

NATURALNESS: SOME ENGLISH (MORPHO)SYNTACTIC EXAMPLES

JANEZ OREŠNIK

University of Ljubljana, Slovenia

ABSTRACT

In Slovenia, the natural syntax of the Klagenfurt brand has been extended to the study of the behaviour of (near-)synonymous syntactic expressions, here called syntactic variants. Below our work is illustrated with (morpho)syntactic cases from English. (Naturalness Theory applied to English has so far not received much attention). About a half of the examples deal with the syntactic behaviour of objects; the other half considers raising phenomena. The language material is divided into consecutively numbered deductions in each of which the existence of a (morpho)syntactic state of affairs is predicted on the basis of apposite assumptions and Andersen's markedness alignment rules.

The subject-matter of my paper is a (language-universal) theory developed in Slovenia by a small group of linguists (under my guidance), who mainly use English, German, and Slovenian language material as the base of verification. Our work owes much to, and exploits, the (linguistic) Naturalness Theory as elaborated especially at some Austrian and German universities; cf. Mayerthaler (1981), Wurzel (1984), Dressler *et al.* (1987), Dressler (2000). Naturalness Theory has also been applied to syntax, notably at the University of Klagenfurt; the basic references are Dotter (1990), Mayerthaler and Fliedl (1993), Mayerthaler *et al.* (1993, 1995, 1998). Within the natural syntax of the Klagenfurt brand, the Slovenian work group has built an extension which studies the behaviour of (near-)synonymous syntactic expressions, here called syntactic variants. Whenever two syntactic variants are included in the same naturalness scale, and consequently one variant can be asserted to be more natural than the other, something can be said about some grammatical properties of the two variants.

Within Naturalness Theory Mayerthaler (1981: 10) distinguishes sem- and sym-naturalness. Since the present paper utilizes sem-naturalness only, Mayerthaler's distinction will not be discussed. Sem-naturalness will simply be

called naturalness in the continuation of the paper. The predicate "natural" will be defined as simple (for the speaker) from the cognitive point of view. This kind of naturalness is similar to traditional markedness, and the following approximate equation can be stated as a first orientation of the reader: α markedness = $-\alpha$ naturalness. It is practically impossible to compare markedness and naturalness in (morpho)syntax seeing that the application of both in that field is in a state of flux.

Naturalness values will be stated in naturalness scales. The basic scale format is $>\text{nat}(A, B)$ – i.e. with respect to cognitive complexity, A is more natural than B. This is the speaker's viewpoint. It is further assumed that, from the hearer's viewpoint, B is more natural than A. (This is based on the assumption that the interests of the speaker and the hearer in a communicative situation are as a rule antagonistic). A consequence of this that will play an important role in the continuation: the scale $>\text{nat}(A, B)$ can be substantiated by showing that A is more natural than B for the speaker, and/or by showing that B is more natural than A for the hearer.

To cover any optional usage of A or B, this framework assumes the following two additional formats derived from the basic format:

- i) $>\text{nat}(A + B, B)$, i.e. admitting both the more and the less natural variant is more natural than admitting only the less natural variant;
- ii) $>\text{nat}(A, A + B)$, i.e. admitting only the more natural variant is more natural than admitting both the more and the less natural variant.

Any scale in one of the two derived formats (i-ii) is asserted to be true whenever the corresponding scale in the basic format $>\text{nat}(A, B)$ is asserted to be true. Therefore, when a scale couched in a derived format is used, it suffices to back up the corresponding scale in the basic format.

Given the wealth of optional usage in languages, the applicability of my framework would be greatly reduced without the two additional formats.

In the present paper, the language examples are dealt with in "deductions". Each deduction contains at least two naturalness scales. The naturalness values of paired scales will be aligned by the principle of markedness alignment as stated in Andersen (1968) (repeated in Andersen 2001), and adapted to naturalness in the following way: what is more natural tends to align with another instance of more natural; what is less natural tends to align with another instance of less natural.

A basic contribution of the Slovenian Theory to Naturalness Theory is the following list of criteria for determining naturalness in (morpho)syntax:

- A) The principle of least effort (Havers 1931: 171). What conforms better to this principle is more natural. What is cognitively simple (for the speaker) is easy to produce, easy to retrieve from memory, etc.
- B) Phylogenetic age. What is older phylogenetically is more natural. What is cognitively simpler (for the speaker) is acquired earlier by the language.
- C) Prototypicality. What is nearer to the prototype is more natural.
- D) Degree of integration into the clause. What is better integrated into its clause is more natural. This partially exploits (C): the prototypical syntactic situation is for a syntactic element to be well integrated into its syntactic construction.
- E) Frequency (in the spirit of Fenk-Oczlon 1991). What is more frequent in a language token- and/or typewise is more natural. What is cognitively simpler (for the speaker) is used more.
- F) Small vs. large class. The use of a unit pertaining to a small class is more natural 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.
- G) Specialised vs. non-specialised use. If there exists a specialised way of expressing a category, that specialised way is very natural as expression of the category in question. Suppose a language has reflexive pronouns. In that case, they are specialised to express reflexivity (whereas other personal pronouns are not specialised to express reflexivity, even if they may express it under certain circumstances), and their use to express reflexivity is very natural: $>\text{nat}(\text{+reflexive personal pronoun}, \text{-reflexive personal pronoun})$ / as expression of reflexivity.
- H) Use vs. non-use. The use of a category or process is more natural than its non-use. This generalisation is based on the following consideration. All kinds of categories occur in the most natural lexical items, paradigms and constructions of the language, and ebb on the way out of that core. Take for example a language whose noun phrases distinguish singular, plural and dual. Although singular, plural and dual are not equally natural with respect to one another, each of them is highly natural in its own field. For instance, the dual is highly natural (specialised) as an expression of duality: $>\text{nat}(+, -)$ / dual in expressions of duality. This is correlated with the circumstance that the dual (in fact all three numbers) are present in personal pronouns, i.e. in the most natural noun phrases, while they may be present to different degrees in the remaining noun phrases of the language.

For the relevant typological data about the grammatical numbers, see Corbett (2000). The situation is similar with processes (such as raising); all processes are natural.

- I) Acceptable vs. non-acceptable use. What is acceptable is more natural than what is not acceptable. The very reason for the acceptability of a syntactic unit is its greater naturalness with respect to any corresponding non-acceptable unit.
- J) What is more widespread in the languages of the world is more natural (the typological criterion). What is cognitively simpler (for the speaker) is realized in more languages.

The current version of criteria (A-J) is new, and has resulted from cooperation with Helena Majcenovič.

The framework just outlined will now be applied to some (morpho)syntactic variants of English. (The examples adduced below are meant to be simple and variegated). Pairs of variants have been determined on the basis of my linguistic experience. The upper limit on the length of a variant is two linked clauses. As already mentioned, each case considered is presented in the format of a deduction. The ordering of the deductions is mostly arbitrary.

(i) Objects

1. English. The placement of direct and indirect objects. With the verbs *give*, *offer*, and *sell*, the pattern indirect object + direct object is about four times more common than the pattern direct object + prepositional object (Biber *et al.* 1999: 928).

The two syntactic variants: the pattern indirect object + direct object, and the pattern direct object + prepositional object.

1. The assumptions of Naturalness Theory

1.1. >nat (the pattern indirect object + direct object, the pattern direct object + prepositional object)

I.e. the pattern indirect object + direct object is more natural than the pattern direct object + prepositional object. By the principle of least effort; see criterion (A) in the introduction.

1.2. >nat (+, -) / frequent unit

I.e. a frequent unit is more natural than a less frequent unit. See criterion (E) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

The >nat (= high naturalness value) of scale 1.1 is the pattern indirect object + direct object. It is aligned with the > nat of scale 1.2, which is "more frequent unit". The <nat (= low naturalness value) of scale 1.1 is the pattern direct object + prepositional object. It is aligned with the <nat of scale 1.2, which is a "less frequent unit".

3. The consequences

From 1.1-2 and 2 it can be deduced: If there is any difference, in the verbs *give*, *offer*, and *sell*, between the pattern indirect object + direct object and the pattern direct object + prepositional object, such that one pattern is common, and the other pattern is less common, it is the pattern indirect object + direct object that tends to be common, and it is the pattern direct object + prepositional object that tends to be less common. *Q.E.D.*

As can be seen from the above deduction, this theoretical framework does not contain any generative component, and operates *ex post facto*. I cannot predict the existence of the pattern indirect object + direct object or of the pattern direct object + prepositional object; I cannot predict that one pattern is common, and the other less common. However, if this data is given, I can predict that it is the pattern indirect object + direct object that tends to be common, and that it is the pattern direct object + prepositional object that tends to be less common. The reverse situation is not likely to obtain. It is not probable that the pattern indirect object + direct object would be uncommon, and that the pattern direct object + prepositional object would be common, if the frequency of occurrence is the *differentia specifica* of the two patterns. It is such predictions (that is, synchronic accounts/"explanations") that constitute the chief motive of my work. *Mutatis mutandis*, these remarks apply to all deductions of the present paper.

2. English. The pattern indirect object + direct object and the pattern direct object + prepositional object, with the verbs *give*, *offer*, and *sell*. With the non-prepositional pattern, the indirect object is very short in most instances. The prepositional pattern is more common than the non-prepositional pattern when the noun phrase following *to* is two words or more in length (Biber *et al.* 1999: 928).

The two syntactic variants: the pattern indirect object + direct object, and the pattern direct object + prepositional object.

1. The assumptions of Naturalness Theory

1.1. >nat (the pattern indirect object + direct object, the pattern direct object + prepositional object)

I.e. the pattern indirect object + direct object is more natural than the pattern direct object + prepositional object. By the principle of least effort; see criterion (A) in the introduction.

1.2. >nat (short, long) / indirect object

I.e. a short indirect object is more natural than a long indirect object. By the principle of least effort; see criterion (A) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences:

From 1.1-2 and 2 it can be deduced: If there is any difference, in the verbs *give*, *offer*, and *sell*, between the pattern indirect object + direct object and the pattern direct object + prepositional object, such that the indirect object of one pattern is short, and the indirect object of the other pattern is long, it is the indirect object of the pattern indirect object + direct object that tends to be short, and it is the indirect object of the pattern direct object + prepositional object that tends to be long. *Q.E.D.*

3. English. Pronoun sequences as direct and indirect object. The prepositional construction, e.g., *give it to me*, is by far the most frequent, in contrast to the overall rarity of the prepositional pattern with full noun phrases (Biber *et al.* 1999: 929-30).

The two syntactic variants: the type *give it to me*, and the type *give the book to John* (includes the option that one of the objects is a pronoun).

1. The assumptions of Naturalness Theory:

1.1. >nat (the type *give it to me*, the type *give the book to John*)

I.e. the type *give it to me* is more natural than the type *give the book to John*. By the principle of least effort; see criterion (A) in the introduction.

1.2. >nat (+, -) / frequent unit

I.e. a frequent unit is more natural than a less frequent unit. See criterion (E) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1-2 and 2 it can be deduced: If there is any difference between the type *give the book to John* and the type *give it to me*, such that one type is common, and the other type is less common, it is the type *give it to me* that tends to be common, and it is the type *give the book to John* that tends to be less common. *Q.E.D.*

4. English. Pronoun sequences as direct and indirect object. The non-prepositional construction with the indirect object in first position, e.g., *give me it*, is virtually restricted to conversation (Biber *et al.* 1999: 929-30).

The two variants: conversation and the written registers.

1. The assumptions of Naturalness Theory:

1.1. >nat (the type *give me it*, the type *give it to me*)

I.e. the type *give me it* is more natural than the type *give it to me*. By the principle of least effort; see criterion (A) in the introduction.

A special case of 1.1:

1.1.1. > nat (the type *give it to me* and the type *give me it*, the type *give it to me*)

I.e. admitting the type *give it to me* and the type *give me it* is more natural than admitting only the type *give it to me*. The scale has the format >nat (A + B, B); see the introduction.

1.2. >nat (conversation, written registers)

I.e. conversation is more natural than the written registers (Dotter 1990: 228). Oral communication is the primary form of communication; see criterion (B) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness:

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1.1, 1.2 and 2 it can be deduced: If there is any difference between conversation and the written registers, such that one kind of registers uses both the type *give it to me* and the type *give me it*, and the other kind of registers uses only the type *give it to me*, it is conversation that tends to use both the type *give it to me* and the type *give me it*, and it is the written registers that tend to use only the type *give it to me*. *Q.E.D.*

5. English. Pronoun sequences as direct and indirect object. The non-prepositional construction with the direct object in first position, e.g., *give it me*, is found both in conversation and fiction. The direct object is almost exclusively *it* (Biber *et al.* 1999: 929-30).

The two variants: conversation/fiction vs. news/academic prose.

1. The assumptions of Naturalness Theory

1.1. >nat (*give it me*, *give it to me*)

I.e. the construction *give it me* is more natural than the construction *give it to me*. By the principle of least effort; see criterion (A) in the introduction.

A special case of 1.1:

1.1.1. >nat (*give it me* and *give it to me*, only *give it to me*)

I.e. admitting both the type *give it me* and the type *give it to me* is more natural than admitting only the type *give it to me*. The scale has the format >nat (A + B, B); see the introduction.

1.2. >nat (conversation/fiction, news/academic prose)

I.e. conversation/fiction is more natural than news/academic prose. That conversation is the most natural register is not disputed. Among the written registers, fiction is nearest to conversation.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1.1, 1.2 and 2 it can be deduced: If there is any difference between conversation/fiction and news/academic prose, such that one kind of register admits both the type *give it me* and the type *give it to me*, and the other kind of register

admits only the type *give it to me*, it is conversation/fiction that tends to admit both the type *give it me* and the type *give it to me*, and it is news/academic prose that tends to admit only the type *give it to me*. *Q.E.D.*

6. English. Clauses with direct objects and object predicatives. Regular placement of the direct object before the object predicative is by far the more common option. E.g., *he made it impossible* (Biber *et al.* 1999: 930-1).

The two syntactic variants: the pattern direct object + object predicative, and the pattern object predicative + direct object.

1. The assumptions of Naturalness Theory

1.1. >nat (the pattern direct object + object predicative, the pattern object predicative + direct object)

I.e. the pattern direct object + object predicative is more natural than the pattern object predicative + direct object. The object predicative amplifies the meaning of the verb, therefore it is in the interest of the hearer that the verb and the object predicative are adjacent. This is achieved in the pattern object predicative + direct object. The situation is the reverse for the speaker; see the introduction.

1.2. >nat (+, -) / frequent unit

I.e. a frequent unit is more natural than a less frequent unit. See criterion (E) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness:

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1-2 and 2 it can be deduced: If there is any difference between the pattern direct object + object predicative and the pattern object predicative + direct object, such that one pattern is common, and the other pattern is less common, it is the pattern direct object + object predicative that tends to be common, and it is the pattern object predicative + direct object that tends to be less common. *Q.E.D.*

7. English. Clauses with direct objects and object predicatives. The direct object must precede the object predicative when the direct object is a pronoun or a short noun-headed phrase. E.g., *he made it impossible* (Biber *et al.* 1999: 930-1).

The two syntactic variants: the pattern direct object + object predicative, and the pattern object predicative + direct object.

1. The assumptions of Naturalness Theory

1.1. >nat (the pattern direct object + object predicative, the pattern object predicative + direct object)

I.e. the pattern direct object + object predicative is more natural than the pattern object predicative + direct object. The object predicative amplifies the meaning of the verb, therefore it is in the interest of the hearer that the verb and the object predicative are adjacent. This is achieved in the pattern object predicative + direct object. The situation is the reverse for the speaker; see the introduction.

1.2. >nat (short, long) / direct object

I.e. a short direct object is more natural than a long direct object. By the principle of least effort; see criterion (A) in the introduction.

A special case of 1.2:

1.2.1. >nat (short & long, only long) / direct object

I.e. admitting a short or long direct object is more natural than admitting only a long direct object. The scale has the format >nat (A + B, B); see the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1, 1.2.1 and 2 it can be deduced: If there is any difference between the pattern direct object + object predicative and the pattern object predicative + direct object, such that in one pattern the direct object is short or long, and in the other pattern the direct object is invariably long, it is in the pattern direct object + object predicative that the direct object tends to be short or long, and it is in the pattern object predicative + direct object that the direct object tends to be invariably long. *Q.E.D.*

8. English. Clauses with direct objects and object predicatives. When the whole of the direct object is a clause, either the order is as expected in conformity with deduction 7, e.g., *but he made clear it was not a sacking offence*, or there is a

dummy *it* in ordinary object position, and the clause is placed in extraposition, e.g., *he made it impossible for her to do anything* (Biber *et al.* 1999: 931-2).

The two syntactic variants: the pattern direct object clause + object predicative vs. the pattern object predicative + direct object clause.

1. The assumptions of Naturalness Theory

1.1. >nat (the pattern direct object + object predicative, the pattern object predicative + direct object)

I.e. the pattern direct object + object predicative is more natural than the pattern object predicative + direct object. The object predicative amplifies the meaning of the verb, therefore it is in the interest of the hearer that the verb and the object predicative are adjacent. This is achieved in the pattern object predicative + direct object. The situation is the reverse for the speaker; see the introduction.

1.2. >nat (+, -) / extraposition

I.e. realization of extraposition is more natural than its non-realization. Extraposition is a process, and as such natural by criterion (H) of the introduction.

1.3. >nat (+, -) / insertion of *it*

I.e. realization of *it*-insertion is more natural than its non-realization. *It*-insertion is a process, and as such natural by criterion (H) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness:

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1-3 and 2 it can be deduced: If there is any difference between the pattern direct object clause + object predicative and the pattern object predicative + direct object clause, such that one pattern undergoes extraposition, and the other pattern does not, and such that one pattern undergoes *it*-insertion, and the other pattern does not, it is the pattern direct object clause + object predicative that tends to undergo extraposition and *it*-insertion, and it is the pattern object predicative + direct object clause that tends not to undergo extraposition or *it*-insertion. *Q.E.D.*

4. Note to item 1.3. The insertion of *it* ought perhaps to be treated as an independent process obtaining under its own conditions that go beyond the matter considered in the present deduction.

9. English. The placement of objects of phrasal verbs. Where the direct object is a pronoun, it is normally placed between the verb and the particle, e.g., *how fast can you pick it up* (Biber *et al.* 1999: 932, 934).

The two syntactic variants: the position of the direct object between the verb and its particle vs. the position of the direct object after the verb's particle.

1. The assumptions of Naturalness Theory

1.1. >nat (between the verb and the particle, after the particle) / position of direct object with respect to phrasal verb

I.e. the position of direct object between the verb and its particle is more natural than the position of direct object after the particle. A direct object located within the phrasal verb is better integrated into the clause than a direct object located after the verb's particle. See criterion (D) in the introduction. Contrariwise, the sequence verb + particle, being a semantic unit, is easy for the hearer to process. The situation is the reverse for the speaker; see the introduction.

1.2. >nat (pronoun, full noun phrase) / direct object of phrasal verb

I.e. the direct object of a phrasal verb which takes the form of a pronoun is more natural than the direct object of a phrasal verb which takes the form of a full noun phrase. By the principle of least effort; see criterion (A) in the introduction. Also, pronouns are a small class, full noun phrases are a large class. See criterion (F) in the introduction.

A special case of 1.2:

1.2.1. >nat (pronoun & full noun phrase, only full noun phrase) / direct object of phrasal verb

I.e. the direct object of a phrasal verb which takes the form either of a pronoun or of a full noun phrase is more natural than the direct object of a phrasal verb which only takes the form of a full noun phrase. The scale has the format >nat (A + B, B); see the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1, 1.2.1 and 2 it can be deduced: If there is any difference, within phrasal verbs, between the position of the direct object between the verb and its particle, and the position of the direct object after the verb's particle, such that one kind of direct object is either a pronoun or a full noun phrase, and the other kind of direct object is invariably a full noun phrase, it is the direct object placed between the verb and its particle that tends to be a pronoun or a full noun phrase, and it the direct object placed after the verb's particle that tends to be only a full noun phrase. *Q.E.D.*

10. English. The placement of objects of phrasal verbs. For direct objects with full noun phrases, mid-position placement is by far most frequent in conversation. Mid-position placement is used less than 10% of the time in the written registers (Biber *et al.* 1999: 932, 934).

The two syntactic variants: mid-position placement of full noun phrase direct object in conversation and the written registers.

1. The assumptions of Naturalness Theory

1.1. >nat (conversation, written registers)

I.e. conversation is more natural than the written registers (Dotter 1990: 228). Oral communication is the primary form of communication; see criterion (B) in the introduction.

1.2. >nat (+, -) / frequent

I.e. being frequent is more natural than being less frequent. See criterion (E) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1-2 and 2 it can be deduced:

11. English. The placement of objects of phrasal verbs. Mid-position placement is much more common with full noun phrase direct objects of two to four words in length, rather than longer objects, in all registers (Biber *et al.* 1999: 932).

The two syntactic variants: mid-position placement of short and long full noun phrase direct objects.

1. The assumptions of Naturalness Theory

1.1. >nat (short, long) / full noun phrase direct object in mid-position

I.e. a short full noun phrase direct object in mid-position is more natural than a long full noun phrase direct object in mid-position. By the principle of least effort; see criterion (A) in the introduction.

1.2. >nat (+, -) / frequent

I.e. being frequent is more natural than being infrequent. See criterion (E) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1-2 and 2 it can be deduced: If there is any difference, within phrasal verbs, between mid-position placement of short full noun phrase direct objects and mid-position placement of long full noun phrase direct objects, such that one configuration is common, and the other configuration is less common, it is the mid-position placement of short full noun phrase direct objects that tends to be common, and it is the mid-position placement of long full noun phrase direct objects that tends to be less common. *Q.E.D.*

12. English. The placement of full noun phrase direct objects of phrasal verbs. Phrasal verbs with a primarily idiomatic sense prefer the two elements of the phrasal verb to be adjacent. Phrasal verbs whose particle has its spatial meaning more often take the direct object in mid-position. E.g., *now carry out the instructions vs. the Germans carried the corpse out* (Biber *et al.* 1999: 933).

The two syntactic variants: phrasal verb with idiomatic and spatial meaning + direct object.

1. The assumptions of Naturalness Theory

1.1. >nat (the type *carry out*, the type *carry + out*)

I.e. the type *carry out* is more natural than the type *carry + out*. By the principle of least effort; see criterion (A) in the introduction. Also, the type *carry out* is better coalesced than the type *carry + out*, therefore more natural by criterion (D) of the introduction.

1.2. >nat (idiomatic, literal) / reading

I.e. an idiomatic reading is more natural than a literal reading. The idiomatic reading is retrieved by the speaker from his memory *in toto*, and is therefore more natural by the principle of least effort; see criterion (A) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1-2 and 2 it can be deduced: If there is any difference between the phrasal verb *carry out* and the verb *carry + spatial out*, such that in one case the verb and the particle are separated, and in the other case the verb and the particle are not separated, it is in the verb *carry out* that the verb and the particle tend to be together, and it is in the verb *carry + spatial out* that the verb and the particle tend to be separated. *Q.E.D.*

4. Note. The example-sentence *can't make out where this school is*, with obligatory adjacency of the two elements of the phrasal verb (Biber *et al.* 1999: 934), is jointly accounted by the present deduction in that the reading of the phrasal verb is idiomatic, and by deduction 11 in that the direct object of the phrasal verb is long.

(ii) Raising

13. English. Subject-to-subject raising vs. extraposed *that*-clauses. Subject-to-subject raising is used for the majority of complement clauses controlled by the verbs *SEEM/APPEAR* or by the adjectival predicates *(UN)LIKELY, CERTAIN, SURE*. E.g., *Andy seems to know everything* (Biber *et al.* 1999: 732).

The two syntactic variants: subject-to-subject raising, and corresponding construction containing a *that*-clause.

1. The assumptions of Naturalness Theory

1.1. >nat (+, -) / subject-to-subject raising

I.e. the implementation of subject-to-subject raising is more natural than its non-use. The use of a process is more natural than its non-use; see criterion (H) in the introduction. Phylogenetically, subject-to-subject raising is decisively earlier than the corresponding construction with a *that*-clause. Subject-to-subject raising with "seem" is of pre-Germanic origin; it is normal, say, in Ancient

Greek and Latin. In German, the subject-to-subject raising with *SCHEINEN* 'seem' is earlier than *SCHEINEN* + *daß*-clause (Paul 1992: 726); see criterion (B) in the introduction.

1.2. >nat (lexical items listed above, other lexical items) / controllers of *that*-clauses

I.e. lexical items listed above are more natural than other lexical items controlling *that*-clauses. A small class is more natural than a large class; see criterion (F) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1-2 and 2 it can be deduced: If there is any difference between subject-to-subject raising and a corresponding construction containing a *that*-clause, such that one construction uses (in the superordinate clause) the lexical items listed above, and the other construction uses (in the superordinate clause) other lexical items controlling a *that*-clause, it is subject-to-subject raising that tends to use (in the superordinate clause) the lexical items listed above, and it is the corresponding construction containing a *that*-clause that tends to use (in the superordinate clause) other lexical items. *Q.E.D.*

14. English. Subject-to-subject raising vs. extraposed *that*-clauses with *SEEM/APPEAR*. Extraposed *that*-clauses are used when the superordinate verb is followed by a noun phrase, e.g., *it seems to him that his home life was disintegrating*. Otherwise subject-to-subject raising is used, e.g., *Andy seems to know everything* (Biber *et al.* 1999: 731, 733).

The two syntactic variants: subject-to-subject raising vs. analogous extraposed *that*-clauses.

1. The assumptions of Naturalness Theory

1.1. >nat (+, -) / subject-to-subject raising

I.e. the implementation of subject-to-subject raising is more natural than its non-use. The use of a process is more natural than its non-use; see criterion (H) in the introduction. Phylogenetically, subject-to-subject raising is decisively earlier than the corresponding construction with a *that*-clause. Subject-to-subject raising with "seem" is of pre-Germanic origin; it is normal, say, in Ancient

Greek and Latin. In German, the subject-to-subject raising with *SCHEINEN* 'seem' is earlier than *SCHEINEN* + *daß*-clause (Paul 1992: 726); see criterion (B) in the introduction.

1.2. >nat (noun phrase) / *SEEM/APPEAR*

I.e. *SEEM/APPEAR* not followed by a noun phrase is more natural than *SEEM/APPEAR* + noun phrase. By the principle of least effort; see criterion (A) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1-2 and 2 it can be deduced: If there is any difference, with the superordinate verb *SEEM/APPEAR*, between subject-to-subject raising and the corresponding construction containing a *that*-clause, such that one construction is used when the superordinate verb is followed by a noun phrase, and the other construction is used when the superordinate verb is not followed by a noun phrase, it is subject-to-subject raising that tends to be used when the superordinate verb is not followed by a noun phrase, and it is the corresponding construction containing a *that*-clause that tends to be used when the superordinate verb is followed by a noun phrase. *Q.E.D.*

15. English. Subject-to-subject raising vs. extraposed *that*-clauses with *(UN)LIKELY*. Extraposed *that*-clauses are used when they contain a modal verb or are marked for tense, e.g., *it is likely that wheelchairs will be excluded; it is likely that this line of objection has another wholly different root*. Otherwise subject-to-subject raising is used, e.g., *she wasn't likely to take a taxi* (Biber *et al.* 1999: 731, 734).

The two syntactic variants: subject-to-subject raising vs. corresponding construction containing a *that*-clause, with *(UN)LIKELY*.

1. The assumptions of Naturalness Theory

1.1. >nat (+, -) / subject-to-subject raising

I.e. the implementation of subject-to-subject raising is more natural than its non-use. The use of a process is more natural than its non-use; see criterion (H) in the introduction. Phylogenetically, subject-to-subject raising is decisively earlier than the corresponding construction with a *that*-clause. Subject-to-subject

raising with “seem” is of pre-Germanic origin; it is normal, say, in Ancient Greek and Latin. In German, the subject-to-subject raising with *SCHEINEN* ‘seem’ is earlier than *SCHEINEN* + *daß*-clause (Paul 1992: 726); see criterion (B) in the introduction. An alternative to scale 1.1 is mentioned in 4. Note below.

1.2. >nat (–, +) / modal verb or tense marking

I.e. the absence of a modal verb or of tense marking is more natural than the presence of a modal verb or of tense marking. By the principle of least effort; see criterion (A) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness:

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1-2 and 2 it can be deduced: If there is any difference between subject-to-subject raising and the corresponding construction containing a *that*-clause, such that one construction contains a modal verb or shows tense marking, and the other construction lacks any modal verb or tense marking, it is subject-to-subject raising that tends to lack any modal verb or tense marking, and it is the corresponding construction containing a *that*-clause that tends to contain a modal verb or to show tense marking. *Q.E.D.*

4. Note. An alternative to scale 1.1: >nat (the type *she wasn't likely to take a taxi*, the type *it is likely that wheelchairs will be excluded*). By the principle of least effort; see criterion (A) in the introduction.

16. English. Between (a) *I believe that she is intelligent* and (b) *I believe her to be intelligent*, at least the following syntactic differences obtain: (i) The superordinate main verb of (a) can be accompanied by an addressee, e.g., *I believe you that she is intelligent*, whereas the superordinate main verb of (b) does not tolerate any addressee. (ii) The *that*-clause of (a) can contain any verbal lexeme as the first or only verb, e.g., *I believe that she works hard*, whereas the infinitive clause of (b) can contain *BE* or *HAVE* (auxiliary or full verb), or rarely some third stative verb, as the first or only verb, e.g., *I believe her to have been working hard* (Stockwell *et al.* 1973: 557-561, 569-571). This deduction is continued in deduction 17.

The two syntactic variants are: the type *I believe that she works hard*, and the type *I believe her to be intelligent*.

1. The assumptions of Naturalness Theory

1.1. >nat (the type *I believe her to be intelligent*, the type *I believe that she works hard*)

I.e. the type *I believe her to be intelligent* is more natural than the type *I believe that she works hard*. The superordinate clause and the *to*-clause are better integrated than the superordinate clause and the *that*-clause; see criterion (D) in the introduction.

1.2. >nat (–, +) / addressee of superordinate main verb

I.e. the lack of the addressee of the superordinate main verb is more natural than the presence of the addressee of the superordinate main verb. By the principle of least effort; see criterion (A) in the introduction.

A special case of 1.2:

1.2.1. >nat (–, ±) / addressee of superordinate main verb

I.e. a superordinate main verb not allowing an addressee is more natural than a superordinate main verb allowing an addressee. The scale has the format >nat (A, A + B); see the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

If there is any difference between the type *I believe that she works hard* and the type *I believe her to be intelligent*, such that the superordinate main verb can have an addressee in one type and no addressee in the other type, it is in the type *I believe her to be intelligent* that the superordinate main verb tends to lack an addressee, and it is in the type *I believe that she works hard* that the superordinate main verb tends to allow an addressee. *Q.E.D.*

17. English. Between (a) *I believe that she is intelligent* and (b) *I believe her to be intelligent*, at least the following syntactic differences obtain: (i) The superordinate main verb of (a) can be accompanied by an addressee, e.g., *I believe you that she is intelligent*, whereas the superordinate main verb of (b) does not tolerate any addressee. (ii) The *that*-clause of (a) can contain any verb as the first or only verb, e.g., *I believe that she works hard*, whereas the infinitive clause of (b) can contain *BE* or *HAVE* (as auxiliary or full verb), or rarely some

third stative verb, as the first or only verb, e.g., *I believe her to have been working hard* (Stockwell *et al.* 1973: 557-561, 569-571). This deduction continues deduction 16.

The two syntactic variants are: the type *I believe that she works hard*, and the type *I believe her to be intelligent*.

1. The assumptions of Naturalness Theory

1.1. >nat (the type *I believe her to be intelligent*, the type *I believe that she works hard*)

I.e. the type *I believe her to be intelligent* is more natural than the type *I believe that she works hard*. The superordinate clause and the *to*-clause are better integrated than the superordinate clause and the *that*-clause; see criterion (D) in the introduction.

1.2. >nat (almost only *BE*, *HAVE*; almost any verb) / subordinate clause

I.e. allowing almost only *BE* and *HAVE* in the subordinate clause is more natural than allowing almost any verb in the subordinate clause. Small classes are more natural than large classes; see criterion (F) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

If there is any difference between the type *I believe that she works hard* and the type *I believe her to be intelligent*, such that the subordinate clause can contain almost any first or only verb in one type, and almost only *BE* and *HAVE* as the first or only verb in the other type, it is in the type *I believe her to be intelligent* that the subordinate clause tends to contain almost only *BE* and *HAVE* as the first or only verb, and it is in the type *I believe that she works hard* that the subordinate clause tends to contain almost any first or only verb. *Q.E.D.*

18. Between (a) *I believe that she is intelligent* and (b) *I believe her to be intelligent*, at least the following syntactic differences obtain: (i) The superordinate main verb of (a) can be accompanied by an addressee, e.g., *I believe you that she is intelligent*, whereas the superordinate main verb of (b) does not tolerate any addressee. (ii) The *that*-clause of (a) can contain any verb as the first or only verb, e.g., *I believe that she works hard*, whereas the infinitive clause of (b) can contain *BE* or *HAVE* (as auxiliary or full verb), or rarely some third stative verb, as

the first or only verb, e.g., *I believe her to have been working hard* (Stockwell *et al.* 1973: 557-561, 569-571). This matter is dealt with in deductions 16 and 17.

Such a state of affairs obtains in numerous verbs of saying and thinking. A special case is that with some verbs, such as *CLAIM*, *SAY* and *THINK*, only the passive form commonly takes a *to*-infinitive, e.g., *the costs are claimed to be about £2.5 bn* (Biber *et al.* 1999: 697-698).

The two syntactic variants are: the type *she is claimed to be intelligent* (showing subject-to-subject raising), and the (almost?) unacceptable type *X claims her to be intelligent* (showing subject-to-object raising).

1. The assumptions of Naturalness Theory

1.1. >nat (subject-to-subject raising, subject-to-object raising) / superordinate construction + *to*-clause

I.e. subject-to-subject raising is more natural than subject-to-object raising in a superordinate construction containing a verb of thinking or saying + *to*-clause. Typologically, subject-to-subject raising is much more common cross-linguistically than subject-to-object raising (Ross 1972: 321). See criterion (J) in the introduction. Also, the new object is easier for the hearer to process than the new subject, because the new object is less distant from the subordinate clause than the new subject. The situation is the reverse for the speaker; see the introduction.

1.2. >nat (+, -) / acceptable syntactic construction

I.e. an acceptable syntactic construction is more natural than an unacceptable syntactic construction. See criterion (I) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1-2 and 2 it can be concluded: If there is any difference, in the verbs of thinking and saying such as *SAY*, *THINK* and *CLAIM* followed by a *to*-clause, between subject-to-object raising and subject-to-subject raising, such that one construction is acceptable and the other construction is not acceptable, it is the subject-to-subject raising that tends to be acceptable, and it is the subject-to-object raising that tends not to be acceptable. *Q.E.D.*

19. English. *To*-clauses controlled by adjectives. Post-predicate *to*-clauses are controlled by adjectives coming from seven semantic domains, e.g., *the government is unlikely to meet the full cost*. Extraposed *to*-clauses are controlled by adjectives coming from three semantic domains, e.g., *it is easy to cook for you* (Biber *et al.* 1999: 716).

The two syntactic variants are: adjectives controlling post-predicate *to*-clauses, and adjectives controlling extraposed *to*-clauses.

1. The assumptions of Naturalness Theory

1.1. >nat (extraposed, post-predicate) / *to*-clauses controlled by adjectives

I.e. extraposed *to*-clauses controlled by adjectives are more natural than post-predicate *to*-clauses controlled by adjectives. Post-predicate *to*-clauses, being *in situ*, are easier for the hearer to process. The situation is the reverse for the speaker; see the introduction. Also, extraposition is natural *qua* process; see criterion (H) in the introduction.

1.2. >nat (few, many) / semantic domains of adjectives controlling *to*-clauses

I.e. a set of few semantic domains of adjectives controlling *to*-clauses is more natural than a set of many semantic domains of adjectives controlling *to*-clauses. Small classes are more natural than large classes; see criterion (F) in the introduction.

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1-2 and 2 it can be deduced: If there is any difference between adjectives controlling post-predicate *to*-clauses and adjectives controlling extraposed *to*-clauses, such that one set of controlling adjectives' semantic domains is small, and the other set of controlling adjectives' semantic domains is large, it is the semantic domains of adjectives controlling extraposed *to*-clauses that tend to be few, and it is the semantic domains of adjectives controlling post-predicate *to*-clauses that tend to be many. *Q.E.D.*

20. English. Object-to-subject raising. The superordinate structure can contain only adjectives of ease or difficulty (such as *easy, hard, difficult, impossible*). The raised noun phrase is typically a pronoun or a simple noun phrase without modifiers. E.g., *it should be easy to remember*. In contrast, in extraposed struc-

tures, the object of the *to*-clause is typically a complex structure. E.g., *it is not difficult to demand a speed of calculation beyond the performance of currently available microcomputers* (Biber *et al.* 1999: 729-30).

The two syntactic variants: construction showing object-to-subject raising (e.g., *it should be easy to remember*), and corresponding construction lacking object-to-subject raising (e.g., *it is not difficult to demand a speed of calculation beyond the performance of currently available microcomputers*).

1. The assumptions of Naturalness Theory

1.1. >nat (+, -) / object-to-subject raising

I.e. the implementation of object-to-subject raising is more natural than its absence. The use of a process is more natural than its non-use; see criterion (H) in the introduction. For an alternative scale see Note 4. below.

1.2. >nat (pronoun/light NP, other NP)

I.e. a pronoun or light noun phrase is more natural than other noun phrases. By the principle of least effort; see criterion (A) in the introduction.

A special case of 1.2:

1.2.1. >nat (pronoun/light NP, all kinds of NP)

I.e. a pronoun or light noun phrase is more natural than all kinds of noun phrase taken together. The scale has the format >nat (A, A + B); see the introduction. A + B consists of pronoun/light NP (this is A) and other noun phrases (this is B).

2. Markedness agreement (Andersen 2001) applied to naturalness

2.1. >nat tends to align with another >nat

2.2. <nat tends to align with another <nat

3. The consequences

From 1.1, 1.2.1 and 2 it can be deduced: If there is any difference between a construction showing object-to-subject raising and a corresponding construction lacking object-to-subject raising, such that one construction has a light underlying object, and the other construction admits all kinds of underlying objects, it is the construction showing object-to-subject raising that tends to have a light underlying object, and it is the corresponding construction lacking object-to-subject raising that tends to admit all kinds of underlying objects. *Q.E.D.*

4. Note. An alternative to scale 1.1: >nat (*it should be easy to remember, it is not difficult to demand a speed of calculation beyond the performance of currently available microcomputers*). By the principle of least effort; see criterion (A) in the introduction.

(iii) Conclusion

In the consequences of each deduction, a state of affairs is predicted. What is predicted to be such-and-such cannot be otherwise. (In particular, the state of affairs is not likely to be the reverse of what it is). In this sense, each state of affairs subsumed in the Consequences is accounted for ("explained" in synchronic terms).

It can likewise be seen in each deduction which assumptions couched in naturalness scales can lead to the corresponding prediction. It is the creative contribution of the linguist which scales are implemented, and in which of the three available scale formats. It is therefore conceivable that the same prediction can be deduced from several alternative sets of assumptions. This potential has not been exploited above.

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