FOFC and the Realisation of Argument Structure[1]

Ian Roberts

Introduction: some assumptions about argument structure

This chapter takes up a different kind of prediction that emerges from the postulation of FOFC as a universal constraint on certain phrase-structure configurations. Rather than looking directly at word order or word structure, as in most of the other chapters of this volume, here we look at how FOFC may constrain certain aspects of argument realisation in relation to word order under certain assumptions regarding the latter. If the ideas presented here are correct, they show the relevance of FOFC for a quite unexpected aspect of the grammar, attesting again to the power of the generalisation.

Here I construe the notion of "argument realisation" in a fairly standard way. I assume that every lexical predicate, possibly every lexical category, favours, in virtue of its intrinsic lexical meaning, an interpretation involving a particular set of θ-roles; the θ-roles are interpreted at the C-I interface on the basis of structural configurations (very probably along neo-Davidsonian lines involving "separation"; see Schein (1992), Herburger (2000)). The categories interpreted as "bearing" these θ-roles (in terms of "separation", as the arguments of the predicates represented by θ-role labels such as "Ag", "Exp", "Th", etc.) are first-merged into the configurations involving elementary structural relations with categories in a lexical phase which determine their interpretation. These categories may or (more usually) may not be realised in that position when eventually spelled out at the A-P interface: the positions in which they are realised at the point of Spell Out may be defined as "grammatical-function" positions such as subject, direct object, etc. Following Chomsky (1965:71, 1981:10), I take grammatical functions to be configurationally defined. "Subject" can be defined as "the DP immediately dominated by TP"; direct object as "the DP sister of V", etc.

To illustrate, consider the sentence in (1), and its representations in (2-4):

(1)   John ate the pizza.

(2)   [$_{vP}$ [$_{DP}$ John] [v [$_{VP}$ [$_{V}$ ate] [$_{DP}$ the pizza]]]]   -- θ-"assignment" configurations; *John* is Agent of v-V, *the pizza* Theme of V

(3)   λe [Ag(John, e) & Th(the-pizza, e) & eat(e)]   -- (partial) logical form at C-I[2]

(4)   [$_{TP}$ [$_{DP}$ John] [T [$_{vP}$ [$_{DP}$ ~~John~~] v [$_{VP}$ [$_{V}$ ate] [$_{DP}$ the pizza]]]]] [3]

     -- input to A-P; *John* is defined as subject of the clause ; *the pizza* is direct object of V

The relation between the configuration in (2) which determines which categories bear which θ-roles and the grammatical functions assumed by different arguments can be referred to as "argument alignment". Thus, in a simple active transitive clause like (1), the Agent aligns with the subject and the Theme with the direct object. These relations are entirely derived from the representations in (2) and (4) and the operations mediating the derivation of (4) from (2): "argument α with θ-role R aligns with GF β" can be taken as asserting that argument α in first-merged position P assigned role R at C-I is the argument in the position defined as bearing GF β at Spell Out. Thus the argument *John* in (1-4) bears the Agent θ-role and occupies the position defined as the subject GF in (4). The other argument, *the pizza* bears the Theme θ-role and remains in its first-merged direct-object position throughout. Finally, following standard practice since Williams (1981), I will often refer to the Agent argument, first-merged outside the VP, as the external argument (EA), and the other arguments, to the extent that they are always and only first-merged inside VP, as internal arguments (IAs).

Alignment may also refer to case-agreement relations. In languages like English, the subject shows a typical pattern of case-agreement relations (triggering number agreement on finite verbs and auxiliaries; pronouns showing nominative forms) which we can relate to nominative case, with the direct object a different pattern (no verb agreement at all; pronouns never nominative) that we relate to accusative case. Various departures from this cross-linguistically common pattern are found in ergative languages: the typical pattern being that the subject of an intransitive patterns with the direct object of a transitive, distinct from the subject of a transitive. Just as the nominative-accusative pattern derives from the combination of the Agree and movement relations (see Chomsky (2001) for details) deriving (4) from (2), I take it that the ergative pattern arises from a partially different set of Agree-Move relations determined by a partially different derivation. I will give the details of this in §2.

---

[2]   There is a fairly straightforward mapping from (2) to (3), as can be surmised. I will not specify that in detail here, though.

[3]   This may not really be a single A-P representation, since it involves two phases. For purposes of illustration, I will leave this point aside here, however.

The paper is organised as follows: in §1 I observe a typological skewing in the distribution of basic word-order patterns in relation to ergative alignment, such that SVO ergative languages appear to be vanishingly rare or non-existent; in §2 I present a variant of Collins' (2005) "smuggling" derivation of passives, and extend this to account to ergative and split-ergative alignments (see also Koopman (2008)). This derivation provides a simple, FOFC-based account for the typological skewing, which I present in §3. In §4 I then consider some implications of this observation.

1. The absence of SVO ergative languages

Here I will adduce evidence, largely based on the on-line version of *The World Atlas of Language Structures* (http://wals.info, Haspelmath *et al* (2008); *WALS* henceforth) that the two variable properties of basic word order, defined in the classic Greenbergian way as SVO, SOV, VSO, etc., and ergative vs accusative alignment are not fully independent.

Consider first word order. Table One presents the figures for each word-order type from Map 81 of *WALS* (Dryer (2008)), along with the percentages:[4]

Word Order	Number of languages	% of total
SOV	497	40%
SVO	436	36%
VSO	85	7%
VOS	26	2%
OVS	9	0.7%
OSV	4	0.3%
No dominant order	171	14%

Table One: numbers and percentages of languages by word-order type. Based on Dryer (2008).

As the term implies, languages with no dominant order do not, on the surface, show a single option among the six as the principal, neutral order. Dryer in fact distinguishes between rigid and flexible word-order languages. The former only allow deviation from the basic pattern under exceptional pragmatic conditions (English is of this type). The latter allow a certain amount of variation, but may or may not have a single, neutral dominant order. If they do, then they are classified as such; so, for example, Russian is classified as SVO although it is highly flexible in Dryer's sense. If a language lacks a single, discernable dominant order then it is classed as "no dominant order". But "no dominant order" also includes languages in which order is not very free, but just shows variance among two

---

[4]   Tomlin (1986) gave the following percentages: SOV 44.78%, SVO 41.79%, VSO 9.2%, VOS 2.99%, OVS 1.24%, OSV "almost 0". These figures are based on a sample of 402 languages. Note that there is no "no dominant order" category. Mallinson & Blake (1981), based on a sample of 150 languages, give 41% SOV, 35% SVO, 9% VSO, 2% VOS, 1% OVS, 1% OSV and 11% (further divided into 4% "free word order" and 7% "other", the latter including languages like German, with different word order depending on the position of the clause). Ruhlen (1975) gives 51.5% SOV, 35.6% SVO, 10.5% VSO, 2.1% VOS, 0 OVS and 0.2% OSV (these figures sum to 99.9%; presumably then there are 0.1% OVS languages). It is clear that all of these surveys point in the same general direction: SVO order is consistently the second-commonest in the world with 35-40% of languages sampled showing this order.

more options among the basic six: Syrian Arabic, for example, alternates between SVO and VSO and hence has no dominant order; German and Dutch have different orders in main and embedded clauses (as do some West African languages), and hence are classified under this heading too, as are other languages with variant orders in main clauses but a fixed order in subordinate clauses (e.g. the Chadic language Miya).

Consider next ergative alignment. Ergative patterns have various guises. First, there is ergative case-marking, in which, canonically, intransitive subjects and transitive objects share absolute case-marking while transitive subjects are marked ergative. Second, we have ergative agreement, in which intransitive subjects and transitive objects may show the same agreement pattern, distinct from transitive subjects. Third, ergative patterns are often split, such that case-marking might follow an ergative pattern while agreement follows an accusative pattern. Also, pronouns may show an accusative case-marking pattern, while non-pronouns show an ergative pattern. Another type of split-ergativity involves tense/aspect: some languages show ergative case-patterns only in some tenses, generally the perfective ones, with accusative patters in other tenses. This pattern, too, can cross-cut the agreement-case distinction. Fourth, some ergative languages distinguish the subjects of unaccusatives from those of unergative intransitives, marking the former like a transitive object and the latter like a transitive subject: such languages are known as active-stative languages. And finally, some languages show a tripartite case or agreement pattern, making a three-way distinction among intransitive subjects, transitive subjects and direct objects. For reasons that will emerge in §2 and §3, I will leave the last two patterns – active-stative and tripartite – largely to one side here; in any case, these patterns are somewhat rarer than (split-)ergativity.

How many ergative systems of the various kinds are there? Here again, I rely on *WALS,* Maps 98, 99 and 100 (Comrie (2008a,b); Sierwierska (2008)). According to the data given there, 32 of 190 languages surveyed (17%) show ergative case alignment on full DPs, 20 of 172 languages (12%) ahow ergative alignment on pronouns. Finally, just 19 of 380 languages (5%) show ergative agreement. Since some languages (e.g. Chamorro) show more than one of the two patterns, we cannot simply add these totals. We can therefore take the average of the three percentages to get a rough general figure for the proportion of languages showing some sort of ergative pattern. That average is 11.33%.

Now, if word order and ergative alignment pattern quite independently, we expect that roughly 11% of all languages will manifest some type of ergative alignment, independently of word order. The expectation therefore is that 11% of SVO languages will be ergative, and if SVO languages represent just over a third (36%) of all languages surveyed (or all languages surveyed so far), we expect around 3% of languages to be SVO and ergative. However, if we combine the figures for ergative alignment of various kinds with word order, we observe a clear skewing, shown in Table 2:

Word-order type	% of all alignment types	% accusative case alignment[5]	% ergative case alignment[6]	% accusative pronoun alignment[7]	% ergative pronoun alignment[8]	% accusative agreement[9]	% ergative agreement[10]
SOV	40% (497/1228)	56% (29/52)	66% (21/32)	53% (34/64)	65% (13/20)	36% (77/212)	26% (5/19)
SVO	36% (436/1228)	19% (10/52)	0% (0/32)	20% (13/64)	0% (0/20)	31% (65/212)	0% (0/19)
VSO	7% (85/1228)	6% (3/52)	3% (1/32)	5% (3/64)	5% (1/20)	7% (14/212)	11% (2/19)
VOS	2% (26/1228)	2% (1/52)	6% (2/32)	1.5% (1/64)	10% (2/20)	4% (8/212)	0% (0/19)

[5]   *WALS* Map 98 gives 52 languages with accusative case alignment. However, only 48 languages appear when case alignment is crossed with word order (Map 89). The "missing" languages are Eastern Armenian, Brahui, Garo and Khasi. Of these, Eastern Armenian is almost certainly SOV, and Khasi is SVO; there is insufficient information regarding the other two, and so I place them under NDO. This slightly alters the figures in relation to those reported in Map 98 of *WALS.*

[6]   *WALS* Map 98 gives 32 languages with ergative case alignment. However, only 28 languages appear when case alignment is crossed with word order (Map 89). The "missing" languages are Araona, Lak, Ngiyambaa and Pitjantjatjara. Of these, Araona (a Tacanan language spoken in Bolivia) is SOV, Lak is clearly SOV, Ngiyambaa appears to be SOV, and Pitjantjatjara is predominantly SOV (Bowe (1990)). Accordingly, I have added these languages to the SOV figures.

[7]   *WALS* Map 99 gives 64 languages with accusative pronominal case alignment. However, only 58 languages appear when this feature is crossed with word order (Map 89). The "missing" languages are Eastern Armenian, Brahui, Garo, Meithei, Ngiyambaa and Pitjantjatjara. On Eastern Armenian, Brahui and Garo, see Note 5. Meithei appears to be SOV, judging from many of the examples in Chelliah (1997). On Ngiyambaa and Pitjantjatjara, see Note 6. I have made the relevant adjustments to the figures for SOV and NDO.

[8]   According to Map 99 of *WALS*, there are 20 languages with ergative pronoun agreement. However, the numbers of languages in this column add up to 19. The "missing" language here is Araona, on which see Note 6. I have therefore adjusted the total for ergative alignment + SOV to 13, and I have calculated the percentages on the basis of N=20.

[9]   Map 100 of *WALS* gives 212 languages with accusative agreement alignment. Cross-classifying with word order yields on 190 languages. The 22 missing languages are Eastern Armenian (see Note 5), Bororo, Brahui (see Note 5), Byansi (SOV), Capanahua, Comox, Crimean Tatar, Dizi, Huitoto, Jaquru, Jurchen, Kwazá, Malakmalak, Nyulnyul, Pech, Pitjantjatjara (see Note 6), Remo (SOV), Selepet, Sema (SOV), Tol, Totonac and Zapotec. Aside from where indicated, no information is available in *WALS* regarding the word order of these languages, and hence they are left aside. For this reason, the percentages in this column do not add up to 100.

[10]   Map 100 of *WALS* gives 19 languages with ergative agreement alignment. However, cross-classifying with word order (Map 89) yields a total of only 12 languages. The 7 "missing" languages are Atayal, Cavineña, Kapampangan, Karitânia, Konjo, Lak and Uma. There is no word-order information available for most of them. Atayal and Kapampangan are clearly V-initial, but it is not possible to tell from *WALS* whether they are VSO or VOS or both. Accordingly, I have adjusted the figures obtained from combining Maps 89 and 100 by adding 1 language to SOV (Lak; see Note 6) and leaving the others aside. For this reason, the percentages in this column do not add up to 100.

OVS	0.7% (9/1228)	2% (1/52)	0% (0/32)	1.5% (1/64)	0% (0/20)	1.5% (3/212)	5% (1/19)
OSV	0.3% (4/1228)	0% (0/52)	0% (0/32)	1.5% (1/64)	0% (0/20)	0.5% (1/212)	5% (1/19)
NDO	14% (171/1228)	15% (8/52)	25% (8/32)	17% (11/64)	20% (4/20)	13% (27/212)	21% (4/19)

Table Two: percentages and numbers of languages according to word order and alignment types.

Looking first at the SOV languages, we observe that the percentages of languages showing the various kinds of case-marking are slightly higher than we might expect based on the overall proportion of languages with this pattern. I attribute this to Greenberg's Universal 41 ("If in a language the verb follows both the nominal subject and nominal object as the dominant order, the language almost always has a case system.") Recall that *WALS* provides data for morphologically overt case only, and so Universal 41 leads us to expect a higher incidence of case-marking of all kinds in SOV languages. Note that the figure for accusative agreement (36%) is closer to the figure for word order overall (40%), and that the figure for ergative agreement is quite low (26%).

Similarly, the figures for case-assignment of all kinds are slightly lower than expected for SVO languages on the basis of the proportion of languages with this order overall; again, this can be attributed to Universal 41 (strictly speaking, a stronger version than Greenberg's formulation just given). This is confirmed by the fact that 38% (38/98) of SVO languages show "neutral" (i.e. no overt) case-marking on full DPs and 42% (33/79) show case-marking on pronouns, while just 29% (29/98) of SOV languages show case-marking on nouns and 30% (24/79) show it on pronouns.

But the really striking figures are the 0s for ergative alignment of all three kinds in SVO languages. The relative proportions of accusative and ergative alignments for SOV languages are 56%-66%, 53%-65% and 36%-26%, on average 48%-52%, compared to a proportion of 40% overall; this is what might expect given Universal 41 (and perhaps a slight preference for ergative languages to be SOV). For VSO languages, the comparable figures are 6%-3%, 5%-5% and 7%-11%, averaging 6%-6% which seems exactly proportional to the 7% overall figure. For VOS languages, where N is very low throughout and so just one or two languages can change the proportions dramatically, the figures are 2%-6%, 1.5%-10% and 4%-0%, averaging at 2.5%-5% (suggesting a possible preference for ergative patterning with this

order, a matter I return to in §4.1). ***But for SVO, the figures are 19%-0, 20%-0 and 31%-0, averaging 23%-0.*** There are other 0s in Table Two, particularly involving the very rare OSV and OVS languages, but these can fairly safely be attributed to chance: *N* is so low here that the accidental incidence or absence of just one or two languages with a given property can skew the percentages; with SVO languages it is harder to maintain that the skewing is a statistical accident.[11] As mentioned above, we should expect about 11% of the 36% overall of SVO languages to show some kind of ergative alignment. Moreover, even the OSV and OVS languages show no dispreference for ergative alignment: for OVS the relative percentages are 2%-0, 1.5%-0 and 1.5%-5%, averaging 1.67%-1.67%, and for OSV they are 0-0, 1.5%-0, 0.5%-5, averaging 0.67%-0.67%.

It is possible that the absence of SVO ergative languages is an accidental result of two large-scale areal effects: one concerning the distribution of SVO, the other the distribution of ergative alignments (Balthasar Bickel, p.c.). Large-scale areal tendencies have been a focus of typological research in recent years (see for example Bickel & Nichols 2006, in press; Dryer 1989, 2000, Nichols 1992, 1993, Siewierska 1998). In fact, the main concentrations of SVO order are in (non-Caucasian) Europe, Sub-Saharan Africa, South-East Asia, New Guinea, Mesoamerica and the Amazon. Ergative case alignment is rare in Europe, Africa and South-East Asia, but is fairly common in New Guinea, Mesoamerica and the Amazon. However, *WALS* Maps 89 and 98-100 indicate that there are areas where SVO and ergative alignment are both found: New Guinea, Northern Australia and Brazil. It is of course possible that the relatively small number of languages from those areas in the *WALS* database may indicate that SVO and ergativity simply happen not to combine. However, the proportions of ergative languages in those areas appear high by world standards. In New Guinea and North Australia we find a mixture of word-order types (SOV, SVO and NDO) and alignment types (ergative and neutral), but still we do not find SVO and ergative alignment in the same language.

---

[11]   Ignoring the '% of all alignment types' column and going by the raw frequencies in the other columns, we get a χ^2 value of 56.0144164. With 30 degrees of freedom, that gives us a p-value of 0.0027, which is very highly significant, i.e. the null hypothesis that word order type and alignment type are independent variables is fairly conclusively disproven. However, including VSO, VOS, OVS and OSV in the table makes the χ^2 test technically inappropriate, because the expected frequencies for these languages are so small. Comparing just SOV and SVO, the p-value is 0.000008, which is still more significant (although here Universal 41 is also presumably having an effect).   The χ^2 test is still inappropriate here, because two cells have expected frequencies of less that 5, but it's more nearly appropriate than on the whole table. Thanks to George Walkden for invaluable help with this.

Furthermore, although the diachronic origins of ergative alignment are debated (Harris & Campbell (1995), Garrett (1990) etc), it is presumably possible for ergative alignment to emerge from accusative or neutral alignment by some natural diachronic process, in principle in any part of the world. Ergative alignments are found in most parts of the world, except for those where SVO orders predominate (non-Caucasian Europe, Sub-Saharan Africa). Given the general absence of ergative SVO languages elsewhere, it is at least possible that there is something inherent to SVO order which prevents the development of ergative alignment. In other words, the areal distribution of SVO and ergativity may reflect a structural incompatibility, rather than the lack of overlapping structural features reflecting an areal distribution. The absence of ergative SVO seems too categorical, and the areal distributions too blurred, to sustain a purely areal explanation.

The languages listed under NDO and ergative alignment in Table Two also need to be checked. If SVO is an unmarked order in any one of these languages, which is in principle possible given Dryer's characterisation of NDO as reported above, then that would clearly affect the generalisation. Table Two gives 8+4+4 languages for the different types of ergative alignment. However, several languages appear under more than one heading, and in fact there are just ten languages to investigate: Macushi, Trumai, Tzutujil, Chukchi, Coos (Hanis), Gooniyandi, Paumarí, Trumai, Wambaya, Wardaman and Central Yup'ik. Let us now briefly look at the information available concerning word order in these languages, with a view to determining whether any of them has SVO an as unmarked order (presumably among others, given the NDO classification).

Little information is available regarding two languages. Wardaman, spoken in the Northern Territories, shows head-final properties in the nominal (Numeral > Noun, Demonstrative > Noun, Adjective > Noun), but *WALS* gives no information regarding clausal word order. Central Yup'ik is an Eskimo-Aleut language spoken in the extreme west of Alaska for which no information regarding word order is available in *WALS*. So in these cases no conclusions can be drawn.

Wambaya is spoken in the Northern Territories of Australia. No information regarding word order is available from *WALS*. Nordlinger (1998:173) indicates that word order is "relatively free" – aside from a second-position auxiliary consisting of a subject prefix, an optional object prefix and a series of tense-mood-aspect suffixes (Nordlinger (1998:133f.)) – and certainly gives no examples or indications of unmarked SVO order.

Three of the languages on which information is available show head-final orders in various domains, and the word order is described as largely free and/or pragmatically governed. It may be reasonable to see these cases as underlying SOV (or at least OV), with a good deal of discourse-governed scrambling, both to the *Mittelfeld* and to the left periphery. In these respects they would be similar to many of the older Indo-European languages such as Latin (see Devine & Stephens 2006) or, depending on how rigidly verb-final they are, Japanese, Korean or the Dravidian languages. This kind of description appears valid for Chukchi (a Northern Chukotko-Kamchatkan language spoken in the extreme North East of Siberia, which has a range of head-final orders -- OV, postpositions, Genitive > Noun, Demonstrative > Noun, Numeral > Noun -- as well as SV order according to *WALS*), Gooniyandi (an Australian language spoken in the northern part of Western Australia with rather free word order including both SV and OV,[12] some head-final traits in the nominal -- Demonstrative > Noun, Numeral > Noun, but Noun > Adjective) and Trumai (an isolate spoken in Mato Grosso, Brazil) which shows some head-final properties -- postpositions, Genitive > Noun, Numeral > Noun, subordinating suffixes-- but according to Guirardello (1999:353) has SOV order. In none of these languages is there a case for regarding SVO as an unmarked order.

Macushi, a Cariban language spoken in the border area of Brazil, Guyana and Venezuela, is a similar case. It clearly shows a range of head-final orders (OV, postpositions, Genitive > Noun, Demonstrative > Noun, Numeral > Noun, a final subordinator and mixed order of relative clause and Noun). Abbott (1991:25) states that OSV is the basic order, with SOV a frequently used alternative "for emphasis or highlighting of a topic referent". Again, there are no grounds for taking SVO to be an unmarked order.

Then there are two V-initial languages. Tzutujil is a Mayan language spoken in Guatemala. It clearly shows a range of head-initial orders (VO, Prepositions, Noun > Genitive, initial subordinator, initial question particle; see Dayley (1985:8) for a fuller list of typical VO features in this language). Dayley (1985:301ff.) shows that the unmarked order is VOS, although the subject is frequently topicalised or focalised. Coos (Hanis) is a now-extinct Coosan language formerly spoken on the Oregon Coast), whose word-order properties are difficult to determine on the basis of the information in *WALS*, although it is VS, postpositional and shows some "head-final" properties in nominals (Adjective > Noun, Demonstrative > Noun, Numeral > Noun). Mithun (1999:399) says that "[w]ord order in

---

[12]   McGregor (1990:3) states that in Gooniyandi "constituent order is 'free'" but "significant in respect of the textual organisation of the clause".

Coos is pragmatically rather than syntactically based". Again, it seems highly unlikely that SVO is an unmarked order in either of these languages.

But there is one very intriguing potential counterexample, Paumarí, an Arauan language spoken in Amazonas, Brazil. Although *WALS* gives the order as VS, Chapman & Derbyshire (1991:164) point out that "[w]hen the S is pragmatically marked for informational prominence the order becomes SV". Further, they state that, in transitive clauses, "[t]he basic word order is SVO" (*ibid*), although OVS and SOV are "two other constituent orders that frequently occur in transitive clauses" (Chapman & Derbyshire (1991:165)). In subordinate transitive clauses the order is either SVO or OV. In SVO orders the subject is marked with the enclitic –*a*, and the verb has a prefix agreeing in person and number (e.g. 3sg *bi-*). In OVS orders the object bears the enclitic –*ra*. In both orders the argument not marked by an enclitic is typically associated with a demonstrative agreeing in gender and number with a verbal suffix (Chapman & Derbyshire 1991:165):[13]

(5)   a.   SVO order:

            Dono-a bi-ko'diraha-'a-ha   ada isai hoariha

            Dono-A 3sg-pinch   -asp-theme Dem child other

            "Dono pinched the other boy." (Chapman (1979/2008:4; Chapman &
                                                         Derbyshire (1991:164))

       b.   OVS order:

            marav-ra namonaha-hi ida mamai

            fan-RA   make-Theme,f. Dem-f. mother

            "Mother made a fan."   (Chapman & Derbyshire (1991:165))

In intransitives, the order is either VS or SV, and the subject has no specific marking in either case, but agrees in gender and number with the verb. A demonstrative usually appears on the postverbal subject, but cannot appear on the preverbal subject, which is "pragmatically marked for informational prominence" (Chapman & Derbyshire 1991:163):

---

[13]   I depart from the glosses given in the sources cited only in not glossing the –*a* and –*ra* enclitics.

(6) a. voroni-'i-hi   ida   kidi-hado

   Fall-Asp-Theme,f. dem,f. his-knife,f.

   "His knife fell."   (Chapman & Derbyshire 1991:254)

   b.   Morosi va-a-kaira-ha-'a-ha

         Morosi 3pl-Vblzr-guava-distance-Asp-Theme

         "Morosi (and companions) went to get guava."

         (Chapman & Derbyshire 1991:197)

We can immediately note that this is not a canonical ergative-alignment pattern, in that the intransitive subject does not invariably pattern like a transitive object. The intransitive subject behaves like a *non-initial* transitive object, but also like a non-initial transitive subject. In fact, non-initial arguments all pattern in the same way, and so we do not have ergative alignment here. When initial, however, we see a three-way split between transitive subject (marked with –*a*), transitive object (marked with –*ra*) and intransitive subject (no marking). So it appears that Paumarí has a tripartite system for initial arguments.

For the moment, I tentatively follow the proposal in Chapman (1979/2008:4) that –*a* and –*ra* are topic markers. If so, then SVO is not an unmarked order. It is possible that Paumarí is a kind of verb-second system, in that the verb must immediately follow the topicalised constituent, with the unmarked order being otherwise SOV. In this respect, Paumarí may resemble Dutch and German; I will return to this analysis below.[14] For the moment, we can tentatively conclude that Paumarí does not have SVO as an unmarked order, although it shows surface SVO with ergative alignment. But this tentative conclusion will be revisited when we have a clearer idea of how SVO and ergative alignment is ruled out in general.

There is one active-stative SVO language: Drehu (Oceanic, spoken in New Caledonia), and there are six SVO languages with active-stative agreement marking: Apurinã (Arawakan, spoken in Amazonas, Brazil), Arapesh (Kombio-Arapesh, spoken Northern New Guinea),

---

[14]   The availability of embedded SVO may suggest that subject topicalisation does not involve the C-system, or, following the analysis of Dutch in Zwart (1997), it may be that subject-initial V2 orders are structurally distinct from non-subject-initial V2 order. Note that Paumarí patterns like many of the Netherlandic dialects discussed by Zwart in showing a special agreement form for subject-initial V2 orders, illustrated by the *bi-* prefix in (5a).

Arawak (Arawakan, spoken in Suriname), Guaraní (Tupi-Guaraní, spoken in Paraguay), Taba (Austronesian, spoken in Indonesia) and Warehena (Arawakan, spoken near borders between Brazil, Colombia and Venezuela). We will see that our analysis of the ban on ergative alignment in SVO languages predicts that active-stative alignment is allowed.

Having established that unmarked SVO order and basic ergative alignment are not found together, I will now try to provide a structural explanation for this missing combination. As we will see, FOFC plays a central role in this explanation.

2.   *A smuggling analysis of (split-)ergativity*

In ongoing work (Roberts 2010), I extend the scope of the type of derivation known as "smuggling", introduced explicitly by Collins (2005), to a further range of cases in addition to passive and raising as analysed by Collins. I suggest that most commonly attested forms of "alignment alternation", cases where arguments bearing the same θ-roles distribute differently across constructions or languages in a more or less productive fashion, involve an alternation between a smuggling-style derivation and a non-smuggling style derivation. I designate these two types of derivation **direct** (non-smuggling) and **indirect** (smuggling) respectively. I propose that the difference between direct and indirect derivations involves a simple formal choice, and that therefore the existence of alignment alternations is a simple consequence of the interaction of the properties of the operations which produce derivations (Internal and External Merge, Agree, locality conditions and movement triggers).[15]

---

[15]   The wider issue underlying these proposals is the question of the "perfect" nature of the language faculty, as hypothesised in the context of the minimalist programme (see Chomsky (1993, 1995, 2000, 2001, 2004, 2005, 2007, 2008)). If we follow the leading idea of the minimalist programme that the language faculty provides the optimal way of relating sound and meaning over an infinite domain, one immediately apparent consequence is that we do not expect optionality, as has often been noted. However, as Baker (1988) points out, many pairs of alignment alternations, e.g. active-passive pairs, are "thematic paraphrases" of one another. Although they may strictly speaking contain different sets of morphemes, and as such be constituted by distinct Numerations, and hence have derivational economy computed separately, there is nevertheless a clear intuition, which Baker's notion of thematic paraphrase precisely intends to capture, that an active-passive pair constitute two ways of expressing the same event. In this sense, we may think of active-passive alternations as a kind of imperfection in natural language, and hence a challenge to the intuitions behind the minimalist programme. Similarly, if we look at artificial languages such as predicate calculus, one thing that we do not find is any analogue of alternations such as the active-passive one. There is a clear sense, then, in which alignment alternations of this type are an unexpected property of natural language, given the leading ideas of the minimalist programme. Of course, the same comments apply to cross-linguistic alignment variations, especially the ergative-accusative alternation.

In the light of this, consider the abstract structure in (7), where H is an active probe endowed with a movement-triggering feature (following Biberauer, Holmberg & Roberts (2010; BHR henceforth) I use the ^ notation to indicate a movement-triggering feature, which should be seen as a pure diacritic)[16] and DP is a potential goal:

(7) $H^{\wedge}_{[u\varphi]}$ $[_{XP}$ $DP_{[i\varphi, uCase]}$ $[$ X   YP $]]$

The standard view is that H can only attract its DP goal here. This is clearly one possibility, and represents an example of a direct derivation (for example, if H is T and XP is vP, this would be raising of the external argument (EA) to SpecTP) on standard assumptions – see Chomsky (2000, 2001)). But is this the only possibility? Chomsky (2001:4) proposes that a probe with an EPP feature must raise its goal to its specifier. Let us suspend that assumption for now, allowing probe-goal agreement between H and DP to take place without DP-movement, and consider what other elements in (7) could in principle move to SpecHP.

We can rule out XP-movement on general anti-locality grounds (Abels (2003), Grohmann (2003)).[17] If we assume a generalised non-intervention constraint on both movement and Agree, then we can see that in (7) H can attract YP only if YP ≠ DP. For the same reason, H can Agree with X but not Y. Although they can Agree, if there is no syntactic head-movement, X can't move to H.[18] Furthermore, any category contained in or asymmetrically c-commanded by YP will prevented from moving by the presence of YP.

But there is no obvious barrier to YP-movement. This involves the maximally local case of movement which is not excessively local, i.e. movement of the complement of the complement. I therefore conclude that this is possible.

So we now arrive at the basic characterisation of the two kinds of derivation. In relation to (7), then these are as follows:

---

[16]   It can be seen as an extra EF, in addition to the one permitting External Merge of H's complement. Given the binary nature of Merge, and the definition of a complement, the only possibility for satisfying a second EF is the creation of a Specifier.

[17]   BHR suggest that complement-to-specifier movement is possible just in the case of movement for linearization, what they call L-movement. In this particular case, they argue that the movement diacritic is associated with the c-selection feature of the head, and therefore causes movement of the complement to the specifier. The presence of the movement-triggering feature on the c-selection feature of the head gives rise to surface head-final order in the category in question. Aside from this case, though, maximally local movement (complement-to-specifier movement) isn't allowed.

[18]   Roberts (forthcoming) argues that Agree can give rise to head-movement under certain conditions. I will leave that possibility aside here however.

(8)   a.   **Direct** derivation: DP moves to SpecHP (to value H's [uφ] features, triggered by ^), YP doesn't.

        b.   **Indirect** derivation: YP moves to SpecHP, DP doesn't (but enters into an Agree relation with H).
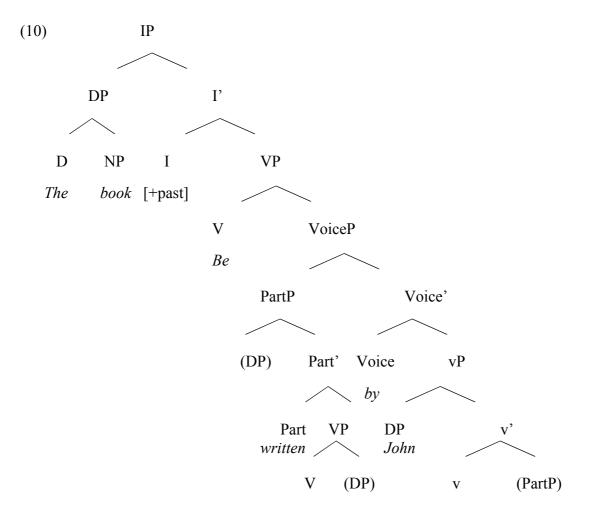
In Roberts (2010) I explore the idea that alternations of direct and indirect derivations, allowed merely by the fact that ^ doesn't have to associate with features which are valued by D, underlie most common alignment alternations. Let us now put these ideas into practice, in relation to the active-passive alternation, adopting and adapting insights from Collins (2005).

The relevant parts of the structure of a passive clause that I am assuming are given in (9):

(9)   … $T_{[u\varphi\wedge]}$ .. [$_{VoiceP}$ Voice [$_{vP}$ EA v [$_{PrtP}$ Prt VP]]]

I take that it Voice is the head of the "internal clausal phase" (see also Kratzer (1996); Collins assumes Voice is present only passives, but I assume it is generally present). Nonetheless, I follow the standard assumption that v introduces the external argument (see below on internal "Case").

In the **direct** derivation, T probes the external argument EA and it moves to the subject position in the usual way, giving an active clause. In the **indirect** derivation: PrtP raises to SpecVoiceP, thereby "smuggling" the VP-internal direct object past the EA, and making it possible for this argument to be probed and raise to SpecTP, giving a passive clause. Collins (2005:90) gives the structure in (10) for a simple passive clause:

(10)

```
                        IP
                      /    \
                   DP        I'
                  /  \      /   \
                D    NP   I      VP
              The   book [+past]  /  \
                                 V    VoiceP
                                Be    /    \
                                  PartP      Voice'
                                 /    \      /    \
                              (DP)   Part' Voice    vP
                                     /  \   by     /   \
                                 Part   VP  DP      v'
                               written /  \ John   /  \
                                     V  (DP)      v   (PartP)
```

Here Voice, as the phase head, has [uφ] features. In active clauses, these features are inherited by v (see Chomsky (2008) on inheritance of probing features). In passives they are withheld by Voice. Voice then probes the EA, this relation is realised by *by* when the EA is overt, PartP raises to SpecVoiceP and the internal argument is probed by T and moves to SpecTP. One key feature of this analysis is that the external argument is merged in the same position as in actives. This, of course, is in conformity with Baker's (1988) Uniformity of Theta-Role Assignment Hypothesis (UTAH), and is supported by the fact that a passive *by*-phrase can bear any θ-role an active subject can, except for no θ-role at all, as shown by (11h):[19]

---

[19] Curiously, as observed by *<Syntax author>*, "weather *it*" cannot appear in a *by*-phrase, although, as has often been pointed out, this element acts like an argument in being able to control, and weather verbs can be transitive and passive:

(i) a. We had a barbecue and we all got rained on (by a large thundercloud/*it).
     b. It has been trying to rain all day.
     c. The shaman forced it to rain.
     d. It's been raining cats and dogs.

(11)   a.   It was believed by everybody that Mary was a thief.

       b.   Danger was sensed by John.

       c.   A black smoke was emitted by the radiator.

       d.   That professor is feared by all his students.

       e.   Mary was respected by John.

       f.   A copy of the book has been received by everyone.

       g.   Ted was bitten by the lovebug.

       h.   *A train was arrived by there.

I follow Collins in observing that *by* appears as a reflex of the licensing relation between Voice and the external argument in Spec,vP when the latter is overt. Voice is also capable of licensing a null argument, interpreted as an arbitrary null pronoun.[20] It is unclear what the nature of this licensing relation is, but, as Collins notes, it is paralleled by the alternation between *for* and Ø alternation in infinitival C.

(12)   The book was *pro* written [to make money].

(13)   a.   I arranged [for John to leave].

       b.   I arranged [PRO to leave].

Presumably, Voice has sufficient φ-features to license an arbitrary null pronoun (see Holmberg (2010) on two types of generic null pronoun in Finnish, one of which is probed by Voice). Since an arbitrary pronoun cannot be a direct object in (most registers of) English, it is possible that not all of Voice's φ-features are available for the direct object, implying that just a subset of Voice's φ-features are inherited by v. This may also be consistent with the fact that v is associated with Accusative Case, while the presence of suggests that Voice licenses a form of oblique.

Turning now to ergativity, recall that the basic ergative alignment pattern is as follows:

(14) SU_{Erg} OBJ_{Abs} V_{tr}

             SU_{Abs} V_{itr}

I have no explanation for this.

[20]   In fact, as a "quasi-existential" arbritrary pronoun in the sense of Cinque (1988).

This is illustrated by the following example from Hunzib (Nakh-Daghestanian; eastern Caucasus, van den Berg (1995: 122), cited in Comrie (2008a)):

(15) a.   kid   y-ut'-ur
            girl   cl2 -sleep- pst
            'The girl slept.'

      b.   Oždi-l   kid   Hehe-r
            boy- erggirl   hit- pst
            'The boy hit the girl.'

 Assume again the basic structure for the relevant part of the clause in (16):

 (16)   T/Aux [VoiceP Voice [vP EA v [VP V IA]]]

In the direct derivation EA raises to Spec,TP and is probed by T, Voice's [uφ] is inherited by the lower v, and licenses the direct object; this gives the familiar accusative alignment pattern. If V is an unergative intransitive, the EA behaves exactly as in the transitive derivation; Voice lacks φ-features (it may license a null cognate object (see Hale & Keyser (2002), but I take that to involve some distinct mechanism and leave it aside here). If V is unaccusative, Voice lacks φ-features, and there is no EA (Burzio's (1986) Generalisation), and the IA is probed by T. Both Voice and v must be sensitive to the lexical properties of V (as transitive, unergative/unaccusative intransitive); presumably this is achieved by selection along the Voice-v-V projection line.

In the indirect derivation on the other hand, VP raises to Spec,VoiceP and Voice withholds its φ-features from v, licensing the *in situ* EA. T probes the IA inside the "smuggled" VP. The case of the EA is the ergative, which in many languages is similar to an oblique of some kind; in this respect as in various others, the ergative resembles the passive, and this is directly captured on this analysis. The case of the IA is absolutive, which I identify with nominative, i.e. the Case licensed by (finite) T. This idea is supported by the fact that both nominative and absolutive are both typically the morphologically least marked cases in the different kinds of systems (this can be seen in the Hunzib examples in (15); see Comrie (2008a) for discussion). If V is an unergative intransitive, Voice lacks φ-features and hence the EA cannot be

ergative; however, since there is no IA, T is able to license the EA.[21] If V is unaccusative, there is no EA and Voice lacks φ-features; in this way the IA is again licensed by T, as absolutive/nominative. In this way we derive the ergative pattern of intransitive subject patterning with transitive object.

The above shows how an indirect derivation can derive the ergative case-marking pattern. Ergative agreement, in which intransitive subjects and transitive objects may show the same agreement pattern, distinct from transitive subjects, can clearly be handled in the same way. However, as we noted in §1, ergative patterns are often split in various ways. One split involves case-marking following an ergative pattern while agreement follows an accusative pattern, e.g. in Gooniyandi (from McGregor (1990:318)):[22]

(17) a.   nganyi ward-ng-i

          I   went-1sgNom-I

          "I went"

      b.   nganyi-ngga wayandi jard-li   -ø

          I   ERG fire   lit -1sgNom-3sgAcc

          "I lit a fire."

Here we see the clear pattern of zero-marking for absolutive case and the –*ngga* ergative ending on the EA of a transitive. The agreement marking on the verb is somewhat (see Note 22), but McGregor describes it as an accusative pattern. *WALS* reports a total of twelve languages which show this kind of split. Clearly it poses a challenge to the Case-Agree system of Chomsky (2001). The simplest way to deal with this kind of system is to make two assumptions which diverge from that system. First, assume that probes have Case features which Agree with their Goals, i.e. assume a typical DP is [iφ, uCase], T is [uφ, iCase] where Case = Nom/Abs and Voice is [uφ, iCase] where Case = Erg/Acc. Second, assume that φ-features and Case features can be differentially inherited. In a split-ergative system with ergative case-marking and accusative agreement, as in (17b), we must assume that Voice's φ-

---

[21]   If Agree is subject to a strict version the Phase Impenetrability Condition (PIC), T would not be able to probe inside the Voice phase and reach the in-situ EA. So we must either slightly relax the PIC, assume that the EA can raise to SpecVoiceP here. I will leave this question open.

[22]   McGregor does not parse the rather complex agreeing verb forms at the point where he gives these examples. My glosses are based on his discussion of the pronominal/agreement affixes on pp. 203f. the final –*i* in (17a), which I have glossed as "I", is a single-valent verbal classifier, one of a class of 12 found in Gooniyandi, which mark verbs for valency and, roughly, semantic/aspectual class (see McGregor (1990:195f). In (17b), we have 1sg Nominative–*li*- and 3sg Nominative is ø.

features are inherited by V, while its Case feature is not. Given this and an indirect derivation, Case-licensing will proceed as described above for ergative systems, but φ-agreement will not: V will Agree with the direct object and thus allow T's φ-features to probe the EA, causing that argument to φ-Agree with T (but see Note 20). T's Case feature does not enter into an Agree relation, but that is of no consequence since it is interpretable (i.e. it has the value Nom/Abs).

In a further kind of split system, pronouns may show an accusative case-marking pattern, while non-pronouns show an ergative pattern. *WALS* gives five languages which do this, four of them Australian and Paumarí (we will consider Paumarí again below, given its apparent combination of ergative alignment and SVO). This kind of system is illustrated by thee Wambaya examples in (18):

(18)   a.   Bungumanyi-ni gini-   ng-a   jiyawu.

                Old.man.I-Loc   3Sg.m.A-1O-NF give

                "The old man gave it to me." (Nordlinger (1998:84))

        b.   Ngajbi ng-a   irra.

                See   1Sg.A.Pst 3Pl.Acc

                "I watched them."   (Nordlinger (1998:127))

Recall that the second word is the auxiliary, which carries subject and object agreement marking, along with tense and aspect marking (for example the –*a* suffix in (18a) marks non-future tense).

For this kind of system I assume a basic ergative pattern, i.e. an indirect derivation with Case and φ-features Agreeing as described above for ergative systems when the arguments are non-pronominal DPs. When the arguments are pronominal, I attribute the different alignment pattern to the fact that they are weak elements. Weak pronominal objects may undergo object shift, which I follow Chomsky (2001) and Richards (2004) in taking to be movement to SpecvP, triggered by an optional EPP feature of v. In this position, the shifted object pronoun can Agree with Voice. However, if we assume full Agree between the shifted object and Voice we deprive the EA of the possibility of being ergative, and a property of these systems is that ergative DP subjects can co-occur with accusative pronominal objects (as shown in (18a), although the 3Sg accusative object is not marked, and the 1st-person object marker

corresponds to an indirect object). We must therefore assume that weak pronouns lack a Case feature. Hence the shifted object φ-Agrees with Voice while the non-pronominal EA may Case-Agree with Voice and appear ergative. Conversely, the EA may be a weak pronoun, attracted to T, and φ-Agree with T while the IA, having been fronted to SpecVoiceP in the indirect derivation, Case-Agrees with T as absolutive. A rather undesirable, but inevitable, corollary of this analysis is that we must assume that uninterpretable φ-features appear optionally on both T and Voice in languages of this kind, since in the two scenarios just described (ergative DP subject, accusative pronominal object and absolutive DP object, nominative pronominal subject) the "other" probe in the clause (T and Voice respectively) has no goal.

Still another type of split-ergativity mentioned above involves tense/aspect: some languages show ergative case-patterns only in some tenses, generally the perfective ones, with accusative patterns in other tenses. This is illustrated in the example in (19) from Georgian (for transitive and ditransitive verbs):[23]

(19)　a.　　k'ats.i　　　kal.　s　ts'ign.s　　ø.　ø.　a.　tʃvɛn. ɛb.s

　　　　　Man.Nom$_A$ woman.Dat$_B$ book.Dat$_B$ it$_B$.her$_B$.LV.shew.TS.he$_A$(-Pres)

　　　　　"The man shows the woman the book".

　　　b.　　k'ats.ma kal.　s　ts'ign.i　　ø.　ø.　a.　tʃvɛn.a

　　　　　man.Erg$_A$ woman.Dat$_B$ book.Nom$_B$ it$_B$.her$_B$.LV.shew.he$_A$(-Aor)

　　　　　"The man showed the woman the book"

(19a) shows the nominative-accusative alignment (although accusative and dative collapse as dative, in the standard descriptions), found in the present and future tenses and moods. (19b) shows the ergative alignment found in the aorist indicative and subjunctive. Here we see the subject in the ergative case and the direct object in the nominative (which, as usual, can be

---

[23]　　　This is a considerable simplification of Georgian, which shows a third (Dative-Nominative) pattern, and a complex interaction of tense/aspect/mood with each case pattern and verb class (see Hewitt (2004:104f., 158-9) for description and illustration. Also, verbal agreement marking follows an accusative pattern, as can be seen in (19). See Hewitt (2004:158f) for discussion. Harris (1981) influentially analysed Georgian as an active-stative system, although Hewitt takes issue with this. See also Comrie (2008a). I have followed Hewitt's system of subscripting clausal arguments and agreement markers (including zeroes) on the verb. In the glosses, "LV" stands for "locative version" ("version" is a notion similar to "applicative") and "TS" for "thematic suffix".

identified with absolute). In systems like this, I take it that T/Aux, in terms of the structure given in (16), triggers a direct or indirect derivation as a consequence of its inherent temporal feature content. For example, aorist T in Georgian (however exactly "aorist" is defined in feature terms) triggers an indirect derivation, giving an ergative alignment pattern, while present T triggers a direct derivation and the associated accusative alignment pattern. The "triggering" relation here is selection: just as the passive auxiliary *be* selects the Voice which triggers an indirect derivation in a structure like (10), different feature-specifications of T select different types of Voice in a language like Georgian.

Active-stative languages, which distinguish the subjects of unaccusatives from those of unergative intransitives, marking the former in the same way as a transitive object and the latter in the same way as a transitive subject, can be simply handled by allowing Voice in unaccusatives to remain an active probe (this conflicts with Burzio's generalisation, as there is no external argument in this case). There is no need for an indirect derivation here. Again, T must be able not to function as an active probe in this kind of system.

Finally, some languages show a tripartite case or agreement pattern, making a three-way distinction among intransitive subjects, transitive subjects and direct objects. This is illustrated by the following Hindi example, again from Comrie (2008a) (citing McGregor (1977)):

(20) a. laRkaa kal   aay-aa
         boy   yesterday come. aor-sg.m
         'The boy came yesterday.'
      b. laRke   ne   laRkii   ko dekh-aa
         boy. oblerg   girl   acc See- sg.m
         'The boy saw the girl.'

Probably the best account for this system would be to attribute the ergative-licensing property to (transitive) Voice, and allow v to probe the direct object. Although not entirely satisfactory, the important thing about this analysis is that it does not require an indirect derivation, like the analysis just sketched for active-stative alignment.

In this section, I have described the general difference between direct and indirect derivations, and shown how passive and ergative alignments may be derived. Now it is time to see how FOFC relates to these considerations.

3.   FOFC and the absence of ergative SVO languages

We are now in a position to account for the absence of ergative SVO languages, and to bring FOFC into the picture. Let us begin by taking a closer look at the structure that results from VP-fronting in the indirect derivation:

(21)   T [$_{VoiceP}$ **[$_{VP}$ V IA] Voice** [$_{vP}$ EA v (VP)]]

The boldfaced part of (21) violates FOFC, which is standardly stated as follows:

(22)   *[$_{βP}$ [$_{αP}$ α γP] β]   (where α and β are on the same projection line)

The structure in (21) violates FOFC for α = VP and β = Voice. So we see why there are no SVO ergative languages as the ergative derivation violates FOFC. Hence the otherwise surprising and unexplained absence of such languages. This is a further case of FOFC, in a different and unexpected empirical domain.

In a head-final language, the order of IA and V is inverted and we no longer have a FOFC violation here. Assuming, following Kayne (1994) and BHR, that surface head-final order derives from general "roll-up" of all complements, we have a structure like (23) instead:

(23)   [$_{VoiceP}$ [$_{vP}$ EA [$_{VP}$ IA V (IA)] v (VP)] Voice (vP)] T (VoiceP)

This kind of derivation gives SOV surface order (with the verb possibly showing the structure root+voice+tense, which is very common crosslinguistically, see Julien (2002)) and no FOFC violation.

We are now in a position to account for the SVO languages which, to varying extents, show various kinds of ergative alignment. As mentioned at the end of the previous section, neither stative-active nor tripartite systems require an indirect derivation. In consequence, a head-initial system will not give rise to a FOFC violation. So we do not predict any ban on these systems, and, as noted in §1, *WALS* gives altogether seven SVO languages with different types of stative-active alignment (mainly in the agreement system).

We can also return to the possible counterexample represented by Paumarí. We can account for the OVS and SOV orders found in this language (where there is no ergative marking) by assuming general "roll-up" in the lower phase, i.e. by taking the linearization feature ^ to percolate just as far as Voice. This gives the intermediate structure in (23), again with no FOFC violation. We can then assume that this language allows 2 ways to satisfy T's EPP

feature: (i) VP-movement to SpecTP, and (ii) vP-movement to SpecTP. The first gives OVS order, the second SOV.

More precisely, I tentatively assign the structure in (25) to an example like (24) with SOV order:

(24)   bano   pa'isi o- sa'a- ra   anani-hi

          Piranha small my-finger-RA bite-Theme

          "A small piranha bit my finger."   (Chapman & Derbyshire (1991:197))

(25) $[_{TP}$ $[_{vP}$ bano pa'isi $[_{VP}$ o-sa'a-ra (V^) (o-sa'a-ra)] v^ (VP)] $[_{T^}$ anani-hi] $[_{VoiceP}$ (vP) Voice^ (vP)]]

Here, as suggested in §1, there is general roll-up inside VoiceP, followed by V-movement to T and vP-movement to SpecTP. It is plausible that the movement-trigger on T corresponds to Chomsky's (2001) optional EPP-feature, since SOV order and appears to have a discourse effect: Chapman & Derbyshire (1991:196) comment that "The fronting of S, as in SOV and (intransitive) SV, signals that special prominence attaches to the S nominal". Note that the same fronting operation will give surface SV with an intransitive. The Agree relations follow accusative alignment here: the object marker –*ra* is the reflex of Voice giving its φ-features to v, while the subject Agrees with T (visible in the form of the theme suffix –*hi* on the verb).

OVS order arises from a derivation very similar to that seen in (25), with the single difference that vP is not pied-piped to SpecTP, but rather VP is. The result is that the subject is "stranded" in SpecvP. I thus assign the structure in (26) to (5b), repeated here:

(5b)   marav-ra namonaha-hi ida mamai

              fan-RA   make-Theme,f. Dem-f. mother

              "Mother made a fan."   (Chapman & Derbyshire (1991:165))

(26) $[_{TP}$ $[_{vP}$ mavra-ra (V^) (o-sa'a-ra)]] $[_{T^}$ namonha-hi] $[_{VoiceP}$ $[_{vP}$ [ida mamai] v^ (VP)] Voice^ (vP)]]

Here again, the –*ra* marker on the direct object is the reflex of the inheritance of φ-features by v from Voice. Again, there appears to be a discourse effect associated with VP-fronting to

SpecTP, as Chapman & Derbyshire (1991:196) say that "O is given more prominence as a marked topic by being fronted" (although there is also a left-dislocation strategy available for objects). T Agrees with the subject, for feminine gender. Here again, then, we have accusative alignment.

Finally, SVO order is illustrated in (5a) and analysed in (27):

(5a)   Dono-a bi-ko'diraha-'a-ha   ada isai hoariha

              Dono-A 3sg-pinch   -asp-theme Dem child other

              "Dono pinched the other boy." (Chapman (1979/2008:4; Chapman &
                                                       Derbyshire (1991:164))

(27)   [$_{TP}$ Dono-a bi-[$_{T^\wedge}$ ko'diraha-'a-ha] [$_{VoiceP}$ (Dono-a) [$_{vP}$ (Dono-a) [$_{VP}$ [ada isai hoariha] V (ada isai hoariha)] v (VP)]] Voice^ (vP)]]

Here we have an indirect derivation: Voice withholds its φ-features from v and Agrees instead with the EA, giving rise to the –a marker. T Agrees with the IA (again the form of the theme affix –ha on the verb shows this). T's EPP feature is satisfied by raising the subject, giving rise to the topic interpretation mentioned in §1. The copies produced by this raising operation in SpecvP amd SpecVoiceP do not appear to act as defective interveners for Agree between T and the direct object, perhaps because the subject is A'-moved. I have left the position of the 3rd-person subject-agreement prefix bi- unclear, on the grounds that it may be a form of subject clitic (in fact it is not inconceivable that this example involves a form of clitic-dislocation of the subject).

The analysis just sketched is partially confirmed by the fact that the –a marker shows up on a postverbal EA in the passive, functioning exactly like a by-phrase:

(28)   oba-hi   hi'-iana- hi   ida   Kasai mina'di-a

         shock-Nominaliser Aux-again-Theme Dem,f Kasai eel   -by

         "Kasai was shocked again by the eel."   (Chapman & Derbyshire (1991:181))

Here we arguably have the OVS structure of (26), with the single complication that the direct object appears to have been shifted out of VP to SpecVoiceP before VP-fronting to SpecTP. The EA remains in its first-merged position in SpecvP, just as we would expect in a passive.

In general, then, it seems we can generate the putative SVO ergative orders in Paumarí by treating the system as an accusative one with leftward VP-, vP- and, in passives, EA-fronting for discourse reasons. There are no FOFC violations in any of the derivations we have considered, as I have been assuming that Paumarí is head-final inside VoiceP. These two vP- and VP-fronting options can be seen as different kinds of pied-piping, rather along the lines of the proposals for West Germanic in Richards & Biberauer (2005). The enclitics *–a* and *–ra* are realisation of Voice's φ-features, while T's features are generally realised by φ-agreement (in this context it is worth noting that *–a* and *–ra* are in complementary distribution with the demonstrative which generally marks the φ-features of nominals (and hence Agree with T)). I take it that the rarity of this system is due to the comparative rarity of EPP-satisfaction by a V-element, which, as we have seen gives the very rare OVS as one possible order.

The FOFC-based account of the lack of ergative SVO languages just given has a number of wider implications, which I will address in the next section.

4.   *Implications*

There are two main sets of implications of the account of how FOFC interacts with smuggling derivations just given, one concerning V-initial languages and one concerning passives. We will now look at these in turn.

4.1   *V-initial languages*

It is clear from Table Two that the ergative alignment is not at all incompatible with V-initial orders, although the numbers of languages, particular VOS languages, are low throughout: recall that, for VSO languages, the different ergative and accusative alignment patterns averaged 6% and 6% which seems exactly proportional to the 7% overall figure for this order. For VOS languages, where N is very low throughout and so just one or two languages can change the proportions dramatically, the average at 2.5%-5%. Even the OSV and OVS languages show no dispreference for ergative alignment: for OVS the relative percentages average 1.67%-1.67%, and for OSV they average 0.67%-0.67%.. So V-initial languages must be exempted from the FOFC-based account of the lack of SVO ergative languages. This is the topic of this section.

One question is: why could we not simply posit verb-movement to some high functional head in the structure in (21) of the sort first put forward by Emonds (1980) for VSO languages? This would give a structure like (29):

(29)   V+T [$_{VoiceP}$ **[$_{VP}$ (V) IA]** **Voice** [$_{vP}$ EA v (VP)]]

However, it is well-known that verb-movement of this type is not restricted to VSO (or VOS) languages, but is allowed in many SVO languages (Pollock's (1989) classic analysis of French being arguably the best-known example). So we do not want V-movement alone to circumvent the FOFC violation, or we would lose the account of the absence of FOFC in SVO languages. But now a further question arises: why should the structure in (29) count as a FOFC violation, but not that in (23)? In other words, why does the copy of V in (29) "count" for FOFC but not the postverbal copy of the IA in (23)? In order to answer this question, we have to look more closely at the details of how BHR derive FOFC.

BHR posit a general movement diacritic, which they write as ^. This element can appear in three different contexts, as illustrated in (30):

(30)   a.   Associated with the active features of a probe, e.g.

              T$_{[u\varphi, \wedge]}$ triggers movement of the goal of the probe [uφ] to specTP

        b.   Associated with the features of a phase head, e.g.

              C$_{[WH, \wedge]}$ triggers wh-movement;

        c.   Associated with the selection features of a lexical head, e.g.

              V$_{[-D, \wedge]}$ triggers movement of the complement DP of V to specVP.

The third case of ^ is the one which is relevant for FOFC, since this is the one which gives rise to surface head-final orders, taking the LCA to govern the mapping from asymmetric c-command to linear precedence. BHR in fact state FOFC as follows, given the postulation of ^ as a diacritic regulating linearization movement:

(31)   If a non-lexical head X^n in the Extended Projection E of a lexical head L has ^ associated with its selection feature for a lower head X^{n-1}, then so does X^{n-1}.

This brings us to the central idea in BHR's account: ^ may spread monotonically from the lexical head L of E to the highest head of E, but, crucially, "skipping" an intervening head is not allowed (ultimately because of relativised minimality, BHR suggest), hence FOFC.

Now we can see the difference between (23) and (29). In (23), we have V^, v^ and Voice^; in fact all heads have ^, which is what gives rise to the roll-up derivation here. In (29), on the other hand, we have Voice^, but not V^, hence a FOFC violation.[24] So merely positing V-movement is not enough to escape the effects of FOFC in the head-initial indirect derivation.

Instead, it is necessary to consider two different derivations of surface VSO order. Biberauer & Roberts (2010) develop the idea that there are two types of VSO languages. Surface VSO order can be derived either by V-movement, following the line of analysis instigated by Emonds (1980), or by remnant VP-movement, following a more recent line of analysis instigated by Massam & Smallwood (1997). The two different derivations are schematised in (32):[25]

(32)   a.   V-movement:

        V+T/C … S …   [$_{VP}$ (V) OBJ]

        b.   Remnant VP-movement:

        [$_{TP}$ [$_{VP}$ V (O)] T   … S .. [$_{vP}$ O (VP)]]]

The derivation in (32b) gives rise to VOS order if the object is not moved out of VP prior to VP-movement. The derivation of the general type in (32a), leaving open the related questions of the landing site of V (T or C) and the position of the subject (SpecTP or lower) is found in Celtic and Semitic (see Adger (1997) on Scots Gaelic, McCloskey (1996) on Irish, Roberts (2005) on Welsh, Jouitteau (2005) on Breton, Newton (2006) on Old Irish, Willis (1998) on Middle Welsh, Shlonsky (2004) on Hebrew and various Arabic dialects, Fassi-Fehri (1993) on Standard Arabic).   The derivation in (32b) is found in many Austronesian and Mesoamerican languages (see Massam & Smallwood 1997, Massam 2000, 2005, Rackowski & Travis 2000, and many of the papers in Carnie, Dooley & Harley 2005). The different derivations correlate with various other properties: VSO languages whose word order is

---

[24]   It might be objected that Voice is an A-movement trigger, being a probe, and not a linearization trigger. However, the key to understanding the possibility of indirect derivations, where a probe Agrees with one category but triggers movement of another, involves not connecting the movement trigger directly with the active probing features, but rather treating ^ as a "free-floating" feature of the head. If we want Voice to allow both a direct (active) and indirect (passive) derivation, then we must adopt this view. In any case, BHR show how A-movement triggering heads fall under FOFC. The one kind of movement that can give rise to FOFC-violating outcomes is A'-movement; see BHR for discussion.

[25]   Obviously a number of details, mainly concerning the position of the subject, are missing here. I will leave these aside as they are not central to the main point.

derived as in (32a) are (i) never ergative (given FOFC), (ii) have "rich" tense morphology (see Biberauer & Roberts (2010) on the connection between V-to-T movement and rich tense morphology), and (iii) do not allow VOS alternative orders. On the other hand, V-initial languages derived as in (32b) can be ergative (see below), have impoverished tense morphology and allow VOS as an alternative order.

So we can now see why one type of VSO language, the (32a)-type, would not in fact allow ergative alignment. But we have yet to explain why the (32b)-type is not a FOFC violation. Why does this type of VSO derivation tolerated, and why is VOS allowed at all? Here we introduce a further aspect of BHR's general account of FOFC. Configurations such as the following, where a head-initial DP or PP is the complement of a head-final VP in a language like German, instantiate the FOFC configuration as stated in (22), but are clearly grammatical:

(33)   a.   Johann hat [$_{VP}$ [$_{DP}$ einen Mann] gesehen].

           John   has   a man   seen

           'John has seen a man'

      b.   Johann ist [$_{VP}$ [$_{PP}$ nach Berlin] gefahren].

           John   is   to   Berlin gone

           'John has gone to Berlin'

BHR propose the Category Proviso to FOFC as a way of allowing such cases:

(34)   In (22), α and β are non-distinct in categorial features.

In turn, (34) follows from the definition of Extended Projection in BHR:

(35)   The Extended Projection of a lexical head L (EP(L)) is the sequence of categories EP = {α$_1$ ... α$_i$ .. α$_n$} such that:

i)   α$_i$ is in the spine defined by L;

and for each pair of heads $\langle H_i, H_{i+1}\rangle$ in EP

ii) H_i c-selects H_{i+1};

iii) H_i is categorially non-distinct from H_{i+1}.

BHR's definition of spine is as follows:

(36)   *Spine:*

A sequence of nodes $\Sigma = \{\alpha_1 \ldots \alpha_i \ldots \alpha_n\}$ forms a spine iff:

i) α_n is a lexical head H^{min};

ii) α_i is H^{-min}, a projection of α_n;

iii) for all $\alpha_{m>i}$, α is a head H' which c-selects either H or some $\alpha_j \in \Sigma$, or α is a projection of some $\alpha_j \in \Sigma$.

Now, coming back to V-initial orders derived by (possibly remnant) VP-fronting as in (32b), we can note that in many of the languages for which this kind of derivation has been postulated, notably Austronesian languages, the categorial status of the basic predicative category is unclear. For example, Massam (2005: 227) says of Niuean that "the Niuean verb is not a morphosyntactic verb, but is more participial in nature, bearing no features for finiteness or tense"; see also Massam (2005: 240), where it is allowed that Niuean verbs may be "participial or even nominal in nature." So there is a real possibility that the "VP" in (32b) is not actually a VP, but rather "participial or even nominal in nature." In that case, is no FOFC violation, given the Category Proviso (or, more precisely, BHR's definition of Extended Projection, which entails the Category Proviso).

Two further things may follow on from these considerations. First, we may have an answer to a question raised by Cinque (2010): why is VOS so rare, while its mirror-image SOV is so common? The answer is quite simply FOFC, which rules out VOS wherever the basic predicative category is VP, combined with the relative rarity of systematically "nominalised" predicates. Second, we clearly predict that a language which tolerates VOS will allow ergative alignment, and, although the overall numbers are so small that it is hard to conclude much with certainty, this appears to be the case. However, we did note above that Table Two

shows that ergative case-alignment, especially with pronouns, is more frequent in VOS languages than accusative alignment.

4.2   Passives

I turn now to the second set of implications of the account of the lack of ergative SVO languages. We saw in §2 that passives involve an indirect derivation, involving an intermediate step like (37):

(37)   … T[uφ]^ .. [_{VoiceP} [_{PrtP} **Prt VP] Voice [uφ]**^ [_{vP} EA v (PrtP)]]

The bold-faced part of this structure is a FOFC violation, in that it violates the schema in (22) for α = Prt and β = Voice. In terms of BHR's analysis, ^ does not percolate monotonically to Voice from a lexical root (see also Note 24). We this arrive at the following generalisation:

(38)   Where PrtP is head-initial, the indirect derivation violates FOFC.

This seems to cast doubt on the whole idea that smuggling derivations can be operative in passives cross-linguistically. However, there is a further important consideration to bring in, and that concerns the nature of the PrtP. It is known that passives can be formed morphologically, by simple affixation of a designated passive affix, in some languages, or by the introduction of a special clitic (e.g. Romance mediopassive *si/se*). Other languages, such as English, seem to require a periphrasis involving a non-finite verb form such as a participle. Why should this be?

In the light of the considerations put forward above, we can think of the presence of PrtP in passives in head-initial languages as a kind of "FOFC-avoidance strategy". It is quite reasonable, indeed traditional, to think that participles are not truly verbal elements. If so, we can postulate that the Category Proviso saves the structure in (37), given that Prt is a distinct category (and therefore in a distinct Extended Projection) from Voice. We are now led to the following cross-linguistic prediction:

(39)   In head-initial languages, passives will feature participial morphology, "protecting"
        VP from the effects of FOFC.

(39) does not exclude the possibility that OV languages may have participial passives, either through a diachronic accident or for some reason independent of the considerations we are concerned with here. But it does imply that only participial passives will be found in head-initial languages.

The prediction in (39) is hard to fully verify. However, it is easy to find examples of OV languages with morphological passives:

(40)   a.   Amor, amaris, amatur …   [Latin]

I am loved, you are loved, s/he is loved …

      b.   Konser boyunca uyu-n-du.   [Turkish: Nakipoğlu-Demiralp
                                                                    (2001:131)]

concert throughout sleep-PASS-PST

"It was slept throughout the concert."

      c.   Kunsyoo ga   Taroo ni   Hanako ni   atae-rare-ta.
                                            [Japanese:Miyagawa (1986:289)]

Award   Nom Taro DAT Hanako DAT give-PASS-PST

"The award was given by Taro to Hanako."

There are, however, VO languages with morphological passives also, contrary to the prediction in (39):

(41)   a.   S-in-ampal ng babae ang lalake.   [Tagalog: Keenan (1985:252)]

PASS-slap by woman TOP man

"The man was slapped by the woman."

      b.   Ha-yeled gudal   al yedei ha-saba.   [Hebrew: Keenan (*ibid*)]

the child was-brought-up on hands the-grandfather

"The child was brought up by the grandfather."

      c.   Ki-tabu ki- me≠ let- w-a   na m-toto.

                                  [Swahili: Bearth (2003:135)]

book   cl5-ANT≠bring-PASS-FV by cl1-child

"The book was brought by the child."

However, here it is worth noting that Tagalog is a V-initial language of the (32b) type; if the VP itself is not truly verbal, then a FOFC-compliant smuggling derivation of passive ought to be possible in this language. Hebrew is "residually" V-initial, but probably of the (32a)-type, so that will not save this counterexample, and Swahili is SVO. So it is unclear how well (39) stands up.

However, there is a further consideration which complicates the picture, but which must be brought in. There is reason to think that the smuggling derivation is not the only way of deriving a surface passive construction. There may be two ways to achieve the effect of "passivisation" of the clause: either through the presence of Voice triggering an indirect derivation as described in §2, or by merger of a clitic, such as mediopassive *se/si*, in v* bearing the external θ-role and valuing of the φ-features which normally probe the direct object (in fact, acting just as Baker, Johnson & Roberts (1989) claimed the passive affix acts). In the case of simple transitives, the outcomes barely seem different, as pairs of sentences like those from Italian in (42) illustrate:

(42)　a.　Il colpevole si scopre sempre.　　(mediopassive *si*)

　　　　The guilty　SI discovers always

　　　　"The guilty one is always found."

　　　b.　Il colpevole è scoperto sempre.　　(participial passive)

　　　　The guilty is discovered always

　　　　"The guilty one is always found."

However, the passive in (42b) allows a *by*-phrase, which the *si*-example in (42a) does not. This follows from the different structural analyses suggested here: in (42a) merger of *si* in v* prevents any other element from bearing the θ-role of the external argument and hence no *by*-phrase is allowed; in (42b), on the other hand, the external θ-role is assigned in the regular way to the argument in SpecvP – the presence of Voice and the associated smuggling derivation have no effect on this. A further difference between the two constructions is that the participial passive can never appear where there is no argument bearing the external θ-role. According to Collins (2005:97), this is because nothing causes an internal argument to raise to SpecvP, and yet this position must be filled in passives. On the other hand, *si* can

appear with an unaccusative, as long as the context is finite; in fact, "non-argumental" *si* can appear with a range of constructions lacking an external argument (see Cinque (1988:522) for examples), where it functions essentially as an impersonal. Thus there are quite clear ways to distinguish the two similar-looking constructions in (42).

So the prediction is more subtle than (39): in head-initial languages, non-participial passives may be found but they will (a) lack a *by*-phrase and (b) be able to passivise unaccusatives and generally act very similarly to impersonals. I have not been able to test this prediction, but its nature is clear. Again we see a surprising and highly non-trivial result of FOFC, as well as new and unexpected avenues of cross-linguistic research being opened up.

5.   Conclusion

What we have seen in this chapter is that two missing typological patterns (FOFC and SVO+ergative) reduce to one. This is a self-evidently good result, especially given our relatively clear understanding of the nature of FOFC. So FOFC (deriving from relativised minimality as part of the definition of Extended Projection, combined with the LCA) pops up in yet another unexpected place.

References

Abbott, M. (1991) "Macushi". In D Derbyshire & G Pullum (eds) *handbook of Amazonian Languages, Volume 3*. Berlin: Mouton de Gruyter, pp. 23-160.

Abels, K. (2003). *Successive Cyclicity, Anti-locality and Adposition Stranding*. Ph.D. Thesis. University of Connecticut, Storrs.

Adger, D. (1997) "VSO and Weak Pronouns in Celtic" *Canadian Journal of Linguistics,* 42.1 9-31, 1997.

Baker, M. (1988) *Incorporation: A Theory of Grammatical-Function Changing*. Chicago: Chicago University Press.

Baker, M., K. Johnson & I. Roberts (1989) Passive Arguments Raised. *Linguistic Inquiry* 20: 219-251.

Bearth, T. (2006) "Syntax" in D. Nurse & G. Philippson (eds) *The Bantu Languages*. London: Routledge, pp. 121-142.

van den Berg, H. (1995) *A Grammar of Hunzib*. Munich: Lincom Europa. Lincom Studies in Caucasian Linguistics, Volume 1.

Biberauer, T., A. Holmberg & I. Roberts (2010) A hierarchical universal and its consequences. Ms Universities of Cambridge and Newcastle.

Biberauer, T. & I. Roberts (2010) Subjects, Tense and Verb-Movement. In In T Biberauer, A Holmberg, I Roberts & M Sheehan *Parametric Variation: Null Subjects in Minimalist Theory*. Cambridge: Cambridge University Press, pp.

Bickel. B. & J. Nichols (2006) Oceania, the Pacific Rim, and the Theory of Linguistic Areas. *Proceedings of the 32nd Meeting of the Berkeley Linguistics Society* [pdf available at http://www.uni-leipzig.de/~bickel/research/papers].

Bickel. B. & J. Nichols (in press) The Geography of Case. In A. Malchukov & A Spencer (eds) *The Handbook of Case*. Oxford: Oxforf University Press.

Bowe, H. (1990) *Categories, Constituents, and Constituent Order in Pitjantjatjara, an Aboriginal Language of Australia*. London: Routledge.

Burzio, L. (1986) *Italian Syntax*. Dordrecht: Kluwer.

Chapman, S. (1979/2008) Prominence in Paumarí. Ms. Anápolis, Brazil: Associaçao Internacional de Lingüística/SIL Brazil. [On-line version 2008].

Chapman, S. & D. Derbyshire (1991) Paumarí. In D Derbyshire & G Pullum (eds) *handbook of Amazonian Languages, Volume 3*. Berlin: Mouton de Gruyter, pp. 161-354.

Chelliah, Shobhana Lakshmi (1997) *A Grammar of Meithei* Berlin: Mouton de Gruyter. Mouton Grammar Library volume: 17

Chomsky, N. (1965) *Aspects of the Theory of Syntax*. Cambridge. MA: MIT Press.

Chomsky, N. (1981) *Lectures on Government and Binding*. Dordrecht: Foris.

Chomsky, N. (1993) A Minimalist Program for Linguistic Theory. In K. Hale & S.J. Keyser (eds) *The View from Building 20*. Cambridge, MA: MIT Press.

Chomsky, N. (1995). Categories and Transformations. In: N. Chomsky. *The Minimalist Program.* Cambridge, Mass.: MIT Press.

Chomsky, N. (2000) "Minimalist inquiries: the framework." In R. Martin, D. Michaels & J. Uriagereka (eds) *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, MIT Press, pp. 89-156.

Chomsky, N. (2001) "Derivation by Phase," in M. Kenstowicz (ed) *Ken Hale: A Life in Language*, MIT Press, pp. 1-52.

Chomsky, N. (2004) "Beyond explanatory adequacy." In A. Belletti (ed.). *Structures and beyond: the cartography of syntactic structures, volume 3*. Oxford: Oxford University Press, pp. 104-13.

Chomsky, N. (2005) "Three factors in language design." *Linguistic Inquiry* 36: 1-22.

Chomsky, N. (2007). Approaching UG from below. In: U. Sauerland & H-M. Gärtner (eds.). *Interfaces + recursion = language?* Berlin: Mouton de Gruyter, 1-29.

Chomsky, N. (2008) "On Phases". In R. Friedin, C. Otero & M.L. Zubizarreta (eds) *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*. Cambridge, Mass.: MIT Press, pp. 133-165.

Cinque, G. (1988) "On *si*-constructions and the theory of *arb*" *Linguistic Inquiry* 19:521-582.

Cinque, G. (2010). Deriving Word Order Types. A Change of Perspective. Ms. University of Venice.

Collins, C. (2005) "A smuggling approach to the passive in English," *Syntax* 8:81-120.

Comrie, B. (2008a) "Map 98: Alignment of Case Marking of Full Noun Phrases." In M Haspelmath *et al* (eds) *The World Atlas of Language Structures On-Line*. Accessed June-July 2010.

Comrie, B. (2008b) "Map 99: Alignment of Case Marking of Pronouns". In M Haspelmath *et al* (eds) *The World Atlas of Language Structures On-Line*. Accessed June-July 2010.

Dayley, J. (1985) *Tzutujil Grammar* Berkeley: University of California Press. University of California Publications in Linguistics volume: 107.

Devine, A. M. & L.D. Stephens (2006). *Latin Word Order: Structured Meaning and Information.* Oxford: Oxford University Press.

Dryer, M. (1989) Large linguistic areas and language sampling. *Studies in Language* 13: 257-292.

Dryer, M. (2000) Counting genera vs counting languages. *Linguistic Typology* 4:334-350.

Dryer, M. (2008) "Map 81: Order of Subject, Object and Verb." In M Haspelmath *et al* (eds) *The World Atlas of Language Structures On-Line*. Accessed June-July 2010.

Emonds, J. (1980) "Word Order in Generative Grammar." *Journal of Linguistic Research* 1:33-54.

Fassi-Fehri (1993)

Garrett, A. (1990) "The origin of NP split ergativity", *Language* 66: 261-296.

Grohmann, K. (2003) *Prolific Domains: On the Anti-Locality of Movement Dependencies.* Amsterdam: John Benjamins.

Guirardello, R. (1999) Trumai. In Dixon, R. M. W. & Aikhenvald, A. Y. *Amazonian Languages* Cambridge: Cambridge University Press, pp.

Hale, K. & J. Keyser (2002) *Prolegomenon to a theory of argument structure.* Cambridge, MA: MIT Press.

Harris, A. & L. Campbell (1995) *Historical Syntax in Cross-Linguistic Perspective*. Cambridge: Cambridge University Press.

Haspelmath, M. *et al* (2008) (eds) *The World Atlas of Language Structures On-Line*.

Herburger, E. (2000) *What Counts?* Cambridge, MA: MIT Press.

Holmberg, A. (2010) The null generic subject pronoun in Finnish: A case of incorporation in T. In T Biberauer, A Holmberg, I Roberts & M Sheehan *Parametric Variation: Null Subjects in Minimalist Theory*. Cambridge: Cambridge University Press, pp.

Jouitteau (2005)

Kayne, R. (1994) *The Antisymmetry of Syntax.* Cambridge, MA: MIT Press.

Keenan, E. (1985) "Passive in the World's Languages," in T. Shopen (ed) *Language Typology and Linguistic Description (3 vols)*. Cambridge: Cambridge University Press.

Koopman, H. (2008) "Samoan ergativity as double passivization." Ms UCLA [available on lingbuzz http://ling.auf.net/lingBuzz/000768].

Kratzer, A. (1996) Severing the external argument from its verb. In J. Rooryck & L. Zaring (eds) *Phrase Structure and the Lexicon*. Dordrecht: Kluwer, pp. 109-137.

McGregor, R.S. (1977) *Outline of Hindi Grammar.* Delhi: Oxford University Press.

McGregor,W. (1990) *A Functional Grammar of Gooniyandi*. Amsterdam: Benjamins.

Mallinson, G. & B. Blake (1981) *Language typology: crosslinguistic studies in syntax.* Amsterdam: North-Holland.

Massam & Smallwood (1997)

Massam (2005

Massam 2000, Rackowski & Travis 2000, and many of the papers in Carnie, Dooley & Harley 2005

McCloskey (1996)

Mithun, M. (1999) *The Languages of Native North America*. Cambridge: Cambridge University Press.

Miyagawa (1986

Nakipoğlu-Demiralp, M. (2001) "The referential properties of the implicit arguments of impersonal passive constructions," in E. Taylan (ed) *The Verb in Turkish*. Amsterdam: John Benjamin, pp. 129-150.

Newton (2006)

Nichols, J. (1992) *Language diversity in space and time*. Chicago: University of Chicago Press.

Nichols, J. (1993) Ergativity and linguistic geography. *Australian Journal of Linguistics* 13: 39-89.

Nordlinger, R. (1998) *A Grammar of Wambaya, Northern Territory (Australia)*. Canberra: The Australian National University, Research School of Pacific and Asian Studies.

Pollock's (1989)

Richards, M. (2004) *Object Shift in North and West Germanic: optionality, scrambling and base-generated OV*. Ph.D. dissertation: University of Cambridge.

Richards & Biberauer (2005)

Roberts (2005)

Roberts, I. (2010) "Smuggling and Derivation Types: Towards a New Theory of Alignment". Ms University of Cambridge.

Roberts, I. (forthcoming) *Agreement and Head Movement: Clitics, Incorporation and Defective Goals*. To appear with MIT Press.

Ruhlen, M. (1975) *A Guide to the Languages of the World.* Stanford: Stanford University Press.

Schein, B. (1992) *Plurals and Events*. Cambridge, MA: MIT Press.

Shlonsky (2004)

Sierwierska, A. (1998) *Constituent Order in the Languages of Europe*. Berlin: Mouton de Gruyter.

Sierwierska, A. (2008) "Map 100: Alignment of Verbal Person Marking." Haspelmath, M. *et al* (2008) (eds) *The World Atlas of Language Structures On-Line*.

Tomlin, R. (1986) *Basic Word Order: Functional Principles*. London: Croom Helm.

Williams, E. (1981) "Argument Structure and Morphology". *The Linguistic Review* 1.2.

Willis (1998)

Zwart, J-W. (1997). *Morphosyntax of Verb Movement*. Dordrecht: Kluwer.