person and the other persons. Finnish and Hebrew (in the past and future tenses) do not allow a 3rd person null subject in a matrix clause even though they allow 1st or 2nd person. Similar asymmetries have been reported to occur in Russian by Müller (2005).

In all of the partial NSLs mentioned, 3rd person null subjects can also be found when the subject is interpreted as an impersonal pronoun, corresponding to English 'one', as in the BP example (3) below:

(3) É assim que faz o doce
is-3SG so that make.3.SG the cake

'This is how one makes the cake' PB (Rodrigues 2004:72)

In (3) the null subject in the embedded clause denotes people in general, including the speaker and the addressee. This reading of a 3rd person null subject is unavailable in a consistent NSL. As already noted by Perlmutter (1971), a consistent NSL cannot use a plain null subject to convey the meaning of a generic (inclusive) subject and must resort to some overt strategy. This contrast can be clearly seen when BP and EP are compared. (3) is a well formed sentence in EP, but it has a different meaning, glossed as 'This is the way he/she makes the cake'. The generic subject reading requires the presence of the clitic *se*:

(4) É assim que **se** faz o doce
is-3SG so that SE make.3.SG the cake
'This is how one makes the cake' EP

Finnish patterns with BP (Holmberg 2005). In Hebrew and Russian, the generic null subject is marked as plural:

(5) Zdies rabotaiut mnogo.
here work-3PL a lot
'Here one works a lot.' Russian

(6) Sotim hamon mic ba arec
drink.m.pl lots juice in-the country
'People drink lots of juice in Israel' Hebrew (Ritter 1995)

In (5) and (6) the impersonal null subject may have an inclusive reading in contrast to what happens in a consistent NSL, in which an impersonal 3rd person plural null subject can only be interpreted as excluding the speaker and the adressee[2].

(7) Aqui trabalham muito.
here work-3PL a.lot
'Here people work a lot.' EP

'people' = people in general excluding the speaker and the addresse

2.2 Holmberg 2005, 2010a

In order to capture the differences between the consistent NSLs and the partial NSLs, Holmberg (2005, 2010a) proposes that one of the parameters involved in regulating the pronunciation of subject pronouns is whether finite T hosts an unvalued D-feature (labelled [uD]). In the consistent NSLs T hosts [uD], in the partial NSLs it does not. In addition, he proposes a typology of null pronouns: pronouns that are DPs and 'weak' or 'deficient' pronouns, labelled ϕP after Déchaîne and Wiltschko 2002. These are specified for ϕ-features but lack D; therefore, they are incapable of coreferring to an individual or a group. (Most) null pronouns are ϕP.

Relying on the observation that null subjects, particularly 3rd person null subjects, are dependent on an antecedent in consistent NSLs too (Samek-Ludovici 1996), Holmberg (2010a) assumes that the antecedent of a null subject in a consistent NSL is an Aboutness-shift topic (henceforth A-topic) base-generated in the C-domain of the clause immediately containing the null subject. Drawing on Frascarelli 2007 on Italian, A. Holmberg takes it that an A-topic is always syntactically represented in the C-domain, either overtly or covertly. Thus, the referential index of the null subject ultimately comes from the index of a spelled out DP in the preceding discourse. In a consistent NSL,

this index-sharing relation between the A-topic and the null subject is mediated by T. Since T contains [uD], the A-topic values T's [uD], where valuation consists in copying the referential index of the A-topic onto [uD]. In this way, the EPP in T is automatically checked by the null A-topic. Therefore, the defective null subject ϕP remains in its first merge position and doesn't raise to Spec-TP. When the subject is a lexical DP or a D pronoun, it has a valued D-feature, which values [uD] in T under raising to Spec-TP (the standard EPP).

In this model, the reason why consistent NSLs cannot have a null 'one' is that this pronoun is a bare ϕP. Thus, it cannot value [uD], which remains unvalued, causing a crash in the derivation. This issue does not arise in a partial NSL given that in this type of language T doesn't contain [uD]. As it has no D which could have a referential index, a 3rd person ϕP on its own cannot be definite. In a language without [uD] in T, such a D-less pronoun can only be interpreted as impersonal (either as generic or athematic). In a language with [uD] in T, the null 3rd person ϕP is interpreted as definite if it is merged under a T whose [uD] is valued by an A-topic, and if it incorporates with T in the following manner.

Holmberg (2010a) adopts the theory of incorporation of Roberts (2010), who takes incorporation to be a direct effect of Agree, in the sense of Chomsky 2001. Finite T has a set of unvalued ϕ-features, and therefore looks for a category with a set of matching valued features. The subject pronoun has the required set of valued ϕ-features, so these values are copied onto T. As a result of Agree, T's features are a superset of ϕP's features as T also has a D feature valued by the A-topic and a tense feature. Roberts (2010) proposes that the probe and the

goal in this situation form a chain. As such, the representation is subject to chain reduction to the effect that only the highest copy is pronounced. Since T is the highest member of the subject chain, it is pronounced (as an affix on V). ϕP itself is not pronounced, yielding a null subject. As the chain contains the feature [D] (T's D-feature), which is valued by the A-topic, the result is a definite null subject construction, with the referential index of the null A-topic.

In Finnish, BP and other partial NSLs, a ϕP subject cannot be incorporated in T and be definite, due to lack of [uD] under T. Holmberg (2010a) argues that, in this set of languages, a null pronoun may in addition have unvalued D (labelled [uDP]). The presence of this feature will prevent incorporation, so the pronoun, if it is a subject, will raise to Spec-TP to check the EPP. In this position it can be interpreted if it is controlled by an argument in a higher clause. According to Holmberg (2010a), the fact that the relation between the null subject and the antecedent is one of control explains the locality effects imposed on the antecedent of 3rd person definite null pronouns in the partial NSLs. The nullness of such pronouns follows from "an extended version of chain reduction (Holmberg 2010a:104)".

In a nutshell, there are two kinds of null subjects: one is an inherently deficient pronoun that needs to enter an Agree relation with T containing D to be interpreted as definite. The other is an [uDP], which is necessarily controlled. Holmberg (2010a) concludes that, as far as core syntax is concerned, null subjects in languages with overt agreement are like regular pronouns; their nullness is a PF matter: they are either deleted pronouns or feature matrices

that fail to have a PF realization.

A. Holmberg's work on the partial NSLs languages constitutes a major step in the understanding of the key properties of this type of language, particularly when compared with the consistent NSLs. The analysis proposed, however, is quite complex and, in our view, it is not entirely satisfactory. One persistent problem with this analysis is that it is not very clear how examples such as (7) above or (8) below, with an impersonal null subject, are to be analysed:

(8) Estão a bater à porta.
are at knock.INF at-the door
'There is someone knoking.' EP

The EP example (8) is ambiguous. It may mean that some contextually given set of people is knocking or it may mean that there is someone knocking. The latter is the non-anaphoric, arbitrary interpretation, which invariably excludes the speaker and the addressee (Cinque 1988, Jaeggli 1986). In this case, there is no A-topic. Therefore, is not very clear how [uD] in T is valued; i.e., it is not clear how the EPP is checked in these examples. One possible answer to this question that would be consistent with Holmberg's framework of assumptions would be to say that the EPP is checked by an implicit locative or by a null expletive. In effect, this possibility is suggested by Holmberg (2010a:100) for thetic sentences with a postverbal subject in Italian and Portuguese. However, once this possibility is allowed in for sentences with a null subject such as (7) or (8), we no longer have an account for why the null subject in (7) cannot be interpreted as inclusive 'one' (as in effect happens in its Russian counterpart

(5)). In Holmberg's (2010a) system, failure of valuation of [uD] in T was the main reason why a consistent NSL cannot have a null 'one'. Thus, we seem to be pushed into a corner: either we accept that the EPP is not checked by an implicit locative or null expletive, in which case (7-8) should be ungrammatical for failure of EPP checking; or we loose the original account for the unvailability of an inclusive 3rd person null 'one' in the consistent NSLs as opposed to the partial NSLs. Therefore, the existence of impersonal null subject constructions that must be interpreted as excluding the speaker remains a problem under Holmberg's (2010b) proposal.

2.3 An alternative analysis

Holmberg (2005) considers and then rejects an alternative analysis that has been proposed by a number of authors for the consistent NSLs (Barbosa 1995, Pollock 1997, Alexiadou and Anagnostopoulou 1998, Ordónez and Treviño 1999, Manzini and Savoia 2002, Platzack 2004). Even though the particular implementations of this proposal vary, all of them have one key feature in common: the functional head bearing subject agreement has a nominal specification (a D-feature), interpretable/valued ϕ-features, probably also Case, to the effect that it has the status of a pronominal affix on V raised to T. A corollary of this hypothesis is that pre-verbal (non-quantified/non-focalized) subjects are Clitic Left Dislocated topics (i.e., topics doubled by clitic-Agr). Barbosa (1995), Alexiadou and Anagnostopoulou (1998), Ordónez and Treviño (1999), among others, discuss a number of differences between the consistent NSLs and the non-NSLs regarding

pre-verbal subjects that follow naturally under this hypothesis and are otherwise rather mysterious. These concern scope interactions between overt pre-verbal subjects and quantifiers inside the clause, asymmetries between referential and non-referential quantified subjects regarding a number of syntactic phenomena, and restrictions on the interpretation of pronouns.

In this context, Barbosa, Duarte, and Kato (2005) argue that the differences between EP and BP regarding overt subject pronouns can be explained under the assumption that they are Clitic Left Dislocated topics in EP whereas in BP they are genuine subjects that raise (or may raise) to Spec-TP. Viewed in this light, the Avoid Pronoun Principle (cf. (1)) simply reduces to preference for not merging an overt pronoun as a left-dislocated topic unless it is required to signal topic switch or for emphasis/empathy. Barbosa, Duarte, and Kato (2005) examine BP against the same set of phenomena where asymmetries in the behavior of overt subjects can be detected between the consistent NSLs and the non-NSLs and observe that BP patterns with the non-NSLs rather than with EP, thus concluding that subjects in BP may raise to Spec-TP. Consequently, there is no effect of topic switch, i.e., no *Avoid Pronoun* effects.

One additional consequence of this hypothesis as applied to the consistent NSLs is that the occurrence of 3rd person subject agreement will always entail an interpretation that excludes the speaker and the addressee regardless of whether the empty subject is anaphoric or not. In Distributed Morphology (Halle and Marantz 1993), the person features 1, 2, 3, are decomposed into combinations of the more primitive features [±1], [±2], (Noyer 1992, Müller

2005) so that the feature composition of 3rd person is [-1, -2]. If this feature make-up is interpretable, then the prediction is that 3rd person agreement in a consistent NSL will always entail exclusion of the speaker and the addressee. This consequence is automatic under the interpretable Agr hypothesis and has no bearing on the question whether the subject is interpreted as definite or indefinite, which is a clear advantage over Holmberg's account.

In sum, I conclude that the interpretable/pronominal Agr hypothesis is adequate for the consistent NSLs; partial pro-drop, on the other hand, is a different kind of phenomenon, not directly linked to the properties of agreement inflection. In effect, the languages that lack agreement morphology and yet license null subjects, such as Chinese, Japanese and Korean, all have plain generic null subjects with an interpretation equivalent to English 'one' (Holmberg, Nayudu, and Sheehan 2009):

(9) Ah John waa hai Jinggwok jiu gong Jingman
Prt John say in England need speak English
'John says that one/he needs to speak English in England.' Cantonese

(10) John-wa kono beddo-de-wa yoku nemu-reru-to iu
John-TOP this bed-in-TOP well sleep-can-COMP say
'John says that one/he can sleep well in his bed' Japanese

Hence, the availability of a plain inclusive generic null subject is a feature that the partial NSLs and the discourse pro-drop languages have in common. Moreover, in some of the discourse pro-drop languages, namely Chinese, there are locality effects on the licensing of zero subjects that are reminiscent of those observed for the partial NSLs. Thus, in the Chinese example below, taken from

Audrey Li (2014), the indexing shows that the zero subject of the adjunct clause must be interpreted as coindexed with the subject of the immediately higher clause and cannot correfer with a topic in the discourse or to a subject beyond the next higher clause:

(11) ta$_1$ shuo wo$_2$ yinwei [$e_{2/*1,3}$ bu xihuan Zhangsan] you diar
he$_1$ say I to $e_{2/*1,3}$ not like Zhangsan have slight
bu-hao-yisi.
embarrassment
'He said I was somewhat embarrassed because e did not like Zhangsan.'

Audrey Li (2014:47)

I take these facts as indication that the two kinds of pro-drop phenomena are related. In the next section I will discuss the discourse pro-drop languages.

3 Discourse pro-drop languages: properties in common with the partial NSLs

East Asian languages lack agreement morphology; yet, argument drop is even more widespread than in languages like Italian since any argument (not just subjects) can be dropped. This is why this kind of pro-drop is also referred to as radical pro-drop (Neeleman and Szendrői 2007). In recent years, attempts have been made at relating radical pro-drop with yet another parameter of variation, namely the availability of a bare NP in argument position (Tomioka 2003, Bošković 2012). In fact, radical pro-drop is allowed in Japanese, Chinese, Korean, Kokota, Hindi, Wichita, Malayalam, Thai, Burmese, and Indonesian, all

of which are languages that lack articles. Here I will focus on S. Tomioka's particular proposal as it will help us prepare the ground for our own analysis.

3.1 Tomioka 2003

Tomioka (2003) observes that all of the languages that allow discourse pro-drop have (robust) bare NP arguments and proposes the following generalization:

(12) *Discourse pro-drop generalization*

The languages that allow discourse pro-drop — Japanese, Chinese, Korean — allow (robust) bare NP arguments.

He notes that zero pronouns in Japanese have all the semantic functions that English pronouns have as well as other uses. Thus, besides the referential, bound variable and E-type interpretations, Japanese zero pronouns can also be interpreted as indefinite and as anaphoric to a pronoun containing antecedent. Tomioka (2003) relates the semantic diversity of Japanese null arguments to the inherent semantic flexibility of full-fledged bare NPs in Japanese. As the following example shows, a bare nominal can have a wide range of interpretations in Japanese:

(13) Ken-wa ronbun-o yun-da
Ken-TOP paper-ACC read-PAST
'Ken read a paper / papers / the paper / the papers'

S. Tomioka proposes that the different uses of full-fledged NPs are derived from one basic meaning, property anaphora (type $< e, t >$) and their semantic differences are the result of two independently needed semantic operations,

namely Existential Closure (14) and Type-shifting to an individual (15).

(14) Existential Closure (Heim 1982): ∃-closure

For any $P \in D < e, t >$

$\exists$-closure$(P) = \exists x.P(x)$

(15) Type shifting of a predicate to an individual (Partee 1987): *Iota*

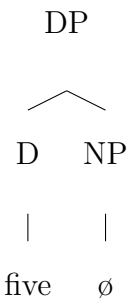
For any $x \in D, P \in D < e, t >$

$\iota(P) = \iota x.P(x) =$ the unique x such that $P(x)$

Then he goes on to propose that Japanese *pro* is a null NP whose descriptive content is pragmatically retrieved: the same semantic tools that are used to interprete full NPs are used to interprete *pro*. S. Tomioka suggests that what underlies discourse pro-drop is the fact that languages (almost) universally allow phonologically null NP anaphora (also known as N' or NP ellipsis).

(16) John bought one book. I bought five [$_{\text{NP}}$—]

(17)



In a language that lacks determiners, this operation will give rise to phonologically unrealized arguments. In languages in which DPs are necessarily projected, a remnant D will always show up so this process will never give rise to a silent argument. Tomioka (2003) doesn't take a stand as to whether the null NP is the result of ellipsis/deletion or rather a proform. I will return to this issue

in Section 4.

Tomioka's (2003) proposal captures the fact that the discourse pro-drop languages allow virtually any argument to be dropped and yields the right predictions for other bare NP argument languages such as Hindi and Thai. Moreover, Bošković (2012) argues for a generalization that is rather similar to (12) on the basis of data from Slavik.

Incidentally, independent support in favor of Tomioka's general approach comes from languages with articles such as Spanish, Portuguese and Greek. In the next section I briefly review these facts.

3.2 Object drop in Spanish and Portuguese (Raposo 1998)

Raposo (1998) observes that there is a correlation between the availability of a zero object and the occurrence of bare nouns as complements in EP as well as Spanish. These languages differ with respect to the possibility of having definite zero objects: an anaphorically dependent direct object may be expressed by a gap in EP ((18a), (19)); in Spanish, it may not ((18b), (20):

(18) a. Mostrei aquele quadro à Maria e a Cristina mais
show.PAST.1SG that picture to-the Maria and the Cristina more
tarde mostrou [—] à Alexandra.
late show.PAST.3 SG to-the Alexandra.
'I showed this painting to Maria and later Cristina showed it to Alexandra.' EP

b. *Le mostré [aquel quadro] a María, y Cristina más
to.her show.PAST.1SG that picture to Maria and Cristina more

tarde le mostró [—] a Alejandra.
late to.her show.PAST.3 SG to Alexandra. Spanish

(19) Este casaco é bem barato. Não queres comprar [—]?
this coat is very cheap not want-2SG to-buy
'This coat is very cheap. Don't you want to buy it?' EP

(20) A: ¿Comiste el pastel? B: No, no *(lo) comi.
A: eat.PAST.2SG the cake B: no, not (it) eat.PAST.1SG.
A: 'Did you eat the cake?' B: 'No, no *(lo) comi.' Spanish

In spite of this, Spanish has zero indefinite objects. Thus (20) contrasts with (21):

(21) A: ¿Compraste regalos? B: Si, compré.
A: buy.PAST.2SG presents B: yes buy.PAST.1SG
A: 'Did you buy presents?' B: 'Yes, I did '. Spanish (Campos 1986)

In Spanish a zero object is possible only in a context in which the object is bare; when an indefinite determiner introduces the direct object, the determiner may not be omitted:

(22) A: ¿Compraste alguns regalos? B: *Si, compré. / Sí,
A: buy.PAST.2SG any presents B: yes buy.PAST.1SG / yes,
compré algunos.
buy.PAST.1SG some
A: 'Did you buy presents?' B: * 'Yes, I bought '. / 'Yes, I bought some.'

Thus, there is a correlation here between the occurrence of a bare noun and argument drop.

Concerning EP, Raposo (1998) observes that bare nouns are allowed in a wider range of contexts than in the other Romance languages. In particular, they may occur as complements of individual level predicates, which select a

generic reading of the object (compare (23a,b) with their counterparts in Spanish (24a,b)):

(23) a. A Maria detesta cenouras.
the Maria hates carrots
'Mary hates carrots.'

b. Odeio café.
hate.1.SG coffee
'I hate coffee.' Portuguese

(24) a. María detesta *(las) zanahorias.
Maria hates *(the) carrots
'Maria hates carrots.'

b. Odio *(el) café.
hate.1.SG *(the) coffee
'I hate coffee.' Spanish

Raposo proposes that EP has a null definite determiner and analyses (23a) as in (25):

(25) A Maria detesta $[_{\mathrm{DP}}[_{\mathrm{D}\,def}\emptyset][_{\mathrm{NP}}$ cenouras]]

He then relates the existence of the zero definite determiner with the availability of definite object drop, so that the null object in (18a) above is the result of null NP anaphora under a null D:

(26) [mostrou $[_{\mathrm{DP}}[_{\mathrm{D}\,def}\emptyset][_{\mathrm{NP}}\emptyset]]$ à Alexandra] Raposo (1998:209)

In a similar vein, Giannakidou and Merchant (1997) analyze indefinite object drop in Greek as an instance of NP ellipsis under a null D.

Even though this discussion only scratches the surface of the phenomena at hand, it suffices to show that null NP ellipsis/anaphora can give rise to silent

arguments in the right contexts. I take these facts as evidence that Tomioka's (2003) hypothesis is on the right track. In his terms, there are, in theory, two ways of deriving a null argument under null NP ellipsis/anaphora:

(27) a. A zero bare NP: $[_{NP}\emptyset]$

b. A zero NP embedded under a null D: $[_{DP}[_{D}\emptyset]][_{NP}\emptyset]]]$

Crucially, Tomioka's hypothesis doesn't really commit ourselves to the idea that, in the absence of "rich" agreement, zero arguments are licensed just in case the language allows bare NP arguments. If D is null, null NP anaphora may yield a zero argument as well.

As seems obvious, the question that immediately arises in this context is why English (or Germanic in general) lacks zero arguments given that it allows bare nouns as arguments even more freely than Romance.

(28) Rich people are becoming richer.

Our answer to this question relies on the following contrasts, noted by Longobardi (1994):

(29) a. The rich are becoming richer.

b. *Rich are becoming richer.

(29a) contains a substantivized adjective. The contrast between (29a) and (29b) shows that such substantivized adjectives cannot occur bare even in the plural interpretation. I assume that these examples contain a null NP (Longobardi 1994, Borer and Roy 2006):

(30) a. [the rich $[_{NP}\emptyset]$] are becoming richer

b. *[rich [$_{NP}$ø]] are becoming richer

The fact that (29b) is ungrammatical is evidence that a null NP requires the presence of an overt D in English. Longobardi 1994 offers an explanation for this fact that relies on the idea that all arguments are categorially DP and that a null D is invariably projected in a bare plural. In addition, he proposes that articleless generics in English are made possible by raising of the lexical head noun to fill the D position in LF. In his view, the LF structure of (28) is as in (31):

(31) [people$_1$ [rich t_1]] are becoming richer

If no overt noun is present, as in the case of substantivized adjectives, this strategy, however, cannot be used. Since Adj to D raising is out on independent grounds (Longobardi 1994:644), the resulting configuration is out.

Even though I do not wish to commit myself here to the idea that all nominal arguments are DPs, I have given considerable attention to Longobardi's account of the ungrammaticality of (29b) so as to show the relevance of the contrast between (29a) and (29b) to the issue at hand. Whichever account one might choose, the fact remains that a null NP may not occur in English in the absence of an overt article. Therefore, it should come as no surprise that English should lack productive zero arguments even though it has bare plurals in argument position. In this context, it is worth mentioning that English does have missing objects in lexically restricted environments (i.e., with particular verbs, like *eat* or *bake*). Interestingly, Ruda (2017) proposes that the zero object in these cases is a null NP licensed by little *v*.

3.3 Partial pro-drop revisited

As mentioned above, the discourse pro-drop languages share with the partial NSLs the availability of a plain impersonal/generic (inclusive) null subject whose interpretation is roughly equivalent to English 'one'. Yet another property that brings together the two sets of languages is that they allow other arguments besides subjects to be dropped. Thus, BP, Russian and Hebrew are known for having fully productive object drop. The following examples show that an object with a definite antecedent may be dropped in all three languages:

(32) João comprou um computador e Maria quebrou [—].
João bought a computer and Maria broke [—]
'João bought a computer and Maria broke it.' BP

(33) [A woman enters home and shows a purchase to her family]

Vot, kupila [—] po-deševke.
here bought.1SG [—] PREP-cheap

'Here, I bought [it] cheaply.'

Russian (Erteschik-Shir, Ibnbari, and Taube 2013)

(34) P: 'Eyfo ha-kacefet? R: He'evarti [—] le-Mixa'el.
P: where the-whipped.cream R: pass.PST.1SG [—] to-Michael
'Where [is] the whipped cream ?' '(I) passed [it] to Michael.'

Hebrew (Goldberg 2002)

As extensively discussed by Cyrino (2001) for BP as well as Erteschik-Shir, Ibnbari, and Taube (2013) for Hebrew and Russian, the missing objects in these examples are instances of genuine null objects of the type described for the

discourse pro-drop languages. In particular, they are not instances of VP ellipsis or 'intransitivization' of transitive verbs.

Finnish exhibits a different behavior. It has productive impersonal null objects, as illustrated below:

(35) a. Tämä päätös ei ilahduta.
this decision not happy.makes
'This decision doesn't make [one] happy.'

b. Lääkärit kehottavat syömään vähemmän rasvaa.
doctors encourage ingest.INF less fat
'The doctors encourage [people] to ingest less fat.'

Finnish (Holmberg 2010b)

Definite, anaphoric null objects are harder to come by in Finnish written sources (Anders Holmberg, p.c.). The following conversation, however, is reported not to sound implausible in colloquial Finnish:

(36) Kui sä tommoset saappat ostit? No, ku mä sain (ne) niin halvalla
why you such boots bought well because I got (them) so cheap
'Why did you buy such boots? Well, because I got [them] so cheap.'

Finnish (Holmberg, pc)

Thus, even though Finnish clearly differs from the other languages under discussion, it has the null object construction to a certain extent.

In this context, the null NP ellipsis/anaphora hypothesis would predict that these languages should allow bare NPs in argument positions, and this prediction is confirmed: Finnish, Marathi and Russian lack articles, so they are robust bare

NP argument languages. BP has articles, but it has bare singular and plural nouns in subject or object position (Müller 2001, Schmitt and Munn 1999), in contrast to EP, which only allows bare plurals in post-verbal position.

(37) a. Eu ouvi cachorro / cachorros
I heard dog / dogs
'I heard a dog/ dogs.'

b. Cachorros gostam de gente / Cachorro gosta de gente
Dogs like-3pl of people / Dog like-3sg of people
'Dogs like people' BP (Schmitt and Munn 1999)

Hebrew has a definite article but lacks an indefinite article, and has singular as well as plural bare nouns in argument position (Doron 2003).

(38) a. Noveax kelev
barks dog
'A dog is barking.'

b. Novxim klavim
bark dogs
'Dogs are barking.'

c. namer maziq le svivat-o
tiger harms to environment-its
'The tiger is harmful to its environment.' Hebrew (Doron 2003)

We suggest that these facts are not mere coincidence and that they should be interpreted as indicating that the same basic mechanism underlies partial and discourse pro-drop, namely null NP ellipsis/anaphora. The first piece of evidence in favor of this idea is the affinity between the impersonal/generic reading and the reading obtained in examples with NP-ellipsis:

(39) The rich [$_{NP}$Ø] are becoming richer.

In (39), the null NP, which is non-anaphoric[3], is interpreted as generic and human. This is the interpretation obtained in the case of the non-anaphoric null subject in the partial NSLs and in the discourse pro-drop languages. We take this as an argument in favor of the ideia that these are instances of the same basic category,

Note that if indeed the impersonal null subject in these languages is a bare NP, it should be possible to find a null argument in object position with the same impersonal interpretation. This prediction is indeed confirmed. (37) above contains examples of impersonal null objects in Finnish and the following examples illustrate the same point in Russian and Brazilian Portuguese:

(40) Krasota mesta porazila [ø].
beauty.NOM.SG.F place-GEN struck.PAST.SG.F [ø]
'The beauty of the place was striking.'

NB: The verb is transitive (*porazit* 'to strike someone').

Russian (Fehrmann and Junghanns 2008:204)

(41) Esta decisão faz [ø] feliz.
this decision makes happy
'This decision makes one/him happy' BP (Chao 1987)

The second piece of evidence in favor of the hypothesis that the null argument arises as a result of NP-ellipsis/anaphora comes from a comparison between null subjects and full-fledged bare NP subjects in Finnish. Ihalainen (1980) as well as Chesterman (1991) show that, in utterances characterized by neutral intonation (i.e. with no focal stress), a bare NP subject occurring in preverbal position is interpreted as definite/specific; a post-verbal bare NP

subject, by contrast, has an indefinite interpretation, as illustrated below:

(42) a. Kirja on pöydällä.
Book is table-on
'The book is on the table.'

b. Pöydällä on kirja.
Table-on is book
'There is a book on the table.'

According to Chesterman (1991), a bare NP subject in preverbal position is usually interpreted as referring to an entity already mentioned in the discourse. A post-verbal subject, on the other hand, can be definite only if it is focused (Holmberg and Nikanne 2002).

With these observations in mind, let us now turn to null subject constructions. Interestingly, Vainikka and Levy (1999) discuss data from Finnish that indicate that the definite 3rd person null subject raises to a high position in the clause (Spec-TP, in Holmberg's terms) whereas the impersonal null subject must stay inside v/VP:

(43) a. Oppilas tietää ettei tehtävää pysty ratkaisemaan.
student knows that-not assignment can solve
'The student knows that the assignment can't be solved.'

NOT 'The student knows that he can't solve the assignment.'

b. Oppilas tietää ettei [[—] pysty ratkaisemaan tehtävää.]
student knows that-not [—] can solve assignment
'The student knows that he can't solve the assignment.'

NOT 'The student knows that the assignment can't be solved.'

In Finnish, the EPP can be satisfied by other categories besides subjects. In (43a), the object checks the EPP. In this case, the only reading available for the

null subject is the impersonal one. In (43b) the EPP is checked by the null subject. Here, the impersonal reading is not a possibility and the subject must be interpreted as a definite pronoun co-referent with the higher subject. Thus, these data constitute clear evidence that the impersonal (non-anaphoric) 3rd person null subject stays *in situ* whereas the definite/anaphoric null subject must raise to a high position. Hence, the definite interpretation is available just in case the subject raises to preverbal position, which is exatly what is found in the case of a non-focused full-fledged subject that is a bare nominal. Therefore, there is a rather striking parallelism between nonfocused full fledged nominal subjects and null subjects in Finnish. This is what is predicted under the hypothesis that the null subject is a bare NP.

4 The null subject as a minimal *n*P

4.1 Introduction

Thus far, we have argued in favor of the view that the null subject in the partial NSLs as well as in the discourse pro-drop languages is a null NP, but we haven't taken a stand as to whether the null NP is derived by NP ellipsis/deletion or is rather some kind of proform. The mere existence of a non-anaphoric null subject is an indication that not all instances of empty subjects can be reduced to NP ellipsis: under the assumption that NP ellipsis is deletion under identity, there is no way the impersonal null subject can be an ellided form, given that it lacks an antecedent. Moreover, in many of the cases under consideration there is no overt

counterpart to the impersonal null subject. On the other hand, Holmberg (2010b) provides arguments that the non-anaphoric 3rd person null subject in Finnish is syntactically projected. In particular, it triggers agreement and has case. Therefore, some mechanism other than ellipsis is needed to account for this kind of null argument.

In view of the similarities between the impersonal 3rd person null subject and English impersonal 'one', we suggest that the null proform is a minimally specified NP, i.e., an NP that lacks a syntactically projecting restricting property. The existence of a default, nearly semantically empty NP that is generally available has been independently posited by Panagiotidis (2002) as well as Elbourne (2005). Both authors propose to unify this default item with (in their view, nearly semantically empty) 'one' in English. Moreover, both of them suggest that this is precisely the category that occurs in pronouns, regarded as determiners that have an NP slot (Postal 1966). Elbourne (2005), in particular, distinguishes E-type pronouns from non E-type pronouns. The former are determiners that take a regular NP as complement, which is subject to NP-ellipsis. Non E-type pronouns, by contrast, are determiners that take a kind of default NP, which he labels ONE, the meaning of which is 'entitiy' or 'individual', and is translated as $[\lambda x :\in D_{<e>}.x \in D_e]$ (a property that is trivially true of any individual in the domain). Elbourne (2005) raises the question whether this null noun ONE would be available in other places too, not just as complement of (non E-type) pronouns, and concurs with Panagiotidis (2002) in that the most desirable position is that this default item is generally available,

with its occurrence restricted only by independently motivated factors.

Here, we wish to suggest that the null subject in the partial and in the discourse pro-drop languages is an instantiation of this item, with one slight modification. If nouns start the derivation as category neutral roots that combine with a categorizing n head (Marantz 2001), as currently assumed within the Minimalist Program, there is no need to posit an empty noun in the lexicon. It suffices to assume that this item minimally consists in the categorizing head n: it corresponds to an n that doesn't merge with a root. In effect, this is the move taken by Panagiotidis (2014), in his analysis of empty nouns within pronouns, and by Dvořák (2015), in her treatment of the generic null object in Czech. Ruda (2017) adopts a similar anaysis for missing objects in English, Polish and Hungarian. Along the lines of Lowenstamm (2008), these authors argue that grammatical Gender (uGender) is marked on n so that the structure of nP is as follows:

(44)
$$\begin{array}{c} n\text{P} \\ | \\ n \\ | \\ u\text{Gender} \end{array}$$

When such a rootless nP is merged under an overt D, an overt pronoun is obtained. Whenever nP is bare or when it is selected by a null Number or Classifier head, or even a null D (depending on the language and the context), we get a null argument[4]:

(45) a. $[_{\text{NumP}}[_{\text{Num}}\emptyset][_{n\text{P}}\emptyset]]$

b. $[_{\mathrm{DP}}[_{\mathrm{D}}\emptyset][_{n\mathrm{P}}\emptyset]]$

c. $[_{\mathrm{DP}}[_{\mathrm{D}}\emptyset][_{\mathrm{NumP}}[_{\mathrm{Num}}\emptyset][_{n\mathrm{P}}\emptyset]]]$

At the end of the previous section, we discussed evidence from Finnish (examples (43a, 43b)) that indicates that the impersonal interpretation obtains when the 3rd person singular null subject stays *in situ*, whereas the definite interpretation is available just in case the null subject raises to a high position. In this context, it is worth pointing out that the null subject in (43a) is interpreted as a weak indefinite (the sentence is paraphrased as follows: 'The student knows that it is not the case that there is anyone who can solve the assignment'). Under the hypothesis that the null subject is an nP, the correlation between the two different positions (the pre-verbal position or the v/VP internal position) and the available readings would follow from the different configurations that serve as input to semantics. When the null nP (interpreted as a property that is trivially true of any individual in the domain) stays inside v/VP, as in (43a), the variable it introduces is bound under Existential Closure (in generic sentences, Existential Closure falls under the scope of a Gen(eric) operator, yielding the "generic" interpretation). When the null nP raises to preverbal position, its meaning is type-shifted to an individual (*Iota*). This is, in essence, the approach we will take in the sections that follow.

4.2 The non-anaphoric null subject

As mentioned in Section 2, there is a split among the partial NSLs with respect to verbal number morphology in impersonal null subject constructions. BP and

Finnish show singular verbal agreement whereas Russian and Hebrew show plural agreement. We will start by analysing the case of BP and Finnish and then we move on to Russian and Hebrew.

Consider the following examples:

(46) a. Aqui conserta sapato
here repair-3SG shoe
'Shoes are repaired here.' BP (Kato 1999)

b. Oppilas tietää ettei tehtävää pysty ratkaisemaan.
student knows that-not assignment can solve
'The student knows that the assignment can't be solved.'
Finnish (Vainikka and Levy 1999)

Even though the null subject is syntactically singular in these examples, it is not semantically singular, given that it may be used to refer to a plural entity. This means that, when not morphologically marked as plural, the non-anaphoric null subject is number neutral. Semantic number neutrality is known to be a stable crosslinguistic property of a phenomenon known in the semantics literature as *semantic incorporation*, as extensively discussed by Van Geenhoven (1998), Dayal (2003) and Farkas and De Swart (2003). In general, semantically incorporated bare nouns are interpreted existentially and are scopally inert.

There are different approaches to semantic incorporation, but all of them share the basic insight that semantically incorporated nouns do not contribute an entity to the interpretation of the sentence. One common approach is to treat them as predicate modifiers. They denote properties that combine with the verbal predicate so that the relevant variable of the predicate is restricted by the

property in question. This operation — labelled *Unification* in Farkas and De Swart's (2003) model; or *Restrict* in Chung and Ladusaw's (2003) framework — doesn't instantiate/saturate the predicate, hence the variable intoduced by the verbal predicate ends up bound by predicate (event) level Existential Closure. This accounts for obligatory narrow scope of such bare nouns.

Even though subjects are less likely to incorporate than objects, Farkas and De Swart (2003) report on instances of subject incorporation in Hungarian. Thus, in view of the properties of the 3rd person singular non-anaphoric null subject — restriction to post-verbal position, number neutrality — it is plausible that it is an nP that is semantically incorporated. Following Panagiotidis (2014) I assume that nP has a Gender feature assigned by default. Also assigned by default are syntactic number (singular) and the semantic feature [+human]. Since nP lacks descriptive content, the effect of combining it with the verbal predicate by Predicate Modification is nearly semantically vacuous: what we get is a predicate that is restricted to apply to human beings.

Concerning generic sentences, I adopt Chierchia's (1995) treatment of impersonal *si* in Romance. Chierchia follows the Davidsonian view that every verb introduces an event/situation variable. In generic sentences, this variable typically gets bound by a Gen-operator and the context will supply ways of restricting the range of the quantifier. In this vein, the BP example (46a) will be assigned the representation in (47), where the situation variable gets bound by *Gen* and is further restricted by the locative adverbial.

(47) $\text{Gen}_s[aqui(s)]\ \exists x[conserta\ sapato(s,x) \wedge \text{human}(x)]$

Existential Closure under the scope of *Gen* of the individual variable introduced by the verbal predicate yields the quasi-universal reading. (46a) will thus be interpreted as follows: take any situation that happens here; in this situation, there is shoe-repairing going on. This is indeed what the sentence means. A similar analysis carries over to Finnish (46b). In this example, the null subject is interpreted as a weak indefinite, as expected under the analysis proposed.

Semantically incorporated bare nouns do not combine with individual-level predicates (Farkas and De Swart 2003). Therefore, the semantic incorporation hypothesis predicts that the non-anaphoric null subject should be incompatible with individual-level predicates. Interestingly, this prediction is borne out. Let us start by considering the case of Finnish. Example (48) below, a generic sentence containing an individual-level predicate, is out (Anders Holmberg, p.c.)[5]:

(48) *Brasilia-ssa rakastaa sambaa.
Brazil-in love.3SG Samba (Anders Holmberg (p.c.))

Turning to BP, there is a dialect split: older speakers consistently reject the examples below, which contain individual-level predicates.

(49) a. *No Brasil adora samba.
in-the Brazil love-3SG samba

b. *Aos cinquenta anos sabe em quem confiar.
at-the fifty years know-3SG on who trust.INF BP

Younger speakers accept (49a,b). The mere fact that there is a dialect split precisely along the lines predicted under the semantic incorporation hypothesis

indicates that this hypothesis is on the right track. I tentatively suggest that, in the grammar of younger people, possibly due to an ongoing process of change related to bare nouns, nP doesn't necessarily incorporate and may shift to kind interpretation (as will be proposed below for the case of the bare plural in Hebrew), so that it may pick the kind 'people' in (49a,b).

Moving on to the languages in which the non-anaphoric null subject is plural, Hebrew and Russian, the observation is that impersonal nul-subject constructions are fine with individual-level predicates. In the examples below, the impersonal null subject may have an inclusive interpretation:

(50) be-america, ohavim / meshuga'im al pica.
in-US, love.PRESENT.PL / mad.PL on pizza
'In the US, [people] love / are mad about pizza.' Hebrew

(51) V Portugalii obozhaiut tresku.
in Portugal love.3PL codfish
'In Portugal, [people] love codfish' Russian

Therefore, we conclude that the plural non-anaphoric null subject is not semantically incorporated in these examples.

In order to get a full understanding of the data, we turn to full-fledged bare nouns. In Hebrew, their interpretation depends on the position they occupy. When they occur post-verbally, they can only get an existential interpretation (52a) and take obligatory narrow scope (Doron 2003); in pre-verbal position, a generic interpretation is available (52b):

(52) a. lo novxim klavim
not bark dogs
'It is not the case that dogs are barking'

$\neg\exists x$ [dogs(x) $\wedge$ barking(x)]

b. sparim 'al zihum 'avir nimkeru be-šana še-abra
books about pollution air sold.past last year
'Books about air-pollution used to sell last year'

Hebrew (Doron 2003)

Doron (2003) argues in favor of a semantic incorporation analysis of the bare plural in (52a). As for examples such as (52b), she claims that the bare plural shifts to kind interpretation, along the lines of Chierchia 1998[6]. Here I propose to extend Doron's (2003) analysis to the non-anaphoric plural null subject. I assume that n projects up to NumP in this case. NumP may incorporate, in which case the relevant variable is bound under Existential Closure, as in the following example:

(53) yodiu bekarov mi zaxa ba taxarut
will.announce.3M.PL soon who won in-the contest
'It will soon be announced who won the context'

Hebrew (Ritter, 1995:435)

When NumP doesn't incorporate, as in example (50) above, it may shift to kind interpretation. In this example, *Gen* quantifies over instances of the kind 'people in the US'. The same approach straightforwardly applies to the Russian example (51).

In sum, the idea that the null subject is an nP — Elbourne's (2005) ONE, or Panagiotidis's (2003) "empty" N — seems adequate for the case of the non-anaphoric null subject in the partial NSLs. Even though they were not discussed here, similar remarks apply, *mutatis mutandis*, to the non-anaphoric

null subject in the discourse pro-drop languages (cf. (9-10)).

4.3 The anaphoric null subject

In the discussion that follows, I will start by addressing the languages that lack articles: Finnish, Russian and the discourse pro-drop languages. In a separate section, I discuss Hebrew and BP.

4.3.1 Languages that lack articles

Recall that, in Finnish, the definite null subject must raise to pre-verbal position. Holmberg (2005) assumes that the Finnish EPP position is Spec-TP. However, Holmberg and Nikanne (2002) show that this position is associated with topics given that it may be occupied by other arguments besides subjects. Our hypothesis is that topicality is what enables the null nP, a function of type $< e, t >$, to be shifted to an individual (a denotation of type $< e >$) and hence be interpreted as definite. Assuming that topics denote individuals that the sentence as a whole is 'about' (Vallduví 1990, Portner and Yabushita 1998), it is not surprising that there should be a relation between topicality and type-shifting to an individual.

Focusing on the languages that lack articles, there is indeed a correlation between topicality and definiteness in the case of full-fledged bare nominal subjects. As mentioned above, in Finnish, in utterances characterized by neutral intonation (i.e. with no focal stress), a bare NP subject occurring in pre-verbal position tends to be interpreted as definite/specific. Likewise, in Russian,

fronting to preverbal position is a means of expressing definiteness/specificity:

(54) a. Na stole stojala lampa.
on desk stood lamp
'There was a lamp on the desk.'

b. Lampa stojala na stole
lamp stood on desk
'The lamp was on the/a desk.'

c. Na stole lampa stojala.
on desk lamp stood
'The lamp was on the desk.' Russian (Chvany 1973:266)

Similarly, in Mandarin, bare nominals in preverbal subject position cannot be interpreted as indefinite. They either get a definite or a generic interpretation (examples from Cheng and Sybesma 2005):

(55) a. gou yao guo malu
dog want cross road
'The dog/the dogs want/s to cross the road'

NOT: 'A dog/dogs want/s to cross the road'

b. gou jintian tebie tinghua
dog today very obedient
'The dog/dogs was/were very obedient today' (NOT indefinite)

Thus, it seems quite plausibe that topicality is related to the availability of type-shifting of the denotation of the subject nP from a property to an individual, so I will pursue this hypothesis here.

4.3.2 Languages with articles: Hebrew and BP

As mentioned, Hebrew and BP have a definite article. Chierchia (1998) proposed that covert *Iota* type-shifting is blocked whenever the language has an overt way of achieving the same results. Since Hebrew and BP have a definite article, covert *Iota* type-shifting is blocked.

Cyrino and Espinal (2015) argue that bare nominals in BP can be interpreted as entity-type expressions, in which case they are DPs headed by a null D. Here I adopt their view. The definite null subject has thus the structure in (56)[7]:

(56) $[_{\mathrm{DP}}[_{\mathrm{D}}\emptyset][_{n\mathrm{P}}\emptyset]]$[8]

Since bare nouns in BP and Hebrew have many properties in common (Doron 2003), I extend this approach to Hebrew as well. In Hebrew a definite null subject can only be licensed in the past and future tenses, which are marked for person agreement. Present tense verbs are participles bearing number and gender agreement only. In this tense, non-argumental (57a) and impersonal/generic (57b) subjects may be silent; definite subjects, however, may not (58):

(57) a. nir'e Se itamar suv me'axer
seems that Itamar again is.late
'It seems that Itamar is late again.'

b. Tafsu kvar et kol ha mavrixim
caught.3MPL already ACC all the smugglers
'All the smugglers have been caught.' Hebrew (Ritter 1995:434-435)

(58) *(ani/ata) roce glida
I/you.M.SG want.M.SG ice.cream
'I/you want ice-cream.' Hebrew (Ritter 1995:433)

In this respect, Hebrew differs from Russian, where past tense verbs are also participles that are only marked for number and gender; yet, definite subject drop is possible in the past tense:

(59) Ona vybegala i ne lajala, poskol'ku [—] byla sderz(annoj sobakoj.

'She would run out but not bark since [she] was a well behaved dog.'

Russian (McShane, 2009:120)

This contrast between Russian and Hebrew shows that the person agreement requirement is a parameterized option. I contend that the answer to this puzzle is related to the fact that Hebrew, unlike Russian, explicitly marks definiteness. Nouns in Hebrew are inflected for definiteness by the prefix *(h)a*. Moreover, it has been claimed that definiteness is a formal, syntactic feature in Hebrew, given that the language has definiteness spreading (Danon, 2010):

(60) ha-sefer *(ha-)adom ne'elam.
the-book the-red disappeared
'The red book disappeared.' Hebrew (Danon, 2010)

In this example, the definiteness marker must appear not only on the noun, but also on the adjective.

Ritter (1995) claims that verbal agreement in past and future tenses in Hebrew belongs to the category D. In fact, she claims that 1st and 2nd person D-agreement is specified for person whereas 3rd person D-agreement is only specified for definiteness, not person. In light of these facts, I suggest that, in Hebrew, person agreement is a means of marking definiteness [def] on *n*. By hypothesis, a definite null subject must be marked for definiteness and this is

achieved by entering an Agree relation with T containing [def][9]. Since definiteness is a formal feature in Hebrew, it is not necessarily interpretable (when it appears on an adjective, it is clearly not interpretable). In our perspective, this is why person agreement is not incompatible with an indefinite subject, be it overt or null[10].

Interestingly, the restricted pattern of null subjects observed in Hebrew present tense is not unique. It is found in a range of creole languages, which have been classified as *semi-pro-drop*. In light of our present discussion, it is now possible to regard this highly restricted pattern of pro-drop as cases that lack the resources required for ι type-shifting to apply. I discuss this type of language in the next section.

4.3.3 Semi pro-drop languages

In Cape Verdean Creole (CVC) a pronominal subject may not be dropped:

(61) *(El) ta trabadja duro.
he asp works hard
'He works hard.' CVC (Baptista 1995)

Yet, CVC has quasi-argumental (62) and impersonal (63) null subjects:

(62) Sta faze frio
is making cold

(63) Na veron, ta korda sedu.
in-the summer Asp wake early
'In the Summer one wakes up early' CVC (Baptista 1995)

Similar facts obtain in Papiamentu (Muysken and Law 2001). Interestingly, both creoles allow bare nominals in argument position. Moreover, they do have

definite determiners alongside bare nouns. Our hypothesis is that these creole languages lack the resources required for *Iota* type-shifting to apply. Therefore, an overt definite determiner must be used for the individual interpretation. In this case, we get an overt pronominal subject, as desired.

Icelandic is yet another semi pro-drop language. Sigurdsson and Egerland (2009) observe that, in addition to dropping quasi-argumental subjects, Icelandic has impersonal null subjects that are syntactically active, as in the Impersonal Modal construction illustrated below:

(64) Nú má [—] fara að dansa.
now may [—] go to dance
'One may begin to dance now' Icelandic (Sigurdsson and Egerland 2009)

Even though the availability of an impersonal null subject in Icelandic is confined to specific constructions, its very existence indicates a pattern in common with CVC. Curiously, Icelandic has no indefinite article and displays bare singular nouns with indefinite interpretation. This suggests that an account along the lines developed for CVC might be suitably extended to Icelandic.

One issue raised by this approach is that it doesn't offer an immediate account of pure null expletives (it makes little sense to posit a non-theta bearing null nP)[11]. However, in recent years, the idea that pure expletive *pro* exists has been challenged (Wurmbrandt 2006, Biberauer 2010). In fact, the sole motivation for positing such an entity is theory internal: assuming that the EPP is universal, it follows that Spec-TP must be filled by a covert nominal in examples such as (57a) above. Wurmbrandt (2006) argues against the idea that

the standard EPP holds in Icelandic and German. For lack of space, I won't be able to review her arguments here. I will, however, assume that in the languages examined here — with the exception of Finnish — the EPP doesn't force the presence of a dummy nominal in Spec-TP and that only theta-bearing nominals (including quasi-arguments) can be realized as rootless nP.

4.3.4 Summary

In sum, I propose that a rootless n is at the heart of a definite null subject in the discourse pro-drop languages. This default n gets an individual interpretation either by undergoing covert *Iota* type-shifting (in articleless languages) or by combining with a null D (BP, Hebrew). The semi pro-drop languages (CVC, Icelandic) are languages that lack the resources required for *Iota* type-shifting to apply. In view of the fact that the shifted null nominal lacks inherent ϕ-features, it gets its ϕ-features from an antecedent. In the next section, I will argue that the definite null subject in all of these languages indeed has the typical behavior of a subject anaphor.

5 The anaphorically anchored null subject as a (local) subject anaphor

In this section, I argue that the definite null subject has the behavior of a (local) subject anaphor. In Section 5.1, I motivate my proposal on the basis of data from the partial NSLs. In Section 5.2 I extend my proposal to the discourse

pro-drop languages.

5.1 Locality effects in the partial NSLs

As mentioned in Section 2, the partial NSLs show an asymmetry between 1st/2nd person and 3rd person null subjects. Typically, the former have a freer distribution: they may occur in matrix as well as embedded contexts and they do not require a linguistic antecedent. A 3rd person null subject, by contrast, requires a linguistically specified antecedent.

Even though the partial NSLs differ from one another with respect to the environments in which a 3rd person null subject is licensed, all of them impose locality conditions on the choice of the antecedent. Here I illustrate this restriction with Finnish and BP, but similar examples can be constructed in Hebrew and Marathi (Holmberg, Nayudu, and Sheehan 2009). As we will see in Section 5.2, Chinese also displays somewhat similar locality effects, but, for ease of exposition, I will postpone discussion of the discourse pro-drop languages to the next section.

(65) a. O Feco$_1$ disse que a Dani$_2$ acha que $e_{*1/2}$ ganhou na loto.
the Feco said that the Dani thinks that $e_{*1/2}$ won the lottery
'Feco said that Dani thinks that she won the lottery.' BP

b. Jukka$_1$ sanoi että Liisa$_2$ ajattelee että $e_{*1/2}$ oli voittanut
Jukka said that Liisa thinks that $e_{*1/2}$ had won
arpajaisissa.
lottery
'Jukka said that Liisa thinks that she won the lottery.' Finnish

Modesto (2008)

Rodrigues (2004) and Nunes (2009) have attempted to subsume the relation between the antecedent and the null subject under obligatory control. However, Modesto (2007), Holmberg, Nayudu, and Sheehan (2009) and Shlonsky (2009) have provided arguments against this idea. First, it is possible to construct minimal pairs in which the covert subject of a finite clause is assigned a different interpretation from the covert subject of an infinitival clause (see the references cited). Secondly, it is possible to construct examples displaying lack of c-command between the antecedent and the null subject (Gutman 2004). To complicate matters, the partial NSLs under discussion do not show a uniform behavior with respect to the environments in which they license a null subject. While Finnish and Hebrew allow the null subject to occur inside a relative clause, BP apparently does not. In what follows, I argue that this intricate array of facts can be made sense of under the assumption that the definite null subject in these languages is a subject anaphor.

The first relevant observation is that the locality effects found in (65) are also observed with certain subject reflexive anaphors, as is the case of the Chinese local anaphor *ta ziji* in subject position. As reported in Cole, Hermon, and Huang 2001, even though Chinese lacks ECM, subjects of complement clauses behave as though they are in the same binding domain as the matrix clause. Thus, the complex anaphor *ta ziji* 'himself', which normally requires a local antecedent (66a), can appear as the subject of a complement clause (66b):

(66) a. Zhangsan$_1$ juede Lisi$_2$ hui shanghai ta ziji$_{*1/2}$.
Zhangsan think Lisi will hurt him self
'Zhangsan$_1$ thinks that Lisi$_2$ will hurt himself$_{*1/2}$.' Haddad 2007

b. Xiaoming$_1$ xiangxin ta ziji$_1$ neng kaoguo.
Xiaoming believe him self can pass.the.exam
'Xiaoming believes that he himself can pass the exam.' Sung (1990)

While *ta ziji* is well formed when it is the subject of the clause immediately below its antecedent, it is ill-formed when it is embedded more deeply:

(67) Xiaoming$_1$ shuo Zhangsan$_2$ xiangxin ta ziji$_{*1/2}$ neng kaoguo.
Xiaoming say Zhangsan believe him self can pass.the.exam
'Xiaoming$_1$ says that Zhangsan$_2$ believes that he$_{*1/2}$ can pass the exam.'

The indexing in (67) is expected if the locality domain for the subject is the immediately higher clause. In fact, Huang and Liu (2001) propose that the traditional notion of Governing Category, defined in terms of the minimal domain containing a governor for the anaphor and an accessible SUBJECT, adequately captures the binding domain for the subject syntactic anaphor. In (66b-67) the Governing Category for the reflexive is the next clause up.

The fact that the 3rd person null subject in the partial NSLs exhibits a similar pattern suggests that it too is a bound anaphor, as predicted under the hypothesis that it is a minimally specified nominal.

As discussed in Pollard and Sag 1992, Reinhart and Reuland 1993, when reflexives are in noncomplementary distribution with nonreflexives, they may be 'exempt' in the sense that they do not need to be locally bound. The following examples (Büring 2005:225) illustrate this phenomenon:

(68) a. There were five tourists in the room apart from me/myself.

b. Physicists like you/yourself are a godsend.

c. Max boasted that the queen invited Lucie and himself/him for a

drink.

In English, 1st and 2nd person exempt anaphors do not need linguistic antecedents whereas 3rd person exempt anaphors require one. Büring (2005) provides the following examples:

(69) a. *Mary tried to attract a man like himself.

b. It angered him that she ... tried to attract a man like himself.

Above, we saw that the partial NSLs display a person asymmetry: 1st and 2nd person null subjects do not need a linguistic antecedent whereas 3rd person null subjects require one. This fact fits in well with the hypothesis that the null subject in these languages is an anaphor that can be exempt. It can be locally bound, as in (69a,b) above, or it can be exempt, in which case it doesn't require a linguistic antecedent if it refers to the speaker or hearer.

The hypothesis that the 3rd person null subject in these languages is a bound anaphor predicts that it shouldn't allow split antecedents and that it should only permit a sloppy reading under VP ellipsis. Modesto (2000), Ferreira (2000) and Rodrigues (2004) argue that this is indeed the case in BP, but the facts concerning Finnish and Hebrew yield mixed results. Examples with split antecedents are reported as degraded in Finnish as well as Hebrew by different authors (Borer 1989, Vainikka and Levy 1999). On the other hand, according to Holmberg, Nayudu, and Sheehan (2009), both sloppy and strict readings are available under VP ellipsis in Finnish. Moreover, Gutman (2004) provides one example in Hebrew in which the 3rd person null subject has a split antecedent:

(70) Noga bikra et Shimon al ma'amaro ha-shovinisti kshe [—]
Noga criticized-F ACC Shimon on his-article the-chauvinist when [—]
nas'u li-yrushalayim
went-PL to-Jerusalem

'Noga criticized Shimon on his chauvinistic article when they went to Jerusalem.' Gutman (2004)

These apparently contradicting judgements can potentially be accounted for if the null subject is an anaphor that can be exempt. As noted by Pollard and Sag (1992) exempt 3rd person reflexives in English may take split antecedents. The following example is taken from Lebeaux (1984:346):

(71) John told Mary that there were some pictures of themselves inside.

Likewise, Cole, Hermon and Huang (2001, footnote 8) note that, in English examples containing an exempt reflexive, VP ellipsis allows either a strict or a sloppy interpretation:

(72) Rupert$_1$ was not unduly worried about Peter's opinion of himself$_1$; nor was Fred$_2$.

The elliptical clause of (72) can be understood to mean either (73a) or (73b):

(73) a. Nor was Fred unduly worried about Peter's opinion of Rupert (strict reading).

b. Nor was Fred unduly worried about Peter's opinion of Fred (sloppy reading).

Thus, the apparently contradicting evidence that can be found in the literature regarding the definite null subject in the partial NSLs can be due to its

ambivalent nature as a referentially dependent element: a locally bound anaphor or an exempt anaphor. Reuland (2001) views the latter case as an instance of logophoric conversion whereby a reflexive is converted into a pronominal under particular syntactic and pragmatic conditions. Local reflexives undergo "conversion" to pronominals when 1) anaphoric binding is blocked in the syntax and 2) they satisfy certain logophoric conditions. When the reflexive is locally bound, it behaves as a bound variable, doesn't allow split antecedents and only admits a sloppy reading in contexts of VP ellipsis. When it undergoes "conversion" it may take split antecedents and allow strict and sloppy interpretations.

I contend that the anaphoric nature of the null subject follows from the fact that it is a (type-shifted) nP that lacks ϕ-features (hence it is ϕ-defective, just like anaphors) and merely denotes an individual in the domain. This hypothesis works pretty well for the partial NSLs. As we will see in the following section, it is possible to argue that it also extends to the discourse pro-drop languages, even though the facts are obscured by the existence of yet another potential confound: the possibility of interpreting the null subject as a pronoun of laziness. This issue is addressed next[12].

5.2 Crosslinguistic variability within the discourse pro-drop languages

The hypothesis that the anaphoric null subject in the partial NSLs is a subject anaphor, coupled with the parallel that we have been drawing between the

partial NSLs and the discourse pro-drop languages, predicts that we should find locality effects in the discourse pro-drop languages as well. And indeed such locality effects are found in Chinese. As discussed in Audrey Li 2014, while missing objects are insensitive to islands, missing subjects are not. The empty object, not the empty subject, can be coindexed with an NP across island boundaries and across the subject of the higher clause:

(74) zhe-ge laoshi hen hao, wo mei kandao-gui [[e_1 bu xihuan [e_1 de]
this-CL teacher very good I not see-ASP e_i not like e_j DE
xuesheng]
student

a. 'This teacher$_2$ is very good. I have not seen students$_1$ who e_1 do not like (him$_2$).'

b. *This teacher$_2$ is very good. I have not seen students$_1$ who (he_2) doesn't like e_1.' Chinese (Audrey Li 2014:45)

The indexing in the example below shows that the zero subject of the lower clause must be interpreted as coindexed with the subject of the immediately higher clause and cannot corefer with a topic in the discourse or a subject beyond the next higher clause[13]:

(75) ta$_1$ shuo Zhangsan$_2$ dui [$e_{2/*1,*3}$ mei kanjian wo] meiyou zeren.
he say Zhangsan to [$e_{2/*1,*3}$ not see me not.have responsibility
'He said Zhangsan did not have responsabilities for (the fact that) e didn't see me.' Chinese (Audrey Li 2014:47)

These locality effects can be straightforwardly explained under the hypothesis that the anaphoric null subject is a subject anaphor, hence subject to locality.

This observation, however, does not extend to other discourse pro-drop

languages, such as Japanese or Korean, where the relation between the null subject and its antecedent is not constrained by locality (Audrey Li 2014). This constitutes a *prima facie* problem for the thesis defended here. However, I will argue in what follows that this problem is only apparent and that the lack of locality effects found in Japanese is due to the existence of an additional strategy of interpreting the null NP, which, by hypothesis, is unavailable in subject position in Chinese.

Empty subjects in Japanese differ from those in Chinese in a number of aspects. Besides the absence of locality effects, the first distinguishing feature concerns the availability of sloppy interpretation. Kim (1999) and Oku (1998) show that null subjects in Japanese can yield sloppy interpretation, as illustrated by the following examples:

(76) a. Taroo-wa [zibun-no kodomo-ga eigo-o hanasu to]
Taroo-TOP self-GEN child-NOM English-ACC speak that
omotteiru.
think
'lit. Taroo thinks that self's child speaks English.'

b. Ken-wa [*e* furansugo-o hanasu to] omotteiru.
Ken-TOP [*e* French-ACC speak that] think
'lit. Ken thinks that *e* speaks French.' Japanese

(76b) can mean that Ken thinks his own (namely, Ken's) child speaks French.

Takahashi (2007) examines Chinese in light of these facts and concludes that, even though zero objects give rise to sloppy readings, zero subjects do not. Consider the following examples from Audrey Li 2014:48:

(77) a. Zhangsan$_1$ [yinwei wo jiao-guo ta$_1$de erzi] hen gaoxing; Lisi$_2$
Zhangsan because I teach-Asp his son very happy Lisi

[yinwei wo mei jiao-guo (ta$_2$de erzi)] hen bu gaoxing
because I not teach-ASP (his son) very not happy
'Zhangsan$_1$ is happy because I taught his$_1$ son: Lisi$_2$ is not happy because I didn't teach his$_2$ son'.

b. Zhangsan$_1$ [yinwei ziji$_1$de/ta$_1$de erzi jiao-guo shuxue] hen gaoxing; Lisi$_2$ [yinwei [ø]$_2$ jiao-guo yuyanxue] hen deyi.
Zhangsan because self's/his son teach-ASP maths very happy; Lisi [because [ø] teach-ASP linguistics] very proud
'Zhangsan$_1$ is happy because self's/his$_1$ son taught maths; Lisi$_2$ is happy because [ø]$_2$ taught linguistics'. Chinese (Audrey Li, 2014:48)

The empty object in (77a) can be interpreted as referring to Lisi's son. The empty subject in (77b), by contrast, can only be interpreted as coindexed with the matrix subject. According to Audrey Li 2014:45, (77b) has the reading 'Zhangsan$_1$ is happy because self's$_1$/his$_1$ son has taught math; Lisi is proud because Lisi has taught linguistics', not 'Zhangsan$_1$ is happy because self$_1$'s/his$_1$ son has taught math; Lisi$_2$ is proud because self$_2$'s/his$_2$ son has taught linguistics.'

The availability of the covariant interpretation in (76b) and (77a) has been taken as an indication that these are instances of (argument) ellipsis (Kim 1999, Oku 1998, Saito 2004, 2007 and Takahashi 2006, 2008). Tomioka (2014), however, argues against this view. In particular, he shows that the availability of sloppy interpretation is not a reliable test for ellipsis. In fact, it is possible to find the covariant interpretation with overt pronouns (so called 'pronouns of laziness', after Karttunen 1969). Consider the following English sentence:

(78) John gave his hat to me, but Bill gave it to Sarah.

(78) has a reading in which the pronoun *it* can refer to Bill's hat. Assuming a logical form for (78) like [John:x [x gave [x's hat] to me] and [Bill:y [y gave [y's hat] to Sarah] with *his* a bound variable, *it* can be taken to be a copy of its antecedent (x's hat), rather than being co-referential with it.

Cooper (1979) analyses (definite) pronouns of laziness as definite descriptions, the descriptive content of which is pragmatically retrieved (i.e. it is a contextually salient property). Tomioka (2003) extends this approach to the analysis of the covariant interpretation of Japanese *pro*. Recall that Tomioka (2003) argues that Japanese *pro* is a null NP (of type $< e, t >$). Under this view, the pronoun of laziness interpretation is just property anaphora of type $< e, t >$, i.e., it is the result of the *Iota* operation applied to a contextually salient property. In the Japanese example (76b), the contextually salient property is being x's child, where the variable x corresponds to the reflexive *zibun*.

Coming back to the difference between Japanese and Chinese regarding the availability of the covariant interpretation in subject position, different hypotheses have been put forward in the literature in order to account for this contrast. Oku (1998) proposes that the availability of sloppy interpretation is related to scrambling, but Takahashi (2007) discusses data that are problematic for this analysis. Saito (2007) suggests that it is related to the absence of agreement. Sato (2012), however, shows that Javanese lacks syntactic agreement and yet it has the same subject-object asymmetry as Chinese. He claims that this subject-object asymmetry is related to the particular status of the preverbal subject position as a topic position in Chinese as well as in Javanese. In fact,

this particular aspect sets these two languages apart from Japanese (or Korean). In Chinese and Javanese, a preverbal subject cannot have an indefinite/nonspecific interpretation. In Japanese as well as Korean, by contrast, it can. Consider the following Japanese example:

(79) Seerusuman-ga Mary-no uchi-ni kita
salesman-NOM Mary-POSS house-to came
'A salesman / the salesman / the salesmen / salesmen came to Mary's house.' Japanese Oku 1998:166

In (79) the subject can be variously interpreted as indicated in the gloss[14]. In Chinese, there is a contrast between subjects and objects with respect to the availability of indefinite readings for null arguments. Indefinite subjects cannot be dropped (80), but indefinite objects can (81).

(80) ta kandao yi-ge keren dian-le longxia; wo kandao *(yie-ge keren)
he see one-CL guest order-LE lobster; I see one-CL guest
dian-le you
order-LE fish
'He saw a guest ordered lobster; I saw *(a guest) ordered fish.'

(81) ta song yi-ge nanhai yie-ben shu, wo song yi-ge nuhai (yi-ben
he give one-CL boy one-CL book I give one-CL girl one-CL
shu).
book
'He gave a boy a book; I gave a girl (a book)' Chinese (Sato, 2012)

This subject-object asymmetry is due to the fact that the preverbal subject position is necessarily a topic position in Chinese (see section 4.3.1).

Sato (2012) proposes to relate this property to the subject-object asymmetry found in Chinese with respect to the sloppy readings (77). In order to appreciate Sato's argument, let us consider the following possible continuation for the

Japanese example (79):

(82) [—] John-no uchi-ni-mo kita.
[—] John-poss house-to-also came
'it. [—] came to John's house too.' Japanese (Oku, 1998:166)

When the utterance of (82) follows (79), one possible interpretation of (82) is that the salesman who visited John's house is a different salesman from the one who visited Mary's house. Now consider a language like Chinese, where a preverbal subject may not be interpreted as indefinite. Because the subject is a topic in Chinese and a topic must refer to an entity established in discourse, the subject gap in the Chinese counterpart to (82) can only be interpreted as standing for the same salesman that came to Mary's house. According to Sato (2012), this restriction is also responsible for the unavailabity of the sloppy interpretation. In effect, as shown in Tomioka 2003, the two readings in question — the indefinite interpetation (82) and the sloppy interpretation (76b) — are related: both instantiate a pronoun of laziness (an indefinite one (82) and a definite one (76b)). In both cases, the core of their meanings is a contextually salient property (*Seerusuman-ga* 'salesman', in (82), or *zibun-no kodomo-ga* 'self's son' in (76b).

Here I wish to propose that property anaphora, of type $< e, t >$, the core of the pronoun of laziness interpretation, is not available in topic position, probably due to the fact that a topic must refer to a discourse salient entity. In the absence of the pronoun of laziness interpretation, the null nominal can only be interpreted as coreferential with its antecedent. Being ϕ-deficient, it is subject to the same locality restrictions as subject anaphors, as discussed in the preceding

section. This is what happens in Chinese. In Japanese, by contrast, the null subject is not necessarily a topic, so the pronoun of laziness interpretation is available. On the assumption that pronouns of laziness are not subject to locality, the lack of locality effects found in Japanese would follow. The subject/object asymmetry observed in Chinese also follows, as it is only subjects that are necessarily topics.

In a nutshell, our hypothesis is that there are two options available: (i) the bare null nominal denotes an individual variable, in which case it behaves as a subject anaphor; (ii) the null nominal is interpreted as a pronoun of laziness (by property anaphora). When the latter option is unavailable — as whenever the null argument is a topic — locality effects obtain. Hence, the claim that the definite, anaphoric null subject is a subject anaphor and hence subject to locality is not undermined by the Japanese facts.

To sum up, the idea that the pronoun of laziness option is unavailable from topic position together with the assumption that preverbal subjects are topics in Chinese has the potential to capture a number of differences between Chinese and Japanese regarding missing arguments. As far as I was able to determine, Russian and Finnish pattern with Chinese regarding the unavailability of the sloppy interpretation for null subject gaps so the analysis can straightforwardly apply to these languages as well. As mentioned, the EPP position in Finnish is filled by topics, so the analysis is not problematic. In the case of Russian, we have also seen that fronting to preverbal position is a means of expressing definiteness, so our account can be extended to this language as well.

Concerning BP, there appears to be a dialect split (the reader is referred to Saab (2016) for discussion).

6 Summary and conclusions

6.1 Summary

Thus far, we have examined the properties of the partial NSLs when compared to the consistent and the discourse pro-drop languages and we have suggested that the same basic mechanism underlies pro-drop in partial as well as discourse and semi pro-drop, namely null NP/nP anaphora. This allows us to consider two basic processes yielding a silent argument:

I The functional head bearing agreement is pronominal in the sense that it has a nominal specification and interpretable ϕ-features: this is the case of the consistent (Type 1) NSLs.

II In languages that have (robust) bare nominals in argument position, a silent argument may be derived by means of an nP proform. This nP introduces a variable that may be bound under Existential Closure — yielding an impersonal interpretation — or else its denotation may be lifted, either by undergoing covert ι type-shifting or by combining with a null D. The differences among languages in the interpretation of the null subject depend on the resources available in the language for application of the semantic operation of type-shifting to an individual: the languages that lack the

resources required for ι to apply only have quasi-argument and impersonal null subjects (semi pro-drop).

6.2 A note on Slavic

It is worth pointing out that these hypotheses don't entail that, if a language has robust bare NP arguments, it will necessarily display the range of properties associated with discourse or partial pro-drop. Polish and Czech lack articles and, unlike Russian, they exhibit the properties associated with the consistent NSLs. Franks (1995) observes that this difference is related to properties of subject-verb agreement morphology: while the West and South Slavic languages (Polish, Czech, Serbo-Croation) show person agreement in all tenses and in copular constructions, in Russian, person agreement is absent in the past tense and in present tense copular constructions, where 'be' is not present.

If indeed Polish and Czech are consistent NSLs, they should differ from Russian with respect to the properties singled out in Section 1. In effect, this is what happens. First, an embedded overt pronoun signals switch-reference in Polish (McShane 2009) as well as Czech (Lindseth 1998:48). In Russian no such effect is found (Lindseth 1998, McShane 2009). Secondly, as reported in Sigurdsson and Egerland 2009, Polish and Czech require impersonal generic subjects with an inclusive interpretation to be overtly marked (by a reflexive or other means). In Russian, non-overtly marked generic inclusive null subjects are an option.

These facts indicate that the languages that have robust bare NP in

argument position may be consistent NSLs depending on the properties of verbal agreement inflection. In our perspective, the bundle of ϕ-features in T in Polish and Czech is interpretable, hence pronominal. The two properties mentioned above follow from this in the manner described above for EP. Our hypothesis here is that, by virtue of allowing robust bare NP in argument position, Slavic has another means of deriving argument drop, namely null nP anaphora. This yields subject drop in Russian as well as object drop (possibly in different guises, see Ruda 2017)) across the Slavic family.

7 Towards a unified theory of *pro*

The reduction of different kinds of pro-drop to the two basic mechanisms listed in 6.1 raises the question whether *pro* is universally a null NP (as already suggested in Borer and Roy 2006). In this case, clause (I) above could be partly reduced to (II). In order to answer this question, we return in this section to the consistent-NSLs.

One longstanding problem with the pronominal-Agr hypothesis has been the status of the argument, first merge, subject position, in examples such as (83):

(83) Já telefonei.
already called.1SG
'I already called.' EP

Positing an *ec* inside the vP in (83) is required in a theory that assumes that θ-roles are assigned configurationally (Chomsky 1995). Now suppose that the *ec* in question is our minimally specified nP, and that what characterizes the

consistent NSLs is that T bears a D feature, as proposed by Holmberg (2005). By hypothesis, D contributes an index, and since I assume that the set of ϕ-features in T is interpretable in this kind of language, what we have in T is a D with interpretable ϕ-features ([D$i\phi$]):

(84) $[_{\mathrm{TP}}[_{\mathrm{T}}v_{\mathrm{i}} - \mathrm{T} < D_{\mathrm{k}}\phi >][_{v\mathrm{P}}nP[_{\mathrm{v}}, t_{\mathrm{i}} \ldots]]]$

Because the null nP denotes a property (of type $< e, t >$), it is not of the right semantic type to combine with the vP (also of type $< e, t >$) by Function Application. However, as discussed in Section 4, there is the option of combining the denotation of nP (i.e., the property of being an entity in the domain) with the meaning of the verbal predicate by Predicate Modification (the operation *Restrict*, in Chung and Ladusaw's (2003) model, or *Unification* in Farkas and De Swart 2003). In this case, the meaning of the vP in (83) is the following complex property (where e stands for a Davidsonian event variable):

(85) $\lambda y \exists e[\mathrm{call}(e, y) \wedge \mathrm{entity}(y)]$

This property is then applied to the index contributed by D in T, yielding a truth-value. The derivation proceeds compositionally, as desired. Thus, it is possible to reduce *pro* to nP even in a consistent NSL, so the unification between cases I and II above is feasible. This allows us to reduce *pro* to nP quite generally.

As acknowledged by Tomioka (2003) himself, this hypothesis faces challenges. In particular, it requires a detailed examination of the distribution of bare nouns in a given language in relation to the conditions on the licensing of nominal

ellipsis as well as pro-drop, a task that goes well beyond the scope of the present paper, but which I believe is worth pursuing.

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Notes

[1]In BP, a 3rd person null subject may occur in a matrix (i) or embedded (ii) clause as long as it is bound by a very salient discourse topic:

(i) A: Cadê o João? B: [—] Acabou de sair.
A. where the João B: [—] finished of leave.INFN
A: 'Where is João?' B: 'He has just left.' BP(Modesto 2000)

(ii) A: E o João? B: As pessoas estão achando que [—] viajou pra
A: and the João B: the people are thinking that [—] travelled to
Europa.
Europe
A: 'What about João?' B: 'People think that he has gone to Europe'

BP (Ferreira, 2000)

As argued in Modesto 2000, Ferreira 2000 and Rodrigues 2004, these cases are instances of topic-deletion in the sense of Ross (1982) and should be set apart from the other instances of subject drop discussed in the text. In the case of (ii), topic detetion is assumed to be preceded by topic movement to the root.

[2]There is an interpretation of the example in the text that includes the addressee, but is not relevant to the present discussion. In EP the third person plural is a suppletive form for 2nd plural, so (7) may also mean 'You guys work a lot here'. This interpretation doesn't concern us here.

[3]Henceforth I will use the label 'non-anaphoric' to refer to the impersonal/arbitrary/generic null subject, a term originally suggested by Hofherr (2003).

[4]Ruda (2017) posits a *Person* node between *D* and *Num*.

[5]Even though (48) is not possible, (i) below is fully grammatical:

(i) Jos Brasiliassa rakastaa Sambaa ...
if Brazil-in love.3SG Samba
'If you love Samba in Brazil ... (everybody will love you)' Finnish

(Anders Holmberg, p. c.)

This difference between (48) and (i) is predicted under the view that the null subject is semantically incorporated. In standard Discourse Representation theory, the LF of (i) contains a Gen-operator, the *if*-clause determines the restriction and the main clause consitutes the Nuclear Scope (Farkas and De Swart 2003). In this case, both the verbal predicate and the incorporated "empty" n end up in the restriction of *Gen*, and the relevant variable is bound by *Gen* (I assume that the verbal predicate introduces a situation variable, here labelled s):

(ii) $\text{Gen}_{x,s}[\text{human}(x) \wedge \text{love}(s, x, \text{samba}) \wedge \text{in}(s, \text{Brazil})][...]$

In (48), by contrast, the verbal predicate ends up in the Nuclear Scope. Since nP is incorporated, it scopes with the verb. Thus, there is no way it can be interpreted in the restriction of *Gen*. Assuming that an individual-level predicate such as *love* requires its argument to be interpreted in the restriction of *Gen*, (48) is correctly ruled out while (i) is in.

[6]According to Chierchia (1998), English bare plurals basically denote plural properties, but when they are used as arguments, they are shifted by a covert nominalization operator, which derives kinds. In generic sentences, what gets accommodated in the restriction of *Gen* are variables over instances of the kind.

[7]Here I do not take a stand as to whether Number projects and leave the issue open.

[8]This assumption holds only of the anaphoric null subject as the non-anaphoric one is an *n*P that combines with the verbal predicate by Predicate Modification and is number neutral, as discussed in the previous section.

[9]This is yet another case of asymmetry between subjects and objects: definite null objects do not need any special marking.

[10]We must assume that the 3rd person features on verbal agreement ($\pm 1, \pm 2$) are not interpretable, as interpretability would entail an exclusive interpretation for the non-anaphoric null subject in past and future tenses, contrary to fact; this is not an issue on the condition that Ritter (1995) is right in claiming that 3rd person D-agreement is not specified for person. Here I assume that the person and number features on T are not interpretable in all the persons of the paradigm (contra Ritter 1995.

[11]I thank Anthony Kroch (p.c.) for drawing my attention to this issue.

[12]If, as suggested, an *n*P proform is at the root of silent arguments regardless of their status as subjects or objects, then the question arises of how a definite null object is interpreted if it is a referentially dependent item. Our answer to this question is partly based in a suggestion by Sigurdsson (2011), who proposes that a silent argument must raise to the left-periphery so as to have its features valued by a discourse topic. Sigurdsson (2011) assumes that C hosts 'speaker', 'hearer' and topic features (labelled 'C/Edge-features'). A silent argument must match at least one of these features in its local C-domain. Since feature matching

is subject to locality, a silent argument must raise to the left-periphery so as to be in a local configuration with the relevant C/Edge-feature. Even though a detailed evaluation of the full implications of Sigurdsson's theory is well beyond the scope of the present paper, I adopt the view that the definite null object raises to the left-periphery of its own clause, whereform it gets its features from a discourse topic. I leave a more detailed study of this issue for future work.

[13]Here we use examples in which the subject is contained inside an island so as to make sure that we are not dealing with Topic movement.

[14]Japanese has a special topic marker, the particle *wa*. As expected, a *wa*-marked subject cannot be interpreted as indefinite; in this case, only the specific/definite interpretation is available (as in Chinese).

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