

## NATURALNESS: SOME SYNCHRONIC DATA OF OLD INDIAN

The description of Natural Syntax is here repeated verbatim from Cvetko-Orešnik/Orešnik (ms.).

Natural Syntax is a (developing) deductive linguistic theory that 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 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.

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

I proceed to list the criteria with which Natural Syntax substantiates naturalness scales:

- (a) The speaker/hearer parameter. In the scale,  $>\text{nat} (A, B)$ , 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,  $>\text{nat}$  (favourable for the speaker, favourable for the hearer). 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).

We follow Mayerthaler (1981: 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, etc.

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 counter-example 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).

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- (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.

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.

- (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. (This is frequency typewise.)
- (f) The process criterion. Any process is natural. Examples of processes: movement, agreement.
- (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 realized in more languages.

We have been applying the above criteria (henceforth also called axioms) (a–h) to the language material covering several languages and miscellaneous (morpho-)syntactic states of affairs. Throughout our work, the criteria have compelled us, time and again, to reject certain solutions and to give precedence to other solutions. Given this encouraging experience, we will preserve the present list (a–h) until some convincing and irreparable counter-example casts doubt upon our 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. We are afraid that any improvement of the axioms would lead to a reduction of the chances for the desirable definitive outcome.

The above criteria of naturalness 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; we 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: 270-71).

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.

1.2. >nat (low, non-low) / number

I.e., any low number is more natural than any non-low number (Mayerthaler 1981: 15). – Low numbers are more easily accessible to the speaker. According to the speaker/hearer criterion, 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 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.)

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 chiasitic in most cases. Chiasitic alignment is explained below.

4.2. Natural Syntax cannot predict the cut-off point between low and non-low numerals.

4.3. Henning Andersen (p.c.) has pointed out to us that there is a parallel system covering numerical indications of frequency, *one additional time*, *two/three/four additional times*, etc., which does not make use of the dichotomy treated in the above deduction. Donald Reindl (p.c.) has added *one more time*, *two/three/four more times*, etc.

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).

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. While Natural Syntax in principle does not deal with semantic phenomena, it does happen in rare cases that semantics is involved in a deduction. Our experience so far suggests that semantic phenomena are never the cause of chiastic alignment. See deduction (3) below.

The insistence of Natural Syntax on the distinction between parallel and chiastic alignments stems indirectly from the work of Henning Andersen within the markedness theory. Andersen observes situations such as the following in all human semiotic systems: on an everyday occasion casual wear is unmarked, formal wear marked; on a festive occasion it is the formal wear 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 "every-day occasion", the alignment within (i-ii) is parallel; if the environment is "festive occasion", the alignment within (i-ii) is chiastic.

After this summary of the basic tenets of Natural Syntax I proceed to the subject-matter of the present paper. It is based on the synchronic morphosyntactic and morphological data assembled in Jamison (1983), a significant monograph on the Rig Veda and Atharva Veda *-áya-* verbs. A few introductory remarks are in order:

In the deductions adduced below unnatural environments are implemented where appropriate, namely "derivative", "causative" and "transitivity". The details:

The basic naturalness scale covering any simplexes and their derivatives is,  $>nat$  (simplex, derivative), i.e., a simplex is more natural than a corresponding derivative. The scale is supported with the circumstance that the internal structure of the derivative is usually more complicated than the internal structure of the corresponding simplex. (Back-formation and most cases of conversion can be exceptional in this

respect.) Therefore the simplex is more natural according to the criterion of least effort, item (b) in the list of axioms. It follows that derivatives constitute an unnatural environment of the deductions that operate exclusively within derivatives. Consequently such deductions call for the chiastic alignment of the values contained in the naturalness scales adduced in those deductions.

On the average causative verbs are structurally (and according to the number of core participants) the most complicated verbs, and as such unnatural according to the criterion of least effort, item (b) in the list of axioms. It follows that causatives constitute an unnatural environment of the deductions that operate exclusively within causatives. Consequently such deductions call for the chiastic alignment of the values contained in the naturalness scales adduced in those deductions.

The basic naturalness scale covering transitive and intransitive verbs is, >nat (intransitive, transitive) / verb, i.e., an intransitive verb is more natural than a transitive verb. Intransitive verbs take fewer core participants than transitive verbs, therefore intransitive verbs are natural according to the criterion of least effort, item (b) in the list of axioms. It follows that transitivity constitutes an unnatural environment of the deductions that operate exclusively within transitivity. Consequently such deductions call for the chiastic alignment of the values contained in the naturalness scales adduced in those deductions.

I proceed to present the deductions:

(1) Rig Veda and Atharva Veda. Causative *-áya-* verbs. The root is monosyllabic. When the root vowel is *a*, it is long in open syllables, short in closed syllables. Examples: *drāv-áyati* 'makes run' as against *krañd-áyati* 'makes roar' (Jamison 1983: 105 ff.).

The two variants: open and closed syllables of the root. – The deduction proceeds in the unnatural environments "derivative".

1. The assumptions of Natural Syntax:

1.1. >nat (open, closed) / root syllable

I.e., an open syllable is more natural than a closed syllable. – In some languages open syllables are almost the only type of syllables allowed whereas in no languages do closed syllables prevail to the same extent. Therefore open syllables are more natural according to the typological criterion, item (h) in the list of axioms.

1.2. >nat (short, long) / root vowel *a*

I.e., a short vowel is more natural than a long vowel. – Long vowels are of longer duration, hence require more effort from the speaker than short vowels. 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 the language distinguishes (within causative *-áya-* verbs whose root vowel is *a* or *ā*)

between open and closed root syllables such that one option requires a short root vowel and the other option requires a long root vowel, then it is the open root syllable that tends to require a long root vowel, and it the closed root syllable that tends to require a short root vowel. Q.E.D. (The reverse situation is not expected.)

4. Note. With 21 verbs the root vowel *a* obtains instead of the expected root vowel *ā* (Jamison 1983: 206, 209).

(2) Rig Veda and Atharva Veda. *-áya-* verbs. There are 31 intransitive verbs and 175 transitive verbs (Jamison 1983: 41, 78–104, 105–68). These statistics are representative of a more general situation, viz., of the relative type frequency of transitive and intransitive verbs. The deduction treats this broader case.

The two variants: transitive and intransitive verbs.

1. The assumptions of Natural Syntax:

1.1. >nat (intransitive, transitive) / verb

I.e., an intransitive verb is more natural than a transitive verb. – On the average, an intransitive verb has fewer core participants than a transitive verb. Therefore the intransitive verb is natural according to the criterion of least effort, item (b) in the list of axioms.

1.2. >nat (small, large) / class

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.

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 the language distinguishes between transitive and intransitive verbs such that one class is small and the other class is large, then it is the intransitive verbs that tend to constitute a small class, and it is the transitive verbs that tend to constitute a large class.

Q.E.D. (The reverse situation is not expected.)

4. Notes

4.1. Whereas most of the numerical data of Jamison (1983) are limited to relatively low numbers and small numerical differences (this being a consequence of the philological situation in the texts studied), the size of the two classes dealt with in this deduction makes handling in Natural Syntax a realistic undertaking.

4.2. The predictions stated in item 3 above are meant to obtain in all languages that make a distinction between transitive and intransitive verbs.

(3) Rig Veda and Atharva Veda. "There are no causatives to trans. verbs in early Vedic" (Jamison 1983: 186).

The two variants: +/-acceptable causative verb. – The deduction proceeds in the unnatural environment "causative".

1. The assumptions of Natural Syntax:

1.1. >nat (intransitive, transitive) / base verb

I.e., an intransitive verb is more natural than a transitive verb. – Intransitive verbs are accompanied by fewer core arguments than transitive verbs. Therefore intransitive verbs are natural according to the criterion of least effort, item (b) in the list of axioms.

1.2. >nat (-, +) / corresponding causative verb

I.e., a non-causative verb is more natural than a causative verb. – Causative verbs are structurally the most complicated type of verbs, therefore unnatural according to the criterion of least effort, item (b) in the list of axioms.

2. The rules of chiasitic 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 the language distinguishes between transitive and intransitive base verbs such that one kind is accompanied by corresponding causatives and the other kind is not accompanied by corresponding causatives, then it is the intransitive verbs that tend to be accompanied by corresponding causatives, and it is the transitive verbs that tend not to be accompanied by corresponding causatives. Q.E.D. (The reverse situation is not expected.)

(4) Post-Rigvedic double transitives (the early construction) contain the obligatory accusative of the base-verb subject and the optional accusative of the base-verb object (Jamison 1983: 35).

The two variants: the subject and the object of the base verb. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

1.1. >nat (subject, object) / of base verb

I.e., the subject is more natural than the object. – Subjects are more frequent textwise than objects, for many clauses lack an object. According to the frequency criterion, item (d) in the list of axioms.

1.2. >nat (-, +) / accusative of derived verb

I.e., a lacking accusative is more natural than a present accusative. – According to the criterion of least effort, item (b) in the list of axioms.

A special case of 1.2:

1.2.1. >nat (+/-, +) / accusative of derived verb

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

2. The rules of chiasitic 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 the language distinguishes between the subject and the object of the base verb such that one clause element corresponds to the obligatory accusative of the derived verb and the other clause element corresponds to the optional accusative of the derived verb, then it is the subject of the base verb that tends to correspond to the obligatory accusative of the derived verb, and it is the object of the base verb that tends to correspond to the optional accusative of the derived verb. Q.E.D. (The reverse situation is not expected.)

(5) Post-Vedic double transitives (the late construction) contain the instrumental of the base-verb subject and the accusative of the base-verb object (Jamison 1983: 189).

The two variants: the subject and the object of the base verb. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

- 1.1. >nat (subject, object) / of base verb

I.e., the subject is more natural than the object. – Subjects are more frequent textwise than objects, for many clauses lack an object. According to the frequency criterion, item (d) in the list of axioms.

- 1.2. >nat (accusative, instrumental) / of derived verb

I.e., the accusative is more natural than the instrumental. – Accusatives are more frequent textwise than instrumentals. According to the frequency criterion, item (d) in the list of axioms.

2. The rules of chiasmic 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 the language distinguishes between the subject and the object of the base verb such that one clause element corresponds to the accusative of the derived verb and the other clause element corresponds to the instrumental of the derived verb, then it is the subject of the base verb that tends to correspond to the instrumental of the derived verb, and it is the object of the base verb that tends to correspond to the accusative of the derived verb. Q.E.D. (The reverse situation is not expected.)

4. Note. The optionality of the accusative is treated in deduction (6).

(6) Post-Vedic double transitives (the late construction) contain the instrumental of the base-verb subject and the optional accusative of the base-verb object (Jamison 1983: 189). This matter is treated in deduction (5). The present deduction deals with the optionality of the derived accusative of the base-verb object.



The two variants: +/-accusative of the derived verb. – The deduction proceeds in the unnatural environment "transitivity".

1. The assumptions of Natural Syntax:

1.1. >nat (-, +) / accusative of derived verb

I.e., a lacking accusative is more natural than a present accusative. – According to the criterion of least effort, item (b) in the list of axioms.

1.2. >nat (more, less) / frequent tokenwise

I.e., what is more frequent is more natural than what is less frequent. – This is the very frequency criterion, item (d) in the list of axioms.

2. The rules of chiasitic 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 the language distinguishes between the realized and the non-realized accusative such that one option is more frequent and the other option is less frequent, then it is the realized accusative that tends to be more frequent, and it is the non-realized accusative that tends to be less frequent. Q.E.D. (The reverse situation is not expected.)

4. Note. Jamison (1983: 189) adduces only one example of lacking derived accusative, and several examples of realized derived accusative (see also her p. 36).

## CONCLUSION

It can be seen that Natural Syntax can predict the Old Indian data treated in the above deductions, in the sense that the predictions do obtain if the presuppositions mentioned in each deduction are accepted. To be sure, Natural Syntax has something to say only about those areas of any language that display variants that can be compared to each other. With this limitation, Natural Syntax has successfully dealt with a variegated language material from many languages.

Natural Syntax treats a morphological case in deduction (1) above, which fact (together with some other evidence) enhances the likelihood that Natural Syntax can be implemented even outside syntax, at least to some extent.

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## Abstract

### NATURALNESS: SOME SYNCHRONIC DATA OF OLD INDIAN

The framework of the paper is Natural Syntax initiated by Janez Orešnik in the tradition of (morphological) naturalness as established by Wolfgang U. Dressler and †Willi Mayerthaler. The basic tenets of Natural Syntax are described at the beginning of the paper.

Natural Syntax is here applied to aspects of Old Indian synchronic verbal morphology and verbal morphosyntax:

- (1) Causative *-áya-* verbs in Rig Veda and Atharva Veda. The root vowel *a* is short in closed syllables and long in open syllables.
- (2) Rig Veda and Atharva Veda contain 31 intransitive and 175 transitive *-áya-* verbs.
- (3) Rig Veda and Atharva Veda do not contain any causative verbs to the basic transitive verbs.
- (4) Post-Vedic double transitive verbs (the early construction) contain an obligatory accusative corresponding to the subject of the base verb, and an optional accusative corresponding to the object of the base verb.
- (5) Post-Vedic double transitive verbs (the late construction) contain an obligatory instrumental corresponding to the subject of the base verb, and an accusative corresponding to the object of the base verb.
- (6) The accusative mentioned in (5) is not obligatory.

The data have been taken from Jamison (1983), a monograph about Old Indian *-áya-* verbs.

## Povzetek

### NARAVNO JEZIKOSLOVJE – NEKAJ SINHRONIH PODATKOV IZ STARE INDIJŠČINE

Okvir tega članka je naravna skladnja, kot jo je začel Janez Orešnik v tradiciji (morfološke) naravnosti, utemeljene v delih Wolfganga U. Dresslerja in †Willija Mayerthalerja. Osnovna načela naravne skladnje so opisana na začetku članka.

Tu so obravnavani nekateri vidiki staroindijske sinhronne morfonologije in morfosintakse glagola:

- (1) Kavzativni *-aya-* glagoli v Rg Vedi in Atharva Vedi. Korenski samoglasnik *a* je praviloma/večinoma kratek v zaprtih zlogih in dolg v odprtih zlogih.
- (2) Rg Veda in Atharva Veda izkazujeta 31 neprehodnih in 175 prehodnih *-aya-* glagolov.
- (3) V Rg Vedi in Atharva Vedi ni nobenega kavzativnega glagola iz bolj osnovnih prehodnih glagolov.
- (4) Po vedskem obdobju vsebujejo dvojno prehodni glagoli (to je zgodnja zgradba) obvezen akuzativ, ki je soodnosen z osebkom osnovnega glagola, in neobvezen akuzativ, ki je soodnosen s predmetom osnovnega glagola.
- (5) Po vedskem obdobju vsebujejo dvojno prehodni glagoli (to je pozna zgradba) obvezen instrumental, ki je soodnosen z osebkom osnovnega glagola, in akuzativ, ki je soodnosen s predmetom osnovnega glagola.
- (6) Akuzativ, omenjen v točki 5, ni obvezen.

Gradivski podatki so iz monografije Jamison (1983), posvečene staroindijskim *-aya-* glagolom.