Parts of speech and dependent clauses: A typological study

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7.1 Introduction

This chapter presents the results for the hypotheses formulated in Chapter 4. First, in section 7.2, I discuss the results for the most general hypothesis, namely that there is a *global match* between flexibility versus rigidity in the domains of PoS and DCs. This prediction is tested first considering DCs as a single group of constructions. Subsequently, the same prediction is assessed while distinguishing between the three structural DC types (see Chapter 3 section 3.4 and Chapter 6, section 6.3.3).

Second, in section 7.3, the functional relation between PoS and DCs is investigated in terms of *specific matches*, i.e. one-to-one matches between particular types of PoS classes and DC constructions, as regards the set of propositional functions that they can express. As in the case of global matches, the predictions concerning specific functional matches will be tested first considering DCs as an undifferentiated group, and then looking at the three structural DC types separately.

As explained in Chapter 4, section 4.4, the results are presented as frequency counts in 2x2 contingency tables, which are submitted to Fischer's Exact tests in order to identify dependency relations between pairs of parameters. One parameter of such a pair relates to PoS, and the other to DCs. Whenever a significant dependency is found, its nature will be further specified using the method proposed by Maslova (2003).

It is shown that significant dependency relations exist between flexible rather than rigid PoS and DCs; between very flexible rather than less flexible PoS and DCs; and between PoS and *deranked* DCs, as opposed to *balanced* DCs. These dependencies are asymmetrical in nature, and can as such be interpreted as statistical bases for implicational universals.

Section 7.4 provides a brief summary of the overall results. The language data that pertain to the analyses presented in the present chapter are summarized in a set of tables in the final section (7.5).

7.2 Global functional matches: Flexibility versus rigidity in the PoS and DC domains

7.2.1 Global matching without differentiating for structural DC-types

7.2.1.1 Introduction

In this section I test the hypothesis that there is a global match between the functional characteristics of the PoS system of a language and its DC constructions, in terms of flexibility versus rigidity. In Chapter 4 this hypothesis was operationalized in the form of a two-fold prediction A1/A2, repeated here in (1a-1b):

Predictions A1/A2:

(1) a. If a particular language has *one or more* flexible DCs, then it should also have *one or more* flexible PoS classes.
b. If a language has rigid DCs *only*, then it should also have rigid PoS classes *only*.

7.2.1.2 Global match for flexible constructions

Starting with the results for flexible constructions, Table 7.1 below presents the frequency counts for Prediction A1. This table (and similar ones in the remainder of this chapter) should be read as follows: The two grammatical parameters under investigation appear in the leftmost column and in the top row, respectively. In this case, i.e. in Table 7.1, these parameters concern the presence/absence of one or more flexible PoS class(es) and the presence/absence of one or more flexible DC construction(s). Thus, each of these parameters represents a variable with two possible values: Either the relevant trait is attested in the language (+), or it is not attested (-). Together, these two binary parameters yield four possible value combinations: +/+, +/-,

-/+, and -/-. The numbers of languages in the sample that exhibit each of these four value combinations are presented in the four shaded cells in Table 7.1. Each of these shaded cells belongs to a set of two cells, the upper (shaded) one of which represents the *observed* frequency, and the lower (transparent) one the frequency that would be *expected* if the pattern of co-occurrence of the two grammatical traits in question were purely coincidental. If, however, the distribution is not co-incidental, then the observed frequencies in the two darker shaded cells are higher than the expected frequencies, whereas the observed frequencies in the lighter shaded cells are lower then the expected ones. As explained in Chapter 4, Fischer's Exact yields a p-value that specifies how likely it is for the observed distribution to be the result of chance; the critical value is $p<0.05$ (see Cysouw 2003: 91). In Table 7.1, the observed and expected counts deviate in the predicted way, but not very much; $p = 0.225$ (2-sided), which means that there is no significant correlation.

Table 7.1: Frequencies for languages with/without (one or more) flexible PoS class(es) and DC(s)

			Flex DCs (total)		
			+	–	total
Flex PoS	+	observed freq	10	7	17
		expected freq	8	9	
	–	observed freq	11	18	29
		expected freq	13	16	
	total		21	25	46

It should be noted that the total number of 17 languages with (one or more) flexible PoS class(es) in Table 7.1 includes those languages that have a large, open and/or a productively derived class of flexible lexemes. When looking back at the data in Chapter 5 (Table 5.1), we see that this means that all languages with a small class of modifiers (Itelmen, Thai, Basque, and Abun) are counted as languages without flexible PoS, while all languages that are listed above Itelmen in Table 5.1 are counted as languages with one or more flexible PoS class(es). Note further that Nunggubuyu and Tuscarora are excluded from all analyses of the present chapter, since they don't seem to have any DC constructions. Rather, these languages express all subordination relations by means of separate, independent clauses. Therefore, no comparison can be made between the distributional patterns of the PoS classes in these languages and any DC construction. The language

data on which Table 7.1 above is based can be found in Tables 7.33 and 7.34 in section 7.5 at the end of this chapter.

7.2.1.3 Global match for rigid constructions

Consider now Table 7.2 below, which shows the results for prediction A2 (see (1b) above), concerning the correlation between rigid PoS only and rigid DCs only.

As in the case of flexible constructions, no significant correlation was found: Fisher's exact yields p = 0.552 (2-sided). The relevant language data can again be found in Tables 7.33 and 7.34 of section 7.5.

Table 7.2: Frequencies for language with/without rigid PoS only and rigid DCs only

			Rig DCs (total)		
			+	–	total
Rig PoS	+	observed freq	15	14	29
		expected freq	14	15	
	–	observed freq	7	10	17
		expected freq	8	9	
	total		22	24	46

7.2.1.4 Summary

In its most general form, the hypothesis of a global match between flexibility versus rigidity in the domains of PoS and DCs is rejected. In the following section this hypothesis is refined by taking into account the parameter of structural DC type.

7.2.2 The parameter of structural DC type

7.2.2.1 Introduction

In this section I introduce the parameter of the internal structural properties of DCs. The prediction, as formulated in Chapter 4, is that the more formally similar a DC construction is to a lexical expression, the more functionally similar it will be to this lexical counterpart. In other words, it is expected that functional connections will be stronger between PoS and deranked DCs (type 2,3) than between PoS and balanced DCs (type 1). In addition, within the group of deranked DCs, it is expected that more deranked DCs (type 3, D-ALT) will show more functional similarity with PoS than less deranked

DCs (type 2, D-SENT). In Chapter 4 this was operationalized in the form of the two predictions B1 and B2, which are repeated in (2a-b) below:

Prediction B1/B2:

(2) a. The functional possibilities of deranked DCs (type 2/3) are more similar to the functional possibilities of PoS than those of balanced DCs (type 1).
b. Within the group of deranked DCs, the functional possibilities of type 3 DCs are more similar to the functional possibilities of PoS than those of type 2 DCs

These predictions will now be combined with the predictions concerning global matches between flexible versus rigid PoS systems and DC constructions.

7.2.2.2 Global match of flexible constructions, differentiating for structural DC type

Applying predictions B1 and B2 to flexible PoS and DC systems yields a set of four hypotheses, which are given in (3a-d) below (cf. (3) of Chapter 4). It is expected that the prediction in (3a) is less likely to hold true than the one in (3b). Furthermore, the prediction in (3c) is less likely to be confirmed than the one in (3d).

(3) a. If a language has one or more flexible balanced DC(s) of type 1, then it should also have one or more flexible PoS class(es).
b. If a language has one or more flexible deranked DC(s) of type 2/3, then it should also have one or more flexible PoS class(es).
c. If a language has one or more flexible deranked DC(s) of type 2, then it should also have one or more flexible PoS class(es).
d. If a language has one or more flexible deranked DC(s) of type 3, then it should also have one or more flexible PoS class(es).

The distributions pertaining to the predictions in (3a-d) are presented in Tables 7.3, 7.4, 7.6, and 7.7 below. The language data can be found in Tables 7.33 and 7.34 of section 7.5.

First, the frequencies relevant for the prediction in (3a), concerning balanced DCs, appear in Table 7.3. This table shows that there is hardly any difference between the observed and the expected dsitribution; Fischer's exact yields p = 0.755 (2-sided).

Table 7.3: Frequencies for languages with/without flexible PoS and flexible DCs of type 1

			Flex DCs type 1 (balanced)		
			+	–	total
Flex PoS	+	observed freq	7	10	17
		expected freq	6	11	
	–	observed freq	10	19	29
		expected freq	11	18	
	total		17	29	46

Second, the frequencies pertaining to the prediction in (3b), concerning deranked DCs, are presented in Table 7.4. As expected, this distribution does yield a significant correlation: p = 0.025 (2-sided). The contingency coefficient (CC) is 0.339, which suggests a moderately strong effect (see Chapter 4, section 4.4).

Table 7.4: Frequencies for languages with/without flexible PoS and flexible DCs of type 2/3

			Flex DCs type 2/3 (deranked)		
			+	–	total
Flex PoS	+	observed freq	7	10	17
		expected freq	4	13	
	–	observed freq	3	26	29
		expected freq	6	23	
	total		10	36	46

Following Maslova (2003; and see Chapter 4, section 4.4), the PoS parameter and the DC parameters are each separately correlated to the derived parameter PoS = DC (i.e. the parameter of PoS and DC having the same or different values), in order to assess the nature of the dependency relation identified in Table 7.4. This yields Tables 7.5a and 7.5b:

Table 7.5a: Maslova test no. 1: change DC parameter to PoS=DC

	Flex Pos +	Flex Pos –
PoS = DC	7	26
PoS ≠ DC	10	3

p < 0.001 (significant)

Table 7.5b: Maslova test no. 2: Change PoS parameter to PoS=DC

	Flex DC 2/3 +	Flex DC 2/3 –
PoS = DC	7	26
PoS ≠ DC	3	10

p = 1 (not significant)

Tables 7.5a and 7.5b indicate a one-sided asymmetrical dependency between flexible PoS and deranked flexible DCs. In particular, Table 7.5a shows that the negative value of the PoS parameter constrains the event of the PoS and DC parameters having the same value[102]. In contrast, Table 7.5b shows that the value for the DC parameter and the event of the PoS and DC parameters having the same value are completely independent of each other.

This outcome is interpreted as the statistical counterpart of the typical situation encountered with implicational universals, namely a 2x2 contingency table with exactly one (nearly) empty cell. In the case at hand, this is the cell with the value combination [-Flex PoS, + Flex DC type 2/3]. The observed frequency in this cell (3) is both low and significantly lower than the expected frequency (6). This constitutes statistical evidence for the universal in (4):

(4) [- Flex PoS] ➔ [- Flex DC 2/3]
Languages without any flexible PoS class(es) also lack flexible deranked DC(s) of type 2/3 (independent of whether languages *with* flexible PoS class(es) have flexible deranked DC(s) of type 2/3).

Relating this result to the prediction in (3b), we can say that indeed the availability of flexible DC constructions of type 2/3 in a language is dependent on the availability of at least one flexible PoS class(es) in that language.

I turn now to the predictions in (3c) and (3d) above, differentiating within the group of deranked flexible DC between DCs of type 2 (D-SENT) and DCs of type 3 (D-ALT). First, the frequencies pertaining to the prediction in (3c), concerning type 2 DCs, appear in Table 7.6. They do not show any correlation: the observed and expected counts are identical, so that Fischer's Exact yields p =1.

[102] Note that the pattern in Table 7.5a pattern differs from the one in Table 4.9a of Chapter 4 (the hypothetical illustration of a one-sided asymmetrical dependency relation), to the extent that in the latter case it is the *positive* rather than the *negative* value of the PoS parameter for which the distribution of flexible DCs is skewed.

Table 7.6: Frequencies for languages with/without flex PoS and flex DCs of type 2

			Flex DCs type 2 (D-SENT)		
			+	–	total
Flex PoS	+	observed freq	1	16	17
		expected freq	1	16	
	–	observed freq	1	28	29
		expected freq	1	28	
	total		2	44	46

At first sight, this result is unexpected, especially in view of the universal in (4). However, this finding can be explained by the fact that there are hardly any flexible DCs of type 2 attested in the sample. That is to say, when comparing Table 7.6 with Table 7.4, it can be seen that only 2 out of the total 10 flexible deranked DCs involve a construction of type 2; all others are of type 3. Therefore, it is not surprising that we do not find a significant correlation when testing the prediction in (3c).

On the other hand, and as expected, we do find a significant correlation when testing the prediction in (3d), which is concerned with flexible DCs of type 3. The relevant frequencies are presented in Table 7.7 below, which differs only very slightly from Table 7.4 above. They yield a significant p-value of 0.038. The CC value is 0.340, which indicates a moderately strong effect.

Table 7.7: Frequencies for languages with/without flex PoS and flex DCs of type 3

			Flex DCs type 3 (D-ALT)		
			+	–	total
Flex PoS	+	observed freq	6	11	17
		expected freq	3	14	
	–	observed freq	2	27	29
		expected freq	5	24	
	total		8	38	46

When applying Maslova's method to these data, again a one-sided asymmetrical dependency is revealed, as the data in Table 7.8a and 7.8b show:

Table 7.8a: Maslova test no. 1: change DC parameter to PoS=DC

	Flex Pos +	Flex Pos –
PoS = DC	6	27
PoS ≠ DC	11	2

p = 0.000 (significant)

Table 7.8b: Maslova test no. 2: Change PoS parameter to PoS=DC

	Flex DC3 +	Flex DC3 –
PoS = DC	6	27
PoS ≠ DC	2	11

p = 1 (not significant)

Table 7.8a shows that the negative value of the PoS parameter constrains the event of the PoS and DC parameters having the same value, while Table 7.8b shows that the DC parameter and the PoS=DC parameter do not interact. This is interpreted as evidence for the universal in (5), which is in fact a more precise version of (4) above.

(5) [- Flex PoS] ➔ [- Flex DC 3]
Languages without any flexible PoS class(es) also lack flexible deranked DC(s) of type 3 (independent of whether languages *with* flexible PoS class(es) have flexible DC(s) of type 3).

In sum, these data show that taking into account structural DC type reveals a dependency relation between flexible PoS and flexible deranked DCs. In particular, flexible deranked DCs hardly ever occur in languages without any flexible PoS class(es). However, this does not mean that all languages with a flexible PoS class also have a flexible deranked DC construction.

7.2.2.3 Global match for rigid constructions, differentiating for structural DC type

In this section I turn back to prediction A2 about *rigid* constructions (see (1b) above), and combine it with the parameter of structural DC type (see B1/B2 in (2a, b) above). Recall the definitions of languages with flexible versus rigid constructions: Whereas flexible PoS and DC systems are defined as those that have *at least one* flexible construction, rigid PoS and DC systems consist of rigid constructions *only*. It was explained that, due to this asymmetry,

it does not make sense to formulate specific predictions about correlations between languages with rigid PoS only and rigid DCs *of a specific structural type only*. This is because there is no reasonable basis on which to expect languages to have only a single structural type of rigid DCs. On the contrary, it is expected that semantically different types of subordination relations will be expressed by DC constructions with different internal morpho-syntactic properties. Indeed, as can be seen in Table 34.7 in section 7.5, there are only a few languages in the sample that have both rigid PoS only and rigid DCs only, and in which all DCs are of a single structural type. The languages that display such a pattern are Abun, Bukiyip, Tamil, and Hixkaryana. All other languages with rigid PoS only and rigid DCs only (11 in total) show a mixture of two or three structurally different DC types.

Nevertheless, we may investigate which structural DC types occur in groups of languages with different values for the parameters of rigid PoS only and rigid DCs only. Specifically interesting are languages with unexpected value combinations, i.e. languages that do not show a match between the functional possibilities of PoS and DCs. Such cases may involve (i) languages with one or more flexible PoS class(es) and with rigid DCs only, and (ii) languages with rigid PoS only and with one or more flexible DC construction(s).

Consider once more the data in Table 7.2, repeated below as Table 7.2' for convenience, which presents the frequencies for languages with and without rigid PoS and DCs only (without differentiating for structural DC type).

Table 7.2': Frequencies for language with/without rigid PoS only and rigid DCs only

			Rig DCs (total)		
			+	–	total
Rig PoS	+	observed freq	15	14	29
		expected freq	14	15	
	–	observed freq	7	10	17
		expected freq	8	9	
	total		22	24	46

Languages with flexible PoS systems and rigid DCs only

I start with a discussion of those languages that display the unexpected feature combination mentioned under (1) above: one or more flexible PoS

class(es) and rigid DCs only ([- Rig PoS only; + Rig DCs only]). Table 7.2' shows that there are 7 languages of this type. They are: Guaraní, Warao, Hungarian, Japanese, Hmong Njua, Lango, and Koasati. Considering Table 7.33 in section 7.5, we see that in some of these cases the rigid DCs in question are balanced (type 1). Even though the attestation of these constructions contradicts the prediction of a global mapping of rigid PoS and DCs, this result is relatively un-surprising, since balanced DCs were predicted to be least likely to show functional similarity to PoS.

What is apparently more surprising is the attestation of a number of deranked (type 2 or 3) rigid DC constructions in the group of languages with flexible PoS systems. However, in almost all of these cases the rigid deranked DC can be regarded as the clausal counterpart of a rigid PoS class (possibly a derived or a small class) that forms part of a system that also includes one or more flexible PoS class(es). Therefore, these cases in fact confirm the prediction that PoS and (deranked) DCs exhibit parallel functional patterns. In what follows, I will discuss in more detail the cases of languages with flexible PoS systems and rigid (balanced or deranked) DCs only.

Guaraní and Warao are both languages with a class of very flexible lexemes: they have contentives and non-verbs, respectively. Guaraní does not have any relevant extra rigid PoS classes to which its rigid DCs can be linked. However, all rigid DCs in this language are balanced (type 1), and as such not very likely to behave functionally like PoS. Warao, in contrast, has a balanced rigid relative clause construction *and* a deranked rigid complement construction of type 2. While the attestation of the former may again be explained in terms of lack of formal (and therefore functional) similarity with PoS, the presence of the latter DC can be related to the a class of derived nouns in Warao. This class of nouns was not taken into the account in the original analysis, since – in order to avoid double values – classes of simple, un-derived items are given prominence over classes of derived items in cases where both are available to express a particular propositional function (in this case the function of head of a referential phrase).

The other languages with flexible PoS systems and rigid DCs only (Hungarian, Japanese, Hmong Nua, Lango, and Koasati) have either a class of nominals or a class of modifiers. Hungarian, for instance, has lexical nominals and, contrary to the predictions, rigid nominalizations and participle constructions of types 2 and 3. A possible explanation for this counterexample may again be sought in the realm of derivational morphology. For one thing, the form *-ás/-és*, which is used to mark Hungarian rigid nominalizations of

type 3, can also be used for the lexical derivation of action nouns, as in: *olt* 'extinguish' ➔ *olt-as* 'extinguishing'. There is thus a functional match between the deranked DC construction and a derived PoS class. Interestingly, one of the rigid participial constructions in Hungarian, namely the active (present) participle form in *-ó/-ő*, is also productively used to derive lexical *nouns*, as for example in: *alvas* 'read' ➔ *olvas-ó* 'reader', and *ebédel* 'have dinner' ➔ *ebédl-ő* 'dining room'. Thus, even though the participial construction is not flexible, its marker also appears in the function of head of a referential phrase, as a marker of lexically derived nouns. In addition to rigid deranked nominalizations and participles, Hungarian has three balanced rigid DCs: complement clauses, relative clauses, and adverbial manner clauses. The functional rigidity of the former two constructions does not match with the flexibility of lexical nominals, but their balanced form makes them unlikely candidates to exhibit such a match in the first place.

Japanese also has nominals, but unlike Hungarian it has a class of simple rigid nouns as well. Therefore, the rigid complement clauses attested in Japanese indeed have a lexical counterpart, and as such do not constitute a counterexample[103]. Lango is a language with two rigid complement clause constructions: a deranked one (of type 3) and a balanced one. These DCs are again not to be regarded counterexamples, since Lango has a class of rigid simple nouns, which serves as the lexical counterpart for the rigid complement clauses. In addition to these constructions, Lango has rigid balanced relative clauses, which do not match with its flexible lexical modifiers. Hmong Njua, similarly, has flexible lexical modifiers and rigid balanced relative clauses. In both cases, the fact that the DC construction is balanced may explain the lack of functional similarity with the relevant PoS class.

Finally, there is one language, Koasati, the PoS system of which is classified as flexible because it contains a derived class of modifiers, but which is otherwise fully rigid, i.e. displays open classes of nouns and verbs, a small class of adjectives, and small and derived classes of manner adverbs. This means that the nominalizations, participial and converbal constructions attested in Koasati, all of which are deranked (type 2), have the expected lexical counterparts.

In sum, there is only one truly problematic case, i.e. one language with a rigid, deranked DC for which no rigid (derived) lexical counterpart is

[103] Recall from Chapter 6 that the classification of Japanese nominalizations in terms of structural type is not evident: They were classified as 1/3, because they retain tense, but also have the possibility of expressing the subject as a possessor.

available: Hungarian has rigid deranked participle constructions of type 2 and 3, without (simple or derived) rigid adjectives.

Languages with flexible PoS systems and a mixture of flexible and rigid DCs

Table 7.2' shows that, apart from the group of 7 languages with at least one flexible PoS class and with rigid DCs only, there is a group of 10 languages with at least one flexible PoS that do *not* have rigid DCs only ([- Rig PoS only; - Rig DCs only]). In principle, this latter value combination is expected. Notably however, 9 out of the 10 relevant languages have one or more rigid (deranked) DCs *alongside* the expected flexible DCs. In other words, these 9 languages with flexible PoS systems have a mixed system of flexible and rigid DCs.

Consider for instance a language like Ma'di: It has lexical nominals and, as predicted, flexible deranked nominal clauses. The latter construction is illustrated in (6a-b):

Ma'di (Blackings & Fabb 2003: 202, 22)

(6) a. *Má lè-ā* [*èɓí ˋ ɲā-lɛ́*] *rá*
1SG (N)want-OBJ fish N-eat-NMLZ AFF
'I certainly want to eat fish.'

b. *àràbíà* [*ɔ́pí ʔà dʒɪ̄-lɛ́*] *rɨ́* *pá* *nā* *ādī.*
car Opi POSS (N)-take-PTC DEF leg AFR deflate
'The car which Opi took has a flat tyre.'

However, in modifier function the *lɛ́*-construction is used for object relative clauses only. For subject relative clauses, a different rigid deranked relative clause construction (of type 2) is used, as is illustrated in (7):

Ma'di (Blackings & Fabb 2003: 193)

(7) *ágɔ́ àm-à dʒɔ́ ˋ nī ˋsī-ɓá rɨ́*
man [1PL-POSS house SPEC PRON N-build-PTC(PL)] DEF
'One of the men who built/are building our house.'

Similarly, Turkish has flexible lexical non-verbs and flexible deranked nominal clauses of type 3. The latter are illustrated in (8a-8b):

Turkish (Kornfilt 1997: 50)

(8) a. *(ben)* [*Ahmed-in* *öl-**düg**-ün*]-*ü* *duy-du-m*
I Ahmed-GEN die-**NMLZ**-3SG-ACC hear-PST-1SG
'I heard that Ahmed died.'

b. [*adam-ın* *git-**tiğ**-i*] *okul*
man-GEN go-**PTC**-3SG school
'the school that the man goes/went to'

However, Turkish also has a number of rigid deranked DCs. Examples (9) and (10) show the infinitival construction in *-mAK* (type 2), and the nominalization in *-mA* (type 3), respectively. Both constructions can be used in the function of head of a referential phrase only. Example (11) illustrates the rigid participle construction marked by *-An* (type 2), which is used exclusively as a modifier in a referential phrase, expressing subject and possessive relative clauses. Finally, example (12) shows the rigid converb construction in *-(y)ArAk* (also of type 2), which can express only the function of modifier in a predicate phrase.

Turkish (Kornfilt 1997: 51, 73; Göksel & Kerslake 2005: 420, 440)

(9) [*Lütfen* *pencere-yi* *aç-mağ*]-*ı* *unut-ma*
please window-ACC open-**INF**-ACC forget-NEG
'Please, don't forget to open the window!'

(10) [*Kerkes-in* *birier* *kikaye* *anlat-**ma**-sı*]
everyone-GEN one.each story tell-**NMLZ**-3SG.POSS
iste-n-iyor-muş
want-PASS-IPFV-EV.COP
'It seems they want [everyone to tell a story].'

(11) [*ögretmen* *ol-**an***] *Haydar*
teacher be-**PTC** Haydar
'Haydar, who is a teacher'

(12) *Ben* [*etraf-ım-a* *bak-**arak***] *yür-ür-üm*
I around-1SG-DAT look-**CONV** walk-AOR-1SG
'I walk looking around (myself).'

In short, almost all languages with a flexible PoS system (i.e. with at least one flexible PoS class) have at least one rigid deranked DC construction; sometimes in combination with flexible deranked DC(s), sometimes not.

In addition, the examples from Turkish point to yet another interesting issue, namely the fact that flexible deranked DCs in languages with flexible PoS sometimes do not show exactly the same distributional pattern as their lexical counterparts, but are rather somewhat less flexible than the relevant PoS class. In particular, Turkish nominal clauses can express two out of the three functions that can be expressed by the lexical non-verbs in this language[104]. In Chapter 8 I will return to this issue, and suggest that there are good functional reasons for deranked DCs to be less flexible than PoS classes in the same language.

Languages with rigid PoS systems and with flexible DCs

Having discussed languages with flexible PoS systems and rigid (as well as flexible) DCs, I will now consider the second group of languages with an unexpected combination of parameter values: rigid PoS only and one or more flexible DC construction(s) ([+ Rig PoS only; - Rig DCs only]). Table 7.2' above shows that half of the total amount of languages with rigid PoS only (14 out of 29) do not have rigid DCs only. However, when looking at Table 7.33 in section 7.5, we see that the majority of these cases (11 out of 14) involve balanced DCs[105]. This suggests again that a lack of formal similarity ties in with a lack of functional similarity between DCs and PoS. In addition, there may be other factors at work. First, the relevant flexible balanced DCs often have the possibility to use some extra morpho-syntactic means (i.e. in addition to their 'regular' structural coding) in order to disambiguate the multiple functions in which they can appear (Hengeveld & Van Lier 2008). Second, diachronic developments also seem to play a role. These issues will be discussed further in Chapter 8.

[104] In combination with a postposition *gibi* ('like'), nominal clauses in *-DIK* can be used as similative clauses (cf. Chapter 6, section 6.2.2), as illustrated in (1). Note however, that this is not a case of flexibility since *-DIK* clauses can only function as predicate modifiers in combination with a postposition (see Chapter 6, section 6.2.2.1).

(1)
Pastayı [[*anne-m-in* *analat-tığ-ı*] ***gibi***] *yapmaya çalıştım*
the cake mother-1SG.POSS-GEN describe-NMLZ-3SG.POSS **like** I tried to make
'I tried to make the cake [as my mother had described].' (Göksel & Kerslake 2005: 477)

[105] There is one language with rigid PoS, Burushaski, which has both balanced (type 1) and deranked (type 2) flexible DCs.

Apart from flexible balanced DCs, there are also three unexpected cases of flexible deranked DC constructions in languages with rigid PoS only (cf. the observed frequency of the 'nearly empty cell' in Table 7.4). The relevant cases are attested in Burushaski, Hdi, and Krongo, and I will discuss them one by one.

First, Burushaski has rigid PoS classes to express the functions of head and modifier in a referential phrase, i.e. nouns and adjectives, in combination with a flexible deranked nominal clause of type 2 that can express both these functions. The flexible DC is illustrated in (13a-b).

Burushaski (Anderson 2002: 545, Berger 1998a: 171)

(13) a. *buṭ* *muškíl* *bilá* [*góo-ltir-**as***]
very difficult be.IV 2-show-INF
'It is very difficult to show (it) to you.'

b. [*Chá-aṭe* *oóo-rvγ-**as***] *hvk*
post-SUPERESS NEG-sit-PTC dog
'a dog which doesn't sit at its post.'

I have not been able to find a plausible explanation for this counterexample, except that there are some indications that the lexical distinction between nouns and adjectives in Burushaski is also not particularly clear-cut. Lorimer (1935: 102), for instance, characterizes the distinction as "*messy*" and observes that "*nouns borrowed from other languages are in many cases used as adjectives, which seems to show a slowness to appreciate the distinction between noun and adjective*". Some examples of such flexible items would be *zo'r* 'power/powerful', *šərum* 'shame/ashamed', and *xʌtər* 'danger/dangerous' (cf. Berger 1998a: 78). The Burushaski dictionary (Berger 1998b) also provides some indications of flexible items, such as *aasáan* 'easy/easiness', and *ajóono* 'strange/stranger'. Although these data obviously do not suffice as a full explanation of the flexibility displayed by Burushaski *-as* clauses, at least they put their unexpected distributional pattern into some perspective.

Second, Hdi has a deranked (type 3) nominal clause construction, which is marked by *tá*. Notably, this marker is not exclusively used for structural coding of DCs; it also combines with non-clausal constituents and as such can have two functions: Either it marks a lexical object, or it is a so-called 'comment marker' in a focus construction. When introducing a complement clause, *tá* is glossed as having the former function, i.e. that of an object marker. This is shown in example (14a). In contrast, as can be seen in (14b),

tá is glossed as a comment marker when marking a relative clause. Thus, the flexibility of this DC construction seems to be due to the general multi-functionality of *tá*, the morpheme used for its structural coding.

Hdi (Frajzyngier & Shay 2002: 480, 406)

(14) a. *Sí* *tà* *ɗv-áy-xən* [***tá*** *ɦliy-á-mú*]
PST IPFV want-PO-3PL **OBJ** leave-GEN-1PL.INCL
'They wanted us to leave.' (lit. They wanted our leaving.)

b. *ghùrúm* [***tá*** *lá-ghw-í* *ndá* *mà* *xàdĭk*]
hole **COMM** go-D:SO-REF ASSOC in ground
'a hole that went deep into the ground'

In Krongo, finally, the flexible deranked DC is a modifier clause; it can be used as a modifier of either a referential or a predicative head. This contruction has been exemplified in Chapter 6 (see example (35a-b). Crucially, Krongo does not have any (flexible or rigid) lexical strategy to express the two modifier functions. This means that it is not possible to compare the distributional pattern of the Krongo modifier clause to that of any PoS class(es). Therefore, this counterexample will be excluded in the analyses of section 7.3, where we will be concerned with specific matches between individual PoS classes and DC constructions.

In short, there are only very few cases of deranked flexible DCs in languages with rigid PoS systems; the large majority of flexible DCs in these languages is balanced.

7.2.2.4 Summary

In this section it has been shown that, when considering DCs as an undifferentiated group, there is no global match between flexibility versus rigidity in the domains of PoS and DCs. However, when taking into account the parameter of structural DC type, the following dependency relation is revealed: Deranked flexible DCs are almost completely absent in languages without any flexibility in their PoS system, but these languages quite often do have balanced flexible DCs.

On the other hand, languages with flexible PoS systems exhibit both flexible and rigid deranked DCs. Some of these languages display a combination of flexible and rigid DCs, while others have rigid DCs only. In fact, however, almost all languages with at a flexible PoS system have at least one rigid DC construction. These rigid DCs can be deranked or balanced.

7.3 Specific functional matches: Types and amounts of flexibility/rigidity in the PoS and DC domains

7.3.1 Introduction

In this section I investigate whether there are correlations between the availability in a language of specific types of flexible and rigid PoS classes, which can express a particular (set of) propositional function(s), and the availability of DC constructions with the same functional possibilities. It is expected that each secondary DC construction of a specific flexible/rigid type will have a primary lexical counterpart of the same flexible/rigid type. This hypothesis was operationalized in Chapter 4 in the form of Prediction C, repeated in (16) below (cf. (6) in Chapter 4):

Prediction C:

(16) If a language has a DC construction of a specific flexible or rigid type X, then it should also have a PoS class of type X.

In what follows, Prediction C is tested first for specific flexible constructions, and then for specific rigid constructions. In every case, I will first consider DCs as a single group of constructions, and then differentiate them according to internal structural type.

7.3.2 Specific matches for flexible constructions

7.3.2.1 Introduction

Starting with flexible PoS and DC constructions, Prediction C in (16) above can be broken down into three sub-predictions, one for each functional type, as in (17a-c):

(17) a. If a language has contentive and/or multi-functional clauses, then it should also have lexical contentives and/or non-verbs.
b. If a language has nominal clauses, then it should also have lexical nominals.
c. If a language has modifier clauses, then it should also have lexical modifiers.

Note that, unlike in Chapter 4 (see (7) in that Chapter), the prediction in (17a) treats two flexible construction types as one: (i) constructions

that can be used in all four functions (lexical contentives and contentive clauses), and (ii) constructions that can be used in all functions except the head of a predicate phrase (lexical non-verbs and multifunctional clauses). This is because, as shown in Chapter 6, contentive clauses are very rare. No predictions are formulated either that make reference to flexible DC types involving the functional slot for head of a predicate phrase (*predicative clauses, head clauses, and Flex Clauses A, B, and D*, see Chapter 3, section 3.2.3), since these constructions are not attested in the sample languages (see Chapter 6, section 6.2.3.2). Finally, while flexible DCs of type C (that can be used as the head of a referential phrase and the modifier in a predicate phrase) are indeed attested, their lexical equivalent (*Flex PoS C*) is not (see Chapter 5, section 5.3.4)[106]. Therefore, no predictions are formulated about constructions with this particular functional pattern.

Each of the predictions in (17) can be combined with the parameter of structural DC type. For example, the prediction in (17a) can be broken down into four sub-predictions, as in (18a-d) (cf. (9a-d) of Chapter 4). As before, it is expected that the prediction in (18a) is less likely to hold than the one in (18b), and that the prediction in (18c) is less likely to hold than the one in (18d).

(18) a. If a language has balanced contentive and/or multifunctional clauses of type 1, then it should also have lexical contentives and/or non-verbs.
b. If a language has deranked contentive and/or multifunctional clauses of type 2/3, then it should also have lexical contentives and/or non-verbs.
c. If a language has deranked contentive and/or multifunctional clauses of type 2, then it should also have lexical contentives and/or non-verbs.
d. If a language has deranked contentive and/or multifunctional clauses of type 3, then it should also have lexical contentives and/or non-verbs.

In the remainder of this section I present the results for the three predictions in (17a-c) one by one. Each of these three predictions will first be tested

[106] It is noteworthy that there are thus DC types without a functional lexical counterpart. However, flexible DCs of type C are infrequently attested (N=3), and involve either balanced clauses (in Basque and West Greenlandic) or an infinitive construction that is reduplicated in the function of modifier in a predicate phrase (Imbabura Quechua).

considering DCs as a single group, and then differentiating for structural DC types, along the lines of (18a-d).

7.3.2.2 Flexible match 1: Lexical contentives/non-verbs and contentive/multi-functional clauses

Consider first the results for the prediction in (17a). This prediction involves the most pervasively flexible construction types, namely lexical contentives/non-verbs and contentive/multi-functional clauses. The relevant frequencies are given in Table 7.9. As expected, they reveal a significant correlation: p = 0.037 (2-sided). The CC value is 0.351, indicating a moderately strong effect. The relevant language data are summarized in Tables 7.35 and 7.36 of section 7.5.

Table 7.9: Frequencies for languages with/without lexical contentives/non-verbs and contentive clauses/multi-functional clauses

			DCs: contentive/multi-functional clauses		
			+	–	total
PoS contentives/ non-verbs	+	observed freq	3	4	7
		expected freq	1	6	
	–	observed freq	3	36	39
		expected freq	5	34	
	total		6	40	46

Applying Maslova's method to the data in Table 7.9 reveals a two-sided asymmetrical dependency, as Tables 7.10a and 7.10b make clear:

Table 7.10a: Maslova test no. 1: change DC parameter to PoS=DC

	Pos contentive/non-verb +	Pos contentive/non-verb –
PoS = DC	3	36
PoS ≠ DC	4	3

p = 0.006 (significant)

Table 7.10b: Maslova test no. 2: change PoS parameter to PoS=DC

	DC contentive/multi-functional +	DC contentive/multi-functional –
PoS = DC	3	36
PoS ≠ DC	3	4

p = 0.037 (significant)

The significant correlations in Tables 7.10a and 7.10b show that the negative values of both the PoS and the DC parameters constrain the event of the PoS and DC parameters having the same value[107]. These results are interpreted as evidence for the universal in (19), which is in fact a pair of two implicational universals:

(19) [- PoS contentive/non-verb] ↔ [- DC contentive/multi-functional]
Languages without lexical contentives or non-verbs also lack contentive or multi-functional clauses, and vice versa (languages without contentive or multi-functional clauses also lack lexical contentives and non-verbs).

Notably however, the original distribution in Table 7.9 makes clear that the PoS and the DC parameters under investigation, involving the availability of maximal flexibility, are both strongly skewed towards the negative value. In other words, lexical contentives/non-verbs and contentive/multi-functional clauses are rare phenomena, independently of each other. This is why there are three nearly empty cells in Table 7.9, rather than exactly one nearly empty cell as would be expected in the case of a 'classical' implicational universal. This means that the implicational universals in (19), which have negative values in the consequent parts, are not particularly informative.

A much more interesting generalization that can be made on the basis of Table 7.9 is that the occurrence of a *positive* value on the PoS parameter strongly increases the likelihood that the DC parameter will also have a positive value, even though this likelihood is still only about 50%. In other words, while maximally flexible PoS classes are rare, when they *are* attested in a language, this dramatically increases the chances that that the same type of flexibility will be attested in the DC system, resulting in a (nearly) even

[107] Note that this pattern differs again from the hypothetical one for a two-sided asymmetrical dependency relation as illustrated in Chapter 4, Tables 4.11a-b. In the latter case, the *positive* value of the PoS parameter (Table 4.11a) and the *negative* value of the DC parameter (Table 4.11b) constrain the PoS = DC parameter.

distribution. This finding supports the general hypothesis that there is a strong tendency for the PoS and DC parameters to have the same value[108].

I will now investigate the effect of the parameter of structural DC type on the correlation between maximally flexible PoS and DCs, as operationalized in the set of predictions listed in (18a-d) above. First, consider the results for the prediction in (18a), concerning balanced clauses. The relevant frequencies are given in Table 7.11. Like in al the previous cases involving balanced clauses, these counts do not reveal a significant correlation: p = 0.160 (2-sided).

Table 7.11: Frequencies for languages with/without contentives/non-verbs and contentive clauses/multi-functional clauses of type 1

			DCs: contentive/multi-functional clauses type 1 (balanced)		
			+	–	total
PoS contentives/ non-verbs	+	observed freq	2	5	7
		expected freq	1	6	
	–	observed freq	3	36	39
		expected freq	4	35	
	total		5	41	46

Turning to deranked contentive and multi-functional clauses (see (18b-d) above), we find that all such constructions attested in the sample are of type 3 rather than type 2 (cf. Table 7.35 in section 7.5). Therefore, it is not possible to differentiate between clauses of type 3 and clauses of type 2. The frequencies for deranked contentive and multi-functional clauses of type 3 are presented in Table 7.12. As expected, these frequencies reveal a significant correlation: p = 0.000 (2-sided). Moreover, the CC value is 0.589, which indicates a strong effect.

[108] I am indebted to Elena Maslova for her helpful comments on the interpretation of these data.

Table 7.12: Frequencies for languages with/without lexical contentives/non-verbs and contentive clauses/multi-functional clauses of type 3

			DCs: contentive/multi-functional clauses type 3 (D-ALT)		
			+	–	total
PoS contentives /non-verbs	+	observed freq	4	3	7
		expected freq	1	6	
	–	observed freq	0	39	39
		expected freq	3	36	
	total		4	42	46

Applying Maslova's method makes clear that this correlation involves a one-sided asymmetrical dependency. The relevant data are presented in Tables 7.13a and 7.13b:

Table 7.13a: Maslova test no. 1: change DC parameter to PoS=DC

	PoS contentive/non-verb +	PoS contentive/non-verb –
PoS = DC	4	39
PoS ≠ DC	3	0

p = 0.002 (significant)

Table 7.13b: Maslova test no. 2: change PoS parameter to PoS=DC

	DC contentive/multi-functional +	DC contentive/multi-functional type 3 –
PoS = DC	4	39
PoS ≠ DC	0	3

p = 1 (not significant)

Table 7.13a shows that the negative value of the PoS parameter constrains the event of PoS and DCs having the same value. Table 7.13b, in contrast, shows that the DC parameter and the PoS=DC parameter do not interact. On the basis of these results, the universal in (20) can be formulated:

(20) [- PoS contentive/non-verb] ➔ [- DC contentive/multi-functional type 3]
Languages without lexical contentives or non-verbs also lack deranked contentive/multi-functional clauses of type 3.

Notably, the distribution in Table 7.12 is similar to the one in Table 7.9, to the extent that it displays three (nearly) empty cells, as a result of the fact that both the PoS and the DC parameter are, independently of each other, strongly skewed towards the negative value. In view of this, the implicational universal in (20), which has a negative value in the consequent part, does not have much explanatory power. Again, it is much more telling that the likelihood of the DC parameter having the rare positive value increases to over 50% under the influence of the PoS parameter having this rare positive value.

7.3.2.3 Flexible match 2: Nominals and nominal clauses

Continuing with less pervasive flexibility, I will now investigate the relationship between lexical nominals and nominal clauses. First consider the data in Table 7.14, in which nominal clauses are considered as one undifferentiated group. The relevant language data can be found in Tables 7.37 and 7.38 of section 7.5. The observed frequencies in Table 7.14 do not deviate at all from the expected ones, so that p = 1 (2-sided). This means that there is no dependency relation between the presence of lexical nominals and nominal clauses.

Table 7.14: Frequencies for languages with/without nominals and nominal clauses

			DCs: nominal clauses		
			+	–	total
PoS: nominals	+	observed freq	2	3	5
		expected freq	2	3	
	–	observed freq	14	27	41
		expected freq	14	27	
	total		16	30	46

Taking into account the parameter of structural DC types, we can formulate the more specific predictions in (21a-d), in parallel with the ones listed in (18a-d) for contentives/non-verbs and contentive/multi-functional clauses.

(21) a. If a language has balanced nominal clauses of type 1, then it should also have lexical nominals.
b. If a language has deranked nominal clauses of type 2/3, then it should also have lexical nominals.
c. If a language has deranked nominal clauses of type 2, then it should also have lexical nominals.
d. If a language has deranked nominal clauses of type 3, then it should also have lexical nominals.

First consider the prediction in (21a). In line with the other results found so far, there is no correlation between lexical nominals and balanced nominal clauses. The relevant frequencies appear in Table 7.15; Fisher's Exact yields p = 0.301 (2-sided). In fact, as this table shows, none of the 13 languages with nominal clauses of type 1 has lexical nominals. (For the language data pertaining to Table 7.15, see again Tables 7.37 and 7.38, in section 7.5.)

Table 7.15: Frequencies for languages with/without nominals and nominal clauses of type 1

			DCs: nominal clauses type 1 (balanced)		
			+	–	total
PoS: nominals	+	observed freq	0	5	5
		expected freq	1	4	
	–	observed freq	13	28	41
		expected freq	12	29	
	total		13	33	46

Regarding the prediction in (21b), the frequencies for deranked nominal clauses of type 2 and 3 appear in Table 7.16. Contrary to the expectations, the observed frequencies do not yield a significant correlation (p = 0.120).

Table 7.16: Frequencies for languages with/without nominals and nominal clauses of type 2/3

			DCs: nominal clauses type 2/3 (deranked)		
			+	–	total
PoS: nominals	+	observed freq	2	3	5
		expected freq	1	4	
	–	observed freq	4	37	41
		expected freq	5	36	
	total		6	40	46

Notably, the total number of languages with deranked nominal clause constructions attested in the whole sample is quite low (6). Therefore, splitting up the group of deranked nominal clauses into constructions of type 2 versus type 3 does not influence the results in any interesting way. For the sake of completeness, the relevant frequencies are presented in Table 7.17 (for nominal clauses of type 2) and Table 7.18 (for nominal clauses of type 3). Not surprisingly, no significant correlations are found: The relevant p-values are p = 0.208 (2-sided) for Table 7.17, and p = 0.379 (2-sided) for Table 7.18.

Table 7.17: Frequencies for languages with/without nominals and nominal clauses of type 2

			DCs: nominal clauses type 2		
			+	–	total
PoS: nominals	+	observed freq	1	4	5
		expected freq	0	5	
	–	observed freq	1	41	41
		expected freq	2	41	
	total		2	44	46

Table 7.18: Frequencies for languages with/without nominals and nominal clauses of type 3

			DCs: nominal clauses type 3		
			+	–	total
PoS: nominals	+	observed freq	1	4	5
		expected freq	0	5	
	–	observed freq	3	38	41
		expected freq	4	39	
	total		4	42	46

7.3.2.4 Flexible match 3: Modifiers and modifier clauses

Finally, consider the results for the third flexible construction type: lexical modifiers and modifier clauses, presented in Table 7.19 below. It must be noted that the total number of languages relevant for this prediction is only 38. This is because in 10 languages neither of the two modifier slots can be expressed by means of a large, open PoS class[109]. Some of these 10 languages do have a small, rigid class of adjectives and/or adverbs, while others have no lexical strategy at all. Both groups are interpreted as lacking a value for the PoS parameter. These cases are excluded from the analysis, since it is impossible to compare the distributional pattern of the DC construction with the pattern of any large, open PoS class. The language data pertaining to lexical modifiers and modifier clauses can be found in Tables 7.39 and 7.40 in section 7.5.

Table 7.19: Frequencies for languages with/without modifiers and modifier clauses

			DCs: modifier clauses		
			+	–	total
PoS: modifiers	+	observed freq	0	4	4
		expected freq	0	4	
	–	observed freq	1	33	34
		expected freq	1	33	
	total		1	37	38

The data in Table 7.19 make clear that there is no correlation at all between the availability of lexical and clausal constructions that can express both modifier functions: p = 1. In fact, there is only one language with modifier clauses, and this language, Babungo, does not have lexical modifiers, but rather rigid derived adjectives (and a small set of simple ones) and a small class of rigid manner adverbs[110,111]. Moreover, there are only four languages with lexical modifiers attested in the sample, and none of these have modifier clauses.

[109] These languages are Mandarin Chinese, Tamil, Nung, Krongo, Hixkaryana, Slave, Nivkh, West Greenlandic, Nunggubuyu, and Tuscarora.

[110] Note that the modifier clause construction in Babungo is balanced. This means that it does not show any formal similarity to a lexical expression, which links up with the lack of functional similarity.

[111] There are two more languages in the sample that display a flexible modifier clause construction: Mandarin Chinese and Krongo (see Table 7.40 in section 7.5). However, neither of these languages is taken into account in Table 7.19, since both lack (large, open) lexical classes to express the functions of modification, and thus do not allow for a functional comparison between PoS and DCs.

7.3.2.5 Summary

To sum up the results for specific matches between flexible constructions, it was shown that the most pervasively flexible (deranked) type of DC is hardly ever attested in languages without a PoS class with the same type of flexibility. However, this generalization is rather uninformative to the extent that maximal flexibility in both the PoS and the DCs domains are rare phenomena in the first place. The interesting observation is that, even though the presence of maximally flexible PoS classes in a language does not imply the presence of maximally flexible deranked DCs, the availability of the former strongly increases the chances of also having the latter.

In contrast, no dependency relations were found between the (non-) attestation of less flexible lexical and clausal constructions, i.e. between nominals and nominal clauses, and between modifiers and modifier clauses (neither balanced nor deranked). The number of cases with a positive value on either the PoS or the DC parameter was again found to be low, but unlike in the case of contentives/non-verbs and contentive/multi-functional clauses, there was no tendency for the two parameters to have the same value.

7.3.3 Specific matches for rigid constructions

7.3.3.1 Introduction

I now turn back to Prediction C in (16) above and apply this prediction to the various types of rigid PoS classes and DC constructions. This allows for the formulation of the three sub-predictions listed in (22):

(22) a. If a language has complement clauses, then it should also have lexical nouns.
b. If a language has relative clauses, then it should also have lexical adjectives.
c. If a language has adverbial manner clauses, then it should also have lexical manner adverbs.

Note that, unlike in Chapter 4 (see (8) in that chapter), constructions specialized for the function of head of a predicate phrase (verbs and predicate clauses) are not taken into account, since, as shown in Chapter 6, rigid predicate clauses are not attested in any of the sample languages.

Each of the three predictions in (22) can be further differentiated when taking into account the parameter of structural DC type. In particular, the

prediction in (22a) can be split up into the sub-predictions listed in (23a-d) (cf. (10) of Chapter 4). As in the previous cases, the prediction in (23a) is less likely to be confirmed than the one in (23b), and the one in (23c) is less likely to hold than the one in (23d).

(23) a. If a language has balanced complement clauses of type 1, then it should also have lexical nouns.
b. If a language has deranked complement clauses of type 2/3, then it should also have lexical nouns.
c. If a language has deranked complement clauses of type 2, then it should also have lexical nouns.
d. If a language has deranked complement clauses of type 3, it should also have lexical nouns.

Parallel lists of sub-hypotheses can be set up for the predictions in (22b) and (22c) above, concerning lexical and clausal constructions that are specialized for the function of modifier in a referential phrase, and for modifier in a predicate phrase, respectively. In what follows, I present the results for every rigid construction type, first considering DCs as a single group, and then differentiating according to structural DC type.

7.3.3.2 Rigid match 1: Nouns and complement clauses

I start out with the results for the prediction in (22a), involving rigid nouns and rigid complement clauses, without differentiating for structural DC type. The observed frequencies are presented in Table 7.20 below. The relevant language data can be found in Tables 41 and 42, section 7.5[112]. They do not deviate from chance frequency, so that p = 1 (2-sided).

[112] Note that, as mentioned earlier, there is one language, Warao, which has two lexical strategies available to express the function of head of a referential phrase: a class of simple non-verbs and a class of derived nouns. To avoid double values, prominence is given to the class of simple lexemes. This means that Warao is counted as a language *without* a class of rigid nouns.

Table 7.20: frequencies for languages with/without nouns and complement clauses

			DCs: complement clauses		
			+	–	total
PoS: nouns	+	observed freq	30	5	35
		expected freq	30	5	
	–	observed freq	9	2	11
		expected freq	9	2	
	total		39	7	46

Turning to the sub-predictions regarding the different structural types of complement clauses, consider the results for the prediction in (23a), which appear in Table 7.21. In accordance with the findings for all balanced clause types considered so far, there is no correlation between rigid lexical nouns and rigid complement clauses of type 1. The counts in Table 7.21 hardly deviate from chance frequency: p = 0.730 (2-sided).

Table 7.21: Frequencies for language with/without nouns and complement clauses of type 1

			DCs: complement clauses type 1 (balanced)		
			+	–	total
PoS: nouns	+	observed freq	20	15	35
		expected freq	19	16	
	–	observed freq	5	6	11
		expected freq	6	5	
	total		25	21	46

Unexpectedly, considering deranked DCs separately does not reveal a correlation either. The frequencies for complement clauses of type 2/3, and for types 2 and 3 separately, are presented in Tables 7.22, 7.23 and 7.24, respectively. None of these yields a significant result. For Table 7.22, p = 0.497 (2-sided); for Table 7.23, p = 0.702 (2-sided); and for Table 7.24, p = 1 (2-sided).

Table 7.22: Frequencies for language with/without nouns and complement clauses of type 2/3

			DCs: complement clauses type 2/3 (deranked)		
			+	–	total
PoS: nouns	+	observed freq	17	18	35
		expected freq	18	17	
	–	observed freq	7	4	11
		expected freq	6	5	
	total		24	22	46

Table 7.23: Frequencies for language with/without nouns and complement clauses of type 2

			DCs: complement clauses type 2		
			+	–	total
PoS: nouns	+	observed freq	9	26	35
		expected freq	10	25	
	–	observed freq	4	7	11
		expected freq	3	8	
	total		13	33	46

Table 7.24: Frequencies for language with/without nouns and complement clauses of type 3

			DCs: complement clauses type 3		
			+	–	total
PoS: nouns	+	observed freq	11	24	35
		expected freq	11	24	
	–	observed freq	4	7	11
		expected freq	4	7	
	total		25	31	46

In sum, no significant correlation exists between rigid nouns and rigid complement clauses, neither for balanced nor for (different types of) deranked clauses.

7.3.3.3 Rigid match 2: Adjectives and relative clauses

Consider now lexical and clausal constructions that are specialized for the function of modifier in a referential phrase: adjectives and relative clauses. The distribution pertaining to the prediction in (22b) (without differentiation

for structural DC type) is presented in Table 7.25. This table shows that the observed frequencies are again equal to the expected frequencies, so that the p-value is 1 (2-sided). For the relevant language data, see Tables 7.43-7.47 in section 7.5.

Note that the total number of analyzed cases (N) in Table 7.25 is 34. This is because there are 14 languages that either lack a class of adjectives altogether (8 languages) or have only a small set of them (6 languages). These 14 cases are not taken into account because they are interpreted as lacking a construction in the PoS domain that can serve as the functional comparative standard[113]. This means that the 15 cases with a negative value on the PoS parameter in Table 7.25 involve languages with a flexible lexeme class that can express the function of modifier in a referential phrase[114].

Table 7.25: Frequencies for languages with/without adjectives and relative clauses

			DCs: relative clauses		
			+	–	total
PoS: adjectives	+	observed freq	15	4	19
		expected freq	15	4	
	–	observed freq	12	3	15
		expected freq	12	3	
	total		27	7	34

Taking into account the parameter of structural DC type, we can formulate the set of predictions listed in (24), in parallel to those in (23) above. The same expectations as above hold regarding the likelihood of each of the predictions to be confirmed: (24a) is less likely than (24b), and (24c) less likely then (24d):

(24) a. If a language has balanced relative clauses of type 1, then it should also have lexical adjectives.

[113] One of the languages without adjectives, namely Hixkaryana, also lacks a relative clause construction (Derbyshire 1979: 26).

[114] Note that there is one language, namely Ket, which has a large, open class of flexible modifiers, as well as a class of derived rigid adjectives, and small classes of simple adjectives and manner adverbs. In order to avoid double values, prominence is given to the large, open lexeme class, i.e. the modifiers, and the derived and small classes are not taken into account. This means that Ket is counted as a language without adjectives. In the case of a choice between a derived and a small lexeme class, the former is considered primary and the latter is disregarded. This occurs in one language, namely Koasati, which has a class of derived modifiers and a small class of adjectives, but is counted as a language without rigid adjectives.

b. If a language has deranked relative clauses of type 2/3, then it should also have lexical adjectives.
c. If a language has deranked relative clauses of type 2, then it should also have lexical adjectives.
d. If a language has deranked relative clauses of type 3, then it should also have lexical adjectives.

The results for the prediction in (24a) are presented in Table 7.26. The observed and expected frequencies deviate only very slightly from each other, so that there is no significant correlation: p =0.724 (2-sided).

Table 7.26: frequencies for languages with/without adjectives and relative clauses of type 1

			DCs: relative clauses of type 1 (balanced)		
			+	–	total
PoS: adjectives	+	observed freq	13	6	19
		expected freq	12	7	
	–	observed freq	9	6	15
		expected freq	10	5	
	total		22	12	34

The results for the prediction in (24b), concerning deranked relative clauses (type 2 and 3) are given in Table 7.27. As can be seen, there is again only a minimal deviation between the observed and the expected frequencies: p = 0.718 (two-sided).

Table 7.27: frequencies for languages with/without adjectives and relative clauses of type 2/3

			DCs: relative clauses of type 2/3 (deranked)		
			+	–	total
PoS: adjectives	+	observed freq	5	14	19
		expected freq	6	13	
	–	observed freq	5	10	15
		expected freq	4	11	
	total		10	24q	34

In Tables 7.28 and 7.29 below the data are split up for deranked relative clauses of type 2 and of type 3, respectively. Neither the results in Table 7.28 nor those in Table 7.29 are in accordance with the predictions: There is no correlation between the availability of lexical adjectives and deranked relative clauses of type 2 and 3, respectively. The p-values are 0.718 (2-sided) for Table 7.28, and p = 1 (2-sided) for Table 7.29.

It should be mentioned that there are some languages (in particular: Kharia, Hungarian, Kayardild, and Georgian) that have both relative clauses of type 2 and of type 3, which is why the totals for relative clauses of Tables 7.28 and Table 7.29 add up to 14, i.e. more than the total of 10 languages with deranked relative clause constructions in Table 7.27. Note further that there are no languages with a relative clause construction of type 3 that do not *also* have a relative clause construction of type 2. This explains why the frequencies in Tables 7.27 and 7.28 are identical.

Table 7.28: frequencies for languages with/without rigid adjectives and relative clauses of type 2

			DCs: relative clauses of type 2		
			+	–	total
PoS: adjectives	+	observed freq	5	14	19
		expected freq	6	13	
	–	observed freq	5	10	15
		expected freq	4	11	
	total		10	24	34

Table 7.29: frequencies for languages with/without rigid adjectives and relative clauses of type 3

			DCs: relative clauses of type 3		
			+	–	total
PoS: adjectives	+	observed freq	2	17	19
		expected freq	2	17	
	–	observed freq	2	13	15
		expected freq	2	13	
	total		4	30	34

In sum, the same conclusion is reached for adjectives and relative clauses as for nouns and complement clauses: There is no correlation between the

availability of lexical and (different structural types of) clausal constructions specialized for the function of modifier in a referential phrase.

7.3.3.4 Rigid match 3: Manner adverbs and adverbial manner clauses

Finally, consider the data for lexical and clausal constructions that are specialized for the function of modifier in a predicate phrase: manner adverbs and adverbial manner clauses. The distribution pertaining to the prediction in (22c) appears in Table 7.30. The relevant language data can be found in Tables 7.48-7.52 in section 7.5.

Note that, as in the case of adjectives, only those languages are taken into consideration that have a large, open class of simple or derived lexemes to express the function of modifier in a predicate phrase. Languages with a small, closed lexical class (8 cases), or no lexical option at all (11 cases) are excluded from the analysis. In addition, there are 3 languages with a large simple or derived class of manner adverbs, but without a DC strategy for the function of modifier in a predicate phrase. There are another 3 languages that do have a class of flexible lexemes that can be used in this function, but which are excluded from the analysis as well, since they lack a DC strategy to express this function. This leaves us with a rather small number of relevant languages, namely N = 23.

The observed frequencies in Table 7.30 deviate from the expected ones in the predicted way, but not significantly: p = 0.083 (2-sided).

Table 7.30: frequencies for languages with/without a (derived) manner adverbs and adverbial manner clauses

			DCs: adverbial manner clauses		
			+	–	total
PoS: manner adverbs	+	observed freq	16	0	16
		expected freq	15	1	
	–	observed freq	5	2	7
		expected freq	6	1	
	total		21	2	23

We may now formulate the specific sub-predictions for manner adverbs and adverbial manner clauses, taking into account the different structural DC types. These sub-predictions are listed in (25), in parallel with (24) and (23) above, and the by now familiar expectations regarding the likelihood of their confirmation apply.

(25) a. If a language has balanced adverbial manner clauses of type 1, then it should also have lexical manner adverbs.
b. If a language has deranked adverbial manner clauses of type 2/3, then it should also have lexical manner adverbs.
c. If a language has deranked adverbial manner clauses of type 2, then it should also have lexical manner adverbs.
d. If a language has deranked adverbial manner clauses of type 3, then it should also have lexical manner adverbs.

The results for the prediction in (25a) appear in Table 7.31. The observed frequencies equal the expected frequencies, so that p = 1 (2-sided).

Table 7.31: Frequencies for languages with/without (derived) manner adverbs and adverbial manner clauses of type 1

			DCs: adverbial manner clauses of type 1 (balanced)		
			+	–	total
PoS: manner adverbs (incl. derived)	+	observed freq	8	8	16
		expected freq	8	8	
	–	observed freq	3	4	7
		expected freq	3	4	
	total		11	12	23

The results for the prediction in (25b), concerning deranked adverbial manner clauses, appear in Table 7.32. The observed frequencies deviate from the expected frequencies in the predicted direction, but not enough to yield a significant correlation: p = 0.193 (2-sided).

Table 7.32: Frequencies for languages with/without (derived) manner adverbs and adverbial manner clauses of type 2/3

			DCs: adverbial manner clauses of type 2/3 (deranked)		
			+	–	total
PoS: manner adverbs (incl. derived)	+	observed freq	10	6	16
		expected freq	8	8	
	–	observed freq	2	5	7
		expected freq	4	3	
	total		12	11	23

Since there is only one language in the sample with an adverbial manner clause construction of type 3, the data are insufficient to further differentiate within the group of deranked adverbial manner clauses.

In sum, the findings for rigid constructions specialized for the function of modifier in a predicate phrase parallel those for the other two rigid construction types: there is no correlation between the presence of lexical manner adverbs and the presence of (different structural types of) adverbial manner clauses.

7.3.3.5 Summary

No dependency relations are identified between the availability of rigid lexical and clausal constructions that are specialized for the expression of the same propositional function. Differentiating between balanced and (different types of) deranked DCs does not influence this result.

7.4 Summary, conclusion

To conclude, the results presented in this chapter make clear that significant correlations between the functional possibilities of PoS and DCs are found along the following lines:

(i) For flexible rather than for rigid constructions;
(ii) For pervasively flexible constructions rather than for less flexible constructions;
(iii) For deranked DCs rather than for balanced ones.

I have presented the following evidence for these findings: First, Tables 7.4 and 7.5a-b reveal a one-sided asymmetrical dependency between flexible

PoS and flexible deranked DCs. In particular, it was shown that flexible deranked DCs occur almost exclusively in languages with a flexible PoS system. Second, Tables 7.7 and 7.8a-b show the same type of dependency relation, but specify it for deranked flexible DCs of type 3 (D-ALT). Third, Tables 7.9 and 7.10a-b contain the data that allow for a further fine-tuning of these findings in terms of specific flexible construction types. In particular, these data shows that maximal flexibility at the level of DC constructions (contentive/multi-functional clauses) is possible only when a maximally flexible PoS class (contentives/non-verbs) is also available. More interestingly, in view of the fact that both maximally flexible PoS classes and maximally flexible DC constructions are rare phenomena independently of each other, the data show that the presence of a maximally flexible PoS class in a language strongly increases the chances of also finding a maximally flexible DC construction in that language. On the basis of the data in Tables 7.12 and 7.13 a-b this generalization could be further specified as pertaining to deranked contentive and multi-functional clauses of type 3 (D-ALT).

These results suggest, in sum, that the presence of (pervasive) flexibility in the domain of deranked DC constructions is dependent on the presence of (pervasive) flexibility in the domain of PoS classes. On the other hand, flexibility in the PoS system of a language does not imply flexibility in the domain of deranked dependent clauses. In Chapter 8 I will further explore the nature of the relationship between distributional patterns of PoS and DCs, as well as the functional factors that may motivate this relationship.

7.5 Language data

Table 7.33: Availability and type of flexible DCs in languages with one or more flexible PoS classes

	Language	Flex DCs	Structural type	Functional Type	Structural coding
1	Tagalog	+	3, 1	contentive/ multi-functional	*pag-*, *Ø*
2	Kharia	+	3	contentive/ multi-functional	*RDP/Ø*, *-na*
3	Samoan	+	1	nominal	*Ø*
4	Guaraní	–	(1)		
5	Warao	–	(1, 2)		

	Language	Flex DCs	Structural type	Functional Type	Structural coding
6	Turkish	+	3, 1	nominal	*-DIK/-(y)AcAK, ki* (borrowed)
7	Kayardild	+	3, 1	multi-functional, nominal	*-n- ntha*
8	Paiwan	+	1	nominal	*a (Ø)*
9	Quechua	+	2	nominal	*-j/-shka/-na*
10	Ma'di	+	2/3	nominal	*-lɛ̄, -dʒɔ*
11	Gooniyandi	+	1	multi-functional	*Ø*
12	Hungarian	–	(1, 2, 3)		
13	Japanese	–	(1, 2, 1/3)		
14	Hmong Njua	–	(1)		
15	Lango	–	(1, 3)		
16	Ket	+	3, 1	nominal	*Ø , Ø* (bare INF)
17	Koasati	–	(2)		

Table 7.34: Availability and type of flexible DCs in languages with rigid PoS classes only

	Language	Flex DCs	Structural type	Functional type	Structural coding
1	Itelmen	–	(1, 2)		
2	Thai	+	1	nominal	*Ø/thiî*
3	Basque	+	1	nominal	*-en, bait*
4	Abun	–	(1)		
5	Bambara	–	(1, 2)		
6	Georgian	+	1	nominal	*rom*
7	Bukiyip	–	(1)		
8	Abkhaz	–	(1, 3)		
9	Polish	–	(1, 2, 3)		
10	Burushaski	+	2,1	nominal, multi-functional	*-(á)as, ke/ki*
11	Lavukaleve	–	(1, 2)		
12	Alamblak	–	(2, 3)		
14	Pipil	+	1	nominal	*ka(h)*
14	Wambon	–	(1, 2)		
15	Dhaasanac	+	1	nominal	DET(+DEM)

	Language	Flex DCs	Structural type	Functional type	Structural coding
16	Berbice Dutch	–	(1, 2)		
17	Babungo	+	1	modifier	*fan/yúu*
18	Nama	–	(1, 2)		
19	Hdi	+	3	nominal	*tá*
20	Mandarin Ch.	+	1	multi-functional, modifier	*Ø, de*
21	Tamil	–	(2)		
22	Kisi	–	(1, 2)		
23	Nung	+	1	multi-functional	*Ø*
24	Garo	–	(1, 2, 3)		
25	Krongo	+	2/3	modifier	*m-/n-*
26	Hixkaryana	–	3		
27	Slave	+	1	nominal	*Ø*
28	Nivkh	–	(1, 2)		
29	Greenlandic	+	1	nominal, comp/adv	PTCmood/ CONT mood
30	Nunggubuyu	none			
31	Tuscarora	none			

Table 7.35: Availability and type of contentive/multi-functional clauses in languages with lexical contentives/non-verbs

	Language	Contentive/multifunctional clause	Type	Structural coding
1	Tagalog	+	3,1	*pag-,Ø*
2	Kharia	+	3	RDP, *-na*
3	Samoan	–		
4	Guarani	–		
5	Warao	–		
6	Turkish	–		
7	Kayardild	+	3	*-n-*,

Table 7.36: Availability and type of contentive/multi-functional clauses in languages without lexical contentives/non-verbs

	Language	Contentive/multi-functional clause	Type	Structural coding
1	Paiwan	–		
2	Quechua	–		
3	Ma'di	–		
4	Gooniyandi	+	1	Ø
5	Hungarian	–		
6	Japanese	–		
7	Hmong Njua	–		
8	Lango	–		
9	Ket	–		
10	Koasati	–		
11	Itelmen	–		
12	Thai	–		
13	Basque	–		
14	Abun	–		
15	Bambara	–		
16	Georgian	–		
17	Bukiyip	–		
18	Abkhaz	–		
19	Polish	–		
20	Burushaski	–		
21	Lavukaleve	–		
22	Alamblak	–		
23	Pipil	–		
24	Wambon	–		
25	Dhaasanac	–		
26	Berbice Dutch	–		
27	Babungo	–		
28	Nama	–		
29	Hdi	–		
30	Mandarin Ch.	+	1	Ø
31	Tamil	–		
32	Kisi	–		
33	Nung	+	1	Ø

	Language	Contentive/multi-functional clause	Type	Structural coding
34	Garo	–		
35	Krongo	–		
36	Hixkaryana	–		
37	Slave	–		
38	Nivkh	–		
39	Greenlandic	–		
40	Nunggubuyu	none		
41	Tuscarora	none		

Table 7.37: Availability and type of nominal clauses in languages with lexical nominals

	Language	Nominal clauses	Type	Structural coding
1	Quechua	+	2	*-j/-shka/-na*
2	Ma'di	+	2/3	*-lɛ̄, -dʒɔ*
3	Gooniyandi	–		
4	Hungarian	–		
5	Japanese	–		

Table 7.38: Availability and type of and nominal clauses in languages without lexical nominals

	Language	Nominal clause	Type	Structural coding
1	Tagalog	–		
2	Kharia	–		
3	Samoan	+	1	*Ø*
4	Guarani	–		
5	Warao	–		
6	Turkish	+	3, 1	*-DIK/-(y)AcAK*, ki (borrowed)
7	Kayardild	+	1	*-ntha*
8	Paiwan	+	1	*a*
9	Hmong Njua	–		
10	Lango	–		
11	Ket	+	3, 1	*Ø, Ø* (bare INF)
12	Koasati	–		

	Language	Nominal clause	Type	Structural coding
13	Itelmen	–		
14	Thai	+	1	*Ø, thiî*
15	Basque	+	1	*-en*
16	Abun	–		
17	Bambara	–		
18	Georgian	+	1	*rom*
19	Bukiyip	–		
20	Abkhaz	–		
21	Polish	–		
22	Burushaski	+	2,1	*-(á)as,* ke/ki
23	Lavukaleve	–		
24	Alamblak	–		
25	Pipil	+	1	*ka(h)*
26	Wambon	–		
27	Dhaasanac	+	1	DET(+DEM)
28	Berbice Dutch	–		
29	Babungo	–		
30	Nama	–	(1)	
31	Hdi	+	3	*tá*
32	Mandarin Ch.	–		
33	Tamil	–		
34	Kisi	–		
35	Nung	–		
36	Garo	–		
37	Krongo	–		
38	Hixkaryana	–		
39	Slave	+	1	*nį*
40	Nivkh	–		
41	Greenlandic	+	1	PTCmood
42	Nunggubuyu	none		
43	Tuscarora	none		

Table 7.39: Availability of modifier clauses in languages with (derived) lexical modifiers

	Language	Modifier clause
1	Hmong Njua	–
2	Lango	–

	Language	Modifier clause
3	Ket	–
4	Koasati	–

Table 7.40: Languages without (derived) lexical modifiers, but with modifier clauses

	Language	Modifier clause	Type	Structural coding
1	Babungo	+	1	*fan/yúu*
2	Mandarin Ch.	+	1	*de*
3	Krongo	+	2/3	*m-/n-*

Table 7.41: Availability and type of complement clauses in languages without nouns

	Language	Rigid complement clauses	Type	Structural coding
1	Tagalog	–		
2	Kharia	+	1	*no, gam-kon*
3	Samoan	+	3	*-ga,* unmarked NMLZ
4	Guaraní	+	1	*há(gwe)*
5	Warao	+	2	*-kitane*
6	Turkish	+	1, 2, 3	*-ma, -maK, diye, Ø*
7	Kayardild	–		
8	Quechua	+	2	*-y, ngapay*
9	Ma'di	+	1, 2/3	*ka, Ø*
10	Gooniyandi	+	2	*-woo*
11	Hungarian	+	3, 1	*-ni, -ás/-és, hogy*

Table 7.42: Availability and type of complement clauses in languages with nouns

	Language	Rigid complement clauses	Type	Structural coding
1	Paiwan	+	1	*tu(a)/tjai*
2	Ket	–		
3	Japanese	+	1/3	*no/mono*
4	Hmong Njua	+	1	*qhov/kuam/ (has)tas*
5	Lango	+	1, 3	*nî,-(kk)ɔ̀*
6	Koasati	+	2	NMLZ (various forms)

	Language	Rigid complement clauses	Type	Structural coding
7	Itelmen	+	1, 2	*Ø*, INF (various forms)
8	Thai	+	1	*wâa*
9	Basque	+	2	*-t(z)e*
10	Abun	+	1	*do/Ø*
11	Bambara	+	1	*ka*
12	Georgian	+	3	*-a*
13	Bukiyip	+	1	*Ø*
14	Abkhaz	+	1, 3	NFIN*/-ra*
15	Polish	+	1, 2, 3	*ze*, INF, *-nie*
16	Burushaski	–		
17	Lavukaleve	+	2	*-e/-i*
18	Alamblak	+	3	*-nef/-(kfë)t*
19	Pipil	–		
20	Wambon	+	1	*-e*
21	Dhaasanac	+	3	*-ɲ/-an*
22	Berbice Dutch	+	1, 2	*bifi/dati, fu/fi*
23	Babungo	+	1	*lāa*
24	Nama	+	1	*!xáis-à*
25	Hdi	+	1	*ká*
26	Mandarin Ch	–		
27	Tamil	+	2	*-atu, -(kk)a*
28	Kisi	+	1, 2	*(m)àà, Ø* (INF)
29	Nung	–		
30	Garo	+	1, 3, 2	*in-e, -a, -a-ni, -na, -kan-a*
31	Krongo	+	1,2/3	*àni tiŋ, (t)-*
32	Hixkaryana	+	3	*ni-/-thi-/-hi-to + ri-*
33	Slave	+	1	*gú, ghá*
34	Nivkh	+	1	*-vut/-vur, Ø*
35	Greenlandic	+	3	*-niq*
36	Nunggubuyu	none		
37	Tuscarora	none		

Table 7.43: Availability and type of relative clauses in languages without adjectives, but with a flexible lexical strategy for the function of modifier in a referential phrase

	Language	Rigid relative clauses	Type	Structural coding	Lexical strategy
1	Tagalog	–			contentives
2	Kharia	+	2, 3, 1	*na-wala, -al, je, a/i*	contentives
3	Samoan	+	1	*-e*	contentives
4	Guaraní	+	1	*va*	contentives
5	Warao	+	1	*kotai*	non-verbs
6	Turkish	+	2	*-An*	non-verbs
7	Quechua	–			nominals
8	Ma'di	+	2	*-rɛ̄/-ɓá*	nominals
9	Gooniyandi	–			nominals
10	Hungarian	+	2, 3, 1	*-ó, óttt, andó,* RelPron	nominals
11	Japanese	+	1	*Ø* (RSP)	nominals
12	Hmong Njua	+	1	*kws*	modifiers
13	Lango	+	1	*à-mɛ̀*	modifiers
14	Ket	+	1	RelPron, *-s/-bes*	modifiers, S/D adjectives
15	Koasati	+	2	various forms	D modifiers, S adjectives

Table 7.44: Availability and type of relative clauses in languages with an open class of simple adjectives

	Language	Rigid relative clauses	Type	Structural coding	Lexical strategy
1	Kayardild	+	1, 2, 3	*Ø, -Thirri-n, -n-garrba*	adjectives
2	Thai	–			adjectives (S. modifiers)
3	Basque	–			adjectives (S/modifiers)
4	Abun	+	1	*gato*	adjectives (S. modifiers)

	Language	Rigid relative clauses	Type	Structural coding	Lexical strategy
5	Georgian	+	1, 2, 3	Several participles, REL PRON	adjectives
6	Bukiyip	+	1	*(ú)li*	adjectives
7	Abkhaz	+	1	REL.PRON + NFIN	adjectives
8	Polish	+	1, 2	Several participles, REL PRON	adjectives
9	Burushaski	+	2	*-im/-um/-am*	adjectives
10	Lavukaleve	+	1	Person suffix	adjectives
11	Alamblak	+	2	*ɨnd*	adjectives
12	Pipil	+	1	*ne, ke*	adjectives
13	Wambon	+	1	*-a + o*	adjectives
14	Dhaasanac	–			adjectives
15	Berbice Dutch	+	1	Wh	adjectives

Table 7.45: Availability and type of relative clauses in languages without an open class of simple adjectives, but with derived adjectives (and a small class of simple adjectives)

	Language	Rigid relative clauses	Type	Structural coding	Lexical strategy
1	Itelmen	+	1	*min*	D adjectives, S modifiers
2	Nama	+	1	*Ø no* INDIC (RSP)	S/D adjectives
3	Babungo	–			S/D adjectives
4	Kisi	+	1	CL	S/D adjectives

Table 7.46: Availability and type of relative clauses in languages without an open class of simple/derived class adjectives, but with a small class of adjectives

	Language	Rigid relative clauses	Type	Structural coding	Lexical strategy
1	Paiwan	+	2	*in- an + a*	S adjectives
2	Bambara	+	2, 1	*-le/-ne, -min(u)/ -mun(u)*	S adjectives
3	Hdi	+	1, 2	*tà, tà* + NMLZ, *-a*	S adjectives
4	Mandarin Ch	–			S adjectives
5	Tamil	+	2	*-a*	S adjectives
6	Nung	+	1	*(tị-vạ)* (+DEM) (+FOC)	S adjectives

Table 7.47: Availability and type of relative clauses in languages without a lexical strategy for the function of modifier in a referential phrase

	Language	Rigid relative clauses	Type	Structural coding	Lexical strategy
1	Garo	+	3	*-gip-a*	X
2	Krongo	–			X
3	Hixkaryana	none			X
4	Slave	+	1	*i, sɬ́i, líi*	X
5	Nivkh	+	1	NONFIN	X
6	West Greenlandic	+	3	*-ta/-sa*	X
7	Nunggubuyu	none			X
8	Tuscarora	none			X

Table 7.48: Availability and type of adverbial manner clauses in languages without an open class of simple/derived manner adverbs, but with a flexible lexical strategy for the function of modifier in a predicate phrase (and in some cases also a small class of rigid manner adverbs)

	Language	Rigid adverbial manner clauses	Type	Structural coding	Lexical strategy
1	Tagalog	–			Flex (contentives)
2	Kharia	+	2, 3	*-ker, -ga, -ta* +RDP	Flex (contentives)
3	Samoan	none			Flex (contentives) + S MAdv
4	Guaraní	+	1	*vo*	Flex (contentives)
5	Warao	none			Flex (non-verbs)
6	Turkish	+	2	*-(y)ArAK, -(y) A..-(y)A*	Flex (non-verbs, D modifiers)
7	Kayardild	–			Flex (non-verbs/ predicatives) + S MAdv
8	Paiwan	+	1	*a parhu*	Flex (predicatives) + S MAdv?
9	Hmong Njua	none			Flex (modifiers)
10	Ket	+	1	*ɛta qɔr'a, ásqà,* -PROSEC	Flex (modifiers) + S MAdv

Table 7.49: Availability and type of adverbial manner clauses in languages with an open class of simple manner adverbs

	Language	Rigid adverbial manner clauses	Type	Structural coding	Lexical strategy
1	Gooniyandi	+	2	*-wadda, -mawoo, -bari, -ya/-gowaaya*	MAdv
2	Hungarian	+	1, 2	*úgy (a-)hogy, -vá/-vé, -vén*	MAdv
3	Japanese	+	2	*-te/-de/-ite, -i/-Ø*	MAdv
4	Lango	none			MAdv
5	Abun	+	1	*sa gato*	MAdv
6	Bambara	+	2	*-tò*	MAdv
7	Georgian	+	1	*ra, rogorc*	MAdv
8	Bukiyip	+	1	*bwidou -(u)mu*	MAdv

Table 7.50: Availability and type of adverbial manner clauses in languages without an open class of simple manner adverbs, but with derived manner adverbs (and in some cases a small class of simple manner adverbs)

	Language	Rigid adverbial manner clauses	Type	Structural coding	Lexical strategy
1	Ma'di	+	2	*-zɾ̄ + sɨ́*	S/D MAdv
2	Koasati	+	2	*-n, -k, -t*	S/D MAdv
3	Itelmen	+	1	QUATZ	D MAdv
4	Thai	none			D MAdv
5	Basque	+	1	*en bezala*	D MAdv
6	Abkhaz	+	1	*-ş-* + -NFIN	S/D MAdv
7	Polish	+	1, 2	PRS.PL-*c-, jak (gdy)by*	S/D MAdv
8	Burushaski	+	2	*n*-STEM-*(a)n*	S/D MAdv
9	Nama	+	2	*se/!'aa/tsii* (no INDIC)	D MAdv
10	Hdi	none			S/D MAdv
11	Garo	+	2	*-e/-e-min/-e-r*	S/D MAdv

Table 7.51: Availability and type of relative clauses in languages without an open class of simple/derived class manner adverbs, but with a small class of manner adverbs

	Language	Rigid adverbial manner clauses	Type	Structural coding	Lexical strategy
1	Quechua	+	2	*-shpa, -y* RDP	S Madv
2	Lavukaleve	–			S Madv
3	Alamblak	–			S Madv
4	Babungo	+	2	*kɨ̀(i)/Ø*	S Madv
5	Mandarin Ch.	+	2	*zhe*	S Madv
6	Tamil	–			S Madv
7	Krongo	–			S Madv
8	Hixkaryana	–			S Madv

Table 7.52: Availability and type of adverbial manner clauses in languages without a lexical strategy for the function of modifier in a predicate phrase

	Language	Rigid adverbial manner clauses	Type	Structural coding	Lexical strategy
1	Pipil	+	1	*ke:n-aken,* ADV	X
2	Wambon	+	1, 2	*-no/-o, ka*	X
3	Dhaasanac	–			X
4	Berbice Dutch	–			X
5	Kisi	–			X
6	Nung	+	1	*bạt*	X
7	Slave	+	1	*ghárę́*	X
8	Nivkh	+	2	*r/-t-ř//-n*	X
9	West Greenlandic	–			X
10	Nunggubuyu	none			X
11	Tuscarora	none			X