9

Null subjects*

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9.1. The Null Subject Parameter

Null-subject languages (NSLs) are those languages that can leave the subject of a sentence not expressed overtly. One such language is, for instance, Italian, which is a quite well-behaved NSL, since virtually any clause can be uttered leaving the subject unexpressed. In examples (1) and (2) you see the difference between a sentence in Italian and the corresponding sentence in English, which is by contrast a well-behaved non-NSL. The subject must be expressed in English, but not in Italian (with the exception of imperatives, like in every language, in subject relatives, as we will see below, and some diary forms).

(1) (Voi)   state leggendo un libro   [Italian]
     You.PL are   reading a book

(2) *(You$_{pl}$) are reading a book   [English]

In canonical NSLs, null subjecthood is independent of the type of clause. Interrogative sentences, as well as exclamatives, negatives, embedded sentences can feature a null subject. This is illustrated through the following examples from Italian:

(3) ___ Vai   al mare?   [Italian]
          go.2SG to-the sea
          'Are you going to the beach?'

(4) ___ Sono   belle!
          are.3PL beautiful
          'They are beautiful!'

(5) ___ Non mangiamo carne
     not   eat.1PL   meat
    'We don't eat meat'

(6) Penso   che   ___ non   sappiano parlare
    think.1SG that   not   can.3PL   speak
    'I think they can't speak'

Examples (3) to (6) also show that in Italian (and in full NSLs in general) the person-number specification of the subject is irrelevant, as there is no preference for omitting 2nd person subjects as opposed to 3rd person ones, for instance.

Of course, the subject of a clause in a NSL can also be overt. The Italian sentences above with an overt subject in fact are perfectly grammatical. Observe though that pronouncing a subject in a NSL brings about some extra pragmatic effect, which we will not discuss here for reasons of space (see Laia Mayol 2010 and references thereof and Grimshaw and Samek-Lodovici 1998 for more details).

By looking at the Italian data and at their English counterpart we can be tempted to conclude that the null-subject (NS) status of a language is a pretty straightforward matter. You must express the subject, like in English, or you do not have to, like in Italian. Empirical evidence shows, though, that pure NS languages are rare, and that there are a number of partial NSLs, i.e. languages allowing NSs under specific structural or lexical requirements. A survey of the known types of NSLs is offered in Section 9.1.1.

An interesting research question which has been pursued very thoroughly during the Government and Binding era (Chomsky 1981 and subsequent work) is whether null subjecthood in a language correlates with other properties of a given language. Parametrically speaking, the question is whether a parameter exists that, once set, determines all other characteristics that correlate with null-subjecthood. This line of research is explored in Section 9.2, where we introduce the classical definition of the null-subject parameter (NSP).

Section 9.3 deals with linguistic variation. NSLs and the NS parameter have been the center of linguistic debate, most notably that between typologists and generativists. This section reproduces this debate, examining the empirical evidence which undermines the classical formulation of the NSP and discussing the evidence in favor or against the idea of a NSP.

Next, we turn to examine some of the key features of the NSL enterprise. The first one, in Section 9.4, is the status of *pro*, the evidence for its existence, and the question whether we can do without it. In section 9.5 we consider partial NSLs. The other key issue that has occupied the stage for several years concerns the role of agreement in licensing null subject. Section 9.6 considers the role of rich, impoverished and null agreement in licensing NSs.

After this survey of the classical issues, we move on to consider some recent attempts to rewriting the NSP in terms of clusters of micro-parameters, in Section 9.7. Finally, Section 9.8 contains the conclusions.

Before turning to the content, one premise is in order. Parameters are often associated to narrow syntax. This implies that the study of the NSP is thought of primarily as a syntactic issue.

A syntactic NSP is however not the only option. We will see that one alternative can be the parametric option of deleting the subject at PF (given specific syntactic conditions), as proposed by Roberts (2004, 2010b), for instance, or Duguine (2013). In this sense, the parameter could be a syntax-PF parameter.

The concept of a syntactic NSP as proposed by Rizzi (1986) also implies the possibility for a language to feature a pro, i.e. an empty pronoun which can fill in the canonical subject position. This is also why NSLs are often referred to as pro-drop languages. In this sense, the parameter could be a morphological/lexical one, rather than a purely syntactic one.

Last, the terminology used to refer to NSLs is quite varied. NSLs are also defined as pro-drop, for instance. The choice of the terminology is very much linked to the theoretical assumptions of the researcher: if the author does not believe in pro, for instance, they will never call a language pro-drop. There is also an issue of fashion. Non-inflecting NSLs are now generally referred to as radical pro-drop languages; the terms topic-drop language, or discourse-oriented NSL can also be found. In what follows, we will try to stick to the terminology used by the different authors to refer to the phenomena at issue. When introducing the language types, though, we will mention the different ways in which they are referred to in the literature. When not discussing a specific proposal, we will use the neutral term NSL.

9.1.1. Types of NSLs

NSLs are very different from each other, for the kind of null subject they admit and for the different structural configurations in which null subjects are allowed. In what follows, we give an overview of the main types of NSLs.

9.1.1.1. Canonical NSLs

Canonical NSLs, also known as full NSLs, or (full) pro-drop languages, are those languages like Italian, illustrated above, for which a full, referential subject can remain unexpressed, or null. These languages have been the main focus of research on the NSP. Among canonical NSLs we find Greek, all Romance languages excluding French, Turkish, Arabic, Berber, Hausa, and Basque.

9.1.1.2. Radical NSLs

Radical NSLs, also known as radical pro-drop languages or discourse pro-drop, are those languages which can leave the subject, as well as the object, unexpressed, and do not have any verbal inflection.

Many Asian languages are radical NSLs: Chinese, Japanese, Korean, Thai, and Vietnamese being the best known. We will discuss radical NSLs and their analysis in Section 9.6.

An example of radical pro-drop is offered by Chinese (Huang 1984). In (7), speaker B can reply to the question asked by the speaker A by omitting the subject (7b), the object (7c), both subject and object (7d), (7e) and (7f).

(7)   Speaker A: Zhangsan kanjian Lisi le   ma?   [Chinese]
                     Zhangsan see   Lisi   LE   Q
                     'Did Zhangsan see Lisi?'
     Speaker B: a.   ta   kanjian   ta   le
                       he   see   he   LE
                       'He saw him'
               b.   *e*[1]   kanjian   ta   LE
                       '[He] saw him'
               c.   ta kanjian   *e*   le
                       'He saw [him]'
               d.   *e* kanjian   *e*   le
                       '[He] saw [him]'
               e.   wo cai [*e*   kanjian   *e*   le]
                       I   guess   see   LE
                       'I guess [he] saw [him]'
               f.   Zhangsan   shuo [e kanjian   *e*   le]
                       Zhangsan   say   see   LE
                       'Zhangsan said that [he] saw [him]' (Huang 1984: 533)

Radical NSLs are believed to be of a different sort than canonical NSLs, in that the omitted argument can be retrieved from the discourse, and not from grammar. We will return to this in Section 9.6.

9.1.1.3. Partial NSLs

NSs are sometimes restricted to some specific structures or feature composition of subject pronouns. For example, Finnish is a partial NSL in that some referential subjects can be null, but not all: while 1st and 2nd person subjects can be omitted, 3rd person cannot, as shown by the following data:

(8)   a.   Minä   puhun   englantia   [Finnish]
            I   speak.1SG   English
      b.   (Sinä)   puhut   englantia
            You   speak.2SG   English
      c.   *(Hän)   puhuu   englantia
            He/she   speak.3SG   English
      d.   (Me)   puhumme   englantia
            We   speak.2PL   English
      e.   (Te)   puhutte   englantia
            You   speak.3PL   English
      f.   *(He)   puhuvat   englantia
            They   speak.3PL   English
                    (Holmberg 2005: 539)

3rd person pronouns can be null if bound, as the following example shows:

(9)   Pekka$_i$ väittää [että hän$_{i/j}$ /∅$_{i/*j}$ puhuu   englantia   hyvin]   [Finnish]
      Pekka   claims   that   he   speaks   English   well
                                                      (Holmberg 2005: 539)

Partial NSLs have been the object of much recent research, especially by Holmberg and his group. Other restrictions to null subjecthood can be the generic, indefinite status of the subject (Holmberg 2010a, Holmberg and Sheehan 2010), as illustrated by the following Marathi example:

(10) a. Unahlyat   lavkar utthavla jato   [Marathi]
         summer-in early   wake   go.PRES.3SG.M
         'In summer one wakes up early'
     b. Ram mhanala   ki   ghar   ghetlə
         Ram say.PST.3SG.M that house   buy.PST.3SG.NT
         'Ram said that he bought a house'   (Holmberg and Sheehan 2010: 125)

Partial NSLs are different from expletive NSLs in that in the former subject omission is determined by syntactic conditions, while in the latter it is determined by the nature (referential or expletive) of the subject. Among partial NSLs we have Finnish and Marathi, Russian, Icelandic, Assamese, and Hebrew (according to Biberauer et al.'s 2010 classification).

9.1.1.4. Expletive NSLs

Expletive NSLs are those languages in which a full referential subject cannot be null, but an expletive subject can.
    An example of an expletive NSL is Dutch, in (11):

(11) Gisteren   werd (er)   door het hele   dorp gedanst   [Dutch]
     yesterday was there by   the whole village danced
     'Yesterday, there was dancing by the whole village'
                     (adapted from Gilligan 1987: 80)

The expletive pronoun *er* can be omitted in the embedded sentence. Similar expletive NSLs are German and Afrikaans. Finnish was included among the partial NSLs. However, this language also features some null expletives, as shown by Holmberg and Nikanne (2002):

(12) a. Nyt (se) taas   sataa   [Finnish]
        now it   again rains
        'Now it's raining again'
     b. (Se) oli   hauskaa että   tulit   käymään
        it   was   nice   that   came.2SG   visiting
        'It was nice that you came to visit'

    c. (Sitä) on   ilmennyt   ongelmia
       there have appeared   problems
       'Problems have come up'
    d. (Sitä) tuli   kiire
       there came haste
       'We/they were in a hurry'
       (Holmberg and Nikanne 2002)

While Holmberg and Nikanne attribute this null subjecthood to other elements, Nicolis (2008) interprets these as instances of expletive null subjects. Nicolis (2005, 2008) also shows that many Creole languages feature expletive NS: Berbice Dutch Creole, Cape Verdean Creole, Jamaican Creole, Haitian Creole, Papiamentu, and Kryol.

9.1.1.5. Non-NSLs

Finally, some languages never allow subject omission. Among these languages are English and French, but also Swedish and Sindhi:

(13) I den   här   stolen sitter *(man) bekvämt   [Swedish]
     in this   here chair   sits   one   comfortably
     'One can sit comfortably in this chair'

(14) *(Hik) hini kursi te   aaraam-sa   vahi sokdo aahen   [Sindhi]
     one   this chair in   comfort-P   sit   can   be-PRES
     'One can sit comfortably in this chair' (Holmberg 2007: 4)

As we can see from this first overview, null subjecthood is not a uniform phenomenon. In general, what all these languages have in common is the possibility of leaving the subject unpronounced in some given contexts without any impact on the semantics of the sentence.

9.2. The (classical) Null Subject Parameter

The classical NSP (Nill Subject Parameter) was first formulated by Rizzi (1982), and subsumed all ideas circulating at the time about NSLs and licensing of null subjects. In what follows we will give an overview of the observations and analyses that fed the NSP hypothesis. These analyses will be presented independently, in order to reconstruct the history of the NSP. Much of these observations are still at the core of the more recent understanding of NSL and licensing of a null subject.

9.2.1. That-t effect

The first systematic generative analysis of NSLs and of the conditions for licensing null subjects is put forward by Perlmutter (1971), who noticed the correlation

between null subjecthood of a language and the possibility of extracting the subject from an embedded clause headed by an overt complementizer; conversely, non-NSL present what is dubbed as THAT-*t* effect: the subject of an embedded clause cannot be extracted across an overt subordinating complementizer.

Perlmutter brings examples of extraction from several NSLs, among which Spanish, here repeated in (15) and (16):

(15) (Nosotros) hemos   trabajado todo el día   [Spanish]
      we   have.PRES.1SG worked   all   the day
      'We worked all day'

(16) a. ¿Quién$_i$ dijiste   que   e$_i$ salió   temprano?
          who   say.PRFV.2SG THAT   leave.PRFV.3SG   early
          'Who did you say that left early?'
      b. Las cosas$_i$ que dijiste   que   e$_i$ pasaron
          the things that say.PRFV.2SG   THAT   happen.PRFV.3PL
          'The things that you said that happened'
          (adapted from Perlmutter 1971: 103)

(15) shows that Spanish is a NSL, as the full DP subject can be omitted. (16a) and (16b) show that the subject can be extracted from an embedded sentence in the presence of an overt complementizer. This is true both for a wh-subject and for the subject of a relative clause. No difference is attested between thematic (argumental) subjects and non-thematic, expletive subjects.

9.2.2. Inversion

In (1980), Kayne lays out a generalization according to which all fully NSLs also have subject inversion. Comparing Italian with English and French, Kayne observes that while Italian, a NSL, can freely invert the subject, i.e. can have a postverbal subject, English and French, non NSL, must have an expletive in the canonical subject position in the case of free inversion.

A language allows free inversion of the subject if the subject can appear after the verb, leaving the canonical subject position empty.

(17) a. È arrivato Gianni   [Italian]
      b. *Est arrivé Jean   [French]
      c. *Has arrived John   [English]
      'John has arrived'
      (Roberts 2007: 28)

(18) a. Hanno telefonato molti amici   [Italian]
      b. Sono arrivati molti amici

      a. *Have telephoned many friends   [English]
      b. *Have arrived many friends

    a. *Ont téléphoné beaucoup d'amis   [French]
    b. *Sont arrivés beaucoup d'amis

                       (Gilligan 1987: 77)

French and English, non-NSLs, do not allow for subject inversion. Italian, a NSL, does.

9.2.3. Thematic and non-thematic subjects

In well-behaved NSLs like Italian, which do not feature expletives, the full subject can be expressed, or it can be left out. Other languages, like English, are fully non-NS, thus the subject must always be expressed, be it a full referential, argumental subject, or an expletive one. There are some exceptions also for English, one being the already mentioned imperative forms. Further exceptions are subject relatives of the kind *The boy that* e *kissed Mary*, which do not license an overt embedded subject, and coordinated structures of the kind *I ate and* e *drank*.

    In the early 1980s, when the NSP was taking shape, the difference was made between thematic and non-thematic (null) subjects, i.e. argumental, fully referential DP subjects and expletive subjects. This difference was drawn early on, already by Perlmutter, given the non-canonical behavior of Dutch with respect to the THAT-*t* effect. Dutch was considered a non-NSL, like the rest of Germanic. However, subject extraction did not incur in the THAT-*t* effect. In fact, Dutch can be NS, but the subject must be an expletive. In this case, it does not comply with the THAT-*t* generalization.

    The discussion on expletive NS languages was brought forward by Maling and Zaenen (1978), who also discussed Icelandic, which does not have null referential subjects but nevertheless has a THAT-*t* EFFECT. effect.

9.2.4. Rich agreement

The issue of inversion is taken on by Taraldsen (1980) who, starting from a very common assumption which was already made by Latin grammarians (see Roberts and Holmberg 2010: 3), attributes the possibility of extracting the subject in NSLs to their rich agreement inflection. Taraldsen links the THAT-*t* effect to the ECP, by stating that the trace of the extracted subject needs to be bound, like an anaphor, and this can only be done by rich agreement.[2]

    According to Taraldsen, in a sentence with extraction like those examined above in (17) and (18), the trace of the moved subject must be bound, like an anaphor (but see Pesetsky 1982 for a different view). Non-NSL don't allow extraction because the trace of the subject must be governed, but the COMP position is already filled by an overt complementizer. Due to the independently assumed doubly filled COMP, no other element can be in the COMPP, hence the trace remains unbound. NSLs have a crucial characteristic that differentiates them from the rest: they have rich agreement, which in Taraldsen's terms is equivalent to saying that they have an AGR head which is "strong" enough to be able to bind the trace of the subject.

The role of rich agreement will come back over and over again in the course of time. We will discuss it again in Section 9.6, after examining Rizzi's formulation of the NSP. Before going into that, though, we can notice immediately that a correlation between rich agreement and null subjecthood, though tempting, does not always hold. In particular, it does not hold for radical NSLs, introduced in 9.1.1.2, which are heavily NS but do not have any agreement.

9.2.5. The NSP

The properties of inversion, extraction from an embedded clause, and no THAT-*t* effect are separately attributed to NSLs. Rizzi (1982) attributes these three properties to a unique cause: the Null Subject Parameter. When set to "null," this parameter determines the co-occurrence of all three properties.

According to Rizzi, the role of AGR is not crucial in licensing extraction, given that extraction proceeds in two steps, the first of which being inversion.

The basic ingredients of the NSP as formulated by Rizzi (1982) and largely adopted for many years to follow are:

i) Rich inflection. Like Taraldsen, Rizzi (1982) attributes an important role to rich inflection, not in the sense that it is directly able to license the trace, but in the sense that a rich INFL has a pronominal status. For a null subject to be licensed, it needs to be identified, i.e. it needs to be governed by a head which is [+pronominal] and [+referential]. The NSP is expressed as in (19):

(19) a. INFL can be specified [+pronoun]
     b. INFL which is [+pronoun] can be referential.
     Only a pronominal INFL can license a null subject.   [Rizzi 1982: 143]

ii) Referential and non-referential NS. Null subjects can be referential or non-referential (expletive). Languages with a pronominal referential INFL can license referential null subjects. Languages without a pronominal INFL which is not referential (i.e. which does not have rich inflection) cannot license a referential NS, but they can still license an expletive NS. Dutch and German belong to this second group of NSL, called PARTIAL NSL. Recall that referential and non-referential subjects were called respectively thematic and non-thematic by Perlmutter.

iii) Free inversion. As noted by Kayne, if a language is NS, it will allow free inversion of the subject. Free inversion was taken at face value by Kayne, but for Rizzi this property is fundamental, because extraction takes place after inversion (see point iv).

iv) Extraction. We have seen how Perlmutter observed that subject extraction is only allowed in full NSLs. Taraldsen proposed an analysis according to which the trace of the moved subject must be licensed as if it were an anaphor, and this was done by AGR in NSLs.

According to Rizzi, this proposal cannot hold. To show this, Rizzi considers the licensing of embedded quantified subjects which also have to be licensed like anaphors. If embedded quantified subjects were licensed by AGR, they should be

able to take wide scope (given that this licensing has also an LF-effect), but this is not the case.

The sentences that Rizzi examines are the following:

(20) a. Non pretendo che   tu   arresti nessuno   [Italian]
         NEG require   that you   arrest   nobody
         'I require that you arrest nobody'
      b. Non pretendo che   nessuno ti   arresti
         NEG require   that nobody   you   arrest
         'I don't require that anybody arrest you'
      c. Non pretendo che   ti   arresti nessuno
         NEG require   that you.2SG.ACC.CLT   arrest   nobody
         'I don't require that anybody arrest you'

                                                    (Rizzi 1982: 124)

In (20a), the quantified object *nessuno* can have wide scope, because it is licensed by the verb (INFL). If the same were true for the embedded subject in (20b), the wide scope reading should also be possible for it, but it is not. This means that INFL does not license the embedded subject. This in turn contrasts with the sentence in (20c), where the inverted subject has wide scope, because it is properly governed by INFL.

This asymmetrical behavior suggests, according to Rizzi, that the position from which the embedded subject must be extracted is the postverbal, inverted one, also for wh-subjects, just like the negative quantifiers. If extraction takes place through inversion, languages without inversion cannot have extraction.

Rizzi's hypothesis is graphically exemplified by Gilligan (1987: 85) as follows:

(21) null
      thematic   < − − − − − − − −> INFL
      subjects   [+ref]

      null   subject   that-t
      nonthematic < − − − - - -> INFL <- − − - − −> inversion <- − − − − − −> filter
      subjects   [+pnl]   violations

In his 2007 monograph, Roberts brings some evidence for Rizzi's analysis of extraction, namely agreement patterns in Florentine. Florentine is a NSL with subject clitics. If the subject occurs in an inverted position (i.e. postverbally), Florentine displays reduced agreement. The subject position is occupied by an uninflected, default, expletive subject, as exemplified in (22):

(22) a. Gli   ha   telefonato   delle ragazze   [Florentine]
         S.CLT.M.SG   has.3SG   telephoned.M.SG   some girls.F.PL
         'Some girls phoned'
      b. Gli   è   venuto   delle ragazze
         SCLT   is   come.M.SG   some girls.F.PL
         'Some girls came'

Observe the contrast with standard Italian, the agreement patterns of which are insensitive to the position of the subject:

(23) a. Hanno   telefonato   delle ragazze   [Italian]
        Have.3PL   phoned.M.SG some girls.F.PL
        'Some girls phoned'
     b. Sono   venute   delle ragazze
        Are.3PL   come.F.PL   three girls.F.PL
        'Some girls came'

Leaving aside the issue of participial agreement (for which the reader is referred to Kayne 1989a, 2000; D'Alessandro and Roberts 2008, and others), we observe that the auxiliary is plural in standard Italian, where it agrees with the inverted subject, while it is singular in Florentine, where the inversion of the subject triggers reduced agreement (Cardinaletti 1997; Roberts 2007).

   Observe furthermore that Florentine does not allow the Standard Italian agreement patterns. A plural auxiliary and a plural feminine subject clitic are not grammatical:

(24) a. *Le   hanno   telefonato   delle ragazze.   [Florentine]
        S.CLT.3PL.F have.3PL   phoned.M.SG some girls.F.PL
     b. *Le   son   venute   delle ragazze.
        SCLT.3PL.F   are.3.PL   come.F.PL   some girls.F.PL

When the subject is extracted, only the agreement pattern without inflection in (25) is allowed:

(25) a. Quante   ragazze gli   ha parlato con te?   [Florentine]
        How-many girls   SCL   has talked with you
        'How many girls have talked to you?'
     b. Quante   ragazze gli   è venuto con te?
        How-many girls   SCL   is come with you
        'How many girls have come with you?'

This extends to examples with a wh-embedded subject:

(26) a. Quante   ragazze tu credi che gli abbia   parlato? [Florentine]
        How-many girls   you think that SCL have.3SG talked
        'How many girls do you think talked?'
     b. Quante ragazze tu credi che è sia venuto?
        How-many girls you think that SCL be.3SG come?
        'How many girls do you think have come?'

In subject extraction contexts, thus, agreement follows the subject inversion pattern, not the preverbal subject pattern. This means that the subject must have inverted (causing agreement reduction) before extraction. These data offer empirical evidence that subject extraction is preceded by subject inversion.

The NSP in its classical version elegantly accounted for many features of NSLs, for the fact that they cluster together, by only specifying the [+pronominal] and [+referential] status of the inflectional head INFL. Because of its elegance, this was one of the most cited and accepted parameters of the Government & Binding era. Its all-or-nothing cut, though, gave origin to a number of discussions, based both on its empirical, descriptive inadequacy and on its theoretical formulation.

In what follows, we address the debate on the validity of the NSP, which had many participants, trying to focus on the main issues. We do not follow a strictly chronological order, but we isolate four main points and discuss the possible alternatives to the NSP. The points are:

i.   empirical counterevidence to the NSP (and the rules vs parameters debate)
ii. the status of *pro*
iii. non-inflectional NSLs and the role of rich, poor and impoverished inflection
iv. partial NSLs

After this, we present a more recent formulation of the NSP as a cluster of micro-parameters, as proposed by Roberts and Holmberg (2010). Observe that a new macro-parameter was recently proposed by Chomsky (2014b), going back to the correlation between the ECP and the NSP.[3]

9.3. Empirical counterevidence to the NSP and the rules vs parameters debate

The NSP was for a long time one of the very few parameters which were agreed upon by most generativists, and therefore it was attacked quite energetically by the anti-Principles & Parameters movement. One such attack came from Gilligan (1987) who disproved the empirical coverage of the NSP, by examining 100 NSLs. Rizzi's NSP, together with the studies that informed it, was based on a relatively small language sample. The sample selected by Gilligan included languages from all families, and was tested on Rizzi's (as well as others') hypotheses.

The relevant features of NSLs as identified by Rizzi are, according to Gilligan, the existence of null thematic subjects (which Rizzi calls referential pronominal subjects), the existence of null non-thematic subjects (Rizzi's non-referential NSs), the possibility of free inversion, and the existence of a THAT-*t* effect on subject extraction.

According to Rizzi, the only possible languages are those showing the combinations illustrated in the following table:

(27)

null thematic subjects	null nonthematic subjects	subject inversion	that-t filter violation
+	+	+	+
-	+	+	+
-	-	-	-

[Gilligan 1987: 86]

Gilligan's results are expressed in terms of typological implications, and are reproduced in table (28) (where yes-yes means the language has the first property as well as the second; yes-no means that the language has the first property but not the second, and so on):

(28)

	yes-yes	yes-no	no-yes	no-no	ND
pro-EXE	24	0	15	2	61
pro-SI	22	49	11	15	4
pro-THAT	5	3	2	1	89
EXE-SI	14	25	1	1	61
EXE-THAT	7	2	0	1	90
SI-THAT	4	0	3	4	89

(Gilligan 1987: 135)

In (28), *pro* refers to a null referential (thematic) subject, EXE to an expletive subject, SI dubs subject inversion, THAT stands for the THAT-*t* effect. The table indicates the correlations between these features in a given language. *pro*-EXE refers to a language that has both a referential *pro* and an expletive *pro*. *pro*-SI refers to a language that has both a referential *pro* and free inversion, and so on.

Observe that *pro* was introduced by Rizzi (1986) in a later reformulation of the NSL, which will be discussed in Section 9.5.

From this table it appears that the only correlations proposed by Rizzi and others that actually hold in a good number of languages are those between the referential and the expletive *pro* (recall that a referential *pro* entails the existence of an expletive *pro*, according to Rizzi, because the INFL licensing the referential *pro* contains a superset of the features licensing the expletive *pro*. While the INFL licensing expletives is [pronominal] but not [referential], the INFL licensing referential *pro* is both [pronominal] and [referential]); those between *pro* and inversion, and to a minor extent those between expletive NS and inversion.

There is virtually no correlation between inversion and the THAT-*t* effect, and between the presence of expletive null subjects and the THAT-*t* effect.

9.3.1. That-t effect and free inversion

The most striking counterevidence to Rizzi's NSP is offered, as we observed, by the lack of correlation between the THAT-*t* effect and free inversion. One language that Gilligan considers in this respect is Papiamento, where extraction is always possible while inversion never is, as shown by the following examples:

(29) a. Maria a   disparse.   [Papiamento]
        Maria PRF   disappear
        'Mary disappeared'
     b. *A disparse Maria

(30) a. Ken$_i$ bo   kere ku e$_i$ a   bini?
         who you think that   PERF come
      'Who do you think that had come?'
   b. e Homber$_i$ ku   ta   evidente ku   e$_i$ a   bini
      the.man   that PROG evident that   PERF come
         'The man that it is evident that had come' (Gilligan 1987: 141)

Gilligan concludes that the only possible implication is that if a language has free inversion it must have extraction, but not the other way around.

9.3.2. Thematic and non-thematic null subjects

According to Rizzi's formulation, if a language has thematic null subjects it must also have null expletives. We have seen that Gilligan's sample shows that this is only partially true. As Camacho (2013) shows, there are cases of languages that contradict this generalization, like for instance Dominican Spanish, which is a NSL but tends to have overt expletives rather than null ones, as the following example illustrates:

(31) Ello   hay personas   que lo aprenden bien (el inglés) [Dominican Spanish]
     EXPL is   people.PL that it learn.PL   well the English
     'There are people who learn it well (English)'   (Camacho 2013: 43)

A similar phenomenon is attested in contemporary Neapolitan, where the expletive subject has become obligatory (Bichelli 1974, Sornicola 1996, Ledgeway 2000, 2009):

(32) E   chello mò   so'   quase   l'unnece   [Neapolitan]
     and   EXPL   now are   almost the-eleven
     'And now it's almost eleven'   (Ledgeway 2009: 291)

(33) Chello fino   a   mò   è   mancata   'a corrente
     EXPL until to   now is   missed   the electricity
     'There was no electricity until now' (Ledgeway 2009: 294)

Neapolitan and Dominican Spanish are thus also counterexamples to Rizzi's generalization.

9.3.3. Expletive NS and free inversion

Another central generalization attributable to Rizzi (1982) regards the possibility of free inversion in a language that has expletive NSs. In Gilligan's words, if a language has an EXE, it will also have inversion (SI), and vice versa. As we have seen, inversion correlates with extraction. It follows, Gilligan points out, that EXE implies THAT-*t*, which is Taraldsen's proposal. On checking this implication, Gilligan finds that this also does not hold: there are several languages that have expletive null-subjects but

no extraction (i.e. they have expletive NS and THAT-*t*). Finnish and Georgian are, according to Gilligan, languages with expletive NSs and THAT-*t*, as exemplified in (34).

(34) a. Mari   kuuli   että   Pekka   kirjoittaa   kirjeen   [Finnish]
       Maru   hear   that   Pekka   writes   letter
       'Mari heard that Pekka is writing the letter'
    b. Mitä$_i$ Mari   kuuli että   Pekka   kirjoitaa e$_i$?
       what   Mari   hear that   Pekka   writes
       'What did Mari hear that Pekka is writing?'
    c. *Kuka$_i$ Mari   kuuli   että   e$_i$ kirjoittaa   kirjeen
       who   Mari   hear   that   writes   letter
       (Gilligan 1987: 143)

While extraction is possible for embedded objects, it is blocked for embedded subjects in the presence of an overt complementizer, as exemplified by (34).

Gilligan's (1987) dissertation constitutes a challenge to the very existence of a NSP, at least in Rizzi's formulation, for two reasons. The first one is that there are languages that constitute clear-cut counterexamples to Rizzi's generalizations, as we have seen. The second, more stringent, problem concerns the co-occurrence of all these properties in a given language. If a language is set so that the NSP is "active", i.e. if a language is NS, all these properties must be present at the same time. There cannot be any exception. This is a general problem for the classical theory of parameters, and has been repeatedly discussed by Chomsky, also recently (Chomsky 2013b), and also in relation to the question whether Greenberg-style typological universals can be the results of principles and parameters. Chomsky's answer to this question is no, because a principle cannot have exceptions, and once a parameter is set, there cannot be partial counterexamples like those found by Gilligan.

9.3.4. The Newmeyer vs Roberts and Holmberg debate

Gilligan's work is taken as a basis for Newmeyer's (2004, 2005) attack to the Principle & Parameters enterprise as a whole.[4] Newmeyer (2004, 2005) points out that only some of the correlations postulated by Rizzi actually hold, and concludes that the parametric enterprise has failed.

9.3.4.1. Rules vs Parameters

Starting from the empirical evidence we have just reviewed, Newmeyer claims that rules are more efficient than parameters to describe linguistic variation.

One way to account for the difference between NSLs and non-NSLs, for instance, is through language-specific rules. The difference between a NS Spanish sentence and a non-NS English one just boils down to language-specific rules. The Spanish rule can be "move the wh-phrase of the embedded clause to the front of the sentence," as in (35); the English rule can say "don't move the wh- of the embedded clause to the front of the sentence," as in (36):

(35) Spanish rule (in contemporary syntactic terms):
      [CP… that [CP wh TP..] > [CPwh- that [CP __ TP..]

(36) English rule (in contemporary syntactic terms):
      [CP… that [CP wh TP..] > *[CPwh- that [CP __ TP..]

According to Newmeyer, this is the way to go. Rules can cover the empirical database much better and can account for the microvariation among NSLs (to which we return in the following sections) more accurately.

Roberts and Holmberg (2005) reply that rules make no cross-linguistic predictions. The fact that Spanish has a rule allowing extraction does not tell anything about the same rule (or a different one) applying in Italian, or in Chinese. The predictive power of P&P is something that shouldn't be given up.

9.3.4.2. Empirical inadequacy

We have seen that the classical NSP is descriptively inadequate. Newmeyer takes this point as a sign of its failure. Roberts and Holmberg reply, though, that all languages have been considered by Gilligan only with respect to the NSP, putting aside all other aspects that could make the NSP effects opaque. There could be other parametric settings interfering with the NSP and thus shading the effect of the properties correlating to the NSP. While Gilligan did leave aside languages with no inflection and checked the sample carefully, he did not study in detail the whole syntax of the languages he considered, offering thus a necessarily biased survey.

Furthermore, the fact that some of the correlations that were predicted on purely theoretical grounds do hold is seen by Roberts and Holmberg as an important result and a sign that parameters are on the right track.

The facts remain, according to Newmeyer, that nobody can point out a set of agreed-upon parameters. And that the NSP, as originally formulated, does not account for the range of data we can find.

9.4. The status of *pro*

Rizzi (1986) reformulates the NSP, proposing explicitly the presence of a null pronoun, *pro*, licensed by INFL of a specific parametric kind under government. *pro* is a pronoun which is not pronounced. It has all the features of a full DP subject (i.e. it can bear Nominative case, for instance, or it can be singular or plural, etc.) but it is phonetically empty. If INFL is pronominal, it will license a *pro*. The NSP is reformulated as follows:

(37) Licensing
      pro is Case-marked by X^0_y, where y is parameterized.
      Identification
      pro inherits the f-feature values of X^0_y (if it has f-features; if not, pro gets a default interpretation, typically arb).

      (Rizzi 1986: 518–23 in Holmberg 2005: 536)

The status of this *pro* has been largely debated by two "teams": one trying to prove its existence, one denying it. The difference between the two views boils down to considering *pro* a phonologically silent but syntactically realized head, or to deny its existence altogether.

The idea that *pro* is syntactically present but then not realized (or deleted at PF), is maintained as we have seen by Rizzi (1986) and much of the following GB literature, including Cardinaletti and Starke (1999), Roberts (2004, 2010b), Sheehan (2006), Holmberg (2005), and many others.

The opposite view has its origins in Borer (1986), and is implemented in different ways by Alexiadou and Anagnostopoulou (1998), Barbosa (1995, 2009), Fassi Fehri (1993), Manzini and Savoia (2005), Nash and Rouveret (1997), Ordóñez (1997), Platzack (2004), and many others.

Cardinaletti and Starke (1999) argue that *pro* is a weak pronoun based on its semantic and distributional properties. Roberts (2010b) follows Cardinaletti and Starke and brings more evidence that *pro* is a weak pronoun. According to these scholars, *pro* is a weak pronoun because it cannot occur in ostension sentences, but it can be used as an expletive. Furthermore, following Rizzi (1982), Roberts (2010b) and Holmberg (2005) show that *pro* occupies spec, TP.

Finnish has in fact both a null referential pronoun and an expletive subject (*sitä*). In Finnish *pro* cannot co-occur with an expletive subject, as they compete for the same position, according to Holmberg. Furthermore, *pro* licenses floating quantifiers, which are only possible with preverbal subjects, and in languages like Florentine and Marchigiano it triggers agreement according to the preverbal subject pattern.[5]

According to another view, NSs are the result of deletion at PF of full pronominal subjects. This view is maintained mainly by Sheehan (2006), and Roberts (2004, 2010b). According to Roberts and Sheehan, rich agreement corresponds to an uninterpretable D feature on T. This D feature can be deleted through agreement, after the pronoun has been merged in spec, TP, together with the rest of φ-features that enter the Agree relation (Chomsky 2001 and subsequent work). Sheehan proposes that a mechanism of Deletion under feature non-distinctness takes place:

(38) *Deletion under feature non-distinctness (where non-distinctness refers to the subset relationship):*
α deletes under non-distinctness of features with β only if βagrees with α

After valuation, originally valued features are virtually indistinct from features that are valued after Agree (Frampton and Gutman 2000, Richards 2011). Identical features do not need to be realized twice at PF, hence, according to Sheehan, the features of the specifier, which contains less information than the T head, get deleted (or not realized) at PF. A full pronoun has a D feature, and hence it can be deleted if T has a D feature itself. If T lacks this D feature, i.e. T is defective, not fully inflected, or impoverished, its deletion cannot take place.

Yet another point of view on *pro* worth mentioning is Uriagereka's (1999), according to which this element is a mere feature, not able to project a specifier.

9.5. Partial NSLs

Perlmutter was the first to note that Dutch has non-thematic NSs, but it allows extraction. Some years later, Maling and Zaenen (1978) pointed out that Icelandic is also a partial NSL (in that it only has null nonthematic subjects) and it also allows extraction, but under different structural requirements.

Partial NSLs have been largely discussed by the Cambridge group on Null Subjects (Biberauer, Sheehan, Holmberg, Roberts). The results of the project has been collected in Biberauer et al. (2010), to which the reader is referred for a detailed discussion of several NS-related phenomena, and a fine-grained classification of NSLs. Another extensive survey is offered by Camacho (2013).

As we have seen in 9.1.1.3., partial NSLs are those languages that do not have full referential silent pronouns, but only have null indefinite pronouns, or null arbitrary pronouns. Finnish, Marathi, Assamese (in the following examples, taken from Holmberg 2010a: 93), as well as Brazilian Portuguese are classified as partial NSLs. Example (39) shows that arbitrary 3rd person pronouns can be dropped in these languages:

(39) a. Tässä   tuolissa   istuu   mukavasti   [Finnish]
          this.IN   chair.IN   sits   comfortably
          'One can sit comfortably in this chair'
     b. Hya   khurchi-war   aaramani   bushushakto   [Marathi]
          this   chair-on   comfort-with   sit.PRES.3SG
          'One can sit comfortably in this chair'
     c. Ei-khon   soki-t   aramkori   boh-ibo   par-i   [Assamese]
          this-CL   chair-LOC   comfortably   sit-MOD   can-3SG
          'One can sit comfortably in this chair'

Null arbitrary pronouns are first considered in Rizzi (1986) who proposes a different version of the NSP, as we saw above. In this new version, Case licensing is considered the crucial ingredient for licensing *pro*, while [+referential] and [+pronominal] features on INFL are replaced by a parameterized "licensing property." Recall that the formulation of the NSP in Rizzi (1986) is the following:

(40) Licensing
      pro is Case-marked by X^0_y, where y is parameterized.
      Identification
      pro inherits the f-feature values of X^0_y (if it has f-features; if not, pro gets a default interpretation, typically arb).
                                    (Rizzi 1986: 518–23 in Holmberg 2005: 536)

The formulation in (40) was such because the main issue of the article were null objects, and Rizzi wished to find a unified account for both subject and object *pro*. According to Holmberg, this formulation makes one important contribution to the understanding of arbitrary null pronouns.

Holmberg (2010a) accurately considers the distribution definite and indefinite

null subjects, drawing the generalization according to which definite null subjects are common in full NSLs and uncommon, or heavily restrained, in partial NSLs. As for indefinite pronouns, their distribution is the reverse: they are quite common in partial NSLs and not so common (or not existing at all) in full NSLs.

An example of this contrast is the following:

(41) a. É   assim   que   faz   o   doce   [Brazilian Portuguese]
        is thus   that makes the sweet
        'This is how one makes the sweet'
     b É   assim   que   **se**   faz   o   doce   [European Portuguese]
        is thus   that SE   makes the sweet
        'This is how one makes the sweet'   (Holmberg 2010a: 92)

Holmberg follows Rizzi (1982) in attributing an important role to referentiality, which he however identifies with definiteness. His proposal is that null subject pronouns are φPs (where φ is a cluster of φ features, see Cardinaletti and Starke 1999, Déchaine and Wiltschko 2002, and others). In NSLs, T is endowed with both unvalued φ features and an unvalued D feature. When T in a NSL probes (Chomsky 2005) for the subject in order to get its φ features valued, these features get copied into the feature matrix of T, giving birth to a sort of incorporation (see Roberts 2010b for more of this conception). Only the highest copy of the subject is pronounced, i.e. that on T, in the form of inflection. As for its reference, the null subject gets it from a null Aboutness topic which Holmberg postulates, following Frascarelli (2007).

The story is different for partial NSLs, where T still has unvalued φ features and hence probes a subject, but it doesn't have an unvalued D feature. This means that when the subject of a non-NSL "incorporates" onto T, it will only have a pronominal nature, in Rizzi's terms, but it will not be definite, because of the lack of D.

Since T does not have a D feature, the reference of the subject cannot be acquired via the chain with the Aboutness topic in partial NSLs. Hence, either their φP subjects, which will not receive their reference, are indefinite, or they are full DPs with their own reference. In this case, they will move to Spec, TP to check the EPP.[6]

9.6. Rich, impoverished, and no agreement NSLs

9.6.1. The role of rich agreement in licensing NSs

One of the core points of the standard formulation of the NSP is that only languages with rich agreement can license null subjects. This was explicitly stated in terms of licensing through AGR in Taraldsen's (1980) work, and indirectly included in both of Rizzi's formulations of the NSP. In (1982), Rizzi attributed the possibility to license a null subject to the INFL head. This INFL had to be pronominal and referential, where reference was represented by rich agreement.

In Rizzi (1986), as we have seen, the NSP was reformulated in terms of a parameterized property on the INFL head, again linked to rich agreement.

Empirical evidence that rich agreement is linked to licensing of thematic, full, referential, Italian-style NSs is offered for instance by Pashto, a split-ergative language spoken in Afghanistan. Pashto shows nominative-accusative alignment in the present tense, and ergative alignment in the past tense. This means for our purposes that in the past tense the transitive verb will show overt agreement with the internal argument/object, as in (42c) and (42d), while in the present tense it will show overt agreement with the external argument / subject, as in (42a) and (42b):

(42) a. Jān   ra-z-i   [Pashto]
         John   DIR-come-3SG.M
         'John comes'
      b. Ze maṇa   xwr-əm
         I   apple   eat-1.M.SG
         'I eat the apple'
      c. Jān   ra-ǧ-ay
         John   DIR-come-3.M.SG
         'John came'
      d. Ma maṇa   wə-xwar-a
         I   apple   PRFV-eat-3.F.SG
         'I ate the apple'   (adapted from Huang 1984: 535)

Pashto has null subjects and null objects. If agreement were directly responsible for their licensing, we would expect subject drop in the present and object drop in the past. This is exactly what we find:

(43) a. *e* Ra-z-i
             DIR-come-3.M.SG
          '[He] comes'
      b. *e* Maṇa   xwar-əm
             apple   eat-1.M.SG
          '[I] eat the apple'
      c. *e* Ra-ǧ-ay
             DIR-come-3.M.SG
          '[He] came'
      d. Ma *e* wə-xwar-a
         I   PRFV-eat-3.F.SG
          'I ate [it (fem.)]'   (adapted from Huang 1984: 536)

Observe that dropping the subject in the past tense is not possible (44a), nor is it dropping the internal argument in the present tense (44b):

(44) a. **e* Maṇa wə-xwar-a   [Pashto]
              apple   PRFV-eat-3.F.SG
          '[?] ate the apple'
      b. Zə *e* xwr-əm
         I   eat-1.M.SG
          'I eat [?]'   (Huang 1984: 536)

Further evidence of the role of rich agreement in licensing null subjects is offered by Ecuadorian Quechua, where null subjects are licensed in root clauses, which show morphological agreement on the verb, but not in embedded clauses, which do not:

(45) a. (Ñuka)   Marya-ta   juya-ni   [Ecuadorian Quechua]
        I-NOM   Marya-ACC love-PRES.1.SG
        'I love Marya'   (Cole 1982: 34 in Gilligan 1987: 165)
    b. Juan-ka   [*(ñuka)   Marya-ta   juya-j-ta]
        Juan-TOP I-NOM   Marya-ACC   love-NMLZ-ACC
        'Juan thinks that I love Marya'   (Gilligan 1987: 165)

These data are taken as evidence for the relation between referential null subjects and rich agreement.

9.6.2. No agreement and radical NSLs

The data from Pashto show uncontroversially that rich agreement plays a key role in licensing null subjects. The problems arise though with languages like Chinese, Japanese, and Korean, and to a certain extent Brazilian Portuguese, which allow null subjects as well as null objects, but have impoverished or no agreement at all.

Huang (1984) examines the case of Chinese pro-drop, and proposes the existence an additional parameter separating languages that are discourse-oriented from languages that are sentence-oriented. Following Tsao (1977), Huang includes Chinese among discourse-oriented languages, which are languages in which antecedents of anaphors must be found in the discourse, but not necessarily in the sentence.

If a language is discourse-oriented, it will have a zero-topic which will be able to bind empty variables, like null pronouns. This zero-topic is hence a licenser, and performs, according to Huang, the same task as the identifying [reference] feature in Rizzi (1982). Thus, two parameters are involved in null subjecthood: the discourse-oriented vs sentence-oriented parameter, and the presence or absence of an antecedent which is "rich enough in content" (a Topic, or rich AGR).

Discourse is also prominent in Saito's (2007) analysis of radical pro-drop languages. According to him, radical pro-drop involves a mechanism of PF merging of arguments that are copied directly from discourse elements. In this, pro-drop equals ellipsis.

Tomioka (2003: 336) observes the correlation between a language featuring discourse pro-drop and the possibility for it to allow bare NP arguments. He puts forward the following generalization:

(46) *Discourse pro-drop generalization*
     All languages which allow discourse pro-drop allow (robust) bare NP arguments.

Building on this generalization, Barbosa (2011, 2013) proposes an account for NSLs according to which there are two ways of licensing NSs: for pro-drop languages, the functional head bearing agreement is pronominal (see Rizzi 1986). For radical

NSLs, which as we have just seen feature bare NP arguments, NSs are the result of null NP anaphora, which is licensed differently depending on the anaphora-licensing mechanisms available in the language.

Along similar lines, Duguine (2013) attempts to explain all pro-drop phenomena as NP/DP ellipsis, buy showing that the conditions licensing NSs are the same licensing DP ellipsis in larger constituents.

Another attempt to unify radical NSLs with NSLs was put forward by Jaeggli and Safir (1989) with their Uniformity of the Paradigm hypothesis, according to which null subjects are permitted in all and only languages with morphologically uniform inflectional paradigms. Jaeggli and Safir distinguish between derived forms and underived ones. Derived verb forms are constituted by a root and an affix. Underived forms are bare roots. A paradigm that has all derived forms, like Italian or German, can allow null pronouns (referential or expletive). A paradigm with only underived forms, like Chinese, can also license null subjects. Languages like French and English, which have only some derived forms, do not license null subjects.

The formulation of the NSP according to Jaeggli and Safir should be the following:

(47) Null subjects are allowed in all and only languages with morphologically uniform inflectional paradigms.

A NSL must hence have rich agreement or no agreement at all.

9.6.3. Impoverished agreement

The setup of the inflectional paradigm is crucial for the NSP also according to Roberts (2004, 2010b).

Building on Müller (2005), Roberts (2010b) classifies languages into rich and impoverished agreement ones; rich agreement when each person-number combination for an inflectional morpheme is realized by a different ending, and there has been no pre-syntactic impoverishment creating syncretic forms in the paradigm. If the paradigm is impoverished, T has no D feature, hence it cannot license deletion of the subject pronoun.

German, Dutch, and partial NSLs have impoverished paradigms, and that is the reason why they are not fully NS, despite their seemingly rich inflectional paradigms. Italian, Greek, Turkish, and all referential NSLs have a morpheme for every number-person combination: they are uniform regarding the setup of their inflectional forms. Chinese, Korean, and Japanese, on the other hand, are also morphologically uniform, as they do not have any ending at all. Uniformly inflected or uniformly uninflected languages license full pro-drop. Impoverished paradigms can only license partial or expletive NSs.

Furthermore, following Saito (2007), Roberts assumes that pro is directly merged at LF in languages without agreement. According to Saito, as mentioned in the previous section, both ellipsis and radical pro-drop involve LF copying of arguments from discourse entities. Discourse licenses pro in radical pro-drop languages. Roberts arrives at the following generalizations:

(48) a. Radical pro-drop is possible if φ-agreement is not obligatory.
      b. Consistent null subjects are possible if there is no impoverishment of T's
          φ-features.

                                                              (Roberts 2010b: 85)

(48) restates Saito's (and Huang's) discourse licensing of pro in radical NSLs, which
lack agreement. (48b) states that among languages with agreement, only those with
rich, non-impoverished, agreement can have a null subject.

   According to Roberts, then, the NSP should be rewritten as follows:

(49) a. Are φ-features optional or obligatory on probes?
      b. If obligatory, are φ-features impoverished on all probes?
      c. If φ-features can be impoverished, are those of {T, v, …} impoverished?
          (Roberts 2010b: 86)

(49a) separates radical NSLs from the rest; (49b) separates non-NSLs from NSLs,
and (49c) separates partial NSLs from full NSLs.

9.7. The micro-parametric approach to NS

The classical parametric approach has several flaws, as we have seen. The first
and most salient is its rigidity which, which was intensely discussed within the
Newmeyer vs Roberts and Holmberg debate, forces an all-or-nothing approach on
the data, which are often not so straightforward.

   With the advent of Minimalism (Chomsky 1995 and subsequent work), the
debate on the shape and role of parameters has been put slightly aside: while
scholars kept assuming the existence of parameters like the Head Parameter, or the
Null Subject Parameter, not much research has been done on discovering new ones.
One notable exception is the reformulation of the concept of parameters dubbed
by Baker (2008a) as the "Borer-Chomsky conjecture," according to which language
variation can be ascribed to featural differences on lexical items.

   This new view on parameters moves variation to the lexicon. Different feature
setup on given lexical items determine different languages.

   For parameters, this means moving from "macro switches" determining many
different properties of a given language in one go, to clusters of micro-parameters,
each linked to a feature. These clusters have the advantage of being more flexible
than classical parameters, and to have wider empirical coverage. The obvious limit
of this conception of parameters is it is not clear how and under which conditions
this clustering takes place.

   This limit can be overcome with hypotheses such as the Uniformity of the Input,
put forward by Roberts and Holmberg (2010), according to which if a feature has
a certain value on a key head (like v), this value will be passed on to all other heads
in the clause. If for instance v has a [+EPP] (a feature triggering movement to its
specifier), the same value will spread to all other functional heads, resulting in a
consistent head-final language.

(50) *Generalization of the input*
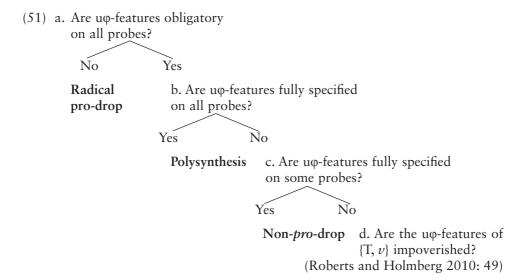   If acquirers assign a marked value to H, they will assign the same value to all
      comparable heads.   (Roberts and Holmberg 2010: 41)

This parameter resolution mechanism is rather flexible, and accounts both for the fact
that languages tend to be harmonic, and for the possible deviation from harmonic
order. Languages like German and Dutch, for instance, which are disharmonic, have
marked values (i.e. values deviating from uniformity) on some heads.

   This approach allows more flexibility than the granitic classical parametric one,
not only because it permits deviations from the standard, but also because being
these micro-parameters independent, and linked to single features, they can easily
obscure each other. This in turn makes it possible to have opacization effects,
meaning that one parametric setting may be overcome by another, without having to
postulate a macro change for the grammar. In this way it is much easier to account
for exceptions.

   Another option is to consider parameters as schemata, available to the language
acquiring-child, as proposed by (Gianollo, Guardiano, and Longobardi 2008). For
a detailed discussion of the form and quantity of micro-parameters, see Biberauer
et al. 2010).

   For null subjects, Roberts and Holmberg propose the following scheme, which is
an update version of (49):

(51) a. Are uφ-features obligatory
         on all probes?

         No   Yes

      Radical   b. Are uφ-features fully specified
      pro-drop   on all probes?

                         Yes   No

                      Polysynthesis   c. Are uφ-features fully specified
                                             on some probes?

                                          Yes   No

                                       Non-*pro*-drop   d. Are the uφ-features of
                                                               {T, v} impoverished?
                                                       (Roberts and Holmberg 2010: 49)

Radical pro-drop languages are those languages, like Chinese and Japanese discussed
above, which allow null subjects and null objects in the absence of verbal inflection.

   Furthermore, the more impoverished the φ-feature bundle is on T (which is
relevant for our case), the more difficult it is to drop the subject. The richer the
inflection, the richer the φ-set, the easier it is to drop the subject.

9.8. Conclusions

The idea of a Null Subject Parameter from which many properties of a given language can descend has always been very appealing. In the GB era, when the attempt to make the parametric components of the UG explicit was strongly pursued, the formulation of an overarching macro parameter which could capture the co-occurrence of several properties of a language was welcomed and accepted.

During the years, the aims of generative research have switched slightly, and the idea of a macro NSP has been abandoned altogether, or replaced by a new formulation in terms of micro-parametric clustering. This was attempted because of the urge to account for the increasing amount of empirical counterevidence to the classical, granitic formulation of the NSP, and because of theory-internal considerations.

Some observations, though, remain valid through the years: first and foremost, the correlation of null subjects and rich agreement in inflecting languages; the correlation of null subjects and discourse recoverability in radical NSLs; the implication according to which a NSL that has full referential NSs usually also has expletive NSs. Furthermore, partial NSLs have been given a lot of attention in the last years, and the empirical coverage has extended dramatically. In this respect, much has been achieved in the understanding of this phenomenon. Whether the new insights have contributed substantially to what had already been discovered in the early 1980s or not remains an open question.

Notes

*   *I wish to thank George Walkden, Marco Tamburelli, Jacopo Garzonio and two anonymous reviewers for their valuable comments and suggestions.

1   In the literature, *e* is the shorthand for "empty category."

2   Note that this correlation, together with the idea of treating null subjects on a par with empty categories, has been recently reconsidered by Chomsky, in a series of MIT lectures in March–April 2014.

3   In a recent series of lectures, Chomsky (2014b) reconsiders the NSP within the general issue of labeling. Labeling (Chomsky 2005 ff.) is an operation which assigns a label to a set of two syntactic items, so that the derivation can proceed and selection can take place. In what follows I give a very short overview of the background needed to follow Chomsky's proposal, which might not be common knowledge yet, and then move on to present Chomsky's idea on the NSP.

In an "asymmetrical" merge, i.e. when a head is merged with an XP, the label will be given by the head. This is what happens in what was once called a head-complement structure. If V is merged with a DP, the label of the set deriving from this Merge will be V (we will call this set a VP).

One of the problematic cases for the labeling algorithm which Chomsky considers is the XP YP configuration (see also Chomsky 2013a), otherwise known as the specifier problem. In a case of object extraction, the object is internally Merged at the edge of the vP in order to be extracted to the matrix clause. We have in this case a DPwh-vP

structure. In other words we have two XPs merged with each other. This creates a problem for the labeling algorithm.

Chomsky examines several solutions to this problem. For wh-movement, Chomsky follows Moro's antisymmetry in claiming that when we create an XP YP structure, this needs to be broken via movement of one of the constituents. This, according to Chomsky, generates successive cyclic movement.

Subjects in spec, TP are also a case of XP YP, the subject being a DP merged with a TP. In this case the subject does not move out, though, because it has hit a criterial position (Rizzi 2006, 2007; Chomsky speculates on why the subject does not move forward, but this is not relevant for the present discussion and we leave it aside). The XP YP set created by the subject in spec,TP must be labeled. One way to do it is to give it the label of the most prominent common element, in this case φ. Both the subject and TP share φ features, hence the label of this <φ, φ> will be φ.

With this in place, we can now move on to the NSP. Chomsky starts from the observation which is very familiar by now of rich agreement. He says that languages with rich agreement have a "strong T," i.e. a T which has enough φ-features as to be able to give a label to an XP TP structure in which it is found.

Going once again back to the origin, Chomsky also considers subject extraction as a case of ECP.

Extraction is possible in Italian (ECP is violated in Italian, to put it in Chomsky's terms) because it is possible to label the intermediate position of extraction (spec,TP of the embedded clause) thanks to rich agreement. This possibility is not given in English, where T is weak, root-like, hence its φ is not sufficient for labeling. T in English can be a label only if it combines with something "labelable," like a full subject. In that case the label will be the combination of the φ-features of T and the subject.

If T is strong in NSLs, it does not need to be merged with a full subject. This means that Italian and other full NSLs do not have an EPP. No subject is needed in spec,TP in order to continue the derivation. The EPP and the ECP go thus hand in hand: either a language has both, or it has neither.

The NSP regards hence the strength of T, its root-like status vs its full status. From this the possibility descends of having subjectless sentences as well as extracting the subject without incurring in THAT-T effects.

4   The Newmeyer vs Roberts and Holmberg debate involves several issues, of which we will report only those that are strictly relevant for the NSP.

5   For reasons of space, all the evidence in favor of the existence of *pro* and its position cannot be presented here. The reader is referred to Roberts (2010b: 70 and ff) for a complete overview of the empirical evidence in favor of *pro*.

6   So far, we have not addressed the EPP, as it is marginal here. If full NSLs have an EPP, how is this going to be checked in the case of incorporation of a NS? Several alternatives are possible, one being that there is no EPP at all in NSLs (which would mean in terms of our parameters that a T head in a NSL has an unvalued D feature and lacks an EPP – two properties that are not very easy to be derived from the same parameter); the other being checking via verb-movement, following Alexiadou and Anagnostopoulou's (1998) proposal. We leave the EPP issue aside because not directly relevant for this discussion, and we turn to examine the role of rich inflection and NSLs lacking inflection altogether.