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Do aliens have UG?
On efficiency of grammatical coding as an explanation for grammatical universals

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1. Ditransitive coding splits (differential coding of R and/or T)

An argument-coding split is a situation where the coding of arguments depends on grammatical features of elements the clause. In ditransitive constructions, we commonly find coding splits depending on definiteness, nominality or person.

1.1. Single-argument splits: conditioned by the variably coded argument

definiteness-conditioned split:
in Wolof, an indefinite R needs a dative flag (preposition *ci*+)

(1) Wolof (Atlantic; Becher 2005: 19):

a. (def R) *Jox naa xale bu jigéén ji benn velo.*
give 1SG girl DEF INDF bicycle
'I gave the girl a bicycle.'

b. (indef R) **Jox naa benn xale bu jigéén velo bi.*
give 1SG INDF girl bicycle DEF
'I gave a girl the bicycle.'

c. (indef R) *Jox naa velo bi **ci** benn xale bu jigéen.*
give 1SG bicycle DEF to INDF girl
'I gave the bicycle to a girl.'

nominality-conditioned split:
in Ewe, a person-form T needs a special serial-verb form (auxiliary *tsɔ́* 'take')

(2) Ewe (Essegbey 2010)

a. nominal T
Kosí ná [*ga lá*] [*nyɔ́nuví-á*].
Kosi give money DEF girl-DEF
'Kosi gave the money to the girl.'

b. person-form T (double-object construction ungrammatical)
**Kosí ná-e Amí*.
Kosi give-3SG.OBJ Ami
('Kosi gave it to Ami.')

c. person-form T (with auxiliary *tsɔ́* 'take')
Kosí *tsɔ́-e* *ná* *Amí*.
Kosi take-3SG.OBJ give Ami
'Kosi gave it to Ami.' (lit. 'Kofi took it, gave-to Ali')

person-conditioned split:
in French, an allophoric (3rd person) R needs special dative flagging (*lui* 3SG.DAT vs. *le* 3SG.ACC)

(3) French
a. (locuphoric R) *Pierre* *me* *donne* *l'argent*.
Pierre 1SG.OBJ gives the.money
'Pierre gives me the money.'

b. (allophoric R) *Pierre* *lui* *donne* *l'argent*.
Pierre 3SG.DAT gives the.money
'Pierre gives her the money.'

1.2. A first universal

Generalizing over definiteness, nominality and person: "referential prominence" (Aissen 1999; van Lier 2012):

(4) **scales of referential prominence**
a. inherent prominence
person scale: locuphoric (1st/2nd) > allophoric (3rd person)
full nominality scale: full nominal > person form (independent or index)
animacy scale: human (> animal) > inanimate

b. discourse prominence
specificity scale: definite (> specific indefinite) > indefinite nonspecific
givenness scale: discourse-given > discourse-new
focus scale: background > focus

(5) **Universal 1**
If a language has an argument-coding split in a ditransitive construction, then if R is low-prominence, it tends to get special coding, and if T is high-prominence, it tends to get special coding.

note: – the distinction between case (*le/lui*) and adpositions is irrelevant, hence **flagging** (not "case-marking")
– the distinction between flagging and serial-verb marking is irrelevant, hence **special coding** (not "special flagging")

1.3. Scenario splits: conditioned by the scenario of arguments (both R and T)

person-conditioned split:
in Bulgarian, an allophoric (3rd) person-form R needs a dative flag (*na-*)
if the T is locuphoric (1st/2nd)

(6) Bulgarian (Hauge 1976 [1999]):

a. (3>3) *Az* *im* *ja* *preporâčvam.*
I 3PL.DAT 3SG.F.ACC recommend.PRES.1SG
'I recommend her to them.'

b. (3>2) **Az* *im* *te* *preporâčvam.*
I 3PL.DAT 2SG.ACC recommend.PRES.1SG
'I recommend you to them.'

c. *Az* *te* *preporâčvam* ***na*** *tjah.*
I 2SG.ACC recommend.PRES.1SG to them
'I recommend you to them.'

Here, the variably coded argument is the R, but the split is conditioned by the referential prominence of the T.
(See Perlmutter 1971; Bonet 1994; Haspelmath 2004; "person-case constraint")

nominality-conditioned split:
in English, an R needs a dative flag (*to+*) if the T is a person form
(especially if the R is a full nominal)

(7) English

a. (N>N) *I gave the girl the money.*
b. (pers>N) *I gave her the money.*
c. (N>pers) *(*?I gave the girl it.) I gave it to the girl.*
d. (pers>pers) *(?I gave her it.) I gave it to her.*

some new terminology:
downstream scenario: when R is more prominent than T
upstream scenario: when T is more prominent than R
balanced scenario: when R and T are equal in prominence

nominality-conditioned split:
in Koyra Chiini, an R needs a dative flag (*+se*)
unless the R is a person form and the T is a full nominal
(i.e. unless the scenario is downstream)

(8) Koyra Chiini Songhay (Heath 1999: §9.1.2)

a. upstream
Ay *noo* *ga* [*woy* *di* *se*].

1SG.SBJ give 3SG.OBJ woman DEF DAT
'I gave it to the woman.' (= Heath's 445b)

b. balanced (double nominal)
Ay noo [woy di se] hari.
1SG.SBJ give woman DEF DAT water
'I gave the woman some water.' (= 445d)

c. balanced (double person-form)
No-o noo ga [i se].
2SG.SBJ-IMPF give 3SG.OBJ 3PL DAT
'You give it to them.' (= 449b)

no dative flag is needed when the scenario is nominality-downstream, as in (9) (but the dative flag is not excluded here; Heath (1999: 248), ex. 448).

(9) downstream
No-o noo gi njerfu.
2SG.SBJ-IMPF give 3PL.OBJ money
'You give them some money.' (= 447b)

(10) **Universal 2**
If a language has a scenario split in a ditransitive construction, then upstream scenarios tend to get special coding, downstream scenarios tend to lack coding, and balanced scenarios are intermediate.

(5) **Universal 1**
If a language has an argument-coding split in a ditransitive construction, then if R is low-prominence, it tends to get special coding, and if T is high-prominence, it tends to get special coding.

(11) **Universal 3 (subsumes 1 and 2)**
If a language has an argument-coding split in a ditransitive construction, then if there is a non-canonical association of roles and referential prominence, special coding is used.

2. Generalizing to monotransitive constructions

canonical associations (prominence attracts prominence) (cf. Aissen 2003)

single-argument associations:
the A and R tends to be referentially prominent,
while the P and T tends to be non-prominent

scenario associations:

the A tends to be referentially more prominent than the P,
and the R than the T

(downstream scenario: when A/R is more prominent than P/T,
upstream scenario: when P/T is more prominent than A/R)

(12) **Universal 4 (subsumes 3)**
If a language has an argument-coding split in a monotransitive or ditransitive construction, then constructions with a non-canonical association of roles and referential prominence tend to get special coding.

single-argument split: ("differential argument marking", Seržant & Witzlack-Makarevich 2018)

Sakha:
a special accusative flag (*-y*) is required on P when P is definite (Baker 2015: 4-5)

(13) (**differential object marking**)

a. *Masha salamaat-y türgennik sie-te.*
Masha porridge-ACC quickly eat-PST.3SG.SBJ
'Masha ate the porridge quickly.'

b. *Masha türgennik salamaat sie-te.*
Masha quickly porridge eat-PST.3SG.SBJ
'Masha ate porridge quickly.'

Kham:
a special ergative flag (*-e*) is required on A when A is allophoric (3rd person)
(Watters 2002)

(14) (**differential subject marking**)

a. *no-ra-e zihm jə-ke-rə*
he-PL-ERG house.ABS make-PFV-3PL
'They made a house.'

b. *ŋa: zihm ŋa-jəi-ke*
I.NOM house.ABS 1SG-make-PFV
'I made a house.'

scenario split: ("global case split"; Georgi 2012)

Yukaghir:
a special accusative flag *(-kele)* is required on P when the A is allophoric (3rd person)

(15) Kolyma Yukaghir (Maslova 2003)

a. *met es'ie tet pulut-kele kudede-m*
my father.NOM your husband-ACC kill-TR.3SG

'My father has killed your husband.'

b. *met* *tolow* *kudede*
I.NOM deer.NOM kill.TR.1SG
'I killed a deer.'

3. Representational and functional-adaptive constraints

General properties of structures can be explained materially or adaptively.

For example, wooden houses strongly tend to have pitched (nonflat) roofs because wood is not stable enough. This cross-cultural generalization can thus be explained by a **material constraint.**

Houses also strongly tend to have doors and windows, across cultures, because otherwise they would not be usable by people. This generalization can be explained by a **functional-adaptive constraint**: People make houses with doors and windows to adapt them to their purposes.

3.1. Representational constraints

The "material" that knowledge of language is made of is **mental representation** – hence, constraints imposed by our cognitive endowment for language are here called **representational constraint**.

For example, grammatical systems do not contain numerical conditions (e.g. "prenominal possessor phrases cannot be longer than three words/five syllables") – this can plausibly be attributed to a representational constraint (GRAMMARS DON'T COUNT).

I take UG ("universal grammar") to be a synonym of the set of representational constraints on human languages.

3.2. Functional-adaptive constraints

Some aspects of human language are unquestionably due to functional adaptation, e.g. that rarer words strongly tend to be longer across languages (Zipf 1935), e.g.

	'in' (inessive)	'through' (perlative)
French	*dans*	*à travers*
Russian	*v*	*čerez*
Swedish	*i*	*genom*
Mandarin	*zài*	*tōngguò*
	(frequent)	(rare)

There is no doubt that this tendency has an **efficiency explanation**: Shorter words for more frequent and hence more predictable words help speakers save production energy, and they help both speakers and hearers save time.

3.3. Do aliens have UG?

http://www.playboy.com/articles/real-life-linguist-behind-arrival

> **Question**: So if universal language theory only applies to humans, there's a real danger that if an alien race started communicating we'd have no hope of deciphering it?
>
> **Jessica Coon**: Yeah, definitely. When people talk about universal grammar it's just the genetic endowment that allows humans to acquire language. There are grammatical properties we could imagine that we just don't ever find in any human language, so we know what's specific to humans and our endowment for language. There's no reason to expect aliens would have the same system. In fact, it would be very surprising if they did. But while having a better understanding of human language wouldn't necessarily help, hopefully it'd give us tools to know how we might at least approach the problem.

This is partly true – we wouldn't expect aliens to have **the same representational constraints** as humans, because presumably they have different brains and minds.

But their languages would be expected to be **subject to very similar functional-adaptive constraints** as human languages, if the languages are used for communication in much the same way as humans use their language.

> "There are grammatical properties we could imagine that we just don't ever find in any human language, so we know what's specific to humans and our endowment for language."

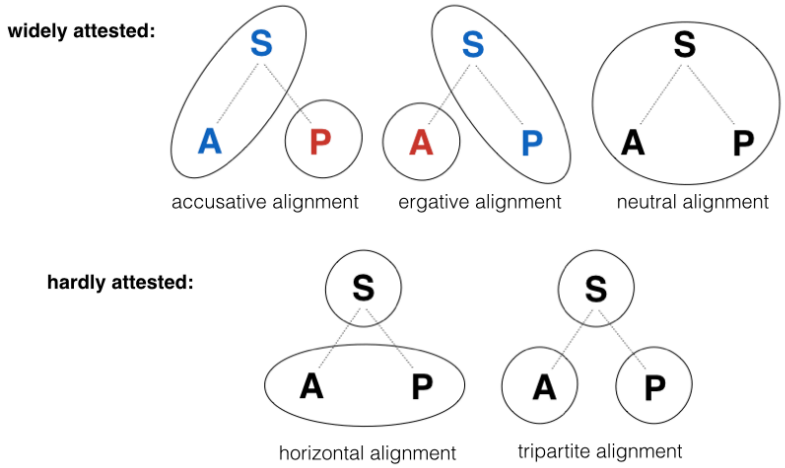
If "something we could imagine but don't find in any human language" is due to functional-adaptive constraints, then **we do not know that it is specific to humans** – because any system that relies on limited energy resources is subject to energy-saving constraints, for example.

4. Explaining empirical language universals

4.1. Some well-known examples

> **(A)** With overwhelmingly greater than chance frequency, languages with normal SOV order are **postpositional**. (Greenberg 1963: Universal 4)
>
> **(B)** There is no language in which the **plural** does not have some **nonzero** allomorphs, whereas there are languages in which the singular is expressed only by zero. (Greenberg 1963: Universal 35)

(C) Where there is a **case system**, the only case which ever has only zero allomorphs is the one which includes among its meanings that of the **subject** of the intransitive verb. (Greenberg 1963: Universal 38)



(D) With overwhelmingly greater than chance frequency, languages do not use a special form for the S argument. (I.e., the other two conceivable alignment patterns do not occur.)

(E) (≈ C) Languages tend to use zero (or a shorter form) for the A=S (nominative) or P=S (absolutive) argument, and (longer) overt marking for the argument that is treated in a special way (accusative, ergative).

Functional-adaptive explanation:

communication is efficient if grammatical patterns do not contain superfluous structure, i.e. if they **minimize domains, distinctions and forms**

4.2. Domain minimization: universal (A)

The word orders OV & NPostp, as well as VO & PrepN, provide optimally efficient lengths of syntactic processing domains (Hawkins 2004; 2014) – hence, VO languages also tend to have prepositions, and OV languages postpositions.

4.3. Distinction minimization: universal (D)

Tripartite alignment needs an additional form distinction that is not needed by the bipartite alignments, and horizontal alignment uses a form distinction wastefully.

4.4. Form minimization: universals (B), (C)

Frequently occurring grammatical meanings are predictable/expected and hence need not be coded by long forms, and can often be left uncoded. This applies to all asymmetrical grammatical oppositions, and is supported by massive evidence:

"typological markedness" patterns (Greenberg 1966; Croft 2003), showing oppositions of short/frequent/expected categories and long/rare/unexpected categories:

short and frequent	**long and rare**		
singular	plural	(*book* – *book-s*)	(Universal B)
present tense	future tense	(*go* – *will go*)	
3rd person	2nd person	(Spanish *canta* – *canta-s*)	
nominative	accusative	(Hungarian *ember* – *ember-t*)	(Universal C)
absolutive	ergative	(Lezgian *gada* – *gada-di*)	(Universal C)
active	passive	(Latin *cantat* – *cantat-ur*)	
affirmative	negative	(*go* – *don't go*)	
allative	ablative	(*to* – *from*)	
declarative	interrogative	(Polish *widzi* – *czy widzi?*)	
positive	comparative	(*small* – *small-er*)	
predicative verb	nominalized verb	(*go* – *go-ing*)	
action word	agent noun	(*bake* – *bak-er*)	
property	change of state	(*red* – *redd-en*)	
cardinal	ordinal	(*four* – *four-th*)	
male	female	(*poet* – *poet-ess*)	

Special coding for accusative and ergative is just a special case of this extremely general pattern.

Special coding for non-canonical association of roles and referential prominence (Universal 4) is likewise a special case, because R-arguments are very frequently referential prominent and T-arguments are very frequently non-prominent.

5. Representational constraints on flagging patterns?

Baker (2015): some highly general case-assignment rules:

(16) a. High case in the clause is ergative.
b. Low case in the clause is accusative.
c. High case in VP is dative.
d. Low case in VP is secundative
e. High case in NP is genitive (there is no low case in NP).
f. Unmarked case is nominative-absolutive.

But these rules only rule out the horizontal alignment pattern (= one half of universal (D)); they explicitly allow the tripartite alignment pattern (and Baker says that it is probably for functional reasons that tripartite alignment is rare).

The rules do not explain universal (E), which Baker leaves to "morphology".

In addition, the rules would allow ditransitive patterns of the type "ERG-ERG-ABS", and Baker has to go to great lengths to exclude them.
In the end, the "theory" has enormous complexity, but it explains few universals (cf. Haspelmath 2017).

The primary reason is that Baker wants to achieve elegant language-particular description at the same time ("principles of case assignment that are as unified as possible").

Baker's principles are extended in a complex way so that they also allow him to subsume definiteness-based differential object marking in Sakha:

(17) a. *Masha salamaat-y türgennik sie-te.*
Masha porridge-ACC quickly eat-PST.3SG.SBJ
'Masha ate the porridge quickly.'

b. *Masha türgennik salamaat sie-te.*
Masha quickly porridge eat-PST.3SG.SBJ
'Masha ate porridge quickly.'

Baker claims that this contrast is due to dependent case assignment as well, because the object is in the same domain as the subject only when it raises from the VP as in (17a). In (17b), where the object stays in its base VP position, it does not count as a case competitor in this kind of language.

But this is not sufficiently general to explain differential object marking, because this is not always associated with different word orders, as it happens to be in Sakha.

Baker is led to make his theory vastly more complicated than a universal case-marking theory would have to be because **language-particular elegant description** is an important goal, in addition to explaining universals of case marking.

(In fact, it is probably a more important goal, because Baker does not highlight the universal predictions his theory makes, and perhaps they do not make any universal predictions, because Baker does not claim that dependent case assignment is the only mode of case assignment; there might be many other modes. Moreover, Baker accepts that the rarity or nonexistence of some kinds of case-marking patterns is functionally motivated, i.e. outside the purview of his system.)

6. Separating description and explanation

I have argued that description and explanation must be separated (cf. Haspelmath 2010a; 2010b), i.e. the functional-adaptive constraints are not intended to contribute to the formulation of language-particular rules ("principles of case assignment", etc.).

This allows us to formulate highly general universals and highly general functional explanations.

Language-particular descriptions can be idiosyncratic, but they will still be simpler than in most of the standard generative work, where language-particular analyses often show staggering complexity.

There may of course be a role for representational constraints (UG) in explaining language universals, but so far, attempts at finding UG principles that actually explain syntactic implicational universals have not been particularly successful (Baker 2008; Haspelmath 2008).

(The only generative work that has actually discovered a substantial amount of empirically serious universals is Cinque 1999, but they are not of the implicational type.)

Thus, since most of the interesting universals seem to be explainable by functional-adaptive principles, I would suspect that alien languages have quite a few of the same properties as human languages.

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