7th Summer School of the German Linguistic Society/
7. Sommerschule der DGfS

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Typology 4

Universals II: Hawkins, Dryer

4. John A. Hawkins

4.1. Hawkin's (1983) sample and his language types

Hawkin's (1983) is based on three samples:

- Greenberg's 30 language sample
- Greenberg's expanded sample (142 languages)
- His own sample, which he calls Expanded Sample and consists of 336 languages

Type Nr	Values of the 4 parameters	Number of languages
1	V-1/Pr/NG/NA	38
2	V-1/Pr/NG/AN	13
3	V-1/Pr/GN/AN	1
4	V-1/Pr/GN/NA	0
5	V-1/Po/NG/NA	0
6	V-1/Po/NG/AN	0
7	V-1/Po/GN/AN	1
8	V-1/Po/GN/NA	0
9	SVO/Pr/NG/NA	56
10	SVO/Pr/NG/AN	17
11	SVO/Pr/GN/AN	7
12	SVO/Pr/GN/NA	4
13	SVO/Po/NG/NA	0
14	SVO/Po/NG/AN	0
15	SVO/Po/GN/AN	12
16	SVO/Po/GN/NA	13
17	SOV/Pr/NG/NA	10
18	SOV/Pr/NG/AN	0
19	SOV/Pr/GN/AN	2
20	SOV/Pr/GN/NA	0
21	SOV/Po/NG/NA	11
22	SOV/Po/NG/AN	0
23	SOV/Po/GN/AN	96
24	SOV/Po/GN/NA	55

Table 8: Frequency table for 24 language types (Hawkins 1983: 288)

> The present study is based on a language sample of some 350 languages, taken from all the major language families of the globe ... This sample has incorporated Greenberg's (1966) samples as a starting point, and has considerably expanded them. The particular emphasis within these languages is on approximately one dozen word orders consisting of pairs of modifier + head: adjective and noun, direct object and verb, preposition and NP, etc. For five of these pairs I have data from all 350 languages (adjective and noun, genitive and noun, preposition/postposition and noun phrase, object and verb, and subject and verb). For the remainder (demonstrative determiner and noun, relative clause and noun, etc.), I have data from between one-third and one-half of the sample. The same methodological problems apply in this work which apply in all large-scale typological studies: Only a limited number of properties (here word order) can be studied; the grammars upon which we rely are not always dependable; the categories that we study are not always readily comparable across languages ...; and some word orders exhibit variant orders. (Hawkins 1983: 9)

4.2. The properties of Hawkin's universals

Hawkin's universals are:

- They are absolute (that is, non-statistical)
- Implicational
- Multitermed

> The implicational universals to be proposed in this chapter have the following properties: they are almost all NONSTATISTICAL (I.E., EXCEPTIONLESS) RATHER THAN STATISTICAL, relative to the data base; they are all UNILATERAL (if P then Q) RATHER THAN BILATERAL (if P then Q and vice versa, as in Vennemann's NSP); and a significant number are MULTITERMED RATHER THAN BITERMED (i.e., defined in terms of at least three rather than just two properties. (Hawkins 1983: 59)

The reason for only accepting absolute/non-statistical universals:

> Consider just the word orders exemplifying the operator-operand orderings listed in the discussion of Vennemann's theory. There are 17 in all. If we add indirect object + verb, oblique NP + verb, and also subject + verb ..., we have a total of 20 word order pairs, each of which can be serialized with the operator either before or after the operand. As these orders are for the most part logically independent of one another, we have some 2^{20}, or over a million possible co-occurrences; and these 20 do not begin to exhaust all the definable word orders of a language.
>
> Now assuming ... that the number of currently existing languages are in the region of 4000-8000, even if each of them were to have a different co-occurrence array from every other (i.e., different with respect to at least one word order), the total number of attested co-occurrence types could not exceed 8000, which would represent just .76% of the mathematical possibilities for 20 varying word orders. And if ... the number of possible co-occurrence types is more like many hundreds of millions, the actually attested co-occurrences could be no more than a tiny fraction of 1% of these.
>
> There is therefore a trivial sense in which a huge discrepancy must exist between the mathematical possibilities and the actually attested co-occurrences - there are not enough languages to go around. (Hawkins 1983:61)

Because Hawkin's operates with multitermed universals, he can only use absolute implicational universals. If statistical implicational universals were combined into implicational chains (multitermed universals) the multiplication of their probability rate would soon lead into statistical irrelevance.

4.3. Consequences of Hawkin's research

1. SVO is no longer a type indicator; that is, nothing correlates with SVO in a unique and principled way, according to our evidence. There are, of course, many languages with SVO, but there is no "SVO-type."
2. VSO and SOV are type indicators, but limited ones. Much better and more general type indicators are prepositions and postpositions.
3. The whole notion of a "word order type" becomes more abstract. The set of languages comprising a common type no longer share all of a given set of word order properties. ... The set of languages which are considered to belong to a common type (e.g., prepositional languages) may now vary in many (even most) of their basic word orders. But they must all conform to a relatively restricted set of word order subtypes obeying certain general regularities (e.g. the subtypes of the Prepositional Noun Modifier Hierarchy, ...), each of which contains a shared common property functioning as the typological indicator (here prepositions)."

   (Hawkins 1983:16f.)

4.4. Some examples

(I') If a language has OV word order, then if the adjective precedes the noun, the genitive precedes the noun; i.e., OV ⊃ (AN ⊃ GN).

(II') If a language has verb-first order, then if the adjective follows the noun, the genitive follows the noun; i.e., V-1 ⊃ (NA ⊃ NG)

(III') If a language has Prep and any verb position other than SVO, then if the adjective follows the noun, the genitive follows the noun; i.e., Prep & -SVO ⊃ (NA ⊃ NG)

(IV) If a language has Postp word order, and if the adjective precedes the noun, then the genitive precedes the noun; Postp ⊃ (AN ⊃ GN).

(XIV): PREPOSITIONAL NOUN MODIFIER HIERARCHY (PrNMH)

Prep ⊃ ((NDem / NNum ⊃ NA) & (NA ⊃ NG) & (NG ⊃ NRel))

This hierarchy reflects the relative instability with which the five modifiers of the noun (Demonstrative, Numeral, Adjective, Genitive, Relative Clause) keep modified-modifier word order. It states that Dem and Num are more unstable than Adj, Adj is more unstable than Gen and Gen is more unstable than Rel. Thus, if in a prepositional language, NP structure deviates from the modified-modifier word order, it is Dem and/or Num that occur first in the prenominal position. If they are in the prenominal position the next category that can occur prenominally is Adj, etc. This yields the following hierarchy (cf. handout 3, § 1.2):

(33) Rel < Gen < Adj < {Dem, Num}

Universal (XIV)/Hierarchy (33) predicts that only 7 of the logically possible 32 (= 2^5) structural word-order types are attested:

1.	Prep	& NDem	& NNum	& NA	& NG	& NRel	0 modifiers preposed:	N_1
2a.	Prep	DemN	NNum	NA	NG	NRel	1 modifier preposed:	N_2
2b.	Prep	NDem	NumN	NA	NG	NRel	1 modifier preposed:	N_2
3.	Prep	DemN	NumN	NA	NG	NRel	2 modifiers preposed:	N_3
4.	Prep	DemN	NumN	AN	NG	NRel	3 modifiers preposed:	N_4
5.	Prep	DemN	NumN	AN	GN	NRel	4 modifiers preposed:	N_5
6.	Prep	DemN	NumN	AN	GN	RelN	5 modifiers preposed:	N_6

Table 9: The 7 word-order types in terms of the Prepositional Noun Modifier Hierarchy (Hawkins 1983:75)

5. Matthew S. Dryer

The aim of Dryer's (1992) studies:

- What are the pairs of elements whose order correlates with that of the verb and object? (cf. §5.1)
- Why do these correlations exist? (cf. §5.2)

For this purpose, none of the criteria postulated by Hawkins (absolute, implicational, multitermed universals) is necessary. What is needed for analysing the above question is a sound statistical method.

5.1. Dryer's correlation pairs

Unlike Hawkins (1983), Dryer (1992) operates with statistical tendencies. On the basis of his method (cf. handout 2, § 3) he wants to find out what pairs of elements correlate with VO/OV word order.

	Africa	Eurasia	SE-As & Ocean	Austr-Neu Gui	N-Am	S-Am	Average
OV & Po	15	26	5	17	25	19	107
OV & Pr	3	3	0	1	0	0	7
VO & Po	4	1	0	0	3	4	12
VO & Pr	16	8	15	6	20	5	70

Table 10: The order of adposition and NP in correlation with VO and OV (Dryer 1992: 83)

Since the type OV & Po invariably dominates over OV & Pr through all the six large areas and since VO & Pr does the same with regard to VO & Po, the two parameters of VO/OV and Pr/Po covary, that is, they are a correlation pair.

(34) a. V O
Pr NP

b. O V
NP Po

c. <Adposition, NP>

The position of the adposition covaries with the position of V
=> the adposition is a **verb patterner**

The position of the NP covaries with the position of O
=> the NP is an **object patterner**

The correlation pair <Adposition, NP> is consistent through all six large areas. Are there also correlation pairs which are to some extent inconsistent?

	Africa	Eurasia	SE-As & Ocean	Austr-Neu Gui	N-Am	S-Am	Average
OV & RelN	5	11	2	2	3	3	26
OV & NRel	9	5	2	6	12	3	37
VO & RelN	0	0	1	0	0	0	1
VO & NRel	21	8	12	3	11	5	60

Table 11: Order of noun and relative clause (Dryer 1992:86)

From looking at the first two lines in table 11 (OV & RelN, OV & NRel) we may conclude that the position of Rel relative to N does not form a correlation pair with VO/OV. However, if we look at the second two lines (VO & RelN & VO & NRel) we observe a very strong and areally consistent preference of NRel in VO languages (60 genera against 1, the language with VO & RelN is Chinese). The statistical significance of these findings can be shown as follows:

	Africa	Eurasia	SE-As & Ocean	Austr-Neu Gui	N-Am	S-Am	Average
OV	0.36	0.69	0.50	0.25	0.20	0.50	0.42
VO	0.00	0.00	0.08	0.00	0.00	0.00	0.01

Table 12: Proportions of genera containing RelN languages as opposed to NRel

In table 12, the percentage of genera of type OV & RelN is compared to the percentage of genera of the type VO & RelN. From table 11 we can see that in Africa, there are 5 genera of the type OV & RelN and 9 genera of the type OV & NRel. The percentage of OV & RelN in OV languages of Africa is thus 0.36 (= 5 : [5 + 9]). If we proceed like this throughout table 11, we get at table 12. As we can see, the percentage of RelN is higher in all six large areas with type OV than with type VO. With this areally consistent result the higher frequency of RelN in OV is statistically significant. Dryer (1992) treats cases like these as correlation pairs too: <N, Rel>.

> If a pair of elements X and Y is such that X tends to precede Y significantly more often in VO languages than in OV languages, than <X,Y> is a CORRELATION PAIR and X is a VERB PATTERNER and Y an OBJECT PATTERNER with respect to this pair. (Dryer 1992: 87)

With this method, Dryer (1992) finds the following correlation pairs:

	VERB PATTERNER	OBJECT PATTERNER	EXAMPLE
(1)	verb	object	*ate + the sandwich*
(2)	verb	subject	*(there) entered + a tall man*
(3)	adposition	NP	*on + the table*
(4)	copula verb	predicate	*is + a teacher*
(5)	'want'	VP	*wants + to see Mary*
(6)	tense/aspect auxiliary verb	VP	*has + eaten dinner*
(7)	negative auxiliary	VP	
(8)	complementizer	S	*that + John is sick*
(9)	question particle	S	
(10)	adverbialer subordinator	S	*because + Bob has left*
(11)	article	N'	*the + tall man*

(12) plural word	N’	
(13) noun	genitive	*father + of John*
(14) noun	relative clause	*movies + that we saw*
(15) adjective	standard of comparison	*taller + than Bob*
(16) verb	PP	*slept + on the floor*
(17) verb	manner adverb	*ran + slowly*

Table 13: Complete list of correlation pairs (Dryer 1992: 108)

Some noncorrelation pairs:

	DEPENDENT	HEAD	EXAMPLE
(1)	adjective	noun	*tall + man*
(2)	demonstrative	noun	*that + man*
(3)	intensifier	adjective	*very + tall*
(4)	negative particle	verb	*not + go*
(5)	tense/aspect particle	verb	

Table 14: Noncorrelation pairs (Dryer 1992: 108)

5.2. Dryer’s explanation for the correlation pairs

Dryer compares two potential explanations for his results concernig correlation pairs:

(35) The HEAD-DEPENDENT THEORY (HDT):
Verb patterners are heads and object patterners are dependents. That is, a pair of elements X and Y will employ the order XY significantly more often among VO languages than among OV languages if and only if X is a head and Y is a dependent. (Dryer 1992: 87)

(36) The BRANCHING DIRECTION THEORY (BDT):
Verb patterners are nonphrasal (nonbranching, lexical) categories and object patterners are phrasal (branching) categories. That is, a pair of elements X and Y will employ the order XY significantly more often among VO languages than among OV languages if and only if X is a nonphrasal category and Y is a phrasal category.

As it turns out, the Head-Dependent Theory makes wrong predictions concerning the question of what is a correlation pair and what is not. The Branching Direction Theory does not.

5.2.1. The Head Dependent Theory

Elements that can be explained by the Head Dependent Theory

	VERB PATTERNER (=head)	OBJECT PATTERNER (=dependent)	EXAMPLE
(1)	verb	object	*ate + the sandwich*
(3)	adposition	NP	*on + the table*
(13)	noun	genitive	*father + of John*
(14)	noun	relative clause	*movies + that we saw*
(14)	noun	relative clause	*movies + that we saw*
(15)	adjective	standard of comparison	*taller + than Bob*

(16) verb	PP	*slept + on the floor*
(17) verb	manner adverb	*ran + slowly*
(4) copula verb	predicate	*is + a teacher*
(5) 'want'	VP	*wants + to see Mary*

Table 15: correlation pairs that can be explained by the BDT

Instances which do not form correlation pairs against the predictions of the BDT:

Cf. table 14.

Example: Adjective / Noun:

	Africa	Eurasia	SE-As & Ocean	Austr-Neu Gui	N-Am	S-Am	Average
OV & AdjN	7	[24]	2	4	10	8	55
OV & NAdj	[18]	4	[5]	[15]	[18]	[14]	74
VO & AdjN	3	[6]	4	[5]	[19]	3	40
VO & NAdj	[25]	3	[12]	2	8	[5]	55

Table 16: Order of noun and adjective (Dryer 1992: 95)

	Africa	Eurasia	SE-As & Ocean	Austr-Neu Gui	N-Am	S-Am	Average
OV	[0.28]	[0.86]	[0.29]	0.21	0.36	0.36	0.39
VO	0.11	0.67	0.25	[0.71]	[0.70]	[0.38]	0.47

Table 17: Proportions of genera containing AdjN languages as opposed to NAdj (Dryer 1992: 95)

Controversial pairs (correlation pairs where head and dependent are controversial)

	VERB PATTERNER	OBJECT PATTERNER	EXAMPLE
(6)	tense/aspect auxiliary verb	VP	*has + eaten dinner*
(7)	negative auxiliary	VP	
(8)	complementizer	S	*that + John is sick*
(9)	question particle	S	
(10)	adverbialer subordinator	S	*because + Bob has left*
(11)	article	N'	*the + tall man*
(12)	plural word	N'	
(2)	verb	subject	*(there) entered + a tall man*

5.2.2. The Branching Direction Theory

Correlation pairs	Noncorrelation pairs
(14) <noun, relative clause>	(A) noun/adjective
(15) <adjective/ standard of comparison>	(C) Adjektiv/Verstärker

(16) <verb, PP> (D) Verb/Negativpartikel

From the perspective of the Head-Dependent Theory, the noncorrelation pairs should also turn out to be correlation pairs. Given the different status of phrasality in the correlation pairs and the noncorrelation pairs, the BDT predicts the above differences:

On (14) vs. (A):
relative clauses are phrasal categories that are fully recursive, adjectives are not.

On (15) vs. (C):
The standard of comparison is phrasal (= object patterner), the intensifier is not.

On (16) vs. (D):
The PP is phrasal (= object patterner), the negative particle is not.

6. Outlook: Word order typology in terms of minimalism

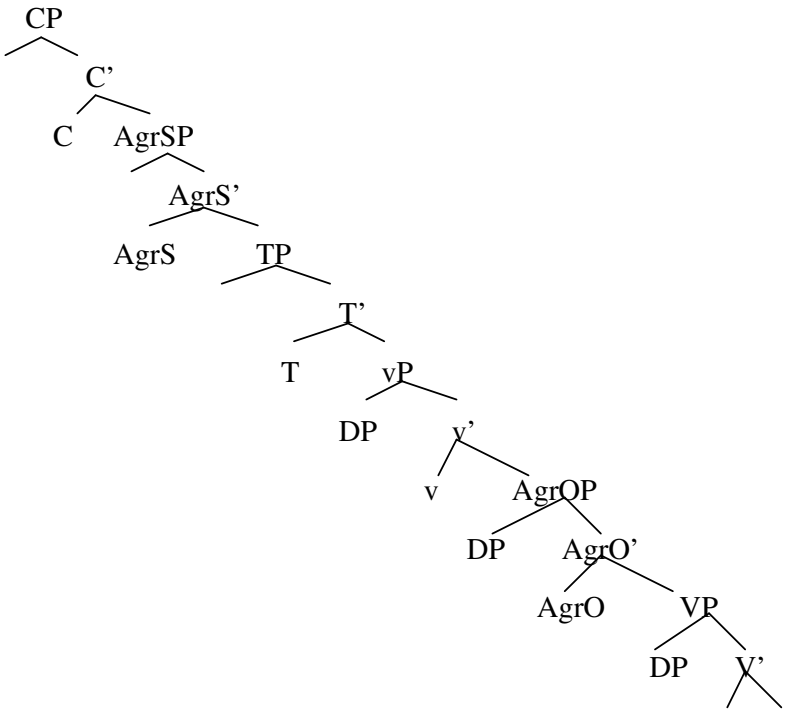
Different word order accross languages is the result of two different types of features which need to be checked in a tree structure of the following type (cf. next page) and thus trigger movement.

As we have seen in handout 1 (pp. 3f.), features (grammatical features) need to be ckecked before spell-out for a derivation to converge (not to crash). The basic idea is that there are two different types of features:

- Strong features: the lexical unit moves together with ist phonological features
- Weak features: only grammatical and logical/semantic features move, the phonological features remain in situ.

Verbal features are checked at a V adjoined to a functional head, nominal features are checked at a DP in the specifier position of AgrP (maybe TP).

(37)



V DP

The combination of weak and strong nominal and verbal features in Agr and T allows for a **formal explanation of word-order types**. The number of word possible word orders is much larger than the six options with S, V, and O. **From the formalist perspective, the six basic word-order types in terms of Greenberg (1966) are only epiphenomenal. They are the product of innate properties of UG which are much more complex**.

An example:

In English, Agr features are weak. Thus, object-DPs do not move before spell-out and we get OV. The T-features for subjects, however, are strong. It is for that reason that the subject DP needs to move before spell-out and we get SV. The verb does not move before spell-out. Thus, in English adverbs such as *often* occur in front of V, whereas in French *souvent* ‚often' occurs after the verb.

(38) Elmer lave souvent son chat.
Elmer washes often his cat

(39) Elmer often washes his cat. (Marantz 1995: 372)

In French, V features are strong in both positions, Agr and T.

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