TRANSITIVITY IN NATURAL SYNTAX: ACCUSATIVE LANGUAGES

JANEZ OREŠNIK
University of Ljubljana
janez.oresnik@sazu.si

ABSTRACT

The framework of this paper is Natural Syntax initiated by the author in the tradition of (morphological) naturalness as established by †Willi Mayerthaler and Wolfgang U. Dressler.

Natural Syntax is a developing deductive theory. The naturalness judgements are couched in naturalness scales, which follow from the basic parameters (or "axioms") listed at the beginning of the paper. The predictions of the theory are calculated in what are known as deductions, the chief components of each being a pair of naturalness scales and the rules governing the alignment of corresponding naturalness values.

Natural Syntax is exemplified here with language data (all taken from Hopper & Thompson 1980) bearing on transitivity phenomena in accusative languages.

KEYWORDS: Naturalness; syntax; accusative languages; transitivity.

Natural Syntax is a (developing) deductive linguistic theory that determines the presuppositions on the basis of which a (morpho)syntactic state of affairs can be made predictable, and thus synchronically explained. The two basic kinds of presuppositions are what are known as naturalness scales and rules of alignment among corresponding values of any two scales. Every (morpho)syntactic state of affairs is represented by two comparable variants. Natural Syntax contains no generative component.[1]

I begin by listing the criteria with which Natural Syntax substantiates naturalness scales:

---

[1] A reviewer asks how Natural Syntax relates to Construction Grammar and to "the modern discussion of transitivity (Hale and Keyser)". My aim is to illustrate how to treat transitivity within Natural Syntax. Given this setting, I am not interested in other theories, although I readily admit that perhaps they can handle transitivity in different and/or more interesting ways than Natural Syntax. Hale and Keyser discuss the type *to anger John* vs. *John angers quickly*, which type is far from the concerns of my paper.

(a) The parameter of "favourable for the speaker" and of "favourable for the hearer". What is favourable for the speaker is more natural, the speaker being the centre of communication. This view of naturalness is commonplace in linguistics (Havers 1931: 171), under the names of tendency to economize (utilized first of all by the speaker) and tendency to be accurate (mainly in the hearer's interest).[2,3]

(b) The principle of least effort (Havers 1931: 171). What conforms better to this principle is more natural for the speaker. What is cognitively simple (for the speaker) is easy to produce, easy to retrieve from memory, etc.

(c) Degree of integration into the construction. What is better integrated into its construction is more natural for the speaker.

(d) Frequency. What is more frequent tokenwise is more natural for the speaker. What is cognitively simpler (for the speaker) is used more. (However, the reverse does not obtain: what is natural for the speaker is not necessarily more frequent.)

(e) Small vs. large class. The use of (a unit pertaining to) a small class is more natural for the speaker than the use of (a unit pertaining to) a large class. During speech small classes are easier for the speaker to choose from than are large classes.

(f) The process criterion. Any process is natural; only movement requires special comment. Given a construction, movement of a unit to the left is more natural for the speaker than movement of a unit to the right. (Movement to the left is more natural than non-movement; movement to the right is less natural than non-movement.)

(g) Acceptable vs. non-acceptable use. What is acceptable is more natural for the speaker than what is not acceptable. The very reason for the acceptability of a syntactic unit is its greater naturalness for the speaker with respect to any corresponding non-acceptable unit.

---

[2] A reviewer's comment: "We have no clear criteria on which to decide what is favourable to the speaker." I follow Mayerthaler (1981: 13 ff.) in assuming that the speaker is the centre of communication, and thus most properties of the speaker are natural; for instance, being the first person and/or the subject and/or +human and/or +masculine (!) and/or +singular and/or +definite and/or +referential, etc. For a theoretically fundamental remark, see footnote 5.

[3] A reviewer's comment: "What is favourable to the hearer may be less natural for the speaker." Yes, this is a pivotal point in Natural Syntax and will be maintained until some good counter-example nullifies it. By way of example, it can be pointed out that producing a longish noun phrase may be "tiresome" for the speaker, but may ease the hearer's decoding process enormously. For a theoretically fundamental remark, see footnote 5.

(h)   What is more widespread in the languages of the world is more natural for the speaker (the typological criterion). What is cognitively simpler (for the speaker) is realized in more languages.[4,5]

The basic format of our naturalness scales is >nat (A, B), where A is favourable for the speaker and B is favourable for the hearer. A and B are the "values" of the scale. Two expanded scales are allowed, viz. >nat (A + B, B) and >nat (A, A + B); they are valid if the corresponding scale of the format >nat (A, B) is valid. Exemplification below.

The above criteria of naturalness (henceforth, axioms) are utilized to support our naturalness scales. Normally it suffices to substantiate any scale with one criterion, which backs up either value A or value B of the scale; the non-supported value is allotted the only remaining position in the scale. Of course, a scale may be supported with more than one criterion. Any clash among the criteria applied to a scale is to be handled with constraints on the combinations of criteria. So far only a few constraints have been formulated; I have not yet encountered much useable crucial language data.

The naturalness scales are an essential part of what are known as deductions, in which Natural Syntax expresses its predictions about the state of affairs in language data. An example of a deduction:

English. The numerical indication of frequency normally consists of a cardinal number followed by the word *times* (e.g., *four times*) except that there are one-word expressions available for the lowest numbers: *once, twice* and archaic *thrice* (*Collins Cobuild* 1990: 270–271).

The two variants: the type *once* and the type *four times*.

1.   The assumptions of Natural Syntax:

    1.1 >nat (type *once*, type *four times*)
        I.e., the type *once* is more natural than the type *four times*. – According to the criterion of least effort, item (b) in the list of axioms.

---

[4] A reviewer's comment: "The methodology used in the paper is based on unclear criteria." I have been applying the above criteria ("axioms") (a–h) to language material covering several languages and miscellaneous (morpho-)syntactic states of affairs. Throughout my work, the criteria have compelled me, time and again, to reject certain solutions and to give precedence to other solutions. Given this encouraging experience, I cannot accept the claim that the criteria are unclear, at least not in its generality. There can be discussion about details; see footnotes 2 and 3. For a theoretically fundamental remark, see footnote 5.

[5] A reviewer's comment: "The list of axioms is unmotivated." If the axioms were motivated, they would have to be derived from more basic criteria. I will preserve the present list until some convincing and irreparable counterexample casts doubt upon my axioms; the occurrence of such an event is in the overriding interest of Natural Syntax anyway. The only realistic aim of deductive theories is that they are eventually disproved. I am afraid that the reviewer's benevolent wish to help by urging that the axioms be improved would lead – if pursued – to a reduction of the chances for the desirable definitive outcome.

      1.2. >nat (low, non-low) / number
          I.e., any low number is more natural than any non-low number (Mayer-thaler 1981: 15). – Low numbers are more easily accessible to the speaker. According to the criterion of favourable for the speaker, item (a) in the list of axioms.

2.   The rules of parallel alignment of corresponding values:

      2.1. value A tends to associate with value C,
      2.2. value B tends to associate with value D. See Note 4.1 below.

3.   The consequences:
      If a language distinguishes between low and non-low numbers in numerical indications of frequency such that one kind of number uses the pattern *four times* and the other kind of number uses the pattern *once*, it is the low numbers that tend to use the pattern *once* and it is the non-low numbers that tend to use the pattern *four times*. Q.E.D. (The reverse situation is not expected.)

4.   Notes

      4.1. Value A of scale 1.1 (= the type *once*) tends to combine with value C of scale 1.2 (= low number). Value B of scale 1.1 (= the type *four times*) tends to combine with value D of scale 1.2 (= non-low number). Similarly in the remaining deductions, with the proviso that the alignment (unlike here) is chiastic in most cases. Chiastic alignment is explained below.
      4.2. Natural Syntax cannot predict the cut-off point between low and non-low numerals.
      4.3. The consequences (item 3 of any deduction) are meant to be universal statements. However, I have not yet succeeded in devising a format in which it would not be necessary to mention language-specific data.

This deduction maintains that the state of affairs cannot be the reverse; i.e., that numerals above *two* (or *three*) would be one-word formations and that the numerals under *three* (or *four*) would be two-word formations. All predictions of our Natural Syntax are restricted to such modest claims about the unlikelihood of the reverse situation.

In every deduction, the rules of alignment play a prominent role; compare item 2 in the above deduction. The alignment rules regulate the combinations of corresponding values of the two naturalness scales mentioned in the deduction.

The alignment can be parallel or chiastic. Suppose that the two scales are >nat (A, B) and >nat (C, D). Parallel alignment pairs value A with value C, and value B with value D. Chiastic alignment pairs A with D, and B with C.

A paramount question is when the alignment is parallel, and when chiastic. Parallel alignment is the default case. Chiastic alignment is necessary whenever a given deduction is limited to the language data obtaining within an "unnatural environment". This is defined as value B of the scale >nat (A, B), provided the scale cannot be extended to the right; i.e., if there is no such value that would be even less natural than value B.

An example: in the scale >nat (main, dependent) / clause, the value "dependent clause" is an unnatural environment because the scale cannot be extended to the right. This means: all deductions whose language data lie within the environment "dependent clause" require the implementation of chiastic alignment.[6]

Chiastic alignment is prohibited when a naturalness scale is substantiated with an axiom. If, however, an axiom is engaged as one of the scales in a deduction, it obeys the usual distribution of the alignment rules.

The insistence of Natural Syntax on the distinction between parallel and chiastic alignments stems indirectly from the work of Henning Andersen within markedness theory. Andersen observes situations such as the following in all human semiotic systems: on an everyday occasion casual wear is unmarked, and formalwear marked; on a festive occasion it is formalwear that is unmarked, whereas casual wear is marked. See Andersen (1972: 45, esp. fn. 23). This example expressed with our scales: (i) >nat (casual, formal) / wear, (ii) >nat (−, +) / marked. A third scale as the source of the environment of the deduction: >nat (everyday, festive) / occasion. If the environment is "everyday occasion", the alignment within (i–ii) is parallel; if the environment is "festive occasion", the alignment within (i–ii) is chiastic.

Natural Syntax is a deductive theory, and therefore my trivially obvious chief aim is to disprove the theory. The strategy used is twofold: (1) the formal apparatus of the theory is gradually increasingly constrained, and (2) I search for counterexamples that could not be eliminated by changing the theory in a principled way. Unfortunately, my endeavour has not yet borne fruit.

This paper treats some examples of transitivity in Hopper and Thompson (1980) (henceforth H&T) utilizing the apparatus of Natural Syntax. The exemplification is limited to accusative languages. Due to limitations of space, the ergative languages (these are also discussed in H&T) are excluded.

H&T's examples are meant to be repeated below faithfully. H&T's descriptions of language data (accompanying the examples) are reworded here in a terse, but hopefully not distorted, form.

H&T demonstrated a great deal of parallelism in the structure and in the interpretation of the data. This feature has been further strengthened in my text through a purposefully schematic (some might say tedious) presentation.

---

[6] A reviewer's comment: "We do not know why sometimes the applied 'alignment' of semantic and morpho-syntactic features is supposed to be chiastic and on other occasions it is parallel." As explained in the main body of the paper, chiastic alignment is applied in deductions whose environment is unnatural. Parallel alignment is the default case. Incidentally, almost only chiastic alignment is used in this paper, so that the distinction between the two kinds of alignment happens to be of no great significance here.

It is necessary to first set up the following naturalness scale: >nat (intransitivity, transitivity); i.e., intransitivity is more natural than transitivity. The scale is supported by the criterion of least effort, item (b) in the list of axioms: the number of participants is usually smaller in intransitive constructions than in transitive ones. The right value of the scale (= transitivity) constitutes an unnatural environment. Consequently, all deductions limited to this environment require chiastic alignment among the corresponding values of the scales utilized in such deductions.

I continue with a discussion of H&T's examples in the format of deductions:

(1a) = H&T (11), **Spanish**. The direct object is preceded by the preposition *a* if the direct object is +human and +referential. This deduction treats the +human direct object. The +referential direct object is the subject matter of deduction (1b).

Busco   mi   sombrero.
I seek   my   hat
'I'm looking for my hat.'

Busco   a   mi   amigo.
I seek   my   friend
'I'm looking for my friend.'

The two variants: the type *a mi amigo* and the type *mi sombrero*. – The deduction proceeds in the unnatural environment "transitivity".

1.   The assumptions of Natural Syntax:

  1.1. >nat (+, −) / human
       I.e., +human is more natural than –human. – The speaker (as the centre of communication) is +human (Mayerthaler 1981: 13). According to the criterion of favourable for the speaker, item (a) in the list of axioms.

  1.2. >nat (−, +) / preposition *a*
       I.e., the absence of the preposition *a* is more natural than its presence. – According to the criterion of least effort, item (b) in the list of axioms.

2.   The rules of chiastic alignment:

  2.1. value A tends to associate with value D,
  2.2. value B tends to associate with value C.

3.   The consequences:
     If a language distinguishes (within the direct object) between the type *a mi amigo* and the type *mi sombrero* such that one type denotes +human and the

other type denotes −human, then it is the type *a mi amigo* that tends to denote +human and it is the type *mi sombrero* that tends to denote −human. Q.E.D. (The reverse situation is not expected.)

(1b) Celia   quiere   mirar   un   bailarín.
Celia   wants to   watch   a   ballet dancer
Celia   quiere   mirar   a   un   bailarín.
Celia   wants to   watch   a   ballet dancer
'Celia wants to watch a ballet dancer.'

This deduction treats the +referential direct object.
The two variants: the type a un bailarín and the type un bailarín. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (+,−) / referential
        I.e., +referential is more natural than −referential. – The speaker (as the centre of communication) is +referential (in the spirit of Mayerthaler 1981: 13). According to the criterion of favourable for the speaker, item (a) in the list of axioms.

    1.2. >nat (−, +) / preposition *a*
        I.e., the absence of the preposition *a* is more natural than its presence. – According to the criterion of least effort, item (b) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes (within +human direct object) between the type *un bailarín* and the type *a un bailarín* such that one type is +referential and the other type is −referential, then it is the type *un bailarín* that tends to be −referential and it is the type *a un bailarín* that tends to be +referential. Q.E.D. (The reverse situation is not expected.)

4. Note.
    It is only deductions (1a) and (1b) taken together that present the correct picture; namely, that the preposition *a* introduces direct objects that are both +human and +referential.

(2) = H&T (14) **Modern Hebrew**. Any +definite direct object is preceded by the object
marker *et* (and by the definite article *ha-*). Any −definite direct object lacks such a
marker (and the definite article).

David   natan   matana   lərina.
David   gave   present   to Rina
'David gave a present to Rina.'

David   natan   ET   ha-matana   lərina.
David   gave   OBJ   DEF-present   to Rina
'David gave the present to Rina.'

The two variants: the type *matana* and the type *et ha-matana*. – The deduction pro-
ceeds in the unnatural environment "transitivity".

1.   The assumptions of Natural Syntax:

  1.1. >nat (+,−) / definite
       I.e., +definite is more natural than −definite. – The speaker (as the centre of
       communication) is +definite (in the spirit of Mayerthaler 1981: 13). Ac-
       cording to the criterion of favourable for the speaker, item (a) in the list of
       axioms.

  1.2. >nat (−, +) / *et ha-*
       I.e., the absence of *et ha-* is more natural than its presence. – According to
       the criterion of least effort, item (b) in the list of axioms.

2.   The rules of chiastic alignment:

  2.1. value A tends to associate with value D,
  2.2. value B tends to associate with value C.

3.   The consequences:
     If a language distinguishes (within the direct object) between the types *matana*
     and *et ha-matana* such that one type is +definite and the other type is −definite,
     then it is the type *matana* that tends to be −definite and it is the type *et ha-
     matana* that tends to be +definite. Q.E.D. (The reverse situation is not ex-
     pected.)

(3a) = H&T (20) **Hungarian**. If the direct object is +referential, it is less integrated into
its construction and is preceded by the numeral *egy* 'one'. If the direct object is
−referential, it is better integrated into its construction. – Integration into the construc-
tion is dealt with in deduction (3b).

Péter   újságot   olvas.
Péter   paper   reads
'Peter is reading a newspaper.'

Péter   olvas   egy   újságot.
Péter   reads   a   paper
'Peter is reading a [specific] newspaper.'

The two variants: +/−referential direct object. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (+, −) / referential
    I.e., +referential is more natural that −referential. – The speaker (as the centre of communication) is +referential (in the spirit of Mayerthaler 1981: 13). According to the criterion of favourable for the speaker, item (a) in the list of axioms.

    1.2. >nat (−, +) / *egy*
    I.e., the absence of *egy* is more natural than its presence. – According to the criterion of least effort, item (b) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between +referential and −referential direct objects such that one of them is preceded by *egy* and the other is not preceded by *egy*, then it is the +referential direct object that tends to be preceded by *egy* and it is the −referential direct object that tends not to be preceded by *egy*. Q.E.D. (The reverse situation is not expected.)

(3b) This deduction deals with the integration of the direct object into the construction.

The two variants: +/−referential direct object. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (+,−) / referential

I.e., +referential is more natural that −referential. – The speaker (as the centre of communication) is +referential (in the spirit of Mayerthaler 1981: 13). According to the criterion of favourable for the speaker, item (a) in the list of axioms.

1.2. >nat (more, less) / integrated direct object
I.e., a unit more integrated into its construction is more natural than a unit less integrated into its construction. – According to the criterion of integration into the construction, item (c) in the list of axioms.

2. The rules of chiastic alignment:

2.1. value A tends to associate with value D,
2.2. value B tends to associate with value C.

3. The consequences:
If a language distinguishes between the +referential and the −referential direct object such that one is better integrated into its construction and the other is less integrated into its construction, then it is the +referential direct object that tends to be less integrated into its construction and it is the −referential direct object that tends to be better integrated into its construction. Q.E.D. (The reverse situation is not expected.)

(4) = H&T (20)b and (21) **Hungarian**. Referential direct object only. If the direct object is −definite, the conjugation of the verb is subjective. If the direct object is +definite, the conjugation of the verb is objective.

| Péter | olvas | egy | újságot. |
| Péter | reads | a | paper |
'Peter is reading a [specific] newspaper.'

| Péter | olvassa | az | újságot. |
| Péter | reads (OBJ) | the | paper |
'Peter is reading the newspaper.'

The two variants: (within the +referential direct object) +/−definite. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

1.1. >nat (+, −) / definite
I.e., +definite is more natural than −definite. – The speaker (as the centre of communication) is +definite (in the spirit of Mayerthaler 1981: 13). Ac-

cording to the criterion of favourable for the speaker, item (a) in the list of axioms.

1.2. >nat (subjective, objective) / conjugation

I.e., the subjective conjugation is more natural than the objective conjugation. – The subjective conjugation is also used in intransitive clauses (intransitivity is more natural than transitivity; see the introductory part of this paper). The subjective conjugation has a zero ending in the third person, whereas the objective conjugation lacks zero endings. According to the criterion of least effort, item (b) in the list of axioms.

2. The rules of chiastic alignment:

2.1. value A tends to associate with value D,
2.2. value B tends to associate with value C.

3. The consequences:

If a language distinguishes (within +referential direct objects) between the +definite and the −definite direct object such that one is accompanied by the subjective conjugation and the other is accompanied by the objective conjugation, then it is the +definite direct object that tends to be accompanied by the objective conjugation and it is the −definite direct object that tends to be accompanied by the subjective conjugation. Q.E.D. (The reverse situation is not expected.)

(5a) = H&T (24) **Amwi** (an Austro-Asiatic language of Northern Bangladesh). The +definite direct object is introduced by *haj*. The −definite direct object is not so introduced, but it is better integrated into its construction than the +definite direct object. – This deduction treats the connection between *haj* and definiteness. The connection between definiteness and the degree of integration into the construction is the subject matter of deduction (5b).

ʔə   bo ŋə haj   ci
TENSE eat I OBJ   rice
'I eat the rice.'

ʔə   bo ci   ŋə.
TENSE eat rice I
'I eat rice.'

The two variants: +/−definite direct object. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (+, −) / definite
    I.e., +definite is more natural than −definite. – The speaker (as the centre of communication) is +definite (in the spirit of Mayerthaler 1981: 13). According to the criterion of favourable for the speaker, item (a) in the list of axioms.

    1.2. >nat (−, +) / *haj*
    I.e., the absence of *haj* is more natural than its presence. – According to the criterion of least effort, item (b) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between +definite and −definite direct objects such that one is, and the other is not, introduced by *haj*, then it is the +definite direct object that tends to be introduced by *haj* and it is the –definite direct object that tends not to be introduced by *haj*. Q.E.D. (The reverse situation is not expected.)

(5b) This deduction treats the connection between definiteness and the degree of integration into the construction.

The two variants: +/−definite direct object. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (+, −) / definite
    I.e., +definite is more natural than −definite. – The speaker (as the centre of communication) is +definite (in the spirit of Mayerthaler 1981: 13). According to the criterion of favourable for the speaker, item (a) in the list of axioms.

    1.2. >nat (more, less) / integrated into the construction
    I.e., what is better integrated into its construction is more natural than what is less integrated into its construction. – This is the very criterion of integration into the construction, item (c) in the list of axioms.

2.   The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3.   The consequences:
    If a language distinguishes between +definite and −definite direct objects such that one is better integrated into its construction and the other is less integrated into its construction, then it is the +definite direct object that tends to be less integrated into its construction and it is the −definite direct object that tends to be better integrated into its construction. Q.E.D. (The reverse situation is not expected.)

(6a) = H&T (25) **Kusaiean/Kosraean** (Micronesian language). If the direct object is +definite, it is followed by the particle ε; if the direct object is −definite, the particle is lacking. If the direct object is −definite, it moves closer to the verb. – This deduction treats the connection between the definiteness of the direct object and the presence of particle ε. The connection between definiteness and integration into the construction is the subject matter of deduction (6b).

nga   l-læ   nuknuk   ɛ.
I   wash-COMP   clothes   the
'I finished washing the clothes.'

nga   owo   nuknuk   læ.
I   wash   clothes   COMP
'I finished washing clothes.'

The latter example is antipassive (Sugita 1973: 399).
The two variants: +/−definite direct object. – The deduction proceeds in the unnatural environment "transitivity".

1.   The assumptions of Natural Syntax:

    1.1. >nat (+,−) / definite
    I.e., +definite is more natural than −definite. – The speaker (as the centre of communication) is +definite (in the spirit of Mayerthaler 1981: 13). According to the criterion of favourable for the speaker, item (a) in the list of axioms.

    1.2. >nat (−, +) / particle ε
    I.e., the absence of ε is more natural than its presence. – According to the criterion of least effort, item (b) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between +definite and −definite direct object such
    that one is, and the other is not, followed by ε, then it is the +definite direct ob-
    ject that tends to be followed by ε and it is the −definite direct object that tends
    not to be followed by ε. Q.E.D. (The reverse situation is not expected.)

(6b) This deduction treats the connection between definiteness and integration into the
construction.

The two variants: +/−definite direct object. – The deduction proceeds in the unnatu-
ral environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (+,−) / definite
         I.e., +definite is more natural than −definite. – The speaker (as the centre of
         communication) is +definite (in the spirit of Mayerthaler 1981: 13). Ac-
         cording to the criterion of favourable for the speaker, item (a) in the list of
         axioms.

    1.2. >nat (more, less) / integrated into the construction
         I.e., what is better integrated into its construction is more natural than what
         is less integrated into its construction. – This is the very criterion of inte-
         gration into the construction, item (c) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between +definite and −definite direct objects such
    that one is better integrated into its construction and the other is less integrated
    into its construction, then it is the +definite direct object that tends to be less in-
    tegrated into its construction and it is the −definite direct object that tends to be
    better integrated into its construction. Q.E.D. (The reverse situation is not ex-
    pected.)

(7a) = H&T (28) **Indonesian**. (i) If the direct object is +definite, it is followed by the particle *itu*; if the direct object is −definite, the particle is lacking. (ii) If the finite verb has the suffix *-kan*, the dative object is not accompanied by a preposition; if the suffix is lacking, the dative object is accompanied by the preposition *kepada*. This deduction treats case (i). Case (ii) is the subject matter of deduction (7b).

Hasan	menjual	kambing	itu	kepada	saya.
Hasan	sell	goat	the	to	me

'Hasan sold the goat to me.'

Hasan	menjual-KAN	saya	kambing.
Hasan	sell	me	goat

'Hasan sold me a goat.'

The two variants: +/−definite direct object. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (+,−) / definite
    I.e., +definite is more natural than −definite. – The speaker (as the centre of communication) is +definite (in the spirit of Mayerthaler 1981: 13). According to the criterion of favourable for the speaker, item (a) in the list of axioms.

    1.2. >nat (−, +) / *itu*
    I.e., the absence of *itu* is more natural than its presence. – According to the criterion of least effort, item (b) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between +definite and −definite direct objects such that one is, and the other is not, followed by *itu*, then it is the +definite direct object that tends to be followed by *itu* and it is the −definite direct object that tends not to be followed by *itu*. Q.E.D. (The reverse situation is not expected.)

(7b) Case (ii). If the finite verb has the suffix *-kan*, the dative object is not accompanied by a preposition; if the suffix is lacking, the dative object is accompanied by the preposition *kepada*.

The two variants: the finite verb with or lacking the suffix *-kan*. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (−, +) / verbal suffix *–kan*
        I.e., the absence of the verbal suffix *-kan* is more natural than its presence.
        – According to the criterion of least effort, item (b) in the list of axioms.

    1.2. >nat (−, +) / preposition *kepada*
        I.e., the absence of the preposition *kepada* is more natural than its presence.
        – According to the criterion of least effort, item (b) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between the verb with and lacking the suffix *-kan* such that one alternative takes a prepositional dative object and the other alternative takes a dative object without any preposition, then it is the verb with the suffix *-kan* that tends to take a dative object without any preposition and it is the verb lacking the suffix *-kan* that tends to take a prepositional dative object. Q.E.D. (The reverse situation is not expected.)

(8) = H&T (30) **Indonesian**. If the verb has the suffix *-i*, the act is less intense. If the verb has the suffix *-kan*, the act is more intense. For instance, *dia memanas-i air* and *dia memanas-kan air* both mean 'he heated the water'; the former act is gentle, the latter act is drastic.

The two variants: the type *memanas-i* and the type *memanas-kan*. – The deduction does NOT proceed in the unnatural environment "transitivity", but concerns only the form and the meaning of the verb.

1. The assumptions of Natural Syntax:

    1.1. >nat (*-i, -kan*) / verb suffix
        I.e., the verb suffix *-i* is more natural than the verb suffix *-kan*. – According to the criterion of least effort, item (b) in the list of axioms.

    1.2. >nat (smaller, greater) / intensity of verbal act

I.e., lesser intensity of verbal act is more natural than greater intensity of verbal act. – Greater intensity is more salient, and therefore in the interest of the hearer and must be mentioned in slot B of the scale. According to the criterion of favourable for the hearer, item (a) in the list of axioms.

2. The rules of parallel alignment:

2.1. value A tends to associate with value C,
2.2. value B tends to associate with value D.

3. The consequences:
If a language distinguishes between the verbal suffix *-i* and the verbal suffix *-kan* such that one suffix expresses lesser intensity and the other suffix expresses greater intensity, then it is the suffix *-i* that tends to express lesser intensity and it is the suffix *-kan* that tends to express greater intensity. Q.E.D. (The reverse situation is not expected.)

4. Note.
Mutatis mutandis the same applies to H&T (29) and (31).

(9a) = H&T (32) **French**. The completely affected direct object is not introduced by a preposition; for instance, *nous avons rapproché la montagne* 'we brought the mountain close'. The unaffected direct object is introduced by a preposition; for instance, *nous nous sommes rapprochés de la montagne* 'we approached the mountain'. – This deduction treats the relationship between the two verbs. The relationship between the objects with and without a preposition is the subject matter of deduction (9b).

The two variants: +/−affected direct object. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

1.1. >nat (type *nous avons rapproché*, type *nous nous sommes rapprochés*)
I.e., the type *nous avons rapproché* is more natural than the type *nous nous sommes rapprochés*. – According to the criterion of least effort, item (b) in the list of axioms.

1.2. >nat (−, +) / affected object
I.e., an unaffected object is more natural than an affected object. – The referent of the affected object is more salient than the referent of the unaffected object. Therefore, the affected object is in the interest of the hearer and must be mentioned in slot B of the scale. According to the criterion of favourable for the hearer, item (a) in the list of axioms.

2.   The rules of chiastic alignment:

  2.1. value A tends to associate with value D,
  2.2. value B tends to associate with value C.

3.   The consequences:
  If a language distinguishes between the type *nous avons rapproché* and the type *nous nous sommes rapprochés* such that one type takes an affected object and the other type takes an unaffected object, then it is the type *nous avons rapproché* that tends to take an affected object and it is the type *nous nous sommes rapprochés* that tends to take an unaffected object. Q.E.D. (The reverse situation is not expected.)

(9b) This deduction treats the relationship between objects with and without a preposition.

The two variants: +/−affected direct object. – The deduction proceeds in the unnatural environment "transitivity".

1.   The assumptions of Natural Syntax:

  1.1. >nat (type *la montagne*, type *de la montagne*) / object
    I.e., the type *la montagne* is more natural than the type *de la montagne*.
    – According to the criterion of least effort, item (b) in the list of axioms.

  1.2. >nat (−, +) / affected object
    I.e., an unaffected object is more natural than an affected object. – The referent of the affected object is more salient than the referent of the unaffected object. Therefore, the affected object is in the interest of the hearer and must be mentioned in slot B of the scale. According to the criterion of favourable for the hearer, item (a) in the list of axioms.

2.   The rules of chiastic alignment:

  2.1. value A tends to associate with value D,
  2.2. value B tends to associate with value C.

3.   The consequences:
  If a language distinguishes between the type *la montagne* and the type *de la montagne* such that one type expresses an affected object and the other type expresses an unaffected object, then it is the type *la montagne* that tends to express an affected object and it is the type *de la montagne* that tends to express an unaffected object. Q.E.D. (The reverse situation is not expected.)

(10) = H&T (33) **Finnish**. If the direct object is in the accusative case it is completely affected. If the direct object is in the partitive case it is partially affected.

Liikemies kirjoitt kirjeen   valiokunnalle.
businessman   wrote   letter(ACC)   committee-to
'The businessman wrote a letter to the committee.'

Liikemies kirjoitti kirjettä   valiokunnalle.
businessman wrote   letter (PART) committee-to
'The businessman was writing a letter to the committee.'

The two variants: accusative and partitive. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

   1.1. >nat (accusative, partitive) / as case of direct object
        I.e., the accusative is more natural than the partitive. – In Finnish, the accusative is the usual case of the direct object. According to the frequency criterion, item (d) in the list of axioms.

   1.2. >nat (partially, totally) / affected object
        I.e., a partially affected object is more natural than a totally affected object. – The referent of the totally affected object is more salient than the referent of the partially affected object. Therefore, the totally affected object is in the interest of the hearer and must be mentioned in slot B of the scale. According to the criterion of favourable for the hearer, item (a) in the list of axioms.

2. The rules of chiastic alignment:

   2.1. value A tends to associate with value D,
   2.2. value B tends to associate with value C.

3. The consequences:
   If a language distinguishes between the accusative and the partitive as the cases of the direct object such that one case expresses a totally affected direct object and the other case expresses a partially affected direct object, then it is the accusative that tends to express the totally affected direct object and it is the partitive that tends to express the partially affected direct object. Q.E.D. (The reverse situation is not expected.)

(11) = H&T (34) **English**. *We sprayed the wall with paint* and *we sprayed paint on the wall* differ in that the prepositionless *the wall* is more affected by spraying than is *on the wall*.

The two variants: *the wall* and *on the wall*. – The deduction proceeds in the unnatural environment "transitivity".

1.   The assumptions of Natural Syntax:

1.1. >nat (−, +) / preposition before *the wall*
I.e., the absence of the preposition is more natural than its presence. – According to the criterion of least effort, item (b) in the list of axioms.

1.2. >nat (partially, totally) / affected object
I.e., a partially affected object is more natural than a totally affected object. – The referent of the totally affected object is more salient than the referent of the partially affected object. Therefore, the totally affected object is in the interest of the hearer and must be mentioned in slot B of the scale. According to the criterion of favourable for the hearer, item (a) in the list of axioms.

2.   The rules of chiastic alignment:

2.1. value A tends to associate with value D,
2.2. value B tends to associate with value C.

3.   The consequences:
If a language distinguishes between *the wall* and *on the wall* such that one unit is more affected by the verbal act and the other unit is less affected by the verbal act, then it is *the wall* that tends to be more affected by the verbal act and it is *on the wall* that tends to be less affected by the verbal act. Q.E.D. (The reverse situation is not expected.)

4.   Note.
The deduction involving the variants *paint* (more paint sprayed) and *with paint* (less paint sprayed) would run the same course.

(12a) = H&T (35) **Hungarian**. With any totally affected object, the verb takes the objective conjugation and the perfectivizing prefix *be-*; the object follows the verb immediately, which is the expected position for an object. Any partially affected object is so to say integrated into the verb; the verb lacks the perfectivizing prefix and uses the subjective conjugation. – In the continuation only the following data is considered: this de-

duction compares the accusative/locative and the totally/partially affected object. Deduction (12b) contains a comparison of the accusative/locative with *fújt/befújta*. Deduction (12c) contains a comparison of the accusative/locative and the subjective/objective conjugation.

János	festék-et	fújt	a	fal-ra.
János	paint-OBJ	sprayed	the	wall-on

'Janos sprayed paint on the wall.'

János	befújta	a	fal-at	festék-kel.
János	sprayed	the	wall-ACC	paint-with

'Janos sprayed the wall with paint.'

The two variants: the accusative and the locative (of *paint*). – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (accusative, locative)
    I.e., the accusative is more natural than the locative. – Within accusative languages the accusative is used much more than the locative. According to the typological criterion, item (h) in the list of axioms.

    1.2. >nat (partially, totally) / affected object
    I.e., a partially affected object is more natural than a totally affected object. – The referent of the totally affected object is more salient than the referent of the partially affected object. Therefore, the totally affected object is in the interest of the hearer and must be mentioned in slot B of the scale. According to the criterion of favourable for the hearer, item (a) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between an accusative and a locative such that one case is more affected by the verbal act and the other case is less affected by the verbal act, then it is the accusative that tends to be more affected by the verbal act and it is the locative that tends to be less affected by the verbal act. Q.E.D. (The reverse situation is not expected.)

(12b) This deduction contains a comparison of the accusative/locative with *fújt/befújta*.

The two variants: the accusative and the locative (of *paint*). – The deduction proceeds in the unnatural environment "transitivity".

1.   The assumptions of Natural Syntax:

   1.1. >nat (accusative, locative)
       I.e., the accusative is more natural than the locative. – Within accusative languages the accusative is used much more than the locative. According to the typological criterion, item (h) in the list of axioms.

   1.2. >nat (*fújt*, *be-fújta*) / finite verb
       I.e., the verb *fújt* is more natural than the verb *befújta*. – According to the criterion of least effort, item (b) in the list of axioms.

2.   The rules of chiastic alignment:

   2.1. value A tends to associate with value D,
   2.2. value B tends to associate with value C.

3.   The consequences:
     If a language distinguishes between an accusative and a locative such that one case combines with the verb *fújt* and the other case combines with the verb *befújta*, then it is the accusative that tends to combine with the verb *befújta* and it is the locative that tends to combine with the verb *fújt*. Q.E.D. (The reverse situation is not expected.)

(12c) This deduction contains a comparison of the accusative/locative and the subjective/objective conjugation.

The two variants: the accusative and the locative (of *paint*). – The deduction proceeds in the unnatural environment "transitivity".

1.   The assumptions of Natural Syntax:

   1.1. >nat (accusative, locative)
       I.e., the accusative is more natural than the locative. – Within accusative languages the accusative is used much more than the locative. According to the typological criterion, item (h) in the list of axioms.

   1.2. >nat (subjective, objective) / conjugation
       I.e., the subjective conjugation is more natural than the objective conjugation. – The subjective conjugation is also used in intransitive clauses (in-

transitivity is more natural than transitivity; see the introductory part of this paper). The subjective conjugation has a zero ending in the third person singular, whereas the objective conjugation lacks zero endings. According to the criterion of least effort, item (b) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between an accusative and a locative such that one combines with the objective conjugation and the other combines with the sub-jective conjugation, then it is the accusative that tends to combine with the ob-jective conjugation and it is the locative that tends to combine with the subjec-tive conjugation. Q.E.D. (The reverse situation is not expected.)

(13) = H&T (36) **English**. The direct object is totally affected; for instance, *I hit Harry with the stick*; the oblique object is partially affected; for instance, *I hit the stick against Harry*.

The two variants: *Harry* and *against Harry*. – The deduction proceeds in the un-natural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (Harry, against Harry)
        I.e., the unit *Harry* is more natural than the unit *against Harry*. – Accord-ing to the criterion of least effort, item (b) in the list of axioms.

    1.2. >nat (partially, totally) / affected object
        I.e., a partially affected object is more natural than a totally affected object. – The referent of the totally affected object is more salient than the referent of the partially affected object. Therefore the totally affected object is in the interest of the hearer and must be mentioned in slot B of the scale. Accord-ing to the criterion of favourable for the hearer, item (a) in the list of axi-oms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between the type *Harry* and the type *against Harry*
    such that Harry is totally affected by the verbal act in one case and partially af-
    fected in the other case, then it is the type *Harry* that tends to describe Harry as
    totally affected and it is the type *against Harry* that tends to describe Harry as
    partially affected. Q.E.D. (The reverse situation is not expected.)

4. Note.
    The deduction involving the variants *a stick* (totally affected) and *with a stick*
    (partially affected) would run the same course.

(14) = H&T (37) **Trukese** (a Micronesian language). In the clause 'I will drink some of
the water', the intransitive stem of the verb is used. In the clause 'I will drink up the
water', the transitive stem of the verb is used.

wúpwe   wún   ewe   kkónik.
I will   drink   the   water
'I will drink some of the water.'

wúpwe   wúnúmi   ewe   kkónik.
I will   drink   the   water
'I will drink up the water.'

From H&T's own data source, Sugita (1973: 394–395), it follows that the difference be-
tween the verb type *wún* (called semitransitive by Sugita) and the verb type *wúnúmi*
(called transitive by Sugita) concerns pronominal objects: the transitive verbs, unlike
the semitransitive verbs, contain pronominal objects that copy the non-pronominal ob-
jects of the transitive verbs.

On the basis of additional examples, Sugita (1973: 398–399), unlike H&T, gives
preference to the following generalization: any transitive verb has an object denoting a
limited or defined quantity or size; any semitransitive verb has an object denoting a
quantity or size not limited (but that can be defined).

Upon this background the deduction can be continued as follows:

The two variants: transitive and semitransitive verbs. – The deduction proceeds in
the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (−, +) / pronominal-object suffix
         I.e., the absence of the pronominal-object suffix is more natural than its
         presence. – According to the criterion of least effort, item (b) in the list of
         axioms. See also note 4.

1.2. >nat (+,−) / object denoting limited quantity or size
I.e., an object denoting limited quantity or size is more natural than an object not so limited. – A quantity or size not limited is more salient, and therefore in the greater interest of the hearer (decoder) and must be mentioned in slot B of the scale. According to the criterion of favourable for the hearer, item (a) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between transitive and semitransitive verbs such that the object of one verb type denotes a limited quantity or size and the object of the other verb type denotes a quantity or size not so limited, then it is the transitive verbs that tend to have an object denoting limited quantity or size, and it is the semitransitive verbs that tend to have an object denoting a quantity or size not so limited. Q.E.D. (The reverse situation is not expected.)

4. Note.
    A naturalness scale including both the verb type *wún* and the verb type *wúnúmi* as unanalyzed words cannot be formed because the verb type *wún* is sometimes shorter and sometimes longer than the verb type *wúnúmi*. What is decisive is the suffix in the verb type *wún-úmi*.

(15a) = H&T (43) **Estonian**. In the clause 'he knew this woman', the direct object is in the partitive case. In the clause 'he recognized this woman', the direct object is in the genitive (which is the usual case of the direct object in Estonian). – This deduction treats the relationship between the case of the direct object and the verbal aspect. In deduction (15b) the subject matter is the relationship between the verbal aspect and the particle *ära*.

    Ta   tundis   seda   naist.
    he   knew   this   woman (PART)
    'He knew this woman.'

    Ta   tundis   selle   naise   ära.
    he   knew   this   woman (GEN) away
    'He recognized this woman.'

The two variants: the genitive and the partitive as the cases of the direct object. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (genitive, partitive) / case of direct object
         I.e., the genitive is more natural than the partitive. – The genitive is the
         usual case of the direct object in Estonian. According to the frequency cri-
         terion, item (d) in the list of axioms.

    1.2. >nat (imperfective, perfective) / verbal aspect
         I.e., the imperfective verbal aspect is more natural than the perfective ver-
         bal aspect. – It is easier to perceive a verbal act as whole in the perfective
         than in the imperfective verbal aspect. This circumstance is presumably in
         the interest of the hearer (decoder), and therefore the perfective verbal as-
         pect must be mentioned in slot B of the scale. According to the criterion of
         favourable for the hearer, item (a) in the list of axioms. Variants of scale 1.2
         have been in fashion for at least seventy years.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between the genitive and the partitive as the cases of
    the direct object such that one case combines with the perfective aspect and the
    other case combines with the imperfective aspect, then it is the genitive that
    tends to combine with the perfective aspect and it is the partitive that tends to
    combine with the imperfective aspect. Q.E.D. (The reverse situation is not ex-
    pected.)

(15b) This deduction treats the relationship between the verbal aspect and the particle
āra.

The two variants: the perfective and the imperfective verbal aspects. – The deduc-
tion does NOT proceed in the unnatural environment "transitivity"; the particle *āra*
is also used with intransitive verbs.

1. The assumptions of Natural Syntax:

    1.1. >nat (−, +) / particle *āra*
         I.e., the absence of the particle *āra* is more natural than its presence. – Ac-
         cording to the criterion of least effort, item (b) in the list of axioms.

1.2.>nat (imperfective, perfective) / verbal aspect
I.e., the imperfective verbal aspect is more natural than the perfective verbal aspect. – It is easier to perceive a verbal act as whole in the perfective than in the imperfective verbal aspect. This circumstance is presumably in the interest of the hearer (decoder), and therefore the perfective verbal aspect must be mentioned in slot B of the scale. According to the criterion of favourable for the hearer, item (a) in the list of axioms. Variants of scale 1.2 have been in fashion for at least seventy years.

2. The rules of parallel alignment:

2.1. value A tends to associate with value C,
2.2. value B tends to associate with value D.

3. The consequences:
If a language distinguishes between the perfective and the imperfective verbal aspects such that one combines with the particle *ära* and the other does not combine with the particle *ära*, then it is the perfective aspect that tends to combine with the particle *ära* and it is the imperfective aspect that tends not to combine with the particle *ära*. Q.E.D. (The reverse situation is not expected.)

(16) = H&T (48) **Hungarian**. In the example below, *meg-verte* expresses the perfective aspect of the verb 'beat', whereas *verte* expresses the imperfective aspect. The two clauses do NOT express a difference in the affectedness of the direct object.

A	gazda	MEG-verte	az	inasokat.
the	boss	PERF-beat(OBJ)	the	apprentices(ACC)

'The boss beat the apprentices.'

A	gazda	verte	az	inasokat.
the	boss	beat(OBJ)	the	apprentices(ACC)

'The boss would beat the apprentices.'

The two variants: the verbal forms *verte* and *meg-verte*. – The deduction proceeds within morphology.

1. The assumptions of Natural Syntax:

1.1.>nat (verte, meg-verte)
I.e., the verbal form *verte* is more natural than the verbal form *meg-verte*.
– According to the criterion of least effort, item (b) in the list of axioms.

1.2. >nat (imperfective, perfective) / verbal aspect

I.e., the imperfective verbal aspect is more natural than the perfective ver-
bal aspect. – It is easier to perceive a verbal act as whole in the perfective
than in the imperfective verbal aspect. This circumstance is presumably in
the interest of the hearer (decoder), and therefore the perfective verbal as-
pect must be mentioned in slot B of the scale. According to the criterion of
favourable for the hearer, item (a) in the list of axioms. Variants of scale 1.2
have been in fashion for at least seventy years.

2. The rules of parallel alignment:

2.1. value A tends to associate with value C,
2.2. value B tends to associate with value D.

3. The consequences:

If a language distinguishes between the verbal forms *verte* and *meg-verte* such
that one expresses the perfective aspect and the other expresses the imperfec-
tive aspect, then it is the form *verte* that tends to express the imperfective as-
pect and it is the form *meg-verte* that tends to express the perfective aspect.
Q.E.D. (The reverse situation is not expected.)

(17) = H&T (49) **Hungarian**. With some verbs, the following situation obtains. If the
object is in the accusative case the verb has the prefix *meg-*. If the object is in the dative
case, the prefix is lacking.

MEG-segit   valaki-T.
PERF-helps   somebody-ACC
'He helps somebody.'

Segit   valaki-NEK.
helps   somebody-DAT
'He helps somebody.'

The two variants: the verbal forms *segit* and *meg-segit*. – The deduction proceeds in
the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

1.1. >nat (segit, meg-segit)
I.e., the verbal form *segit* is more natural than the verbal form *meg-segit*.
– According to the criterion of least effort, item (b) in the list of axioms.

1.2. >nat (accusative, dative)

I.e., the accusative is more natural than the dative. – The accusative is the most common case of Hungarian after the nominative. According to the frequency criterion, item (d) in the list of axioms.

2. The rules of chiastic alignment:

2.1. value A tends to associate with value D,
2.2. value B tends to associate with value C.

3. The consequences:
If a language distinguishes between the verbal forms *segit* and *meg-segit* such that one combines with a dative object and the other combines with an accusative object, then it is the form *segit* that tends to combine with a dative object and it is the form *meg-segit* that tends to combine with an accusative object. Q.E.D. (The reverse situation is not expected.)

(18a) = H&T (50) **Hungarian**. If the direct object is +definite, associated with the objective conjugation and less integrated into its construction, the clause is acceptable. – This deduction treats the choice of the conjugation. Integration into the construction is the subject matter of deduction (18b).

A   fiu   el-olvasta   a   könyvet.
the   boy   PERF-read   the   book
'The boy has read the book.'

*A   fiu   könyvet   el-olvasott.
the   boy   book   PERF-read
'*The boy has read book.'

The two variants: (combining with a +definite object) the subjective and the objective conjugation. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

1.1. >nat (subjective, objective) / conjugation
I.e., the subjective conjugation is more natural than the objective conjugation. – The subjective conjugation is also used in intransitive clauses (intransitivity is more natural than transitivity; see the introductory part of this paper). The subjective conjugation has a zero ending in the third person singular, whereas the objective conjugation lacks zero endings. According to the criterion of least effort, item (b) in the list of axioms.

1.2. >nat (+, −) / acceptable
I.e., what is acceptable is more natural than what is unacceptable. – This is the very acceptability criterion, item (g) in the list of axioms.

2. The rules of chiastic alignment:

2.1. value A tends to associate with value D,
2.2. value B tends to associate with value C.

3. The consequences:
If a language distinguishes (in combination with a +definite direct object) between the subjective and the objective conjugation such that one is acceptable and the other is not, then it is the objective conjugation that tends to be acceptable and it is the subjective conjugation that tends not to be acceptable. Q.E.D. (The reverse situation is not expected.)

(18b) This deduction treats integration into the construction.

The two variants: better and lesser integration of the +definite direct object into its construction. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

1.1. >nat (better, lesser) / integration of the +definite direct object into its construction
I.e., better integration of the +definite direct object into its construction is more natural than lesser integration of the +definite direct object into its construction. – According to the criterion of integration into the construction, item (c) in the list of axioms.

1.2. >nat (+,−) / acceptable
I.e., what is acceptable is more natural than what is unacceptable. – This is the very acceptability criterion, item (g) in the list of axioms.

2. The rules of chiastic alignment:

2.1. value A tends to associate with value D,
2.2. value B tends to associate with value C.

3. The consequences:
If a language distinguishes between better and lesser integration of the +definite direct object into its construction such that one alternative is accept-

able and the other alternative is not acceptable, then it is the lesser integration of the +definite direct object that tends to be acceptable and it is the better integration of the +definite direct object that tends not to be acceptable. Q.E.D. (The reverse situation is not expected.)

(19) = H&T (61) **Finnish**. If the direct object is in the accusative case, the verbal aspect is perfective. If the direct object is in the partitive, the verbal aspect is imperfective.

Liikemies   kirjoitti   kirjeen   valiokunnalle.
businessman   wrote   letter(ACC)   committee-to
'The businessman wrote a letter to the committee.'

Liikemies   kirjoitti   kirjettä   valiokunnalle.
businessman   wrote   letter(PART)   committee-to
'The businessman was writing a letter to the committee.'

The two variants: accusative and partitive. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (accusative, partitive) / as case of direct object
    I.e., the accusative is more natural than the partitive. – In Finnish, the accusative is the usual case of the direct object. According to the frequency criterion, item (d) in the list of axioms.

    1.2. >nat (imperfective, perfective) / verbal aspect
    I.e., the imperfective verbal aspect is more natural than the perfective verbal aspect. – It is easier to perceive a verbal act as whole in the perfective than in the imperfective verbal aspect. This circumstance is presumably in the interest of the hearer (decoder), and therefore the perfective verbal aspect must be mentioned in slot B of the scale. According to the criterion of favourable for the hearer, item (a) in the list of axioms. Variants of scale 1.2 have been in fashion for at least seventy years.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes between the accusative and the partitive as the cases of the direct object such that one case combines with the perfective aspect and

the other case combines with the imperfective aspect, then it is the accusative that tends to combine with the perfective aspect and it is the partitive that tends to combine with the imperfective aspect. Q.E.D. (The reverse situation is not expected.)

(20) = H&T (74) **Palauan** (a Malayo-Polynesian language). If the verb is in the imperfective aspect, there is no agreement between the verb and the direct object. If the verb is in the perfective aspect, there is agreement between the verb and the direct object.

A ngalęk   a milęnga   a ngikęl.
child   eat(IMPF)   fish
'The child was eating the fish.'

A ngalęk   a kill-ii   a ngikęl.
child   eat(PERF)-AGREE   fish
'The child ate up the fish.'

The two variants: the perfective and the imperfective verbal aspects. – The deduction proceeds in the unnatural environment "transitivity".

1.   The assumptions of Natural Syntax:

    1.1. >nat (imperfective, perfective) / verbal aspect
    I.e., the imperfective verbal aspect is more natural than the perfective verbal aspect. – It is easier to perceive a verbal act as whole in the perfective than in the imperfective verbal aspect. This circumstance is presumably in the interest of the hearer (decoder), and therefore the perfective verbal aspect must be mentioned in slot B of the scale. According to the criterion of favourable for the hearer, item (a) in the list of axioms. Variants of scale 1.1. have been in fashion for at least seventy years.

    1.2. >nat (+, −) / agreement with direct object
    I.e., agreement with the direct object is more natural than the lack of such agreement. – According to the process criterion, item (f) in the list of axioms.

2.   The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3.   The consequences:
    If a language distinguishes between the perfective and the imperfective verbal aspects such that one triggers the agreement of the verb with the direct object

and the other does not trigger such agreement, then it is the perfective aspect that tends to trigger such agreement and it is the imperfective aspect that tends not to trigger such agreement. Q.E.D. (The reverse situation is not expected.)

(21) = H&T (75) **Chamorro** (a Malayo-Polynesian language). The past tense only. If the direct object is +definite, the subject is repeated before the verb as a pronominal copy. If the direct object is –definite, there is no additional pronominal subject.

Si   Juan   ha   KANNO?   i   guihan.
ART   Juan   he   ate   the   fish
'Juan ate the fish.'

Si Juan   CHUMOCHO   guihan.
ART   he ate   fish
'Juan ate fish.'

The two variants: *ha kanno?* and *chumocho* (suppletive forms of the verb 'to eat').
– The deduction proceeds in the unnatural environment "transitivity".

1.   The assumptions of Natural Syntax:

   1.1. >nat (−, +) / pronominal copy of subject
      I.e., the absence of the pronominal copy of the subject is more natural than the presence of the pronominal copy of the subject. – According to the criterion of least effort, item (b) in the list of axioms.

   1.2. >nat (+,−) / definite
      I.e., +definite is more natural than −definite. – The speaker (as the centre of communication) is +definite (in the spirit of Mayerthaler 1981: 13). According to the criterion of favourable for the speaker, item (a) in the list of axioms.

2.   The rules of chiastic alignment:

   2.1. value A tends to associate with value D,
   2.2. value B tends to associate with value C.

3.   The consequences:
   If a language distinguishes between the verbal forms *chumocho* and *ha kanno?* such that one form combines with a +definite direct object and the other form combines with a –definite direct object, then it is *chumocho* that tends to combine with the –definite direct object and it is *ha kanno* that tends to combine with the +definite direct object. Q.E.D. (The reverse situation is not expected.)

(22) = H&T (77) **Turkish**. Nominalization as direct object only. If the perfective aspect is used, nominalization stands in the accusative ending in -*ı*. Nominalization in the imperfective aspect lacks any case ending. – These data are not accurate enough. Nominalization in the accusative is not necessarily a direct object.

> Ekmek   al-mağ-I   unuttu.
> bread   take-NOMZ-ACC   forgot(3sg)
> 'He forgot to get bread.'

> Çaliş-mak-∅   istiyor.
> work-NOMZ-∅   want (3sg)
> 'He wants to work.'

The two variants: nominalization in the perfective and imperfective aspects. – The deduction does NOT proceed in the unnatural environment "transitivity", but concerns only the morphological form of the nominalization.

1.   The assumptions of Natural Syntax:

   1.1. >nat (-∅, -ı) / accusative case ending
       I.e., the absence of an ending is more natural than its presence. – According to the criterion of least effort, item (b) in the list of axioms.

   1.2. >nat (imperfective, perfective) / verbal aspect
       I.e., the imperfective verbal aspect is more natural than the perfective verbal aspect. – It is easier to perceive a verbal act as whole in the perfective than in the imperfective verbal aspect. This circumstance is presumably in the interest of the hearer (decoder), and therefore the perfective verbal aspect must be mentioned in slot B of the scale. According to the criterion of favourable for the hearer, item (a) in the list of axioms. Variants of scale 1.2 have been in fashion for at least seventy years.

2.   The rules of parallel alignment:

   2.1. value A tends to associate with value C,
   2.2. value B tends to associate with value D.

3.   The consequences:
     If a language distinguishes between the case endings -∅ and -*ı* of nominalization in the accusative such that one kind of nominalization is in the perfective aspect and the other kind of nominalization is in the imperfective aspect, then it is the ending -∅ that tends to accompany nominalization in the imperfective

aspect and it is the ending *-ı* that tends to accompany nominalization in the perfective aspect. Q.E.D. (The reverse situation is not expected.)

(23) = H&T (78) **English**. Some perfectivizing verb particles occur only with referential objects; for instance, *I ate UP the sandwich* as against the almost unacceptable *I ate UP a sandwich*. (This particular subclass of perfectivizing verb particles is called P-particles in this deduction.)

The two variants: +/−referential object. – The deduction proceeds in the unnatural environment "transitivity".

1.   The assumptions of Natural Syntax:

1.1. >nat (−, +) / P-particle
I.e., the absence of a P-particle is more natural than its presence. – According to the criterion of least effort, item (b) in the list of axioms.
A special case of 1.1:
1.1.1.   >nat (−, +/−) / P-particle
The scale assumes the permitted expanded format >nat (A, A + B) and is automatically valid because the corresponding basic scale 1.1 has been substantiated.

1.2. >nat (+, −) / referential
I.e., +referential is more natural than −referential. – The speaker (as the centre of communication) is +referential (in the spirit of Mayerthaler 1981: 13). According to the criterion of favourable for the speaker, item (a) in the list of axioms.

2.   The rules of chiastic alignment:

2.1. value A tends to associate with value D,
2.2. value B tends to associate with value C.

3. The consequences:
If a language distinguishes between +referential and −referential objects such that one kind of object combines with the presence or absence of P-particles and the other kind of object combines with the absence of P-particles, then it is the +referential objects that tend to combine with the presence or absence of P-particles, and it is the −referential objects that tend to combine with the absence of P-particles. Q.E.D. (The reverse situation is not expected.)

(24) = H&T (81) **French**. In an affirmative clause the partitive direct object is accompanied by the definite article. In a negative clause the definite article is lacking.

Nous   avons   du   pain.
we   have   PART-the bread
'We have (some) bread.'

Nous   n'avons   plus   de   pain.
we   NEG-have   more   PART   bread
'We have no more bread.'

The two variants: the presence and absence of the definite article in a partitive direct object. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (−, +) / definite article
         I.e., the absence of the definite article is more natural than its presence.
         – According to the criterion of least effort, item (b) in the list of axioms.

    1.2. >nat (affirmative, negative) / clause
         I.e., an affirmative clause is more natural than a negative clause. – The affirmative is usually zero coded in languages. According to the criterion of least effort, item (b) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes (within the partitive direct object) between the presence and absence of the definite article such that one alternative is realized in the affirmative clause and the other alternative in the negative clause, then it is the presence of the definite article that tends to be realized in the affirmative clause and it is the absence of the definite article that tends to obtain in the negative clause. Q.E.D. (The reverse situation is not expected.)

(25) = H&T (p. 277) **Finnish**. The direct object of the affirmative clause stands in the accusative; the direct object of the negative clause stands in the partitive. – These data are not accurate enough: the partitive stands for the accusative even in adverbial phrases that answer the questions *How far?*, *How long?*, *How often?*, and *How many times?* if

the clause is negative (according to H&T's own source, Fromm & Sadeniemi 1956: 140–141). Consequently, it is not transitivity that is at stake but the partitive itself (in the object and adverbial usage). The partitive also has several usages in affirmative clauses.

The two variants: the accusative and the partitive. – The deduction does NOT proceed in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (accusative, partitive) / as case of direct object
    I.e., the accusative is more natural than the partitive. – In Finnish, the accusative is the usual case of the direct object. According to the frequency criterion, item (d) in the list of axioms.

    1.2. >nat (affirmative, negative) / clause
    I.e., an affirmative clause is more natural than a negative clause. – The affirmative is usually zero coded in languages. According to the criterion of least effort, item (b) in the list of axioms.
    A special case of 1.2:
    1.2.1.   >nat (affirmative only, affirmative & negative) / clause
    The scale assumes the permitted expanded format >nat (A, A + B) and is automatically valid because the corresponding basic scale 1.2 has been substantiated.

2. The rules of parallel alignment:

    2.1. value A tends to associate with value C,
    2.2. value B tends to associate with value D.

3. The consequences:
    If a language distinguishes between the accusative and the partitive such that one case is used in affirmative clauses only and the other case is used both in affirmative and negative clauses, then it is the accusative that tends to be used in affirmative clauses only, and it is the partitive that tends to be used both in affirmative and negative clauses. Q.E.D. (The reverse situation is not expected.)

(26) = H&T (82) **Spanish**. If the direct object is introduced by a preposition, the relative clause associated with the direct object is in the indicative mood. If the direct object lacks any preposition, the relative clause associated with the direct object is in the subjunctive.

Busco a un empleado que habla inglés.
I seek ACC a assistant who speak(INDIC) English
'I'm looking for an assistant who speaks English.'

Busco un empleado que hable inglés.
I seek a assistant who speak(SUBJUNC) English
'I'm looking for an assistant who speaks English.'

The two variants: the direct object with and without a preposition. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

   1.1. >nat (−, +) / preposition *a*
   I.e., the absence of the preposition *a* is more natural than its presence. – According to the criterion of least effort, item (b) in the list of axioms.

   1.2. >nat (indicative, subjunctive) / mood
   I.e., the indicative mood is more natural than the subjunctive. – The indicative mood is often zero coded. – According to the criterion of least effort, item (b) in the list of axioms.

2. The rules of chiastic alignment:

   2.1. value A tends to associate with value D,
   2.2. value B tends to associate with value C.

3. The consequences:
   If a language distinguishes (within the direct object and the associated relative clause) between the direct object introduced by a preposition and the direct object lacking a preposition such that the verb of one relative clause is in the indicative mood and the verb of the other relative clause is in the subjunctive, then it is the direct object introduced by a preposition that tends to have the corresponding relative clause in the indicative mood and it is the direct object lacking a preposition that tends to have the corresponding relative clause in the subjunctive. Q.E.D. (The reverse situation is not expected.)

(27) = H&T (84) **Chimwiini** (a Bantu language of Somalia). If the direct object is a non-reflexive noun phrase, the verb agrees with it. If the direct object is a reflexive pronoun, the agreement is lacking.

Mw-a:na ∅-m-łumiłe nu:ru.
child SP-OP-bit Nuru
'The child bit Nuru.'

Mw-aːna   ∅-łumiłe   ruːhu-y-e.
child   SP-bit   himself
'The child bit himself.'

The two variants: a reflexive pronoun and another noun phrase as direct object. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

    1.1. >nat (reflexive pronoun, other noun phrase)
    I.e., a reflexive pronoun is more natural than another noun phrase. – A reflexive pronoun is a small class, whereas another noun phrase is a large class. According to the criterion of small vs. large class, item (e) in the list of axioms.

    1.2. >nat (+, −) / agreement of verb with direct object
    I.e., agreement with the direct object is more natural than lack of such agreement. – According to the process criterion, item (f) in the list of axioms.

2. The rules of chiastic alignment:

    2.1. value A tends to associate with value D,
    2.2. value B tends to associate with value C.

3. The consequences:
    If a language distinguishes (within the direct object) between the reflexive pronoun and "other" noun phrase such that the verb agrees with one unit and not with the other, then it is the reflexive pronoun that tends not to have agreement with the verb and it is the "other" noun phrase that tends to have agreement with the verb. Q.E.D. (The reverse situation is not expected.)

(28) = H&T (86) **Russian**. Numerous transitive verbs become intransitive if they are added the morpheme for reflexivity; for instance, *načinat'* 'to begin (trans.)' as opposed to *načinat'sja* 'begin (intrans.)'.

The two variants: the type *načinat'* and the type *načinat'sja*.

1. The assumptions of Natural Syntax:

    1.1. >nat (type *načinat'sja*, type *načinat'* + direct object)
    I.e., the type *načinat'sja* is more natural than the type *načinat'* + direct object. – According to the criterion of least effort, item (b) in the list of axioms.

1.2. >nat (−, +) / transitivity
   I.e., intransitivity is more natural than transitivity. – On the average intransitive constructions realize fewer participants than transitive constructions. – According to the criterion of least effort, item (b) in the list of axioms.

2. The rules of parallel alignment:

   2.1. value A tends to associate with value C,
   2.2. value B tends to associate with value D.

3. The consequences:
   If a language distinguishes between the type *načinat'* and the type *načinat'sja* such that one type expresses transitivity and the other type expresses intransitivity, then it is the type *načinat'* that tends to express transitivity and it is the type *načinat'sja* that tends to express intransitivity. Q.E.D. (The reverse situation is not expected.)

4. Note.
   The same situation is found in French (*ouvrir* 'open (trans.)', *s'ouvrir* 'open (intrans.)', H&T (85)) and in Slovenian.

Conclusion

The above illustration testifies that Natural Syntax is capable of predicting a significant amount of language situations, given a small number of presuppositions (i.e., the particular description of language data adopted, the choice of variants, the naturalness scales, the alignment rules) and a modest apparatus (namely, the deduction format).

The development of Natural Syntax is to be continued exploiting as variegated language material as possible.[7,8]

---

[7] A reviewer's comment: "It is not explained on what grounds some environments are proclaimed natural and others unnatural." All unnatural environments are explained in the paper. Any natural environments are the default case.

[8] A reviewer's comment: "The mode of presentation is extremely monotonous." I agree that the paper is tedious. However, this depends in great part on my main source of language material, which some might describe as similarly tedious in the first place. As the lasting quality of my main source (Hopper and Thompson 1980) testifies, a (somewhat) tedious paper need not be a bad paper.

ABBREVIATIONS

ACC	accusative
AGREE	agreement marker
ART.	article
COMP	'completive' morpheme
DAT	dative
DEF	definiteness marker
GEN	genitive
IMPF	imperfective aspect
INDIC	indicative mood
NEG	negation
NOMZ	nominalization marker
OBJ	object marker; objective conjugation
OP	object prefix
PART	partitive
PERF	perfective aspect
SP	subject prefix
SUBJUNC	subjunctive mood

REFERENCES

Andersen, H. 1972. "Diphthongization". *Language* 48. 11–50.

Collins Cobuild English Grammar. 1990. London: HarperCollins.

Cvetko-Orešnik, V. and J. Orešnik. 2007. "Natural Syntax: Three-value naturalness scales". *Slovenski jezik. Slovene linguistic studies* 6. 235–249.

Fromm, H. and M. Sadeniemi. 1956. *Finnisches Elementarbuch. I. Grammatik.* Heidelberg: Winter.

Havers, W. 1931. *Handbuch der erklärenden Syntax*. Heidelberg: Winter.

Hopper, P.J. and S.A. Thompson. 1980. "Transitivity in grammar and discourse". *Language* 56. 251–299.

Mayerthaler, W. 1981. *Morphologische Natürlichkeit*. Wiesbaden: Athenaion.

Orešnik, J. 2007a. "Natural Syntax: Negation in English". *Poznań Studies in Contemporary Linguistics* 43. 97–111.

Orešnik, J. 2007b. "Natural syntax: The grammatical person of personal pronouns". *Sprachtypologie und Universalienforschung* 60. 293–313.

Orešnik, J. 2007c. "Natural syntax: English interrogative dependent clauses". *Razprave* 20 (Ljubljana). 191–208.

Orešnik, J. 2007d. "Natural syntax: English dependent clauses". *Studia Anglica Posnaniensia* 43. 219–236.

Orešnik, J. 2007e. "Natural syntax: English interrogative main clauses". *Linguistica* 47. 35–48.

Orešnik, J. 2008. "Natural syntax: English relative clauses". *Poznań Studies in Contemporary Linguistics* 44. 61–101.

Sugita, H. 1973. "Semitransitive verbs and object incorporation in Micronesian languages".
     Oceanic Linguistics 12. 393–406.

Address correspondence to:
Janez Orešnik
Faculty of Arts
Aškerčeva c. 2
1000 Ljubljana
Slovenia
janez.oresnik@sazu.si