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Natural Syntax: An Introduction and Application to Special Linguistic Properties

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Abstract

Natural Syntax is a pseudo-deductive linguistic theory, and this is its most recent version. The naturalness judgements are couched in naturalness scales, which follow from the basic parameters (or "axioms") listed at the beginning of this 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. Parallel and chiastic alignment are distinguished and related to Henning Andersen's early work on markedness. The basic idea is to illustrate how a (pseudo)deductive theory of syntax performs if it insists on avoiding abstract solutions, and in particular on excluding any generative component. Natural Syntax is exemplified here with (mostly individual) cases from the following languages: Chichewa, Gunin, Kambera, Northern Sotho, Saliba, Slovenian, Southern Tiwa, Wakiman, and Welsh.

Keywords: naturalness, syntax, transitivity, English, African languages, Australian languages

1. Introduction

Natural Syntax is a pseudo-deductive linguistic theory and this is its most recent version. Natural Syntax determines the presuppositions on the background of which a (morpho)syntactic state of affairs can be made predictable, and thus synchronically explained. The two basic kinds of presuppositions are naturalness scales and rules of alignment among the corresponding values of any two scales. Every (morpho)syntactic state of affairs is represented by two comparable variants. Natural Syntax contains no generative component.

Natural Syntax is a special case of the approach usually called Naturalness, which arose as a reaction against the abstractness of generative grammars. (This abstractness was first embodied in the former distinction between deep and corresponding surface structures). Initially Naturalness was active in phonology (Stampe, 1979) and – to a much greater extent – in morphology (Mayerthaler, 1981; cf. also various works by Dressler; e.g., Kilani-Schoch & Dressler, 2005). The present author added syntax about 1985. Natural Syntax (as my framework is dubbed) introduced a new set of basic criteria and confined the processed language material to what could be assumed to constitute pairs of variants (rather than single structures). Natural Syntax is a deductive theory except that the basic criteria are not couched in mathematical terms, and

thus not true axioms. Therefore Natural Syntax is better described as pseudo-deductive.

The present state of the art can be summarised as follows. Natural Syntax does not perform as efficiently as generative grammars; this circumstance is partly counterbalanced by the much simpler apparatus of Natural Syntax. However, Natural Syntax is interesting in its own right because it has developed a few (not language-particular) distinctions presumably lacking in generative grammars. Restricting myself to what is presented in greater detail below, I mention natural and unnatural environments (crucially combined with parallel and chiastic alignments).

The basic format of my naturalness scales is >nat (A, B), where A is more natural than B. Two expanded scales are allowed, viz. >nat (A + B, B) and >nat (A, A + B); these are valid if the corresponding scale of the format >nat (A, B) is valid. Exemplification below.

I proceed to list the criteria by which Natural Syntax substantiates naturalness scales. (The following basic criteria (a–h) are sometimes referred to as axioms in this paper in order to draw attention to the circumstance that the criteria are presupposed.

1.1. Axioms

a. The speaker/hearer parameter

In the scale >nat (A, B), value A is natural for the speaker (and unnatural for the hearer); value B is unnatural for the speaker (and natural for the hearer). The basic naturalness scale is >nat (favourable for the speaker, favourable for the hearer). This view of naturalness is commonplace in linguistics (Havers, 1931, p. 171) under the names of tendency to economise (utilised first of all by the speaker) and tendency to be accurate (mainly in the hearer's interest).

Regarding the principle of least effort by Zipf (1949) and its later use in Natural Phonology and Natural Morphology, I acknowledge the importance of Zipf and the fruitful exploitation of Zipf in much subsequent work. However, my analysis neglects Zipf for two reasons: (i) Havers (1931), whom I do mention, is an earlier work than Zipf's and (ii) in Zipf's monograph, economy of expression and frequency are intertwined, whereas in Natural Syntax they are separated so that my criterion (b) refers to the length of expression and my criterion (d) refers to text frequency. The separation is necessary because both of my criteria also cover situations other than length of expression in relation to frequency.

I follow Mayerthaler (1981, p. 13 ff.) in assuming that the speaker is the centre of communication. Therefore, 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, and so on.

What is favourable for the hearer may be less natural for the speaker. This is a pivotal point in Natural Syntax and will be maintained until some good counterexample nullifies it. By way of illustration, it can be pointed out that producing a longish noun phrase may be "tiresome" for the speaker (= less

natural for him), but may ease the hearer's decoding process considerably (= be more natural for the hearer).

Regarding speaker/hearer tension, Natural Phonology and Natural Morphology have never treated syntax. It is by no means certain that (some of) the criteria valid in Natural Phonology or Natural Morphology are also valid in Natural Syntax (although this might be the case). For instance, Natural Syntax insists that text frequency is so essential in syntax that the copula ('be'), being the most frequent verb, is the most natural verb of Natural Syntax (in the languages that do have the copula), and so on. Any similarities between Natural Morphology (of Dressler and others) and Natural Syntax (the Slovenian approach) are only similarities; in other words, both areas of research are responsible for their own criteria notwithstanding how similar some of the criteria might look.

b. The principle of least effort (Havers, 1931, p. 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. As a rule of thumb, what is located at the margin of a construction is less natural (for the speaker) than what is placed inside a construction. This is because the positions at the beginning and at the end of any construction are especially interesting for the hearer. Recall the location of the topic clause-initially and of the rhematic material clause-finally. Everything favourable for the hearer is less favourable for the speaker, and therefore clause-medial material must be mentioned in slot A of the scales. As a reviewer pointed out, this is the psycholinguistic bathtub effect.

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).

This seeming reversal of naturalness (frequency first over naturalness) relates to Natural Syntax thus: natural(ness) is the basic predicate, but in Natural Syntax it is specified (exhaustively, I hope) in terms of the criteria (a–h) (serving only for syntactic purposes). No criterion is superordinate to naturalness. What counts are the criteria adopted. Incidentally, my criteria must be treated as presupposed (i.e., as not to be questioned); they can only be falsified through their algorithmic application to language material.

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. (This is

frequency typewise). The expression "frequency typewise" refers to the kind of frequency that can be culled from lists of units or constructions.

f. The process criterion
Any process is natural. Examples of processes: movement, agreement, imitation.

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.

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 realised in more languages. I have been applying the criteria (a−h) above to language material covering several languages and miscellaneous (morpho-)syntactic states of affairs (recent references: Cvetko-Orešnik & Orešnik 2009, Orešnik 2009a−c.) 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 will preserve the present list (a–h) 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; that is, falsifiability. I am afraid that any improvement of the axioms would lead to a reduction of the chances for this desirable definitive outcome.

The criteria of naturalness above are utilised to support my naturalness scales. Normally it suffices to substantiate any scale with one criterion that 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 no convincing 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:

1.2. Example of a Deduction

In 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, pp. 270–271).

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

a. The assumptions of Natural Syntax:
   i. >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. With regard to regularity and the economy thereof, the type *four times* is more transparent than the type *once*. Therefore the type *four times* is easier for the hearer to decode and must be mentioned in slot B of the scale (where everything favourable for the hearer is located). The concomitant regularity and economy of the type *four times* are regularity and economy from the standpoint of the hearer. On the other hand, the type once is natural (also economical) from the standpoint of the speaker.

   ii. >nat (low, non-low) / number
   I.e., any low number is more natural than any non-low number (Mayerthaler 1981, p. 15). Low numbers are more easily accessible to the speaker. According to the speaker/hearer criterion, item (a) in the list of axioms.

b. The rules of parallel alignment of corresponding values:
   i. value A tends to associate with value C,
   ii. value B tends to associate with value D. See Note 4.1 below.

c. The consequences:
If the 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).

d. Notes
   i. 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). This is similar in the remaining deductions, with the proviso that the alignment (unlike here) can be chiastic. Chiastic alignment is explained below.
   ii. Natural Syntax cannot predict the cut-off point between low and non-low numerals. As a reviewer pointed out, there are typological preferences. For example, Latin as morphology-rich goes further up with simple numeral expressions than do Romance and modern Germanic languages.
   iii. Henning Andersen (p.c.) has pointed out to me that there is a parallel system covering numerical indications of frequency: *one additional time, two/three/four additional times*, and so on, which does not make use of the dichotomy treated in the deduction above. Donald Reindl (p.c.) has added *one more time, two/three/four more times*, and so on. As a reviewer commented, these constructions are more complex and are less frequent.

iv. In Item c., the use of the verb *tend* is important. The principled implication is that any language phenomenon can have exceptions.

This deduction maintains that the state of affairs cannot be the reverse; that is, that the 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 Natural Syntax are restricted to such modest claims about the unlikelihood of the reverse situation.

The following are the deduction-internal presuppositions that must be accepted for the consequences (in fact, predictions) stated in Item c. of any deduction to obtain:

a. The description of the language data adopted in the deduction;
b. The choice of the two variants treated in the deduction;
c. The choice of the natural or the unnatural environment in which the deduction proceeds;
d. The choice of the naturalness scales that form the basis of the computation within the deduction.

In every deduction, the rules of alignment play a prominent role; compare item 2 in the deduction above. 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.

1.3. Parallel and Chiastic Alignment

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).

An example. In the scale >nat (main, dependent) / clause, the value "dependent clause" is an unnatural environment. This means: all deductions whose language data lie within the environment "dependent clause" require the implementation of chiastic alignment.

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. Although Natural Syntax in principle does not deal with semantic phenomena, it does sometimes happen that semantics is involved in a deduction. My experience so far suggests that semantic phenomena block chiastic alignment within such a deduction. 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 formal wear marked; on a festive occasion it is the formal wear that is unmarked, whereas casual wear is marked. See Andersen (1972, p. 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.

1.4. Goals

The purpose of this paper is twofold: (i) to acquaint the reader with Natural Syntax, and (ii) to demonstrate how Natural Syntax treats languages whose properties are somewhat special compared to Average Standard European. (This does not apply to English, which is also included below.) The results of my past work show that Natural Syntax is probably efficient in all languages. To facilitate the reader's initiation, the illustration is as simple as possible.

The remainder of this paper is couched in the format of deductions. A brief conclusion ends the paper.

2. Northern Sotho Word Order

Northern Sotho is a Bantu language spoken in South Africa. Its basic word order is SVO. This word order lacks agreement of the subject and the object with the finite verb. All other word orders do trigger such agreement. For instance, *mpša ngwana e-mo-lomilê* (dog child bit) 'as for the dog, it bit the child'. Here the word order is SOV (arrived at through the movement of the object before the verb). Consequently, the finite verb *lomilê* has acquired the prefixes of (the noun classes of) the subject and object (Tallerman, 2005, pp. 59, 168, citing Louwrens et al., 1995).

The two variants: +/−basic word order.

a. The assumptions of Natural Syntax:

   i. >nat (−, +) / basic word order

   I.e., "other" word orders are more natural than the basic word order. The basic word order, being the expected word order, is easier for the hearer to decode than "other" word orders. Therefore the basic word order must be mentioned in slot B of the scale. According to the speaker/hearer criterion, item (a) in the list of axioms.

   ii. >nat (+, −) / agreement of subject and object with finite verb

   I.e., realisation of agreement is more natural than its lack. Agreement is a process. All processes are natural according to the process criterion, item (f) in the list of axioms.

b. Parallel alignment applies

c. The consequences:

If the language distinguishes between the word order SVO and "other" word orders such that one option triggers agreement of the subject and the object with the finite verb and the other option does not trigger agreement, then it is the "other" word orders that tend to trigger agreement and it is SVO that tends not to trigger agreement. Q.E.D. (The reverse situation is not expected.)

3. Welsh Subject–Finite Verb Agreement

Welsh is a Celtic language. Subject–finite verb agreement is realised only if the subject is a personal pronoun; for instance, the verbal form *gwel-son* 'see (past:3pl)' can combine with the personal-pronoun subject *nhw* 'they', but not with the (full noun phrase) subject *fy ffrind-iau* 'my friends' (Tallerman, 2005, p. 66–67).

The two variants: +/−agreement of the subject with the finite verb.

a. The assumptions of Natural Syntax:

i. >nat (personal pronoun, "other") / subject

I.e., a personal pronoun is more natural than "other" noun phrases. – According to the criterion of least effort, item (b) in the list of axioms.

ii. >nat (+, −) / agreement of subject with finite verb

I.e., realisation of agreement is more natural than its lack. Agreement is a process. All processes are natural according to the process criterion, item (f) in the list of axioms.

b. Parallel alignment applies

c. The consequences:

If the language distinguishes between personal-pronoun subjects and "other" subjects such that one option triggers agreement of the subject with the finite verb and the other option does not trigger agreement, then it is the personal-pronoun subject that tends to trigger agreement and it is "other" subjects that tend not to trigger agreement. Q.E.D. (The reverse situation is not expected).

4. Gunin Noun Classes

Gunin is an Australian language. There are five noun classes; one covers +human nouns, and four the rest (Tallerman, 2005, p. 59, citing McGregor, 1993). The two variants: +/−human noun classes.

a. The assumptions of Natural Syntax:

i. >nat (+, −) / human noun class

I.e., +human is more natural than −human (Mayerthaler, 1981, p. 14). The speaker is the centre of communication and he is +human according to the speaker/hearer criterion, item (a) in the list of axioms.

ii. >nat (small, large) / number of noun classes
I.e., a small class is more natural than a large class. This is the very criterion of small vs. large class, item (e) in the list of axioms.

b. Parallel alignment applies

c. The consequences:
If the language distinguishes between +human and −human noun classes such that one option is a small number of noun classes and the other option is a large number of noun classes, then it is the number of +human noun classes that tends to be small and it is the number of −human noun classes that tends to be large. Q.E.D. (The reverse situation is not expected).

d. Note:
Natural Syntax cannot predict that the number of +human noun class will be one and the number of −human noun classes four.

5. Wakiman Finite and Non-Finite Verbs

Wakiman is an Australian language. Wakiman distinguishes finite and non-finite verbal forms, the former used with only about 35 verbs (Tallerman, 2005, p. 76).

The two variants: a list of finite and non-finite verbs, and a list of non-finite verbs.

a. The assumptions of Natural Syntax:
i. >nat (finite, non-finite) / verb
I.e., a finite verb is more natural than a non-finite verb. Cross-linguistically, most independent sentences (clauses) contain a finite verb (Tallerman, 2005, p. 70). Because independent sentences are widespread, finite verbs are widespread, and therefore natural according to the typological criterion, item (h) in the list of axioms.
A special case of i.:

i.i. >nat (finite & non-finite, only non-finite) / verb
Scale 1.1.1 assumes the permitted expanded format >nat (A + B, B) and is automatically valid because the corresponding basic scale 1.1 has been substantiated.

ii. >nat (small, large) / list of verbs
I.e., a small class is more natural than a large class. This is the very criterion of small vs. large class, item (e) in the list of axioms.

b. Parallel alignment applies

c. The consequences:
If the language distinguishes between a list containing finite and non-finite verbs and a list of remaining non-finite verbs such that one option constitutes a small class and the other option constitutes a large class, then it is the list containing

finite and non-finite verbs that tends to constitute a small class and it is the list of remaining non-finite verbs that tends to constitute a large class. Q.E.D. (The reverse situation is not expected.).

d. Notes
   i. Natural Syntax cannot predict that the list containing finite and non-finite verbs will comprise about 35 items and that the list of remaining non-finite verbs will be open.
   ii. Many languages allow the finite forms of only one or two verbs in some of their tenses. As an example, cf. deduction (6).
   iii. In Item i.i. a well-formed expanded scale has been invoked (and there will be additional cases below). Because expanded scales are used at the discretion of the author (to improve a deduction that would otherwise not yield a correct prediction), an expanded scale must be considered as one of the several deduction-internal presuppositions of an equal footing that have to be valid for the prediction of the deduction to be correct.

6. Slovenian Auxiliary 'be'

Slovenian is a Slavic language. The finite verb 'be' qua auxiliary is not allowed in the present tense, but is obligatory in all other tense forms (author's data).

The two variants: +/−auxiliary 'be'.

a. The assumptions of Natural Syntax:
   i. >nat (−, +) / auxiliary 'be'
   I.e., the absence of auxiliary 'be' is more natural than its presence. – According to the criterion of least effort, item (b) in the list of axioms. Auxiliary 'be', when present in the predicate, is superfluous and prone to ellipsis under suitable conditions.

   ii. >nat (+, −) / present tense
   I.e., the present tense is more natural than other tenses (Mayerthaler, 1981, p. 14). The present tense is zero coded in many languages, and therefore natural according to the criterion of least effort, item (b) in the list of axioms.

b. Parallel alignment applies

c. The consequences:

If the language distinguishes, within finite verbs, between the presence and absence of auxiliary 'be' such that one option obtains in the present tense and the other option obtains in the remaining tenses, then it is the absence of auxiliary 'be' that tends to obtain in the present tense and it is the presence of auxiliary 'be' that tends to obtain in the remaining tenses. Q.E.D. (The reverse situation is not expected).

d. Notes
   i. Slovenian also has copular ‘be’, to which this deduction does not apply.
   ii. Notice that English exclusively uses auxiliary *have* as a finite verb in its perfect tense forms.

7. Southern Tiwa Active and Passive

Southern Tiwa is spoken in New Mexico. This language distinguishes active and passive, but the passive is unacceptable with first-person agents and/or patients (Tallerman, 2005, pp. 64–65, citing Allen & Frantz, 1978, 1983). The two variants: the active and the passive.

a. The assumptions of Natural Syntax:
   i. >nat (active, passive)
   I.e., the active is more natural than the passive (Mayerthaler, 1981, p. 15). The active is much more frequent textwise than the passive, and therefore the active is natural according to the frequency criterion, item (d) in the list of axioms.

   ii. >nat (1, 2/3) / person of agent/patient
   I.e., the first person is more natural than the non-first person (Mayerthaler, 1981, p. 14). The speaker is the centre of communication and he is the first person. Therefore the first person is natural according to the speaker/hearer criterion, item (a) in the list of axioms.
      A special case of ii.:

      ii.i. >nat (1 & 2/3, only 2/3) / person of agent/patient
      Scale ii.i. assumes the permitted expanded format >nat (A + B, B) and is automatically valid because the corresponding basic scale ii. has been substantiated.

b. Parallel alignment applies

c. The consequences:
If the language distinguishes between the active and the passive such that one option can be used in all persons and the other option is used only in non-first persons, then it is the active that tends to be used in all persons and it is the passive that tends to be used only in non-first persons. Q.E.D. (The reverse situation is not expected).

8. Chichewa Active and Passive

Chichewa is a Bantu language spoken in Malawi and elsewhere. The language distinguishes the active and the passive. Both are expressed synthetically; for instance, the active *a-na-b-a* ‘he stole’, the passive *a-na-b-edw-a* ‘it was stolen’ (Tallerman, 2005, p. 58, citing Baker, 1988). The two variants: the type *a-na-b-a* and the type *a-na-b-edw-a*.

a. The assumptions of Natural Syntax:
   i. >nat (active, passive)
   I.e., the active is more natural than the passive. The active is much more frequent textwise than the passive, and therefore the active is natural according to the frequency criterion, item (d) in the list of axioms.

   ii. >nat (type *a-na-b-a*, type *a-na-b-edw-a*)
   I.e., the type *a-na-b-a* is more natural than the type *a-na-b-edw-a*. – According to the criterion of least effort, item (b) in the list of axioms.

b. Parallel alignment applies

c. The consequences:
If the language distinguishes between the type *a-na-b-a* and the type *a-na-b-edw-a* such that one type is used in the active and the other type is used in the passive, then it is the type *a-na-b-a* that tends to be used in the active and it is the type *a-na-b-edw-a* that tends to be used in the passive. Q.E.D. (The reverse situation is not expected.)

d. Note
The situation is similar in many languages; only the means may be (partly) analytic. So far it has been appropriate to implement only (default) parallel alignment, whereas the following deductions are couched in an unnatural environment (specified and substantiated each time separately), so that chiastic alignment applies. As a halfway (perhaps pedagogical) example, two deductions are now adduced, both covering the same language material, yet the first deduction (correctly) uses parallel alignment and the other deduction cannot avoid chiastic alignment.

9. Slovenian Masculine and Feminine Gender

Slovenian is a Slavic language primarily spoken in Slovenia. Three genders are distinguished with nouns: masculine, feminine and neuter. All three genders contain +human and −human nouns, but +human nouns are rare in the neuter gender and therefore neuter gender will be disregarded below. In several dialects +human females use the masculine gender; for instance, ‘she went to the shop’ is expressed with ‘he went to the shop’ (Bešter, 1998 and my data). This and the following deduction treat only these special dialects.

The two variants: the masculine and the feminine gender.

a. The assumptions of Natural Syntax:
   i. >nat (masculine, feminine) / gender
   I.e., the masculine gender is more natural than the feminine gender (Mayerthaler, 1981, p. 15). In many languages the masculine gender, unlike the feminine gender, is zero coded, and therefore natural according to the criterion of least effort, item (b) in the list of axioms.

ii. >nat (+, −) / human
I.e., +human is more natural than −human (Mayerthaler, 1981, p. 14). The speaker is the centre of communication and he is +human. According to the speaker/hearer criterion, item (a) in the list of axioms.

A special case of ii:

ii.i. >nat (+/−, −) / human
Scale ii.i assumes the permitted expanded format >nat (A + B, B) and is automatically valid because the corresponding basic scale 1.2 has been substantiated.

b. Parallel alignment applies

c. The consequences:
If the language distinguishes between the masculine and the feminine genders such that one gender allows both +human and −human nouns and the other gender allows only −human nouns, then it is the masculine gender that tends to allow both +human and −human nouns and it is the feminine gender that tends to allow only −human nouns. Q.E.D. (The reverse situation is not expected.).

d. Note: Cf. deduction (10).

10. Slovenian +/−human Feminine Gender

Slovenian is a Slavic language primarily spoken in Slovenia. Three genders are distinguished with nouns: masculine, feminine and neuter. All three genders contain +human and −human nouns, but +human nouns are rare in the neuter gender and therefore neuter gender will be disregarded below. In several dialects +human females use the masculine gender; for instance, 'she went to the shop' is expressed with 'he went to the shop' (Bešter, 1998 and my data). This and the previous deduction treat only the special dialects.

The two variants: (in the feminine gender) +/−human noun. The deduction proceeds in the unnatural environment "feminine gender", culled from the scale >nat (masculine, feminine) / gender, substantiated above in deduction (9).

a. The assumptions of Natural Syntax:
i. >nat (+, −) / human
I.e., +human is more natural than −human (Mayerthaler, 1981, p. 15). The speaker is the centre of communication and he is +human. According to the speaker/hearer criterion, item (a) in the list of axioms.

ii. >nat (+, −) / human
I.e., what is acceptable is more natural than what is not acceptable. This is the very criterion of acceptability, item (g) in the list of axioms.

b. Chiastic alignment applies

c. The consequences:
If the language distinguishes (in the feminine gender) between +human and −human nouns such that one option is acceptable and the other option is not acceptable, then it is the +human noun that tends not to be acceptable and it is the −human noun that tends to be acceptable. Q.E.D. (The reverse situation is not expected).

d. Note: Cf. deduction (9).

11. Saliba Noun Phrases

Saliba is a language spoken in Papua New Guinea. Noun phrases (not nouns) can receive a plural ending only if they are +human; for instance, *natu-gu* 'my child', *natu-gu-wao* 'my children' (Tallerman, 2005, p. 53, citing Mosel, 1994).

The two variants: +/−human noun phrases. The deduction proceeds in the unnatural environment "noun phrase", culled from the scale >nat (noun, noun phrase), and supported with the criterion of least effort, item (b) in the list of axioms.

a. The assumptions of Natural Syntax:
   i. >nat (+, −) / human noun phrase
   I.e., +human is more natural than −human (Mayerthaler, 1981, p. 14). The speaker is the centre of communication and he is +human. According to the speaker/hearer criterion, item (a) in the list of axioms.

   ii. >nat (singular, plural)
   I.e., the singular is more natural than the plural (Mayerthaler, 1981, p. 15). In many languages the singular is zero coded, and therefore natural according to the criterion of least effort, item (b) in the list of axioms.
   A special case of ii.

   ii.i. >nat (only singular, singular & plural)
   Scale 1.2.1 assumes the permitted expanded format >nat (A, A + B) and is automatically valid because the corresponding basic scale 1.2 has been substantiated.

b. Chiastic alignment applies
   i. value A tends to associate with value D,
   ii. value B tends to associate with value C.

c. The consequences:
If the language distinguishes between +human and −human noun phrases such that one option has only singular forms and the other option has both singular and plural forms, then it is the +human noun phrase that tends to have both singular and plural forms and it is the −human noun phrase that tends to have only singular forms. Q.E.D. (The reverse situation is not expected).

12. Welsh Cardinal Numerals

Welsh is a Celtic language. Although the singular and the plural are distinguished, the plural is not used with cardinal numerals; for instance, *ci* 'dog', *cŵn* 'dogs', but *pedwar ci* 'four dogs' (Tallerman, 2005, p. 53).

The two variants: (with cardinal numerals) the singular and the plural. The deduction proceeds in the unnatural environment "phrasal noun phrase", culled from the scale >nat (bare, phrasal) / noun phrase, substantiated according to the criterion of least effort, item (b) in the list of axioms.

a. The assumptions of Natural Syntax:

i. >nat (−, +) / cardinal numeral in the noun phrase

I.e., the absence of a cardinal numeral is more natural than the presence of a cardinal numeral. According to the criterion of least effort, item (b) in the list of axioms.

ii. >nat (singular, plural) / noun phrase

I.e., the singular is more natural than the plural. In many languages the singular is zero coded, and therefore natural according to the criterion of least effort, item (b) in the list of axioms.

A special case of ii.:

ii.i. >nat (only singular, singular & plural)

Scale ii.i assumes the permitted expanded format >nat (A, A + B) and is automatically valid because the corresponding basic scale 1.2 has been substantiated.

b. Chiastic alignment applies

c. The consequences:

If the language distinguishes between the presence and the absence of a cardinal numeral in the noun phrase such that one option is used in the singular noun phrase and the other option is used both in the singular and in the plural noun phrase, then it is the presence of a cardinal numeral that tends to be limited to the singular noun phrase and it is the absence of a cardinal numeral that tends to allow the use of both the singular and the plural noun phrase. Q.E.D. (The reverse situation is not expected).

13. Kambera Personal Pronouns as Affixes

Kambera is spoken on the Pacific island of Sumba. Personal-pronoun subjects and personal-pronoun objects are affixes on the verb: the subjects are prefixes, the objects are suffixes; for instance, *ku-ita-ya* 'I saw him/her' (Tallerman, 2005, p. 85, citing Klamer, 1994).

The two variants: personal-pronoun subject and personal-pronoun object as affix on the verb. The deduction proceeds in the unnatural environment "margin of construction", culled from the scale >nat (−, +) / margin of

construction, supported with the criterion of integration into the construction, item (c) in the list of axioms.

a. The assumptions of Natural Syntax:
   i. >nat (subject, object) / personal pronoun as affix
   I.e., the subject is more natural than the object (Mayerthaler, 1981, p. 14). Subjects are more frequent textwise than objects, and therefore subjects are natural according to the frequency criterion, item (d) in the list of axioms.

   ii. >nat (suffix, prefix)
   I.e., a suffix is more natural than a prefix (Mayerthaler, 1981, p. 106). Suffixes are more widespread in languages than prefixes, and therefore suffixes are natural according to the typological criterion, item (h) in the list of axioms.

b. Chiastic alignment applies

c. The consequences:
If the language distinguishes (within personal pronouns as affixes to the verb) between subjects and objects such that one option is a suffix and the other option is a prefix, then it is the subject that tends to be a prefix and it is the object that tends to be a suffix. Q.E.D. (The reverse situation is not expected).

14. Conclusion

The basic idea has been to illustrate how a (pseudo)deductive theory of syntax performs if it insists on avoiding abstract solutions, and in particular on excluding any generative component. The main limitation of such an approach seems to consist in compulsory reliance on language material that contains pairs of variants (aspects of whose syntactic behaviour can be made predictable using suitable presuppositions). Single constructions have no place in Natural Syntax.

This paper has applied Natural Syntax to the (morpho)syntax of various languages, primarily those with somewhat special properties (from the viewpoint of European languages). Apparently, this framework can be successfully applied even in such cases.

References

Allen, B. J., & Frantz, D. G. (1978). Verb agreement in Southern Tiwa. In J. Jaeger, A.C. Woodbury, F. Ackerman, C. Chiarello, O.D. Gensler, J. Kingston, E.E. Sweetser, H. Thompson & K.W. Whitler (eds.). *Proceedings of the Fourth Annual Meeting of the Berkeley Linguistic Society* (pp. 11-17). Berkeley: Berkeley Linguistic Society.

Allen, B. J., & Frantz, D. G. (1983). Advancements and verb agreement in Southern Tiwa. In D. Perlmutter (ed.). *Studies in relational grammar* (pp. 303−314). Chicago: University of Chicago Press.

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

Baker, M. (1988). *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.

Bešter, M. (1998). "Govorjenje na fanta" v gorenjskem narečju. In E. Kržišnik (ed.). *XXXXIV. seminar slovenskega jezika, literature in kulture*. Ljubljana: Filozofska fakulteta.

Collins Cobuild English Grammar. (1990). London: Harper Collins.

Cvetko-Orešnik, V., & Orešnik, J. (2009). Natural syntax: Expressions of future time. In S. Franks, V. Chidambaram & B. Joseph (eds.). *A linguist's linguist: Studies in South Slavic linguistics in honor of E. Wayles Browne* (pp. 167-187). Bloomington, IN: Slavica.

Havers, W. (1931). *Handbuch der erklärenden syntax*. Heidelberg: Winter.

Kilani-Schoch, M. & Dressler, W.U. (2005). *Morphologie naturelle et flexion du verbe français*. Tübingen: Narr.

Klamer, M. (1994). *Kambera: A language of eastern Indonesia*. Amsterdam: Holland Institute of Generative Linguistics.

Lowrens, L., Kosch, I.M. & Kotzè, A.E. (1995). *Northern Sotho*. Munich: Lincom Europa.

Mayerthaler, W. (1981). *Morphologische natürlichkeit*. Wiesbaden: Athenaion.

McGregor, W.B. (1993). *Gunin/Kwini*. Munich: Lincom Europa.

Mosel, U. (1994). *Saliba*. Munich: Lincom Europa.

Orešnik, J. (2009a). Transitivity in natural syntax: Accusative languages. *Poznan studies in contemporary linguistics, 45*, 405−46.

Orešnik, J. (2009b). Transitivity in natural syntax: Ergative languages. *Linguistica, 49*, 65−93.

Orešnik, J. (2009c). Natural syntax of Belfast English: (I) Subject-verb agreement (II) Imperative. *Studia Anglica Posnaniensia, 45(2)*, 107−43.

Stampe, D. (1979). *A dissertation on natural phonology*. New York: Garland.

Tallerman, M. (2005). *Understanding syntax* (2nd ed.). London: Hodder Arnold.

Zipf, G.K. (1949). *Human behaviour and the principle of least effort: An introduction to human ecology*. New York: Hafner.

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