Parametric Lexicons

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1 Diversity

Three aspects to accomodate in a unified organisation of grammar:

1. logical form (LF) and argument structure, including phenomena of binding and control;

2. surface syntax and constituency, including case, agreement and the long-range dependencies involved in relativisation and coordination; and

3. word-order and flexibility in word-order.

The morphological resources of a language may be at odds with the controllee's syntactic behaviour.

Morphological Ergativity:

(1) a. *Arnaq*   *yurar-tuq*
       woman-ABS dance-IND.3SG
         $\mathcal{S}$
       'The woman dances.' Yup'ik   (Bok-Bennema, 1991)

   b. *Angutem* *tangrr-aa*   *arnaq*
       man-ERG see-IND.3SG.3SG woman-ABS
        $\mathcal{A}$ $\mathcal{P}$
       'The man sees the woman.'

Syntactic Ergativity:

(2) [*bayi*   *burrbula baŋgul*   *gubi-ŋgu*   *bara-n*]   [__ *baji-gu*]
       I.ABS.TH B.ABS   I.ERG.TH doctor-ERG punch-NFUT   fall.down-PURP
                  $\mathcal{P}$ $\mathcal{A}$ $\mathcal{S}$
       'The doctor punched Burrbula$_i$ and __$_i$ fell down.' Dyirbal (Manning, 1996)

In Basque, a morphologically ergative language, the controllee can be the absolutive $\mathcal{S}$ NP (3a), or the ergative $\mathcal{A}$ NP (3b), hence cross-cutting the $\mathcal{S}=\mathcal{P}$ alignment provided by morphology. In a case-marking accusative language such as Turkish, the controllee is always the nominative NP (4), hence conforming to the $\mathcal{S}=\mathcal{A}$ alignment.

(3) a. *Nik*   [*joan*] *nahi dut*
        I-ERG go.INF want have.1SG.3SG
        'I want [to go].'

   b. *Nik*   [*kafea*   *egin*] *nahi dut*
        I-ERG coffee-ABS do.INF want have.1SG.3SG
        'I want [to make coffee].'

(4) a. *Ben* [*gitmek*] *istiyorum*
  I.NOM go-INF want-TENSE-1SG
  'I want [to go].'

 b. *Ben* [*kitabı* *okumak*] *istiyorum*
  I.NOM book-ACC read-INF want-TENSE-1SG
  'I want [to read the book].'

But, assuming a uniform grammatical resource provided by language's morphology (e.g. absolutive or ergative case) is not possible, because, for example, some absolutive arguments cannot be controlled in Basque (5).

(5) **Aitak* [*semeak ikusi*] *nahi dut*
  Father-ERG Son-ERG see.INF want have.3SG.3SG
  * for 'The father wants the son to see him (father).' Alan King (p.c.)

In contrast, Dyirbal operates on a uniform morphological resource, as only absolutives can be controlled in Dyirbal (6a–b): the agent of the transitive ($\mathcal{A}$) cannot be controlled.

(6) a. *Bayi yara* *walŋgarra* [*ŋaba-ygu*]
  I.ABS.TH man.ABS want-NFUT bathe-PURP
  'The man wanted [to bathe].' (Manning, 1996)

 b. *Naja bayi yara* *giga-n* [*gubi-ŋgu mawa-li*]
  I.NOM I.ABS.TH man.ABS tell-NFUT doctor-ERG examine-PURP
  'I told the man to be examined by the doctor.'
  lit. 'I told the man [doctor examine].'

The controllee in (7a) cannot also be the syntactic subject, as Inuit surface grammar works on $\mathcal{S}{=}\mathcal{P}$ alignment, not $\mathcal{S}{=}\mathcal{A}$, for syntactic subject.

(7) a. *Miiqqat* [*Juuna ikiu-ssa-llu-gu*] *niriursui-pp-u-t*
  children.ABS J.ABS help-FUT-INF-3SG promise-IND-INTR-3PL
  'The children promised [to help Juuna].' (Manning, 1996)

 b. *Miiqqat* [*qiti-ssa-llu-tik*] *niriursui-pp-u-t*
  children.ABS dance-FUT-INF-4PL promise-IND-INTR-3PL
  'The children promised [to dance].'

Moreover, in languages where morphology plays little part in surface syntax, it is still possible to discern the syntactic nature of control in the language. For example, although it is quite clear that agents can be controllees in English (8a), what is controlled is actually the syntactic subject, as the passive example (8b) and the unaccusative (8c) show.

(8) a. *John wants to clean the window.*

 b. *The dog wants to be petted.*

c. *The window tries to open.*

Morphological coding of the subject may matter as well. For example, in German, dative objects (which are sometimes spoken of as logical subjects) cannot be controlled (9). But there seems to be no control of the ergative argument alone, the accusative argument, or control of logical objects that are not syntactic subjects.

(9) a. *er   gefällt mir.*
     he.NOM pleases I.DAT
     'he pleases me.' = 'I like him.' (Stiebels, Słodowicz and Yang, 2003)

    b. **Ich$_i$ hoffe* [__$_i$ *er   zu gefallen*]
       I   hope Ø.DAT he.NOM to please
       'I hope to like him.'

    c. *er$_i$ hofft* [__$_i$ *mir   zu gefallen*]
       he hopes Ø.NOM I.DAT to please
       'he hopes to please me.'

The use of morphological resources may be at odds with surface syntax as well. For example, in Basque, although morphology provides $S=P$ and A, its syntax allows $S=A$ because logical subjects can be shared in conjunction reduction (10).

(10) a. *Amak   [seme-a eskola-n utzi] eta [klase-ra joan zen]*
      Mother-ERG son-ABS school-at leave and class-to go   AUX
      'Mother left her son at school and went to class.'

Word-order, and in particular free-word-order, compounds the problem of keeping morphosyntax and semantics in harmony, and introduces another domain of asymmetry, namely the sensitivity of extraction and coindexation to linear order in languages with relatively free word-order. For example, in Dyirbal, although absolutive and ergative NPs can occur sentence-initially, only absolutive NPs can be sentence-initial topics to be shared across the topic chains (11): ergative NPs (denoting the A relation) cannot (Dixon, 1972).

(11) a. *bayi   yara   walmanu*
      I.ABS.TH man.ABS got up
      'The man got up.' (Dixon, 1972, p.67)

    b. *bayi   yara   wayndin*
      I.ABS.TH man.ABS went uphill
      'The man went uphill.'

    c. *bayi yara walmanu   wayndin*
      'The man got up (and then) went uphill.'

(12) a. *Ken-ga Naomi-o, Erika-ga Sara-o tazuneta*
      K-NOM N-ACC   E-NOM S-ACC visit-PAST.CONCL
      'Ken visited Naomi, and Erika, Sara.' Japanese (Steedman, 2000, p.172)

b. *Ken-ga Naomi-o tazunete, Erika-ga, Sara-o.

c. *Chonaic Eoghan Siobhán agus Eoghnaí Ciarán.*
   saw   Eoghan Siobhán and Eoghnaí Ciarán
   'Eoghan saw Siobhán, and Eoghnaí, Ciarán.' Irish (Steedman, 2000, p.177)

d. **Eoghan Siobhán agus chonaic Eoghnaí Ciarán.*

2 Proposal: Capture diversity with *lexical* parameters

The tension generated by such different kinds of alignment and resource requirements is usually resolved in theories of grammar by linking the three aspects of morphology, logical form and word order in terms of separate tiers of representation and domains of computation, (e.g. Sadock, 1991; Jackendoff, 2002; Yip, Maling and Jackendoff, 1987; Bittner, 1994; Manning, 1996).

(13)   Manning's (1996) organisation of grammar:

a. Syntactic accusativity: **gr-structure**   **a-structure**

                              SUBJ ◄———————— Agent (a-subject)

                              OBJ ◄———————— Patient

b. Syntactic ergativity: **gr-structure**   **a-structure**

                              SUBJ ◄   Agent (a-subject)
                                       ╳
                              OBJ ◄   Patient

Proposal (Bozsahin and Steedman, 2004):

- Lexicalise the grammar.

- Categories of lexical items encode syntactic type, predicate-argument structure, and word order.

- No tiers of representation.

- Universal Grammar (UG) is a simple combinatory system; it does not develop into a competence grammar because it does not have any parameters to play with.

- Competence Grammar: The Lexicalised grammar that is shaped by UG (hence languages differ only in their lexicons and accessibility of UG combinators).

- Lexicalised grammar is parametric, not UG.

- So far we have identified a control parameter and surface syntax parameter (aka. ergativity parameter). There are perhaps more.

- Some sub-lexicons are predictable from the value of the parameters (namely, control, intransitive, and transitive verb lexicons)

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- Some lexical items are predictable from the parameters as well: if a language has a syntactic pivot, its category is predictable.
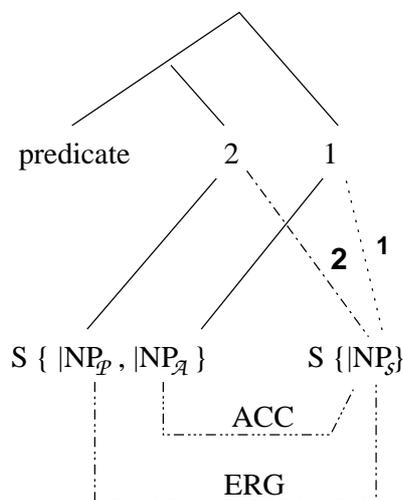

Figure 1: Possible mappings of semantic and lexical syntactic structure.

(14)   **Semantic subject**: 1 in the predicate-argument structure.

   Syntactic subject: The syntactic argument that carries $\mathcal{S}$ case.

(15) Syntactic asymmetries are mediated by the syntactic subject $\mathcal{S}$, and semantic asymmetries are mediated by the semantic subject 1, via lexical types for the category of the head of the construction.

3   Examples: control parameter

Syntactic uniformity: The controlled clause has the syntactic category $\mathbf{S}_{\text{inf}}|\mathbf{NP}_{\text{cp}}$ cross-linguistically, where cp is the value of the control parameter in the lexicon. Its value shows the subjecthood that the language employs for control ($\mathbf{NP}_1$ being the semantic subject, and $\mathbf{NP}_{\mathcal{S}}$ being the syntactic subject). A language can use one of these aspects but cannot leave it completely underspecified, hence the most general syntactic type $\mathbf{S}|\mathbf{NP}$ is unavaliable for control (cf. no evidence of $\mathbf{NP}_2$, $\mathbf{NP}_3$, or $\mathbf{NP}_{\text{acc}}$, $\mathbf{NP}_{\text{dat}}$ control unless they encode subjects).

1. $\mathbf{S}_{\text{inf}}|\mathbf{NP}_1$: Basque, Inuit, Tagalog

2. $\mathbf{S}_{\text{inf}}|\mathbf{NP}_{\mathcal{S}}$: Dyirbal (where $\mathcal{S}$ case is abs); English, German, Turkish (where $\mathcal{S}$ case is nom)

3. No control :   Mayali (Evans, 1991), Mohawk (Baker, 1996), Nung-gubuyu (Heath, 1975)

3.1 Dyirbal: An ergative $\mathcal{S}$-control Language

(16) a. *walŋgarra* := $\mathbf{S}\{\backslash\mathbf{NP}_{abs}, |(\mathbf{S}_{inf}|\mathbf{NP}_{abs})\} : \lambda P\lambda x.\mathsf{want}\,(P(ana\,x_1))x_1$

  b. *giga* := $\mathbf{S}\{\backslash\mathbf{NP}_{erg}, |(\mathbf{S}_{inf}|\mathbf{NP}_{abs}), \backslash\mathbf{NP}_{abs}\} : \lambda x_2\lambda P\lambda x_1.\mathsf{tell}\,(P(ana\,x_2))x_2 x_1$

(17) a.

bayi yara	*walngarra*	$\begin{bmatrix}\text{\textit{ŋaba-ygu}}\end{bmatrix}$
I.ABS.TH man.ABS	want-NFUT	bathe-PURP

$$\mathbf{NP}_a \qquad \mathbf{S}\{\backslash\mathbf{NP}_a, |(\mathbf{S}_{inf}|\mathbf{NP}_a)\} \qquad \mathbf{S}\backslash\mathbf{NP}_a$$
$$\underline{\qquad\qquad\qquad\mathbf{S}\backslash\mathbf{NP}_a\qquad\qquad\qquad}_{>}$$
$$\underline{\qquad\qquad\qquad\mathbf{S} : \mathsf{want}(\mathsf{bathe}\,(ana\,\mathsf{man}))\mathsf{man}\qquad\qquad\qquad}_{<}$$

'The man wanted to bathe.'

  b.

bayi yara	*walŋgarra*	$\begin{bmatrix}\text{\textit{baŋgun yibi-ŋgu}}\end{bmatrix}$	*bura-li*
I.ABS.TH man.ABS	want-NFUT	II.ERG.TH woman-ERG	see-PURP

$$\mathbf{NP}_a \qquad \mathbf{S}\{\backslash\mathbf{NP}_a, |(\mathbf{S}_{inf}|\mathbf{NP}_a)\} \qquad \mathbf{NP}_e \qquad \mathbf{S}\{\backslash\mathbf{NP}_e, \backslash\mathbf{NP}_a\}$$
$$\underline{\qquad\qquad\mathbf{S}\backslash\mathbf{NP}_a\qquad\qquad}_{<}$$
$$\underline{\qquad\qquad\mathbf{S}\backslash\mathbf{NP}_a\qquad\qquad}_{>}$$
$$\underline{\qquad\mathbf{S} : \mathsf{want}(\mathsf{see}\,(ana\,\mathsf{man})\,\mathsf{woman})\mathsf{man}\qquad}_{<}$$

'The man wanted the woman to see him.'

3.2 Basque: An ergative 1-control language

(18) a. *niriursui* := $\mathbf{S}\{\backslash\mathbf{NP}_{abs}, \backslash(\mathbf{S}_{inf}|\mathbf{NP}_1)\} : \lambda P\lambda x_1.\mathsf{promise}\,(P(ana\,x_1))x_1$

  b.

Miiqqat	$\begin{bmatrix}\text{\textit{Juuna}} & \text{\textit{ikiu-ssa-llu-gu}}\end{bmatrix}$	*niriursui-pp-u-t*
children.ABS	J.ABS help-FUT-INF-3SG	promise-IND-INTR-3PL

$$\mathbf{NP}_a \qquad \mathbf{NP}_a \qquad \mathbf{S}\{\backslash\mathbf{NP}_e, \backslash\mathbf{NP}_a\} \qquad \mathbf{S}\{\backslash\mathbf{NP}_a, \backslash(\mathbf{S}_{inf}|\mathbf{NP}_1)\}$$
$$\underline{\qquad\qquad\mathbf{S}\backslash\mathbf{NP}_e\qquad\qquad}_{<}$$
$$\underline{\qquad\qquad\qquad\mathbf{S}\backslash\mathbf{NP}_a\qquad\qquad\qquad}_{<}$$
$$\underline{\qquad\mathbf{S}: \mathsf{promise}(\mathsf{help}\,\mathsf{juuna}(ana\,\mathsf{children}))\mathsf{children}\qquad}_{<}$$

'The children promised to help Juuna.' (Manning, 1996)

  c.

Miiqqat	$\begin{bmatrix}\text{\textit{qiti-ssa-llu-tik}}\end{bmatrix}$	*niriursui-pp-u-t*
children.ABS	dance-FUT-INF-4PL	promise-IND-INTR-3PL

$$\mathbf{NP}_a \qquad \mathbf{S}\backslash\mathbf{NP}_a \qquad \mathbf{S}\{\backslash\mathbf{NP}_a, \backslash(\mathbf{S}_{inf}|\mathbf{NP}_1)\}$$
$$\underline{\qquad\qquad\mathbf{S}\backslash\mathbf{NP}_a\qquad\qquad}_{<}$$
$$\underline{\qquad\mathbf{S}: \mathsf{promise}(\mathsf{dance}\,(ana\,\mathsf{children}))\mathsf{children}\qquad}_{<}$$

'The children promised to dance.'

4 Examples: Ergativity parameter

4.1 Turkish: An accusative language with morphologically-marked $\mathcal{S}$

Turkish contrasts with English and Icelandic in the way $\mathcal{S}$ is encoded in surface syntax. The syntactic subject is not characterised as '$\backslash\mathbf{NP}$' because, as a head-final language, all arguments are on the same side of the verb.

Left- and -right-node raising of non-subjects:

(19) a. *kitab-a/-*ı*   [*adam bak-tı*]$_{\textbf{S}\backslash\textbf{NP}_{dat}}$ [*çocuk da oku-du*]$_{\textbf{S}\backslash\textbf{NP}_{acc}}$
book-DAT/*ACC man   look-PAST   child and read-PAST
'the man looked at and the child read the book.'

   b. *Kitab-ı/-*a* [*adam oku-du*]$_{\textbf{S}\backslash\textbf{NP}_{acc}}$ [*çocuk da bak-tı*]$_{\textbf{S}\backslash\textbf{NP}_{dat}}$

   c. [*Adam bak-tı*]$_{\textbf{S}\backslash\textbf{NP}_{dat}}$ [*çocuk da oku-du*]$_{\textbf{S}\backslash\textbf{NP}_{acc}}$ *kitab-ı/-*a*

   d. [*Adam oku-du*]$_{\textbf{S}\backslash\textbf{NP}_{acc}}$ [*çocuk da baktı*]$_{\textbf{S}\backslash\textbf{NP}_{dat}}$ *kitab-a/-ı**

Left- and right-node raising of subjects:

(20) a. *Kız-ı   [*adam*   *gördü*]$_{\textbf{S}\backslash\textbf{NP}_{acc}}$ [*çocuğ-a da*   *baktı*]$_{\textbf{S}\backslash\textbf{NP}_{nom}}$
girl-ACC man.NOM saw   child-DAT and looked at
* for 'The man saw the girl and the girl looked at the child.'

   b. *[*Adam-ı gördü*]$_{\textbf{S}\backslash\textbf{NP}_{nom}}$ [*çocuk da*   *baktı*]$_{\textbf{S}\backslash\textbf{NP}_{dat}}$ *kız-a*
man-ACC saw   child.NOM and looked at   girl-DAT
* for 'The girl saw the man and the child looked at her.'

We claim that these facts point to the presence of a pivot in Turkish lexicon for VP coordination, and for the existence of a non-pivot for node-raising of non-subjects.
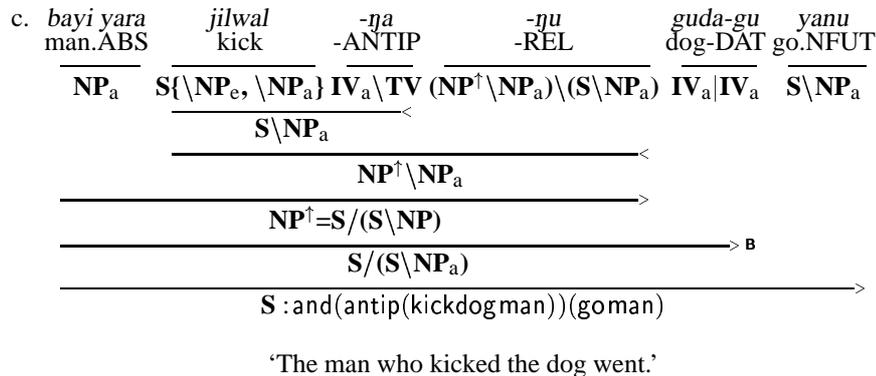
4.2 Dyirbal: An Ergative Language with Widespread Syntactic $\mathcal{S}$ Asymmetry

(21) a.

bayi	*yara*	*miyanda*	*-ŋu*	*yanu*
I.ABS.TH	man.ABS	laugh	-REL	go.NFUT
$\textbf{NP}_a/\textbf{NP}_a$	$\textbf{NP}_a$	$\textbf{S}\backslash\textbf{NP}_a$	$(\textbf{NP}^{\uparrow}\backslash\textbf{NP}_a)\backslash(\textbf{S}\backslash\textbf{NP}_a)$	$\textbf{S}\backslash\textbf{NP}_a$

$$\underline{\qquad\qquad}_> \textbf{NP}_a \qquad \underline{\qquad\qquad}_< \textbf{NP}^{\uparrow}\backslash\textbf{NP}_a$$
$$\underline{\qquad\qquad}_< \textbf{NP}^{\uparrow}=\textbf{S}/(\textbf{S}\backslash\textbf{NP})$$
$$\underline{\qquad\qquad}_> \textbf{S}$$

'The man who was laughing went.' (Manning, 1996)

b.

balan yibi	*baŋgul yara-ŋgu*	*miyanda*	*-ŋu*	*-ru*	*bura-n*
woman.ABS	man-ERG	laugh	-REL	-ERG	see-NFUT
$\textbf{NP}_a$	$\textbf{NP}_e$	$\textbf{S}\backslash\textbf{NP}_a$	$(\textbf{NP}^{\uparrow}\backslash\textbf{NP}_a)\backslash(\textbf{S}\backslash\textbf{NP}_a)$	$(\textbf{NP}^{\uparrow}\backslash\textbf{NP}_e)\backslash(\textbf{NP}^{\uparrow}\backslash\textbf{NP}_a)$	$\textbf{S}\{\backslash\textbf{NP}_e, \backslash\textbf{NP}_a\}$

$$\underline{\qquad\qquad}_< \textbf{NP}^{\uparrow}\backslash\textbf{NP}_a$$
$$\underline{\qquad\qquad}_< \textbf{NP}^{\uparrow}\backslash\textbf{NP}_e$$
$$\underline{\qquad\qquad} \textbf{NP}^{\uparrow}=(\textbf{S}\backslash\textbf{NP}_{\tau})/(\textbf{S}\backslash\textbf{NP}\backslash\textbf{NP}_{\tau})$$
$$\underline{\qquad\qquad}_> \textbf{S}\backslash\textbf{NP}_a$$
$$\underline{\qquad\qquad}_> \textbf{S} : \mathsf{and(laugh\,man)(see\,woman\,man)}$$

'The man who was laughing saw the woman.'

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c. *bayi yara*   *jilwal*   *-ŋa*   *-ŋu*   *guda-gu*   *yanu*
man.ABS   kick   -ANTIP   -REL   dog-DAT   go.NFUT

$$\begin{array}{cccccc}
\mathbf{NP_a} & \mathbf{S\{\backslash NP_e, \backslash NP_a\}} & \mathbf{IV_a \backslash TV} & \mathbf{(NP^\uparrow \backslash NP_a) \backslash (S\backslash NP_a)} & \mathbf{IV_a | IV_a} & \mathbf{S\backslash NP_a}
\end{array}$$

$$\underline{\qquad \mathbf{S\backslash NP_a} \qquad}_{<}$$

$$\underline{\qquad\qquad \mathbf{NP^\uparrow \backslash NP_a} \qquad\qquad}_{<}$$

$$\underline{\qquad\qquad \mathbf{NP^\uparrow = S/(S\backslash NP)} \qquad\qquad}_{>}$$

$$\underline{\qquad\qquad \mathbf{S/(S\backslash NP_a)} \qquad\qquad}_{> \mathbf{B}}$$

$$\underline{\qquad\qquad\qquad \mathbf{S} : \mathtt{and(antip(kickdogman))(goman)} \qquad\qquad\qquad}_{>}$$

'The man who kicked the dog went.'

Dyirbal's coordination point to existence of a lexical pivot for that too.

5 Conclusion

- Apparent diversity is actually predictable from a set of parameters with very limited value ranges.

- Proposal: a theory of grammar in which the only components are a parametric lexicon, which embodies the lexicalised grammar of a particular language, and a universal combinatory system which "projects" the lexical information out to phrasal (sentential) predicate-argument structures, including long-range dependencies.

- The lexicon therefore becomes the competence grammar of an individual as (s)he acquires language-particular rule accessibility of an invariant UG—the combinatory rules—and masters the production and interpretation of words used in constructions.

- The asymmetric phenomena studied in this research, which in other frameworks have led to proposals for multi-tiered grammar architectures, can be handled without intermediate representational levels.

- The theory makes no use of such surface syntactic enhancements as traces, surface PRO, empty categories and the like.

- We claim that certain aspects of the lexicon in this extended sense are predictable from UG and the parameters, namely, the skeleton of argument-taking entities once the types of the arguments are determined by the value of the parameters (their grammatical role, relation and order).

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