Parameters and the design of the Language Faculty

Northern Italian partial null subjects

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Following Berwick and Chomsky (2011), parameters are degrees of freedom open at the externalization (EXT) of syntactico-semantic structures (SEM) by sensorimotor systems (PHON) (Section 1). Within this framework, in Section 2 I focus on a case study concerning Northern Italian subject clitics, also raising the well-known question how to reconcile observable microvariation with the desideratum of a reduced number of (macro)parameters. Sections 3 reviews recent relevant models of parameterization, the Rethinking Comparative Syntax model (ReCoS, Biberauer et al. 2014) and the Parameters & Schemata model (Longobardi 2005, 2017). Sections 4–5 return to the case study, taking the reductionist view that parameters may be just categorial cuts, such as the 1/2P vs 3P split, interacting with externalization and other general principles of grammar.

Keywords: parameter, externalization, lexicon, null subject, microvariation

1. From the foundational work of the 80s to evolutionary linguistics

In this overview section, I begin by reviewing the emergence of the notion of parameter within the Government and Binding framework. The next crucial advance in the conception of language variation stems from the biolinguistic perspective of Chomsky (2005, 2007), Berwick and Chomsky (2011) and from its externalization view of parameters. In connection with it, I will also briefly mention word order and movement parameters.

The starting point of any investigation into the notion of parameter must be the classical discussion of Chomsky (1981):

> What we expect to find, then, is a highly structured theory of UG based on a number of fundamental principles that sharply restrict the class of attainable

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> grammars and narrowly constrain their form, but with parameters that have to be fixed by experience. […] Limited evidence, just sufficient to fix the parameters of UG, will determine a grammar that may be very intricate. (Chomsky 1981: 3–4)

What Chomsky presents is essentially a research program. The crucial characteristics of this research program is the same that informs all of Chomskyan linguistics, once applied to parameters – namely that parameters should have deductive depth and not merely reproduce observed variation or encode it via merely classificatory devices.

Let us consider how this research program was implemented in contemporary work. Rizzi (1982) defines the Null Subject Parameter in the following terms:

> Other properties systematically correlate with the null subject property: first of all null subject languages (henceforth NSL's) generally have a free process of subject inversion, while non-NSL's generally do not; secondly, non-NSL's generally show COMP-trace effects, while NSL's generally do not. […] This systematic pattern of variation will be provisionally called the Null Subject Parameter. (Rizzi 1982: 117)

Rizzi formalizes the parameter as in (1). Languages which have both (a) and (b) positively set are NSL's proper, like Italian; languages that do not have a positive setting for (b) are those that only present null expletives. The best part of Rizzi's chapter is devoted to showing that the theoretical statement of the parameter in (1) derives the systematic pattern of variation between NSL's and non-NSL's. This yields the picture of a parameter aimed at by Chomsky (1981), as a single yes/no choice from which one could derive several apparently unrelated phenomena.

(1) a. INFL can be specified as [+pronoun]
b. INFL [+pron] can be referential (Rizzi 1982: 143)

According to (1), what actually varies from language to language is the feature content associated with a certain head. Borer (1983) provides an explicit discussion of "a model of parameters" in "the inflectional component":

> We will be using the notion *inflection*… to indicate a particular kind of local relations and local features, whether specified as properties of lexical items or as properties of grammatical formatives… The availability of any particular subset of these relations for any given grammatical formative or lexical item is an idiosyncratic, language-particular fact… The interaction of this set of properties… with the principles of universal grammar will, in turn, give rise to different grammars… Our system… is clearly a desirable system: it places the burden of learning on the grammatical component that is idiosyncratic and learned in every language: the vocabulary and its properties. (Borer 1983: 3)

This parametric vision is at the basis of the so-called Borer-Chomsky conjecture, which has become standardized within the minimalist program (Chomsky 1995). In minimalist terms, what determines variation is essentially the feature content of probes and goals – essentially the inflectional relations of Borer (1983). This feature content influences the derivation, since it dictates the application of probe-goal relations, essentially as envisaged by Borer for her inflectional rules.

Another concept which plays an important role in the discussion of parameters in the 80s is that parameter values may be ordered by subset hierarchies. According to Manzini and Wexler (1987: 425), "the Subset Principle says intuitively that the learner selects the value of a parameter that generates the smallest language that is compatible with the data". Their Subset Condition, stated in (2) below, introduces the hypothesis that the languages that parameter values generate are ordered by subset relations. The result is that "if all languages generated by the values of a parameter stand in a subset relation to one another, as under the Subset Condition, the Subset Principle will always be able to operate".

(2) Subset Condition
Given the parameter p with values $p_i \ldots p_n$, for every p_i and p_j, $1 < i, j < n$, either $L(p_i) \subseteq L(p_j)$ or $L(p_j) \subseteq L(p_i)$. (Manzini and Wexler 1987: 429)

In general, Manzini and Wexler (1987), Wexler and Manzini (1987) make the relevant point that if parameters are to be internally structured, this organization must be predictable on the basis of some deeper properties. They conclude that parameters are shaped in a certain way by learnability, i.e. by what Chomsky (2005) would call 'third factor' (roughly processing) considerations.

Therefore, by the mid '80s the principles and parameters model was firmly established as well as important accessory notions such as the idea that the lexicon is a locus of variation and that the internal structuring of parameters, if any, is shaped by general principles external to language. The conceptualization of language variation and parameters forged ahead next as a byproduct of developments in the theory grounding language in a biological, evolutionary perspective.

Hauser et al. (2002) introduce a distinction between a Narrow Faculty of Language (FLN) consisting essentially of a recursive computation, and a Broad Faculty of Language (FLB) consisting of conceptual-intentional (C-I) and sensori-motor (SM) components, recruited around FLN. They propose that FLN and FLB follow quite distinct evolutionary paths:

> We hypothesize that most, if not all, of FLB is based on mechanisms shared with nonhuman animals… In contrast, we suggest that FLN – the computational mechanism of recursion – is recently evolved and unique to our species… Much of the complexity manifested in language derives from complexity in the peripheral components of FLB, especially those underlying the sensory-motor (speech

> or sign) and conceptual-intentional interfaces… FLB as a whole thus has an ancient evolutionary history, long predating the emergence of language… By contrast,… FLN comprises only the core computational mechanisms of recursion.
> (Hauser et al. 2002:1573)

Berwick and Chomsky (2011:28–29) explicitly connect this new architecture of grammar to parametrization: "diversity of language results from the fact that the principles do not determine the answers to all questions about language, but leave some questions as open parameters". They go on to formulate the idea that variation and parameters are to be connected to externalization; specifically, the long evolutionary history of FLB and more specifically of its sensorimotor component, is at the origin of its variability:

> a sensory-motor system… appears to have been basically intact for hundreds of thousands of years… We would expect, then, that morphology and phonology – the linguistic processes that convert internal syntactic objects to the entities accessible to the sensory-motor system – might turn out to be quite intricate, varied, and subject to accidental historical events. Parameterization and diversity, then, would be mostly – possibly entirely – restricted to externalization.
> (Berwick and Chomsky 2011:35)

Yet when Yang et al. (2017) recently face the issue of parameters acquisition they evidently still refer to the Principles & Parameters view:

> the Language Acquisition Device must be highly structured in order to promote rapid and accurate acquisition … The Principles and Parameters framework (Chomsky, 1981) was an attempt to resolve the descriptive and explanatory problem of language simultaneously … Parameters provide a more compact description of grammatical facts … the determination of the parameter values will thus simplify the task of language learning (Yang et al. 2017:110–111)

Even more explicitly, Yang et al. (2017) refer to the evolutionary, economy view striking a cautionary note about its level of detail:

> [parameters] are unlikely to have evolved independently … We can all agree that the simpler conception of language with a reduced innate component is evolutionarily more plausible – which is exactly the impetus for the Minimalist Program of language (Chomsky, 1995). But this requires working out the details of specific properties so richly documented in the structural and developmental studies of languages. (Yang et al. 2017:115)

As I will briefly discuss later in this section, it seems that, empirically, nothing much stands in the way of Berwick and Chomsky's simpler view – on the contrary,

it may prove, empirically, advantageous, for instance with respect to microparameterization (Section 2–5).

Another type of doubt which has been raised in the literature concerns externalization itself, in relation to what Balari and Lorenzo (2018) call Chomsky's New Wave Internalism, roughly "that I-language relates asymmetrically with the interfaces, privileging the semantic interface". Balari and Lorenzo exemplify this view with a discussion of agreement:

> Chomsky's efforts to preserve his optimal LOT [Language of Thought] thesis are certainly ingenious. However, they are a far cry from explaining why agreement features are there to begin with. If any, the suggestion that they have to be somehow eliminated/neutralized makes their being there even more mysterious. In other words, Chomsky's recent approaches to the matter appear not to have progressed too much from the early days when he declared these aspects of languages "imperfections" of the linguistic faculty (Chomsky 1995). The same objection rules for other Chomskyan-inspired alternatives: for example, the idea that agreement features are alien to the thought composing process and that they rather belong to late insertion morphological processes within the route to externalization. Not surprisingly, defenders of this view refer to them as "ornamental morphology" (Embick & Noyer 2007). But why should speakers embellish externalized expressions? (Balari and Lorenzo 2018:10)

I would fully subscribe both to the preceding discussion and to the conclusion that "we have equally good reasons to attribute these kinds of units both an external and an internal status, for … they self-organize according to a learner-internal logic, and contribute … to the constitutive process of the inner machinery underlying complex linguistic computations" (Balari and Lorenzo 2018:13–14). Yet, it seems to me that the idea that externalization is the locus of variation works equally well under integrated views of the type expressed by Balari and Lorenzo as under New Wave Internalism. In other words, parameters as degrees of freedom open at externalization are logically independent of the level of integration (or dissociation) of externalization in the overall architecture of grammar (see Balari and Lorenzo's fn. 3 on how Chomsky himself wavers considerably in this respect).

The connection with the Borer-Chomsky conjecture, concerning the lexical nature of parametrization, is also brought out by Berwick and Chomsky (2011:39): lexical items are "the conceptual atoms of thought and its ultimate externalization". In other words, parameters concentrate in the lexical system for the simple reason that the latter is inextricably connected with externalization. The lexicon, being responsible for the matching of elementary pairs of C-I and SM properties, is a privileged locus of externalization, and therefore of variation.

The set of parameters involving word order also finds a natural collocation in the externalization framework, including the head-complement parameter (Baker

2001 and many others), which determines whether a language is head-initial (the head precedes the complement) or head-final (the complement precedes the head). In influential work, Kayne (1994) proposes that deep features of the hierarchical order of constituents (the X-bar schema) are imposed by the need for linearization within the computational component, as enforced by the Linear Correspondence Axiom. As a consequence, basic word order is universal (head-initial) and variation in word order derives from a rich repertory of movement operations, including not only A/A′ movement but also head movement, remnant movement, roll-up movement. From the point of view of parameters, it is difficult to conceive of this set of movements as lexically driven, precisely because many of them are motivated solely by word order.

Chomsky (2005) takes a new departure. Merge yields non-ordered couples (sets) of the type {X, Y}. At the same time:

> one asymmetry imposed by the phonetic interface is that the syntactic object derived must be linearized… If linear order is restricted to the mapping to the phonetic interface, then it gives no reason to require the basic operation Merge to depart from the simplest form … unstructured Merge, forming a set.
>
> Chomsky (2005: 15)

In other words at externalization, universal pairs such {Head, Complement} are linearized so that Head precedes Complement or the reverse. The inextricable link of precedence relations with parametrization follows then from the idea that parameters involve externalization procedures. It appears that there are at least two such procedures – namely linearization and the lexicon.

Some of the best known parameters of Government and Binding and minimalist literature involve whether movement takes place or not and what position it targets. Here I consider just one family of these parameters involving head movement, specifically verb movement (Pollock 1989 and many others). The discussion of the parameter by Chomsky (1995, 2001) illustrates how the conceptualization of parameters in generative frameworks revolves around the lexicon and the externalization interface even though the weight of explanation shifts from one to the other of these components. Chomsky (1995) introduces the idea that whether V moves to I or not depends on whether the features of I (Agr) are strong or weak:

> the V-features of Agr are strong in French, weak in English… If V does not raise to Agr overtly, the V-features survive to PF. Let us now make the natural assumption that strong features are visible at PF and weak features invisible at PF. These features are not legitimate objects at PF; they are not proper components of phonetic matrices. Therefore, if a strong feature remains after Spell-Out, the derivation crashes. In French overt raising is a prerequisite for convergence; in English it is not. (Chomsky 1995: 181)

Strong and weak features were widely adopted by the minimalist literature and construed as a core application of the Borer-Chomsky conjecture. Yet Chomsky (2001) argues against the solution just proposed and in favour of a different analysis of the verb movement parameter:

> A substantial core of head-raising processes… may fall within the phonological component… Semantic effects of head raising in the core inflectional system are slight or non-existent, as contrasted with XP-movement, with effects that are substantial and systematic… Overt V-to-T raising, T-to-C raising and N-to-D raising are phonological properties, conditioned by the phonetically affixal character of the inflectional categories… Considerations of LF-uniformity might lead us to suspect that an LF-interpretive process brings together D-N and C-T-V… to form wordlike LF supercategories in all languages, not only those in which such processes are visible. (Chomsky 2001: 37–38)

The discussion just quoted falls short of a formal implementation. Yet, the overall idea is clear, namely that lexical categories and their functional spines form LF units which may be externalized at any of the positions that the extended projection comprises.

In short, in the biolinguistic framework parameters are located at the externalization interface, where syntactico-semantic structures are mapped to sensory-motor systems. One of the fundamental sources of linguistic variation is the relative order of constituents, as determined by phrase structure or by movement. The externalization idea is that this source of variation is not internal to syntax (contrary to much minimalist literature), but it is to be pushed at the interface. The lexical encoding of derivational instructions by such meta-features as strong/weak is thus avoided (as are various types of movement necessary only to derive order in core syntax). At the same time the unification of parameters at the externalization interface is eminently compatible with the status of the lexicon as a locus of variation. The Null Subject Parameter in Rizzi's formulation in (1) is a good example of a lexical parameter – since it centers on whether the agreement inflections of a verb are to be construed as endowed with D (pronominal) content or not.[1]

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1. An anonymous reviewer points to several notable parameter families in the literature, besides the few quoted in the text. For instance, questions can be formed by moving a wh-word to scope position (English) or by binding an indefinite in situ (Chinese). One may assume that this depends on the wh-features present in English and not in Chinese – no necessity to refer to weak/strong wh-features. Of the three parameters quoted by Baker (2001) we have not mentioned the polysynthesis parameter. However many of the facts described by Baker oppose English to any rich agreement/clitic language, for instance the Romance languages. This leaves what we may call the incorporation parameter to be accounted for. Finally, Chierchia (1998) proposes

It should be mentioned that the place of the lexicon in the overall architecture of the Language Faculty is open to (partially) different construals, no less than the other theoretical constructs considered so far. Halle and Marantz (1993, 1994) provide an approach which is often taken as standard within minimalist theory, namely Distributed Morphology. In this framework, the computation does not operate on conventional lexical items, comprising a C-I and an SM content, but on abstract feature matrices. The Vocabulary, which matches the abstract syntacticosemantic features operated upon by the syntax with SM contents, is postsyntactic. At the very least, if the more moderate position taken by Embick (2000:187) is followed, there is "distinction between the *functional* and *lexical* vocabularies of a language" whereby "functional categories merely instantiate sets of abstract syntacticosemantic features". This is not the view of the lexicon originally proposed within the minimalist program (Chomsky 1995) which explicitly holds projection of the syntax from the (pre-syntactic) lexicon. Indeed recall that the Inclusiveness Principle forbids the addition of extra-lexical properties in the course of the derivation.

The DM argument in favour of Late Insertion is empirical. For DM theorist, the fact that Vocabulary Insertion applies after syntactic derivation (Late Insertion), crucially allows it to take into account the result of applying morphological rules to the abstract terminal nodes, yielding syncretisms and other morphological idiosyncracies. Yet Manzini and Savoia (2011a, b), Kayne (2010a, b), in their different ways, argue that apparently morphological phenomena involving for instance Romance clitics can all be accounted for within a minimalist syntactic component with some explanatory and descriptive advantages. Arregi and Nevins (2018) label this type of approach as Occam's syntactic razor.

The present discussion is based on the projectionist model, which seems more directly compatible with ideas about parametrization being linked to externalization than the DM model. Indeed, Distributed Morphology, while explicitly acknowledging the existence of postsyntactic Vocabulary Items, subject to Late Insertion, must have a presyntactic lexicon of sorts as well, consisting of roots and of feature matrices. If the feature matrices are subject to variation, then we end up with the paradox that these choices are no longer connected with externalization.

As I partially mentioned, the actual implementation of the general ideas presented in this section raises a great deal of questions. One such question has to do with the fact that variation, especially between closely related languages

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a semantic parameter differentiating pluralizing languages (English) from classifier languages (Chinese). In the construal of Borer (2005), this becomes a parameter manageable by an ordinary minimalist syntax involving the alternative of the nominal class Div (for plural) and of nominal classifiers.

(or dialects), typically involves small portions of the lexicon – whence the often used term of microvariation. Can this be reconciled with the idea that parametric choices present themselves to the learner in a limited number and with a correspondingly general format (macroparameters)? The rest of this paper concentrates on this question. In Section 2, I begin by considering a concrete case study in parameterization, arising in connection with the Null Subject Parameter and concerning variation in partial null subjects in Northern Italian varieties.

2. A case study: Partial null subject in Northern Italian varieties

Kayne's (2000) label of microparametric syntax, reflects the coming of age of what we may call a generative dialectology, to which his own studies provide an important contribution:

> the technique of examining a large number of very closely related languages promises to provide a broad understanding of parameters at their finest-grained (microparameters), that is, to provide a handle on the question, What are the minimal units of syntactic variation? … Since the invariant principles of UG can hardly be understood in isolation from syntactic variation, this tool promises to provide invaluable evidence that will shape our understanding of those principles themselves. Kayne (2000: 6, 9)

Several examples of this research trend are mentioned by Kayne. Among them is the fact that "Renzi and Vanelli (1983) showed that in Northern Italy alone one can individuate at least 25 syntactically distinct languages/dialects solely by studying the syntax of subject clitics" (Kayne 2000: 7).

Renzi e Vanelli (1983) propose several implicational generalizations holding of Northern Italian subject clitics, including (3), which I reproduce in the rendering by Cardinaletti and Repetti (2008). Cardinaletti and Repetti (2008) argue that the implicational hierarchy 2nd singular < 3rd singular < 3rd plural that can be deduced from Renzi and Vanelli's generalizations in (3) depends on a structural hierarchy of positions, namely (4). They propose that in (4) the 2nd singular position is licenced by verb movement to it. In turn, both the 3rd singular and the 2nd singular positions are licenced by verb movement to the 3rd singular, and so on. This means that no position can be licenced unless 2nd singular is; 3rd singular can be lexicalized only if 2nd singular also is; and so on.

(3) a. Generalization 1: If a variety has at least one subject clitic, it is 2SG.
    b. Generalization 2: If a variety has two subject clitics, they are 2SG and 3SG.
    c. Generalization 3: If a variety has three subject clitics, they are 2SG, 3SG, 3PL.

(4) [3PL [3SG [2SG

The proposal by Cardinaletti and Repetti (2008) is typical of a range of so-called cartographic responses to microparametric variation. In other words, keeping a relatively simple computational component, the underlying structures on which it operates is more finely articulated. Thus the Infl position of Rizzi (1982) is articulated in the sequence of person position in (4). However, (3) depicts the situation in proclisis (in the 30 varieties considered by Renzi and Vanelli (1983)). The mapping between enclisis and proclisis is not straightforward, as highlighted by the generalization in (5) (again in the formulation of Cardinaletti and Repetti (2008)). Cardinaletti and Repetti also propose a structural derivation for (5). Because by definition, enclisis is created by movement of the verb to a sufficiently high position to leave all clitics to its right, all clitic positions in (4) will be licenced in enclisis, letting clitics surface. Hence enclitics are at least as many as proclitics (5a) and all proclitics are also enclitics (5b).

(5) If interrogative sentences are formed via subject-inversion,
   a. the number of enclitic pronouns found in interrogative sentences is equal to or greater than the number of proclitic pronouns found in declarative sentences, and
   b. the subject pronouns found in proclitic position are also found in enclitic position.

Now, Renzi and Vanelli's empirical base is relatively small (30 dialects), and a larger database brings out a few classes of systematic counterexamples. Manzini and Savoia (2005: § 2.3) exemplify 183 varieties (as counted by Calabrese 2011) and among those there are several where 3rd person subject clitics are realized, but not the 2nd singular clitic, violating the generalizations in (3). Things do not improve when it comes to enclisis-proclisis generalizations. Pattern representing a counterexample to (5) are illustrated in (22)–(23) in Section 4 (see also fn. 6–7). What is more, in many varieties, specialized proclitics alternate with syncretic subject enclitics. Hence there are proclitic forms that do not appear in enclisis, violating at least (5b); in the extreme case, a differentiated proclitic paradigm may alternates with an undifferentiated enclitic (in Piedmontese Occitan varieties).

From this state of affairs, Calabrese (2011) concludes that the correct level of analysis at which to account for the intricate microvariation illustrated by Northern Italian subject clitics is not syntax but morphology. In order to understand Calabrese's approach it must be kept in mind that there is a close correspondence between instances of partial pro-drop and instances of syncretism. By and large, subject clitics are absent for a given set of person and number forms iff a syncretic realization is attested for the same set. It is syncretisms, rather than partial pro-drop, that Calabrese sets out to account for. Calabrese's analysis is again based

on a person hierarchy, namely 2SG > 3SG > 3PL > 1SG > 2PL > 1PL. For Calabrese, this hierarchy corresponds to a set of constraints, each of which blocks the realization of the relevant forms, as in (6). For instance, the activation of constraint (6f) means that the feature cluster [+speak, +augm], i.e. 1st plural, is excluded. This in turn triggers morphological readjustment, in order to allow for lexicalization, yielding syncretism. Alternatively, the activation of a constraint can lead to obliteration, i.e. lack of the relevant lexicalization, hence to partial pro-drop. Calabrese's system allows only certain syncretisms or partial pro-drop patterns, since the constraints are forced to apply in the order given, from more marked to less marked, i.e. from bottom to top of the hierarchy in (6).

(6) In the context [[AgrS ____] + V
a. *[+part, −speak, −augm] 2SG
b. *[−part, −augm] 3SG
c. *[−part, +augm] 3PL
d. *[+speak, −augm] 1SG
e. *[+part, −speak, +augm] 2PL
f. *[+speak, +augm] 1PL

From an empirical point of view Calabrese reaches a better match to the data than previous approaches – yet some problems remain. In particular, Calabrese recognizes that in enclisis the hierarchy of persons may be different. For this reason, the hierarchy in (6) is restricted to proclitics; for enclitics, Calabrese notices that the hierarchy may need to be partially reversed to 3SG > 2SG. Even limiting ourselves to proclisis, varieties which violate Renzi and Vanelli's (1983) generalization in (3a) are a problem under (6) as well. Furthermore, Calabrese's system does not deal with the proclitics of a variety like Prali (in (8) below) where only the 1st singular is missing and all other forms are specialized – counter to his hierarchy. From a theoretical point of view, the morphological repairs that Calabrese assumes to be at work require Late Insertion, in the sense of Distributed Morphology; these assumptions violate minimalist principles such as Inclusiveness, i.e. projection from the lexicon, and no backtracking. It is possible that these minimalist principles hold in syntax and not in morphology for some reason, but the result is in any case an enrichment of grammar.

What is then the overall empirical picture that it is so difficult to capture? Manzini (2015) concentrates on variation in the P paradigm and specifically on partial pro-drop. The logical possibilities for combining four person denotations with two choices for lexicalization (P vs. zero/syncretic form) are sixteen. In the absence of further constraints, we expect to find all of them. Now, enclitic paradigms reported by Manzini and Savoia (2005: § 3.1, § 3.13.2) are only about half the proclitic ones, since several subject clitic varieties form questions without

subject clitic inversion. Surprisingly enough, Manzini (2015) finds evidence for fourteen existing varieties, as shown in (7),[2] where each pattern is labelled by a variety which exemplifies it in the relevant corpus (generally the first variety in the order of presentation). The minus sign refers to the fact that the relevant P reference is not lexicalized or not by a specialized P form.

(7)

		1st	2nd	4th	5th
1.	*Villa di Chiavenna*	–	P	P	P
2.	*Chioggia*	–	P	–	–
3.	*Colle S.Lucia* (impf.)	–	P	–	P
4.	*	–	P	P	–
5.	*Tuenno* (impf.)	P	–	P	P
6.	*Passirano*	P	–	–	–
7.	*	P	–	–	P
8.	*Vermiglio*	P	–	P	–
9.	*Barcis*	P	P	P	P
10.	*Comeglians*	P	P	–	–
11.	*Castellazzo Bormida*	P	P	–	P
12.	*Forni di Sotto*	P	P	P	–
13.	*Pozzaglio*	–	–	–	–
14.	*(La Strozza)*	–	–	(o)	P
15.	*Odolo*	–	–	–	P
16.	*Cataeggio*	–	–	P	–

Face to the table in (7) I simply conclude that more or less all logically possible values are attested. This means that there are no special constraints in action (structural hierarchies, constraints hierarchies, typological implications or others), simplifying the issue at least as far as enclisis is concerned. However, Manzini (2015) tabulates only 6 possible proclitic patters with 1st/2nd person, which means that there is a considerable amount of missing combinatorial slots, as shown in (8). In the table in (8), the generalization holds that if any 1/2P clitic is lexicalized, the 2nd singular is, striking out the rows 5–8 and 14–16 – and also rows 4 and 16 where lexicalization of the 2nd is violated in the plural. The other

2. The varieties in (7) and also in (8) are not necessarily Northern Italian. In dialectological terms, Prali in (8) is Occitan, Faeto is Franco-Provençal, Corte/Sief is Ladin. Similarly, not all of the varieties in (7) are dialectologically Northern Italian. In general, (7)–(8) reflect the corpus of Manzini and Savoia (2005) which comprises varieties spoken within the political boundaries of Italy and Italian varieties of Switzerland and Corsica, as well as Swiss Romansh varieties, e.g. (23) in Section 4. In referring to the corpus, we decided to keep the shorthand of Northern Italian dialects, which is useful in situating our discussion with the respect to the formal literature.

descriptive generalization is that the plural cannot present a richer internal differentiation than the singular, striking out the rows 15–16, 11–12.

(8)

		1st	2nd	4th	5th
1.	*Prali*	–	P	P	P
2.	*Corte/Sief*	–	P	–	–
3.	*Càsola*	–	P	–	P
4.	*	–	P	P	–
5.	*	P	–	P	P
6.	*	P	–	–	–
7.	*	P	–	–	P
8.	*	P	–	P	–
9.	*Faeto*	P	P	P	P
10.	*Sillano*	P	P	–	–
11.	*	P	P	–	P
12.	*	P	P	P	–
13.	*Livo*	–	–	–	–
14.	*	–	–	P	P
15.	*	–	–	–	P
16.	*	–	–	P	–

From the point of view of the remarks by Kayne (2000), opening this section, the interesting observation is that there are now 14 different varieties even only considering 1/2P subject enclitic pro-drop. If we cross them with the 6 attested proclitic pattern we potentially have well in excess of the 25 varieties which Kayne (2000) counted ($14 \times 6 = 84$). At the same time, both precompiled cartographic hierarchies of the type in (4) and the readjustment rules that (6) implies appear to be too rigidly structured to yield all of the observed variation – in other words, they undergenerate.

In what precedes, I referred to the phenomena in (8) as partial pro-drop, a characterization also shared by Cardinaletti and Repetti (2008). Before proceeding on this track, one may wonder whether the status of partial null subject languages of Northern Italian dialects is consistent with other languages characterized in this way by the literature. Holmberg (2010) for Finnish and Brazilian Portuguese, Shlonsky (2009) for Hebrew indicate that partial null subject languages have null subjects in the 1/2P. Evidently, this corresponds to the possibility instantiated by Livo in line 13 of table (8); recall that all of the varieties in table (8) have 3P subject clitics. According to the literature quoted, furthermore, partial null subject languages may have null (3P) expletives. The possibility for Northern

Italian dialects to have overt referential 3P subject clitics, but null expletives (at least in some contexts) is in fact documented by Manzini and Savoia (2005: § 2.7).[3]

More problematically, the languages to which Holmberg (2010) attaches the label of partial null subject languages have the possibility of dropping 3P if it is coreferential with a c-commanding antecedent or if it is interpreted generically. This is illustrated in (9) with Brasilian Portuguese. The generic reading is possible in both (9a) and (9b). In the context in (9b) the definite reading becomes possible, depending on binding by a c-commanding antecedent; in other words, the null embedded subject can refer to Joao, not to some other contextually defined individual.

(9) a. *Na praia vende cachorro quente*
at.the beach sell.3SG dog hot
'Hot dogs are sold at the beach.'
*'He sells hot dogs at the beach.'

b. *Joao me contou que vende cachorro quente na praia*
Joao me told that sell.3SG dog hot at.the beach
'Joao told me that he/*she sells hot dog at the beach.'
'Joao told me that hot dogs are sold at the beach.'
Brasilian Portuguese (Holmberg and Sheehan 2010: 133, adapted)

For Holmberg, in a full null subject language like Italian:

> in a clause CL which has a 3rd person null subject NU[ll subject], the 'ultimate antecedent' of NU is a DP which is the A-topic of a clause preceding NU. … This A-topic values the uD-feature of T … In partial null-subject languages, by hypothesis, inheriting a referential index by this indirect route is impossible due to absence of a uD-feature in T. (Holmberg 2010: 103)

At the same time, "in … the partial null-subject languages, the subject can still be null … However, in the absence of a uD-feature … can only be interpreted as generic or arbitrary" (Holmberg and Sheehan 2010: 133). Furthermore, "a pronoun can be null if it is controlled by a DP in a higher clause" (ibid.).[4] This is tantamount to saying that Brasilian Portuguese has the possibility of (3P) finite

3. In some languages, like Dutch or German, this is the only partial null subject attested. Following Rizzi (1986), these are languages which satisfy (1a), but not of (1b) above; recall that satisfaction of both (1a) and (1b) characterizes classical null subject languages. Rizzi labels them semi-null subject languages and the label is kept by Biberauer (2010) to separate them from partial null subject languages. Leaving labels aside, we are dealing with varying conditions of partial null subjects.

4. We omit technical details which we cannot discuss for reasons of space.

control, namely of a free variable subject, interpreted either via Generic closure or via anaphoric binding.

3P drop is outside the scope of the present contribution; nevertheless, for the sake of completeness one may adopt the idea that Brasilian Portuguese null subjects in the 3P are free variables – leaving only control and Generic closure as open interpretive options. In Section 4–5, I return to the 1/2P facts in table (8), briefly comparing the treatment I propose with the one proposed by Holmberg (2010) for languages like Brasilian Portuguese.

Assuming that nothing stands in the way of the description of the Northern Italian phenomenon in (7)–(8) as partial null subject, it remains for me to provide an analysis of it. Before proceeding, in Section 3, I review two highly articulated recent proposals about parameters, which also address the question of microvariation vs macroparameters.

3. Some recent models: The ReCoS project, Longobardi's Schemata

In commenting the Subset Principle (2) in Section 1, I briefly dwelled on the question whether parameters are in some way internally structured. The presence of some form of internal organization is not excluded by the minimalist idea that parameters correspond to open choices within UG – as long as it is imposed by the structure of some other cognitive component, perhaps a learnability component or more directly of the C-I and SM interfaces which variation depends on. This issue is central to the Rethinking Comparative Syntax (ReCoS) research project, led by Ian Roberts in Cambridge, with the participation, among others, of Anders Holmberg, Theresa Biberauer, Michelle Sheehan. Their work has resulted in a number of proposed parametric hierarchies, which cover in particular the null subject parameter (Roberts and Holmberg 2010), the head-movement parameter (Biberauer and Roberts 2012), the alignment parameter (i.e. ergative vs. accusative, Sheehan 2014), and the A′-movement parameter (Biberauer et al. 2014, who also discuss the other hierarchies mentioned).

The internal organization of parametric space is determined by general processing/economy principles, specifically Feature Economy (FE, Roberts and Roussou 2003) and Input Generalization (IG, Roberts 2007), reproduced in (10).

(10) a. *Feature Economy (FE):*
Given two structural representations R and R′ for a substring of input text S, R is less marked than R′ iff R contains fewer formal features than R′;

b. *Input Generalisation (IG):*
If a functional head F sets parameter *Pj* to value *vi* then there is a preference for similar functional heads to set *Pj* to value *vi*.(Biberauer et al. 2014)

These "general cognitive optimisation strategies" determine the general form of parameter hierarchies by interacting with the schema $Qh_{h \in P}$ [F(*h*)] in (11) regarding "generalised quantification over formal features". In this schema *h* stands for head(s) belonging to set P, of which feature(s) F are predicated. Universal negative, universal and existential quantification over h are ranked in this order by Feature Economy and Input Generalization as in (12). The passage from larger to smaller sets of restrictor heads yields the descending hierarchy of macroparameters, mesoparameters, microparamenters (Biberauer et al. 2014 and references quoted there), as in (13).

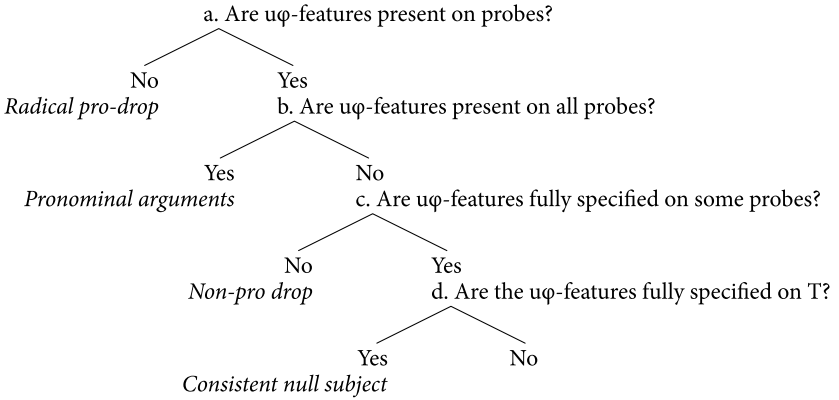
(11) $Qh_{h \in P}$ [F(*h*)].

(12) a. Hypothesis I (ahead of any experience/analysis of PLD):
No head in P has F ($\forall h_{h \in P} \neg$[F(h)]); this hypothesis maximally satisfies FE and IG
b. Hypothesis II (at least one occurrence of F is detected in the PLD):
All heads in P have F ($\forall h_{h \in P}$ [F(h)]); FE is overridden by PLD, IG is still satisfied
c. Hypothesis III (at least one non-occurrence of F is detected):
Some heads in P have F ($\neg \forall h_{h \in P}$ [F(h)]); both FE and IG overridden by PLD

(13) For a given value v_i of a parametrically variant feature F:
a. *Macroparameters*: all functional heads of the relevant type share *vi*;
b. *Mesoparameters*: all functional heads of a given naturally definable class, e.g. [+V], share *vi*;
c. *Microparameters*: a small subclass of functional heads (e.g. modal auxiliaries, pronouns) shows *vi*;
d. *Nanoparameters*: one or more individual lexical items is/are specified for *vi*.
(Biberauer et al. 2014)

As already mentioned, Biberauer et al. (2014) exemplify their model with no less than four different hierarchies. Here, given that both null subject and subject clitics (or clitics generally) have provided some of the case studies in the discussion that precedes, I will concentrate on the *Null Arguments Hierarchy*, which I reproduce in (14).

(14) *Null arguments Hierarchy*



(Roberts and Holmberg 2010:49)

The macroparametric region of the schema in (14) corresponds to (14a)–(14c). In (14a), lack of attestation for a particular type of features, here uninterpretable phi-features, counts as the least marked value in the parametric hierarchy, namely radical pro-drop languages (languages of the Chinese/Japanese type). In (14b), the universal value of the parameter, corresponding to Pronominal argument languages, in the sense of Jelinek (1984), already implies the restriction of the domain of application of the quantificational statement to certain categories, namely functional heads. (14c), which posits the existence of uninterpretable phi-features sets on some functional heads, triggers the next set of statements (mesoparameters), concerning the association of uninterpretable phi-features with all T heads (14d), and presumably further down with some T heads, and then on to microparameters etc.

Note that from mesoparameters down, what drives the construction of the hierarchy is a progressive domain restriction. I already mentioned that this is relevant for the head set *h* of which feature F is predicated; for instance, in the macroparametric steps (14a–c), the uninterpretable phi-features property is evaluated in relation to functional heads, while in the mesoparametric steps from (14d) down it is evaluated in relation to T heads. If so, parameters are in fact structured by something more elementary than quantificational schemas and processing/economy principles, namely the existence of a Boolean superset/subset organization in the categorial domain. In the specific case at hand, this conclusion is strengthened by the observation that in the passage from (14b) to (14c), the query switches from "is present" to "is fully specified". This means that restrictions down the scale apply not only to the head set *h*, but also to the property F in the quantificational schema.

In short, the integration of the microparametric scale with the macroparametric one is one of the leading concerns behind the ReCoS approach. The model sees macroparameters and microparameters as applications of the same property in progressively smaller domains. Thus it addresses and potentially eliminates the tension between the desideratum of a few parameters of potentially great generality and the existence of fine variation.

The issues it raises are of at least two types. For Biberauer et al. (2014) languages that are highest in the hierarchy in (14), i.e. Chinese-style "radical pro-drop" languages or Jelinek's (1984) pronominal argument languages, are least marked. But it not obvious that the predicted unmarked status corresponds to relative frequency of these languages or other similar independent criteria for default status. In fact, in table (8), the choice of treating all 1/2P clitics alike by lexicalizing all of them, or by not lexicalizing any of them (as opposed to 3P clitics) is certainly possible in Northern Italian dialects, but unpopular. More than half of the dialects in the corpus present a pattern whereby 1P singular and 1/2P plural are associated either with subject clitic drop (39/187) or with an uninflected subject clitic (65/187). In other words, on statistical grounds alone, one can legitimately conclude that the supposedly more marked mixed bag choice is in fact the default one. Similarly, in the ReCoS model, if I understand it correctly, the learning path is downwards, proceeding from macroparametric default to microparametric settings. Nevertheless, consistently with the Subset Principle and Lexical Parameterization, one may expect that on the contrary the learner fixes first lexical choices and that the latter trigger the activation of the relevant parameter – leading the child to look out for parametric splits in other areas of the lexicon/grammar.

A second type of issue is emphasized in particular by Longobardi (2017) and concerns the interaction of the hierarchies, i.e. whether parameter settings may depend on one another, or in in other words whether a given choice for a parameter may imply a given choice for another parameter. In fact, the model as it now stands does not seem to allow the expression of such implications – which again is not necessarily the right result.

An alternative model relating the macroparametric to the (potential) microvariation scale is proposed by Giuseppe Longobardi and his collaborators, principally Cristina Guardiano, under the label of Principles & Schemata (Longobardi 2005, 2017, Gianollo et al. 2008, Guardiano and Longobardi 2017).[5] With considerable timeliness, Longobardi (2003:103), adds to the traditional adequacy

5. This work has spawned a research project at the University of York (Meeting Darwin's last challenge: toward a global tree of human languages and genes, LanGeLin), which has at its core what Gianollo et al. (2008) call Parametric Comparison Method (PCM). The latter is not addressed here.

levels (observational, descriptive, explanatory) a level of evolutionary adequacy. Thus while the explanatory adequacy question is "What are the *biologically possible* human languages?", the evolutionary adequacy question is "Why do we have precisely *these* biologically possible languages?". Parameters Theory is crucially involved in answering both questions. Longobardi (2003) in fact provides a list of questions to be answered by Parameters Theory, of which I reproduce just the first four in (15).

(15) a. Are there restrictive conditions on possible parameters, i.e. a limited set of parameter schemata?
b. Are all parameters really binary?
c. What is the order of magnitude of parametric variation (e.g. do parameters number in the dozens, hundreds or thousands?)?
d. To what extent does parametric variation display a deep deductive structure? (Longobardi 2003: 112)

The most up to date list of schemata, answering question (15a), includes nine schemata, of which I reproduce roughly the first half in (16).

(16) a. Grammaticalization parameters
Is F, F a feature, grammaticalized?
b. Probing parameters
Does F, F a grammaticalized feature, Agree with X, X a category (i.e., probes X)?
c. Strength (or EPP) parameters
Is F, F a grammaticalized feature, "strong" (set in the terminology of Chomsky (1995), i.e., overtly attracts X, or equivalently probes X with an EPP feature)?
….
d. Null category parameters
Does a functional category (a set of lexically co-occurring grammaticalized features) X have a phonological matrix Φ? (Longobardi 2017: 531–532)

The most fundamental of all schemata is the grammaticalization one (16a), by which "it is meant that the feature must obligatorily occur" (Longobardi 2005: 410); this is different from whether the category bearing the feature is externalized, namely (16e). The other parameters have to do with probe-goal relations (Agree) (16b) and with (overt) movement (16c), already briefly discussed in Section 1. In short,

> it becomes unnecessary to suppose that the initial state of the mind consists of highly specific parameters, but just of an incomparably more restricted amount of parameter schemata, which combine with the appropriate elements of the lexicon

> (features and categories) under the relevant triggers in the primary data to both yield the necessary parameters and set their values for each language.
>
> (Longobardi 2005: 412)

To some extent, the ReCoS approach is even more ambitious, in that one might say that it entertains a single parameter schema, namely (11), to which one must add only general principles organizing the hierarchies. However, as already mentioned in connection with the hierarchy in (14), the switch from macro- to meso- and micro-parameters may determine shifts in the shape of parametric alternatives not fully predicted by the very general principles in (10)–(13). In this respect, schemata of the type in (16) provide a more realistic source for actually observed variation. According to Longobardi (2017: 536), at least in the DP domain "89 out of the 91 parameters … suggest themselves as plausible or at least tentative candidates for one or the other of the schemata above".

The other difference between ReCoS and Parameters & Schemata has also been briefly mentioned, namely the fact that Longobardi and colleagues try to provide an explicit answer to the question of parameters interactions – which seems to be beyond the reach of ReCoS hierarchies:

> parameters seem to display *partial interactions* … In fact, it is, empirically, observable that there exist two distinct surface manifestations of such partial interactions. In some cases, by partial interaction, the irrelevance of a parameter makes its consequences completely predictable … [e.g.] one binary parameter … is open if another parameter … is set on +, but is automatically set on – if the other is set on –. In other cases, by partial interaction, a parameter becomes completely undecidable, i.e. it has no potential trigger at all in the generated language: for example, if a language has no definite determiner it is meaningless to ask whether its definite determiners are free morphemes or affixes (enclitics).
>
> (Longobardi 2003: 114–115)

In conclusion, the work by Longobardi and colleagues no less than that of ReCoS is concerned with bridging the observed levels of variation, including microparametric variation, with the idea that parameters are organized by macrocategories. A question for the Principles & Schemata model is whether parameter schemata are primitives, as implied by the discussion quoted. In the framework of Berwick and Chomsky (2011) we expect there to be no primitive statement devoted to parameters (see Section 1). In the next sections, I will summarize the discussion of partial null subjects in Northern Italian (and other phenomena involving referential splits) in Manzini and Savoia (2005, 2011a, c), Manzini (2015). They indeed try to enforce a view under which parameter schemata and parameters hierarchies are at best emergent properties of the interaction between the computational component, the lexicon, and the SEM and PHON contents they organize.

4. Manzini and Savoia's account of Northern Italian partial null subjects

The table in (8), reproduced in (17) for ease of reference, summarizes the simplest externalization choice, i.e. externalization vs. no externalization, as it applies to Northern Italian subject/nominative 1/2P proclitics. There are (more or less subtle) differences in the extent to which the varieties in (8), or others with the same P paradigms, lexicalize gender, number and expletives – not discussed here (see Section 2 for an overview on partial null subjects). Nevertheless the varieties in (8) all have 3P clitics that do not overlap with 1/2P ones.

(17)

		1st	2nd	4th	5th
1.	*Prali*	–	P	P	P
2.	*Corte/Sief*	–	P	–	–
3.	*Càsola*	–	P	–	P
4.	*	–	P	P	–
5.	*	P	–	P	P
6.	*	P	–	–	–
7.	*	P	–	–	P
8.	*	P	–	P	–
9.	*Faeto*	P	P	P	P
10.	*Sillano*	P	P	–	–
11.	*	P	P	–	P
12.	*	P	P	P	–
13.	*Livo*	–	–	–	–
14.	*	–	–	P	P
15.	*	–	–	–	P
16.	*	–	–	P	–

A language that lexicalizes all P forms, such as Faeto in line 9, is a language similar to French in having a consistent set of subject clitic forms. Consider next Livo in line 13. Given the way the table is built, the fact that Livo lexicalizes no 1/2P clitic implies a 1/2P vs. 3P split, since 3P is lexicalized. Manzini and Savoia (2007) characterize speaker and hearer and the sets including them as discourse-anchored, i.e. as part of the universe of discourse, independently of their role within the event. Categorially, they are Ps (for Person or Participant). On the other hand, Manzini and Savoia characterize non-participants as event-anchored, i.e. as dependent on the position assigned to them within the structure of the event (or situation). Categorially, they belong to the demonstrative/definite referential system, hence they are Ds. The 1/2P vs D categorization means that only positive properties (monovalent features) are employed and no underspecification.

Besides Faeto and Livo, the other existing languages of table (8) externalize subject clitics along a finer fault line, that between speaker and hearer. This

may result in the externalization of just hearer reference, as in line 3 (Càsola) – but the lexicalization of just speaker is unattested. In order to account for the speaker/hearer asymmetry, Manzini (2015) formulates the split between speaker and hearer (1P vs. 2P) in terms of the salience of speaker reference, as in (18a). The categorial cut in (18) can equally well be expressed as a two-members hierarchy, namely (18b).

(18) a. referential salience of speaker
b. 1 > 2/other

Manzini (2015) argues that (18), interacting with a universal rule/principle of grammar, namely Recoverability, explains why Càsola in line 3 of table (17) is a possible language, while its mirror image in line 8 is impossible. Recoverability is standardly conceived as a principle constraining the deletion operation at the SM interface. Equivalently one may construe it as a constraint on the enrichment of C-I interface content, as in (19); in either case its result remains constant, i.e. licencing lack of Externalization.

(19) Recoverability
Recover non-externalized C-I content (referential etc.)

The referential salience of 1P in (18) makes it optimally recoverable, in the sense of (19). This licences its lack of externalization in preference to other less highly ranked persons. Therefore (18) crossed with Recoverability at the Externalization interface yields the prevalence of 2nd person lexicalizations over 1st person ones in table (17). To be more precise, rows 1–3 are allowed because 1P is not lexicalized and 2P is; rows 5 to 8 are excluded because 1st person is lexicalized and not 2nd; rows 4, 12 and 16 are excluded because this latter pattern holds in the plural.

In this connection, it is interesting to note that for Calabrese (2011) the conceptual basis for lexicalizing 2P but not 1P in Northern Italian subject proclitic paradigms is that marked forms such as 1P shy away from lexicalization. Technically, in his filter hierarchy in (6), the more marked a form is, the less likely it is that the constraint blocking it will be deactivated. Therefore it is it the marked status of 1P, that determines its lack of lexicalization. Manzini and Savoia's approach is the reverse – it is the inexpensive status of 1P in terms of recoverability that determines its lack of lexicalization. Importantly, under this latter approach there is no special 2 > 1 markedness hierarchy for Italian dialects proclitics, but only the prominent status of speaker reference, corresponding to the classical 1 > 2 animacy ranking in (18b).

Recall now that there are patterns in table (17) which are excluded, even though 2P is lexicalized, including rows 11 and 15. Descriptively, what seems to be relevant is that the speaker vs. hearer split is defined in the plural but not in the

singular. We may therefore assume that (18) either applies to the singular, i.e. to speaker proper, or it cannot apply at all, as in (20). In other words, it is possible for it to be defined in the singular of a given language, and not in the plural – but not vice versa. A point to which I will return is that (20) is a statement about a value of a given categorial split (singular vs. plural) blocking another categorial split, namely the salience or prominence of speaker (vs. other referents).

(20) (18) is not defined in the plural.

Summarizing so far, given (18) and (19), we expect there to be languages with 1P drop and 2P externalized – but not the reverse. This is correct. Furthermore, given (20) we expect there to be languages with partial pro-drop in the singular and undifferentiated treatment of the plural, but not vice versa. This is also correct. Manzini (2015) argues that the discussion of the microvariation in (20) holds a moral for parameters in general, their nature and their internal structure. Before proceeding to these matters, however, it is worth recalling briefly that neither (18) nor the way it interacts with (19) hold in enclitic contexts – whence the essentially free combination of lexicalizations in table (7).

The traditional characterization of enclisis and proclisis relies on the SM interface, defining proclitics as preceding stressed material and enclitics as following it. Standard syntactic literature in turn defines enclitics and proclitics in terms of their position with respect to the verb. Enclitics are lower than the verb, proclitics higher. Manzini and Savoia (2005, 2017) argue that what is relevant for enclitic vs. proclitic alternations is LF configurations is that enclitic paradigms are found in the scope of non-veridical operators, in the sense of Giannakidou (1998), or more accurately of lexical items externalizing them. Indeed object enclitics are found in the scope of imperatives, and negations, which are typical contexts licencing (negative) polarity items, as are questions, where the Northern Italian subject enclitics occur. Manzini (2018) points to typological literature arguing in favour of the category of irrealis modality as governing alterations in pronominal/agreement paradigms (e.g. in Amele and in Caddo).

Manzini (2015) therefore proposes that (18) is only defined in non-modal (i.e. positive declarative) contexts, as in (21) – introducing a statement parallel to that in (20) concerning plural. Under (21), we derive that subject enclitics appearing in the domain of the interrogative verb will not reflect the asymmetry implied by (18) – i.e. they will admit of roughly any distribution of speaker/hearer externalization patterns, as illustrated in table (7).

(21) (18) is not defined in the scope of modal/non-veridical operators

Interesting questions arise when we move away from considering the overall distribution of enclitics and focus instead on the single dialects. In principle, we

expect to find at least three different typologies as a result of (21), which removes the obligatoriness of 2P (singular). First, one might expect that while in proclisis 1P is null and 2P lexicalized, in enclisis both are lexicalized. I shall not illustrate this possibility, which is abundantly documented by Manzini and Savoia (2005), and independently by Cardinaletti and Repetti (2008). More interestingly, one may expect there to be languages where 1P is dropped both in the proclitic and in the enclitic paradigm, but the enclitic paradigm differs from the proclitic paradigm in that it also drops 2P. There is a small subset of languages of this type in the Manzini and Savoia (2005) corpus, including the Northern Lombard variety in (22), of which I reproduce just the singular paradigm, both declarative (proclisis) and interrogative (enclisis).[6]

(22) a. *dɔrmi*
te dɔrməʃ
al/la dɔrm
'I sleep etc.'
b. *dɔrmi?*
dɔrməʃ?
dɔrm- əl?
'Do I sleep? etc.' Bormio (Lombardy)

The third schema of enclisis/proclisis alternation predicted to be possible in the absence of other constraints, reverses the proclitic pattern – namely 1P is lexicalized but not 2P. This pattern is documented in Romansh varieties of Switzerland which have sparse proclitic systems, but more robust enclitics. In (23) I provide just one example. Subject enclitics are obligatory in (23b) in both the 1P singular and in the 1P plural – by contrast the 2P enclitic is optional or absent. In most Romansh varieties it is absent, as independently documented by Benincà and Haiman (1992:132). Since Romansh varieties have generalized V2, enclisis is not limited to questions.[7]

---

6. Needless to say, (22) is a counterexample to Renzi and Vanelli (1983) and to models built on their generalization, such as Cardinaletti and Repetti (2008). The same is true of (23) below. The reader is referred to Manzini and Savoia (2005:§ 3.6) for more examples of the type in (22), including Livigno (Lombardy) as well as Vagli, Sillano, Dalli di Sotto (Northern Tuscany). Absence of the 2P singular *t-* enclitic in Lombard dialects where the verbal inflection is also *-t* could be claimed to be an instance of haplology; even so, they are also counterexamples.

7. Manzini and Savoia (2005:§ 3.13.2) document several Romansh varieties with the same properties, in the Engadine (Müstair, Sent, Zernez, Scuol), in the Sutselva (Donat) and in the Surselva (Mustèr). An anonymous reviewer notes that "the impossible combination in line 6 is exactly what we find in Bavarian enclitic forms (*pro* is never possible as 1 person singular)". Various questions arise as to the Germanic/Romansh contact and as to the relevance of generalized V2, which however are beyond the scope of the present contribution.

(23) a. *(i) dɔrm*
te dɔrməs
(l) ɔ durmia
durmiɲ
durmits
(i) dɔrman
'I sleep, etc.'

b. *dɔrm -a*
dɔrməs (-te)
dɔrm -al/-la
durmin -dza
durmits
dɔrm -iʎ
'Do I sleep, etc.' Mulegns (Romansh, Switzerland)

In short, investigation of the internal conditions of the single languages are consistent with the predictions made on the basis of the overall crosslinguistic pattern of Northern Italian (and Romansh) varieties, as summarized in tables (7) and (17). But where are the parameters in the account in (18)–(21)? And how do they relate to parameters as discussed in Sections 1 and 3? I return to these questions in the final section.

5. Microvariation and macrocategories

Recoverability in (19) is universal, so that the only candidates left for the role of parameters are categorial splits such as Speaker vs. other referents, as implied by (18), or Singular vs. Plural implied by (20), or Veridical vs. non-Veridical implied by (21). I assume that a rule of Externalization, in the sense of Berwick and Chomsky (2011) pairs a Conceptual-Intentional (C-I, SEM) content with a Sensory-Motor (SM, PHON) content, as in (24). Parameter values are the SM choices that (24) brings into effect, by interacting with C-I categorial splits such as Participant vs. D, Speaker vs. Hearer, Singular vs. Plural. In the specific instance of Northern Italian(-type) partial null subjects, Externalization and the 1P vs. 2P hierarchy further interact with Recoverability, determining a crosslinguistic asymmetry.[8] In short, the parameters are the splits themselves. Activating a yes value of a para-

8. One may legitimately wonder why we don't construe the split between P and D as an asymmetric split, along the lines of (i).

(i) a. referential salience of Participant
b. 1 > 2 > other

meter implies activating the categorial split – otherwise the split remains inactive, corresponding to the zero value of the parameter.

(24) Externalization
Pair a C-I content x with a SM content y

Generalizing from statements like (20) and (21), one may further surmise a schema for the interaction between parameters, as in (25). In other words, when parameters cross, one of them may remain undefined for one value of the other. Thus the Speaker vs. other referents parameter (or categorial split) may remain undefined for value plural of the Singular vs. Plural parameter.

(25) Parameter (i.e. categorial split) A is not defined for value 0/1 of parameter (i.e. categorial split) B

I will return immediately below to comparisons with the general models of parameters discussed in Section 3. Before proceeding, it is worth briefly comparing the present proposal to analyses of partial null subject languages like Brasilian Portuguese, Finnish (Holmberg 2010) or Hebrew (Shlonsky 2009) which also have null subjects in the 1/2P. Holmberg (2010) provides the following analysis:

> If NU[ll subject] is 1st or 2nd person, the ultimate and also intermediate antecedent is the speaker or addressee 'speech feature', which … are properties of the C-domain in every finite clause. Holmberg (2010:104)

In other words, 1/2P are represented in a cartographically defined left periphery of the sentence and as such are able to licence a null subject.[9] It seems to me that theories such as Holmberg's have no more deductive depth than the present set of statements – and they are of course more complex. As long as the 1/2P vs. 3P split (or the 1P vs. 2P split) has to be stated, there is no particular advantage in encoding it cartographically and activating it through core syntax operations of feature checking/valuation. On the contrary, one may argue that accounting for the fact in terms of the purely lexical encoding of categorial splits, as in (18)–(21),

Manzini and Savoia (2005:§ 2.3) report at least two languages, namely Bonifacio (a Genoese dialect of Corsica) and Tetti (a Provençal dialect of Piedmont) which externalize 2P but not 3P. Therefore, the hierarchy in (i) appears not to be relevant in the partial null subject phenomena under consideration. This is not to say that (i) does not hold in other empirical domains.

9. To be precise, the passage quoted is part of the account provided for 1/2P null subjects in Italian-type languages. 1/2P null subjects in partial pro-drop languages, involve further technical notions such as an "extended version of chain-reduction".

has the advantage of simplicity.[10] The particularly direct connection of parameters to externalization is also a positive property of the present account.

We are now in a position to draw some conclusions about the present conception of parameters in relation to other recent attempts at bridging the gap between parameters and minimalism. Manzini and Savoia (2011a, c) make two main points which are directly relevant for a comparison with the models reviewed in Section 3. Discussing auxiliary selection (*be* vs. *have*), they reject the opposition between macroparameters and microparameters:

> The distinction between microparametric and macroparametric approaches to variation has been so often discussed that the contours of the debate have become somewhat blurred. It is evident that, to the extent that the primitives manipulated by variation are macrocategories like transitivity or voice, we could describe our approach as macroparametric – though the fact that the unit of variation can be as small as a single lexical item qualifies it as microparametric.
>
> (Manzini and Savoia 2011a)

Transposing this discussion to the present case study, Speaker, Plural, Veridicality are macrocategories applying not only to local phenomena or syntactic domains but rather influencing the global forms of a grammar; at the same time, they can be seen to determine the microvariation in subject clitic systems in table (17). It is evident that the split between 1/2P and 3P, well-known from the typological literature, can be thought of as a macroparameter, to the extent that it may determine, say, an accusative rather than ergative alignment. Person splits are in fact pervasive in the Romance languages, though this is not necessarily obvious from the descriptive or theoretical literature. Restricting ourselves to clitics, 1/2P object clitics differ from 3P ones with respect to their distribution (e.g. their position in the clitic string), their morphological make-up (e.g. the presence vs. absence of gender and Case distinctions), their agreement properties (e.g. the presence or absence of agreement with the perfect participle). This opposition furthermore feeds asymmetric behaviours such as case (Differential Object Marking) and the PCC (Person Case Constraint). Very much the same considerations could be replicated for the 1P vs 2P split – which is also well-known from typological work, as the first cut in the referential hierarchy (the D-hierarchy in the sense of Kiparsky 2008, see also fn. 8).

In short, 1/2P (Participant) and 3P (Demonstrative/Definite) are macrocategories. Whether their contrast becomes externalized in self-contained areas of the lexicon (Northern Italian subject clitic drop) or has systemic consequences (case

10. In this respect, it is also relevant to mention general criticisms regarding the unlearnable and unevolveable character of cartographic hierarchies (Chomsky et al. 2017).

and agreement alignments) is a separate matter. Manzini and Savoia (2011a) make a second point worth bringing out, namely:

> our position … is that macrophenomena can be decomposed into the same elementary conceptual components that determine local lexical variation – and in fact the latter is the true matrix of perceived macroparameters.
>
> (Manzini and Savoia 2011a)

This must be true in acquisition as well. Suppose that the learner fixes lexical choices such as those concerning partial pro-drop in Northern Italian dialects locally. This "local lexical variation" is "the true matrix of …macroparameters". This means that the differential treatment of 1/2P vs. 3P (or 1P vs. 2P etc.) in the lexicalization of subject clitics triggers the activation of the relevant categorial splits in the grammar of the language. In this sense, the microparametric (i.e. lexical) setting has a macroparametric (i.e. systemic) consequence in the acquisition process. This is notably different from the descending markedness and learnability hierarchies of the ReCoS, which was called into question in Section 3. Manzini and Savoia's model is distinctly weaker in this respect, simply implying no hierarchical organization (not even an emergent one).

At the same time, there is considerable convergence between Manzini and Savoia and the ReCoS researchers on what we may want to call the fractal organization of parametric space, which is the core conception bridging macroparameters with microvariation. In this respect, present ideas have an obvious affinity also to the Principles & Schemata framework of Longobardi and colleagues. Specifically, the discussion in Section 4 effectively uses the first of Longobardi's (2017) schemata in (16), namely "Is F, F a feature, grammaticalized?", since the various patterns of partial pro-drop in Northern Italian dialects depend on certain features being grammaticalized in Longobardi's terms. To be more precise, since we considered the conditions under which the categories bearing such features can have zero externalization, Longobardi's grammaticalization schema interacts with a further schema, namely "Does a functional category X have a phonological matrix Φ?".

On the other hand, in contrast with Longobardi, here we have assumed that there is no specialized parameter schema dealing with phonologically null categories – this is just part of the spectrum of possibilities open to externalization. In other words, the observed variation is a property of the general design of grammar and does not correspond to a stated parametric schema. More fundamentally, the same is true of Longobardi's grammaticalization schema. The externalization of the universal conceptual repertory by different lexicons is again intrinsic to the design of grammar and need not correspond to any stated parametric schema. As

we mentioned at the end of Section 4, parameters schema are emergent properties of grammar's design.

5.1 Conclusions

Systematic research on language variation, within the mentalist, innatist framework of generative grammar, begins with Chomky's (1981) Principles and Parameters framework. Berwick and Chomsky (2011) make it clear that there is no parametric switchbox added to UG, but parameters correspond to degrees of freedom within the Faculty of Language, specifically in what concerns externalization of syntactico-semantic structures by SM components. Bridging Principles & Parameters-style parameters with the minimalist program is the main impetus behind recent models such as Principles & Schemata (Longobardi 2005, 2017) or the ReCoS project (Roberts and Homberg 2010, Biberauer et al. 2014). I argued that the parameters hierarchies of ReCoS or the Schemata of Longobardi are emergent properties of the interaction between the computational system and externalization. Following Manzini and Savoia (2011a, 2018) the lexicon externalizes selected categories of the universal conceptual repertory. This can be described as a parameter schema, and a parametric hierarchy can further be built based on the range of instantiations of a given category. Yet, in reality there is nothing but the basic design of the Language Faculty and the degrees of freedom that it leaves at the interfaces, and specifically at EXT.

I proposed an implementation of these general ideas for partial null subject languages, displaying an intermediate status between null subject languages (Italian) and non-null subject ones (English). Specifically, I concentrated on the microparametric domain of Northern Italian(-type) varieties. The relevant categories are Person and Number categories. In principle, we may expect externalization of the relevant categories to vary freely, producing for instance 16 different language from the choice lexicalized/null s applied to 1P singular, 2P singular 1P plural and 2P plural. This kind of system appears to be instantiated by enclitics. At the same time, in proclisis, 1P is favored over 2P for non-externalization. I argued that this is the result of the ranking of referential contents by the conceptual system interacting with recoverability and optimization at externalization.

More generally, all of the models under consideration agree that microvariation is governed by macrocategories which can be active in small areas of the lexicon as well as in systemic domains of grammar.

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