

Subjects and the (Extended) Projection Principle (ms 1982)

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1. The Subject

1.1. The intuitive notion

Aristotle (350 BC) defines subject and predicate as the counterparts that form a simple sentence. There is in a simple sentence a binary split between a referential naming part, the subject, and a characterizing part, the predicate.

The binary split is grammatically marked in various language specific ways. Take (1) as an example.

(1) [[Mona Lisa] subject [is smiling away] predicate] proposition

The left-hand part is the subject. It is a reference carrier and represented by a name, a pronoun or a nominal phrase. As reference carriers, all subjects get the same label (DP in generative grammars). The right-hand part is the predicate. It may be represented by variety of categories. Its function is not referential but characterizing.

The more recent perspective on the subject–predicate construction is due to Frege (1879) and it develops this way. The predicate can be considered as a function that accepts the referential subject as its argument. The application of the predicate function on the subject argument equals the statement or proposition. This entity *proposition* has a new and distinctive characteristic. It may be true or false. It has a *truth-value*. From this point of view, the predicate function projects subject arguments on truth valued statements. As a function, the predicate may be said to represent a *property*. The predicate property corresponds with an indefinitely extended class of imaginable possible events or state of affairs. All members of the set share the same characterizing property, which is given with the predicate.

The predicate assigns a property to the subject. However, the subject–predicate construction is more than property assignment only. Property assignment to the subject has an additional specific function. It instantiates the predicate in a single case, such that the new construction must be true or false. This is crucial. The relation in a subject–predicate construction creates a new syntactic entity and that entity is distinguished by its truth-value property. As Aristotle (350 BC: book I) pointed out, this truth-value property is the new and decisive characteristic of the subject–predicate construction.

1.2. Property assignment

Property assignment as such needs not have the truth-value effect. There may be other reference carrying parts within the proposition. They attract a property assignment as well, but they are not subjects. For example, the property assignment to ‘any visitor’ in (2) limits the predicate set, but is not offered as a point of instantiation.

(2) [Mona Lisa]-DP is smiling away at any visitor

The example in (2) can be rephrased as in (3).

(3) [Any visitor]-DP is being smiled away at by Mona Lisa

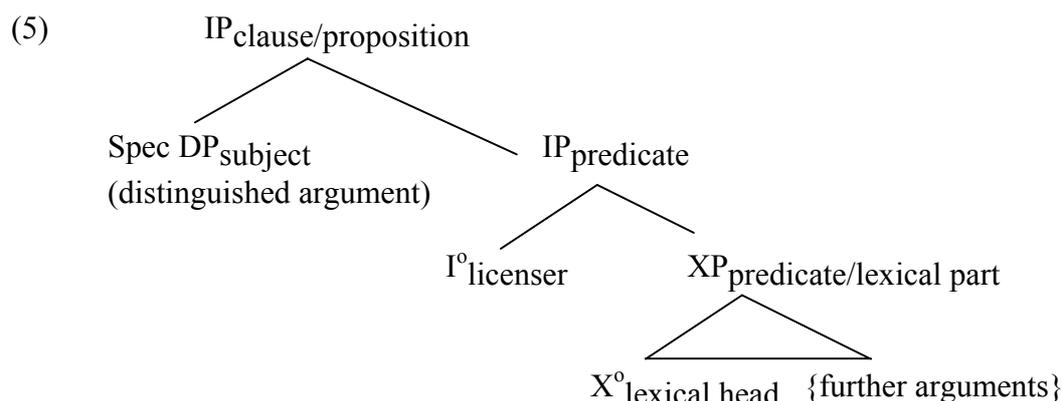
The predicates in (2) and (3) are somewhat differently qualified (active versus passive), but the two persons referred to, ‘Mona Lisa’ and ‘any visitor’, get assigned the same properties,

say the charming one and the charmed one. These properties that a predicate head assigns to its arguments are commonly called theta roles. Each one of the theta roles is fit to function as a point of instantiation and a point to check for a true/false value, but if and only if it is assigned in the subject construction. This much may suffice to highlight the difference between implied property assignment to the non-subject arguments and the explicit property assignment to the subject argument.

The subjects in (2) and (3) have a different property assigned to them by the predicate. The subject ‘Mona Lisa’ in (2) gets the property agentive argument. The subject ‘any visitor’ in (3) gets the property receiving, beneficent argument. Yet, although different, the subjects have their grammatical function in common. Each one brings its property (implied by the predicate) to the fore as the decisive moment for the truth-value of the subject–predicate construction.

2. The Extended Projection Principle

So far, age-old plausibility considerations have been used to argue that a true/false value constitutes the defining requirement for a proposition. The logical truth-value requirement reappears as a grammatical well-formedness condition. The predicates in grammar require a local element that indicates and licenses their predicate status. The predicate licenser involves at the same time the grammatical requirement that a subject should be present. If the DP subjects in (1)-(3) were left out, the remaining predicates would of course no longer function as parts of a proposition. At the same time, the remnants are, without any logical reflection, no longer interpretable as acceptable clauses either. That well-formedness failure can be described in mere grammatical terms. One must say that the ‘smiling’ predicates in (1)-(3) contain a local licenser, the auxiliary/copula ‘is’. Let the category of the auxiliary/copula be labeled as a head I^0 (Inflection). I^0 projects into a phrase IP and it selects in (1)-(3) the predicate as its complement. At the same time, the auxiliary/copula element requires a specifier DP phrase on the left and a predicate on the right. See the phrasal diagram in (5). The IP phrase requires a specifier DP. Consequently, the grammatical well-formedness conditions of the IP relate predicate and subject, as respectively the complement and the specifier of I^0 .



The definition of subject and predicate as specifier and complement of an I^0 projection is known as the *Extended Projection Principle*, often abbreviated as *EPP* (Chomsky 1981: 40f, Rothstein 1983, Chomsky 1986: 166). One could consider the I^0 projection as the canonical form for the subject–predicate construction. The propositions of logical form correspond with the I^0 projection in grammatical form. In general, a head X^0 with lexical content will license its arguments as complements within its phrase XP. This is the *Projection Principle* and it serves to guarantee a semantically coherent interpretation of phrases XP. The head of a

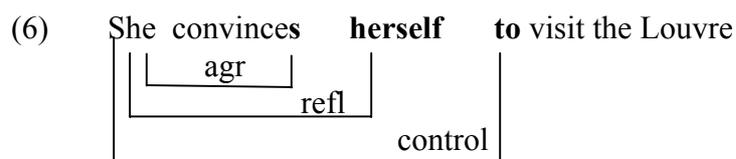
predicate phrase XP, though, will have a licenser that announces a special or privileged argument position outside of the lexical part of the predicate phrase in (5). In a sense, the licenser of the predicate extends in a crucial way the XP domain of argument licensing with Spec.I.

3. Configurational prominence of the subject argument

3.1. A uniform configurational prominence (EPP)

The Extended Projection Principle implies that all points where a speaker commits himself to an explicit truth-value must be of the same kind and form IP. Grammar would not admit to degrees of subjecthood or to degrees of explicit predicate instantiation. All cases of the subject–predicate relation are to be treated as configurations of an extended projection IP. If it were possible to define the subject in a uniform configurational way over all constructions and all languages, the propositional logic of natural language would be straightforward. Moreover, and grammatically more interesting, if subjecthood were definable by a uniform configurational prominence all over the place, secondary subject properties can be made to follow from that same configurational prominence.

Such secondary subject properties are for example the subject’s antecedency in anaphoric phi-relations {verbal agreement, reflexivity, control} in (6) and the wider scope of quantifiers in (7).



- (7) each woman considered some pictures
(for every woman, there are at least some pictures that she considered)

The phi-feature antecedency and the wider quantifier scope follow if the subject c-commands the other arguments. The subject strictly c-commands the predicate if it is within the first phrasal configuration above the predicate (Reinhart 1976, see also Chomsky 1986: 164f). It may now follow from configurational prominence that any subject is the possible antecedent for further arguments in the predicate, whereas the reverse cannot hold. The sentence in (8)a cannot be acceptably rephrased as the one in (8)b.

- (8) a. Mona Lisa liked herself
b. *she, herself, liked Mona Lisa

A quantifier on the subject may easily lead to a distributive reading for some argument, whereas the reverse does not hold. The sentence in (9)a will as such never be intended to mean that one should think of one and the same set of pictures as in (9)b (see Reinhart 1983: 193).

- (9) a. each woman considered some pictures
b. *there were some pictures considered by each woman

In principle, grammatical properties of the subject should be derived from its configurational prominence. A further discussion of the EPP from various points of view is given in Svenonius (2001).

3.2. Secondary predicates

The uniform configurational view on subject prominence (EPP) postulates a simple relation between grammatical form and the prepositional status of a clause. The question is whether the EPP can be maintained. Here is the problem. Each natural language contains a score of various subject–predicate relations and the I^o projection for the EPP is hardly ever present in an obvious way. Moreover, English is comparatively rigid on phrasal configurations, but other languages are less so and some seem to have hardly any phrasal configuration at all. See for this problem and a defense of a configurational approach, Baker (2001). Does then at least English have a phrasal configuration sufficiently tight to allow a uniform definition of the subject–predicate relation? It may be, but only by an extensive appeal to the theory of grammar. The originally intuitive notion of subjecthood is traded in for the EPP, and the presence and absence of an EPP configuration can only be considered within a whole theory of configurational syntax. Consider, the bracketed parts in (10) and (11). They do suggest a predicate that is related to a subject, whereas an IP split as in (5) seems to be lacking most of the time.

- | | | | |
|------|----|--------------------------------------------------|-------------------------------------------------------|
| (10) | a. | finite verb subject | she [– smiles away] |
| | b. | infinitival raised subject-to-subject | she seems [– to smile at me] |
| | c. | infinitival raised subject-to-object | I believe her [– to smile away] |
| | d. | infinitival accusative subject | I saw her [– smile at me] |
| | e. | infinitival subject in <i>for/to</i> complement | I long for her [– to smile to me again] |
| | f. | subjects in <i>for/with</i> absolutes | with her [- smiling] my day was made |
| | g. | small clause resultative subject | that smile made her [– my heroine] |
| | h. | small clause subject with ‘ <i>as</i> predicate’ | I consider her [– as a flirt] |
| (11) | a. | infinitival controlled subject | she intends [– to flirt] |
| | b. | predicate adjunct | Mona Lisa did not consume the
carrots [– unwashed] |

The bracketed predicates marked by a finite head (10)a or by the elements *to* respectively *-ing* in (10)b/c/e/f allow a separate negation. This tallies well with the truth-value property that should hold for all subject–predicate constructions. The same argument raises a problem in (10)d, (10)g, and (10)h. These small clause predicates do not have the possibility of a separate negation. They can be denied but only by a negation placed on the matrix predicate. A strange, but unmistakable effect of this matrix negation is that precisely the bracketed part seems to be at issue, as shown in (12).

- (12) I did not believe her to smile at me ≅ I believed her not to smile at me

The same holds in (11)b, where the matrix negation is realized. It seems more or less taken for granted in (11)b that carrots were on the menu and were consumed. The point of the denial is that neither these carrots, nor for good sake Mona Lisa herself, could qualify for the small clause predicate ‘unwashed’. The sentential stress falls into the matrix predicate and within that matrix predicate it focuses the small clause predicate phrase. The denial, although placed on the matrix predicate, concerns the small clause predicate and takes the rest of the predicate

for granted. This effect of matrix negation holds for the bracketed subparts in (10). An exception is the absolutive sentential adjunct in (10)f. It requires a local negation, a negation element within the bracketed predicate, see (13).

(13) with Mona Lisa [- not smiling]

The small clause predicates can be negated and they require a subject that controls the phi-relations mentioned in (6), but the small clause predicates do not contain an I⁰ projection.

3.3. Dummy subjects and the subject configuration

All bracketed subparts in (10) select a DP subject that is positioned outside the (small clause) predicate. This can be demonstrated by means of so-called dummy subjects. Dummy subjects are selected as DP subjects by certain predicates, for example ‘to snow’ or ‘to be obvious’ as in (14).

(14) a. it is snowing
b. it is obvious that Mona Lisa smiles

Dummy subjects are 3rd person singular pronouns that have no predicate assigned property (no theta-role). Their message is ‘instantiate this predicate here and now’. As (15) shows, dummy subjects do not allow a wh-variant.

(15) a. *what is snowing?
b. *what is obvious that Mona Lisa smiles?

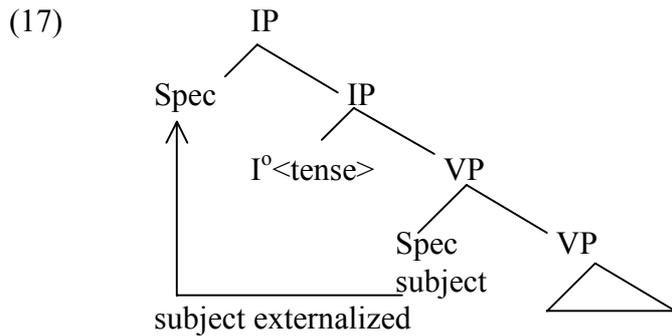
The predicates in (14) can appear as secondary predicates, as in (16). They continue to select the idiomatic dummy subject elements. The dummy element clearly fits into the Spec.I in (16)a, but less obvious so in the other examples.

(16)	a. finite verb subject	it [- snows/is obvious that ...]
	b. infinitival raised subject-to-subject	it seems [- to snow/to be obvious that ...]
	c. infinitival raised subject-to-object	I believe it [- to snow/to be obvious that ...]
	d. infinitival accusative subject	I saw it [-snowing]
	e. infinitival subject in <i>for/to</i> complement	I long for it [- to snow all day]
	f. subjects in <i>for/with</i> absolutes	with it [- snowing] my day was made
	g. small clause resultative subject	that smile made it [- snow/obvious that..]
	h. small clause subject with ‘ <i>as</i> predicate’	I consider it [- as obvious that ...]

The relevance of the dummy subjects is stressed in Rothstein (2001).

A dummy subject is a rather idiomatic phenomenon, but grammatical theory should preferably offer a configurational definition of subject that explains the parallel between I⁰-marked predicates and small clause predicates and that rules in dummy subjects. This is possible and leads to a few surprising re-analyses.

Koopman and Sportiche (1991) successfully re-argued the *predicate (VP) internal subject hypothesis*. The lexical projection would already realize a propositional structure as indicated in diagram (17). For references and a survey of direct empirical arguments supporting the VP-internal subject hypothesis, see McCloskey (1997). Let now the merely lexical propositional structure VP as a whole be selected, for example by the I⁰. Then subject raising applies. See the transformational derivation of subjecthood by *subject raising* in (17).



Subject-hood by subject raising may hold for small clauses as well. A raising of the small clause subject into a matrix construction ends in a matrix object position *I [make her] [-happy]*. Fortunately, there are parallels between the subject and object position that may save the parallel between the I° subject and the small clause subject.

A quarter of the human languages, according to an estimate in Bybee (1985: 30-31) based on a judicious 50-language sample, has verbal agreement for both structural arguments. The ambition of present day configurationalism which goes under the name Minimalism (Chomsky 1995) aims to place subject as well as object in parallel configurations and outside the VP (explaining the object agreement).

The analysis of the object as a kind of small clause subject can be extended by analyzing affected objects as subjects of a resultative small clause (Postal 1974, Hale and Keyser 2002), as in (18).

(18) *Mona Lisa cleaned the carrots* ≅ *Mona Lisa made the carrots clean*

The use of intermediate subject configurations as in the causative analysis of resultative objects is manifest in serial languages (Déchaine 1993).

4. Selectional prominence of the subject argument

The configurational approach, especially in its ‘minimalist’ variant (Chomsky 1995), stands for a considerable amount of phrase structure manipulation.

There are within generative grammar alternatives. Lexical Functional Grammar (Bresnan 2001), Head Driven Phrase Structure Grammar (Sag and Wasow 1999), and the proposal by Williams (2003) avoid the proliferation of phrasal structure and the associated system of argument to specifier movement. They all turn to the semantic properties that a predicate assigns to its arguments. These semantic properties are plausibly selected from a highly limited and prospectively universal set of options, so-called theta roles {agent, cause, affected object, affected person, goal, result, location} (Keenan and Comrie 1977; cf. section 1.3.). There is a hierarchy among the theta roles. The agent theta role is selected for subject prominence in the unmarked case. Passive endings on the predicate may change the hierarchy effect, but only in a limited way. The usual subject theta role that is blocked for the passive-marked predicate, may either no longer be expressed at all, or it must take the form of an oblique adjunct ‘by Mona Lisa’ in (19). The new subject is either an impersonal dummy subject, or the argument that is next to the hierarchy in theta roles ‘the visitor’.

(19) *the visitor is smiled at by Mona Lisa*

Since the selection of the subject argument follows from the hierarchy of theta roles, there is an option. Subject properties may follow from subject configuration, as defined by the

Extended Projection Principle, or more directly from theta role prominence. Antecedent-hood for verbal agreement, reflexivity or control may follow either from theta role prominence or from a configurational effect of that prominence.

A direct interpretation of subjecthood in terms of theta-role prominence offers a descriptive advantage. There is less configurational reanalysis of the string as in (21) above and all grammars with full or partial non-configurationality fit in easily. Part of this advantage is short-lived. The interpretative rules for syntactic function interact and lead to new complexity, see for instance Ristad (1993).

5. Typology

5.1. Survey of properties

A more mundane, less theoretical, approach to the notion ‘subject’ has been tried out as well. Keenan (1976a) lists 30 possible properties of subjects. There is all kind of variation and there is no shared minimal subset of properties sufficiently theory free that could be used as a straightforward observational check on subjecthood. Keenan’s contention is the somewhat weaker claim that a DP in a clause must be the subject if it displays clearly more of these proto-typical subject properties than a competitor. His main point is that surveys in comparative grammar, in which subjecthood figures highly, are by no means an exercise in global impressions. They are an empirically serious matter. Explaining the diversity of subject properties between languages is no less challenging than explaining the subject diversity within a specific language. Keenan divides his subject properties in three subsets: a) semantic, b) syntactic, and c) pragmatic.

a) Keenan’s *semantic* subject properties are the theta roles that a predicate may assign to its subject. That roles are plausibly selected from a highly limited and prospectively universal set of options, as mentioned in the previous section. The semantic subject properties deal with theta hierarchy and the exceptions to it in so-called ergative and split-ergative languages.

b) Keenan’s *syntactic* subject properties are is concerned with the pronominal phi-features of the subject (number, person, gender) for verbal agreement, reflexives and control (Schachter 1976), mentioned in section 3.1, diagram (6).

c) Keenan’s *pragmatic* subject properties deal with the subject that must at the same time function as definite, old information and presumed or running discourse topic.

5.2. Pragmatic subject properties

A telling case of pragmatic subject properties is the subject in Sesotho (a Bantu language) as analyzed by Demuth (1989). The subject in the Sesotho system must be at the same time the definite presumed old information topic. Hence subject arguments cannot be questioned. Nevertheless and as usual the agentive initiating role is the preferred subject property. If one now would like to ask a ‘who dunnit’ in Sesotho, the subject–predicate structure must be changed into the parallel construction ‘by whom was it done’. And that is what happens, see (20) (Demuth 1989: 67).

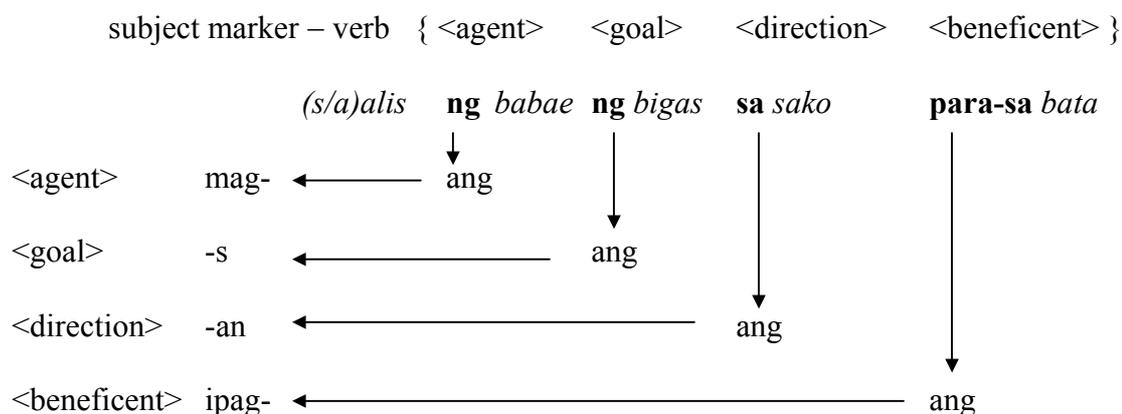
- (20) a. *mang o-pheh-ile lijo?
 who sm-cook-prf food?
 (who cooked the food?)
 b. lijo li-pheh-il-o-e ke mang?
 food sm-cook-prf-PASS-m by who?
 (the food was cooked by who?)

Subject-changing transformations succeed to maintain the status of the subject as preordained old topic. The Sesotho case was brought up by Demuth in a discussion about the learnability of subject-changing transformation. As Demuth pointed out, the learnability of subject-changing transformations may relate to the discourse functions such transformations have. As a discourse device, passive is central in Sesotho. Sesotho children below three show themselves as little masters in subject-changing constructions. By comparison, passive plays a more marginal role in English, and it is acquired later.

A comparable subject-changing issue appears in Keenan's (1976b) analysis of Malagasy, an Austronesian language on Madagascar. The subject in Malagasy must also function as old information argument. Curiously, the subject is now the only argument that may appear as a relative pronoun. By consequence, if one would like to relativize an argument, it must be made subject and a subject-changing transformation is called for. Fortunately, and may be not by accident, Malagasy, like all Austronesian languages, is strong in subject-changing transformation.

Tagalog (Schachter 1976) marks a single argument in each clause as the most prominent one. All other arguments have an oblique case. The prominent argument drops that oblique case and appears with a fixed single element '*ang*'. One might think of it as a topic marker. The obligatory prominence marking by '*ang*' co-occurs with a marking on the verb. This reminds of the subject-verb relationship, but there is no verbal agreement by means of phi-features. The dependent marking on the verb indicates the theta role of the prominent argument. It is rather an indication of 'voice' (active and various kinds of 'passive'). The verb is in the initial position and the subsequent argument order is free without any obvious configurational structure. Schachter hesitates to welcome the prominent argument in Tagalog as the subject. The interesting reason is that all subject attributes that follow from the external position of the configurational subject are lacking. The single and grammatically marked prominent argument has no wide quantifier scope, is not the antecedent of reflexives, and is not the controlled argument in subordinates. The questioned argument though must have the prominent status and the relative clause is formed by dropping the prominent argument, because of its identity with the antecedent of the relative clause. See (21) adapted from Schachter (1976: 495).

(21) the woman will take some rice for the child out of the sack



- Only one of the arguments drops its (oblique) case for the topic marker '*ang*'.
- The verbal inflection subsequently expresses the theta role of the topic.
- The verb is in initial position. The linear order of the arguments is free.

Both Bantu Sesotho and Austronesian Tagalog have in principle a predicate selected argument with unique prominence. At the same time, the prominent argument is bound to function as topic (old information argument) in Sesotho or as focus (new information argument) in Tagalog. Both systems combine the most prominent argument status with a topic or focus function. They succeed to do so due to a high flexibility of the verbal paradigm. The selection of the prominent argument by the verb may target any standard argument, due to the variety of passive-like endings on the verb. These endings indicate whether the prominent argument is an agent, a beneficiary, a goal, or a location. Verbal systems with such a variety of passive-like endings are called *applicative* (Baker 1988).

There are several languages that require a systematic marking of topic or focus. They may or may not collapse subject and topic marking. See Li and Thompson (1976). The parallel between prepositional logic and clausal grammar is less clear in topic-oriented languages. The topic need not be an argument of the predicate head at all. Predicates are no longer instantiated by means of argument prominence and the notion subject does not apply.

6. Conclusion

Subject–predicate relations appear in a variety of phrasal configurations and morphological markings. Moreover, they may or may not have further associated consequences for reflexives, control of infinitival complements, coordinate structure reductions, subject-drop, switch reference phenomena, effects of quantifier scope, unstressed topic-hood requirements, long wh-movement restrictions and so on. This constructional variety appears within the grammar of specific languages and it appears between them in comparative grammar. Yet, it is a crucial property of human language to construct complex signs with a true/false value. Consequently, a theory of syntax that holds water should explain how this feat is arrived at by grammar and what its further distributional consequences are. Preferably, all subject–predicate variations in syntax should derive (naturally) from a single representation or a single descriptive device. Syntactic analysis may show how subjecthood is privileged form of argument saturation and how that construction leads to the grammatical form for propositions with true/false values. No doubt, such an ideal subject/predicate analysis will require syntactic tinkering for each new construction. Fortunately, the various syntactic workshops or programs in generative syntax offer all kind of options. These alternatives are sometimes thinly veiled parallels sometimes purposely incompatible. The syntacticians by their very ambition change the notion subject anyway. Initially, ‘subject’ was a plausible intuition about a few simple grammatical structures. On closer inspection, it turns into a somewhat unwieldy problem that involves legitimately the set up of the whole theory of syntax. Moreover, as far as the facts are concerned (and their reconstruction in grammatical theory), we are in front of a chaos still on the rise. This is as such of course not an objection to the notion subjecthood, nor is it a reason for dismay.

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