

CLIPP

Christiani Lehmanni inedita, publicanda, publicata

titulus	
	On the typology of relative clauses
huius textus situs retis mundialis	
	http://www.christianlehmann.eu/publ/typology_relative_clauses.pdf
dies manuscripti postremum modificati	
	01.11.2010
ocasio orationis habitae	
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volumen publicationem continens	
	<i>Linguistics</i> 24
annus publicationis	
	1986
paginae	
	663-680

On the typology of relative clauses

Christian Lehmann

Abstract

The NP accessibility hierarchy first formulated in Keenan & Comrie 1977 establishes the possible subsets of syntactic functions on which a relative clause (RC) strategy may relativize and for which of them it may use pronominal representatives of the head inside the RC. However, it does not tell us what determines the size of these subsets. This article briefly introduces the positional types of RCs and an elaborated version of the hierarchy of syntactic functions. It then shows that RCs may be nominalized to varying degrees and that their degree of nominalization correlates with their positional type. The degree of nominalization of a RC largely determines its achievement on the hierarchy of syntactic functions. The degree of nominalization and the positional type together determine the degree to which a relation of normal interclausal anaphora obtains between the head and the relativized position and, thus, determine the extent to which a pronominal representative may be used in the RC.

1. Introductory remarks¹

The typological and universal aspects of relative clauses (RCs) have enjoyed an intense interest in recent research in general comparative linguistics. This interest has been fed at least by the following three sources:

1. The syntactic description of RCs has always played a prominent role in the various phases of generative transformational grammar. Much effort has been devoted to such issues as the fate of the proform representing the head noun in the RC or the analysis of the difference between restrictive and appositive relative clauses.
2. RCs were given a place in basic order typology from its very beginning, since number 24 of Greenberg's (1963) universals concerns the connection of the pronominal position of the RC with the other word order characteristics of the language.
3. More recently, Keenan and Comrie (1977) have addressed the question of which syntactic functions in the RC are relativizable, and by what syntactic means. This has provoked extensive discussion both on RC forming strategies and on syntactic relations.

Several in-depth studies of the typology of the RC emerged from this debate. As some of the important steps in this development, one may recall Schwartz 1971, Andrews 1975, Downing 1978 and Touratier 1980. The most recent comprehensive study is Lehmann 1984; this article is a report on some of the major findings of the book.

The structure of the presentation is as follows: Sections 2 and 3 reformulate some concepts that have been used for some time in the typology of RCs. §2 introduces the positional types of RCs and §3 the hierarchy of relativizable syntactic functions. This leads to the following question: What determines the achievement of a RC strategy on the hierarchy of syntactic functions and the employment of pronominal representatives of the head inside the RC? The remaining part of the paper is devoted to this question. §4 shows that RCs may be nominalized to varying degrees and that this correlates with their positional type and their achievement on the hierarchy of syntactic

¹ I thank the anonymous readers of this journal for some extremely well taken and helpful criticism of the version first submitted.

[postnominal]

E4 Kārxāne-yi ke dar ān kār mi-kard-am baste šode ast.
 PER factory-IND [SR in D3 work IMPF-did-1.SG] closed become is
 "The factory in which I used to work has been closed." (Amin-Madani & Lutz 1972:175)

[prenominal]

E5 Orhan-ın gör-düğ-ü adam çık-tı.
 TUR [Orhan-GEN see-NR-POSS.3] man leave-PAST
 "The man Orhan saw left." (Andrews 1975:152)

In E3, the RC follows the main clause, which contains the head. In E4 the RC follows, in E5 it precedes its head. The role of the head in the RC is expressed by processes similar to anaphora. There is an anaphoric pronoun representing the head in the RC of E4, and there might also be one in E3. In E5, however, where the head is the direct object in the RC, there can be no pronoun representing it. We will return to this point in §5.

As was mentioned, the second principal division of RCs cuts across the first one. The RC may be either **adjoined** to the main clause or, together with its head, be **embedded** in it. The adjoined RC is not a constituent of the main clause; the embedded RC constitutes, together with the head, a nominal within the main clause. E1 and E3 are adjoined, the former being **preposed**, the latter **postposed** to the main clause. The others are embedded, E2 being **circumnominal**, E4 **postnominal** and E5 **prenominal**. We thus get the following positional types of RCs:

F1. Positional types of relative clauses

subordination	adjoined	embedded	
head position			
internal-head	preposed	circumnominal	
external-head	postposed	adnominal	{ postnominal prenominal

2.3. In order to forestall possible misunderstandings, we should dwell a little more on the terms and the concepts. First of all, observe the essential difference between a preposed and a prenominal RC, and again between a postposed and a postnominal RC. The prenominal and postnominal RCs are attributes to their head and form a nominal together with it which can have one of the syntactic functions in the matrix clause which NPs usually have. The preposed and postposed RCs, on the contrary, do not form a nominal with their head noun, have no syntactic function in the main clause and cannot be categorized as anything but a clause. Since an adjoined RC is not a constituent of the main clause, it never appears within it, but always at its margin, being either preposed or postposed. Certain adjoined RCs may switch their position before or after the main clause, but still not be embedded in it. We will see an example from Walbiri in E7 and E7'.

A very common variety of the adjoined relative construction is the **correlative construction**, where relative and/or demonstrative pronouns in the relative and main clauses mark the anaphoric relationship. This is illustrated in E1, whereas E3 is not correlative.

Internal-head RCs contain the nominal which they semantically modify.² They are sometimes, misleadingly, called headless (cf. §5.1). In semantic terms, a headless RC is one which does not have a head nominal, either internal or external. Examples can be derived from E1, E2 and E5 by simply leaving out the head. The idea that RCs such as those in E1 and E2 might be headless is based on a syntactic concept of ‘head’ which requires a head to be outside what it is a head of. But then, of course, the term ‘internal-head RC’ would not make sense. We will say no more about headless RCs.

2.4. The examples of the five positional types of RCs have made us see that the semantic configuration which our preliminary definition of the RC was based on is brought about by a couple of **operations** which may, in part, be applied alternatively. The first step is common to all RCs: A clause is subordinated and nominalized to some degree. Then we may either form an empty place in the clause and mark it as referring (anaphorically or quasi-anaphorically) to a nominal outside the RC, or we may form a head inside the RC by marking one of its nominals. If we have applied empty place formation, we must finally connect the RC with a head nominal by attribution.

Thus, a relative construction is formed by a bundle of operations which will be called:

- subordination - nominalization,
- anaphora - empty place formation,
- attribution/head formation.

3. The hierarchy of syntactic functions

3.1. In their well-known article on what they called **noun phrase accessibility**, E. Keenan and B. Comrie assumed a fixed set of syntactic functions which the head of a relative construction could conceivably have within the RC. For any given RC strategy, there are some syntactic functions which are relativizable and others that are not, and again there are some syntactic functions for which there is a representative of the head within the RC, and others for which there is no representative. Throughout the following, I will be referring to the ‘representative of the head in the RC’ and leave it open whether this is a relative pronoun, a person or demonstrative pronoun, a personal affix or even the head itself, as it is in the internal-head RCs.

The fruitful finding of that research was that the set of syntactic functions can be ordered in such a way that the application to any RC strategy divides the set into continuous segments. This means that certain syntactic functions are inherently easier to relativize than others, so that the more difficult ones may be either not at all relativizable or may require a representative of the head in the RC even where the easier functions do not. Keenan and Comrie made a hierarchy of this ordered set, putting the most easily relativizable syntactic functions at the top of the hierarchy. In F2, I give my modified version of the accessibility hierarchy.

F2. Hierarchy of syntactic functions

subject/absolutive
direct object / ergative

² 2 Although the head of a head-internal relative construction is not the head in any distributional sense, it is its syntactic head. This has to be assumed in order to explain, among other things, the form of the resumptive pronoun in the following main clause (e.g. *apedanda* in E6).

indirect object	
local complement	
temporal complement	possessive attribute
other complements	
adjuncts	standard of comparison
	prepositional attribute

Since the idea of the accessibility hierarchy and the evidence for it have been known for quite some time now, I can renounce to explaining its details or adducing examples. Just a few features have to be noted. First, the syntax of NPs depending on verbs differs from the syntax of NPs depending on nouns, and this again differs from the syntax of dependent NPs subject to additional conditions such as coordination and embedding another subordinate clause in the RC. Therefore we do not get a unidimensional hierarchy, but a complex one composed of several subhierarchies. F2 only shows two of them, the first comprising the **adverbal syntactic functions**, the second one the **adnominal syntactic functions**.³ The two subhierarchies are only weakly ordered with respect to each other. In particular, for some languages the possessive attribute is much higher up in the hierarchy, being served by the same strategy which also serves the subject and then breaks off; this is the case, e.g., in Indonesian and Dagbani. For other languages, the whole subhierarchy of adnominal functions is further down; it is, e.g., not reached at all in Basque, Tamil and Yaqui. The slash in two of the boxes means 'either - or, as the case may be', the tilde means that the syntactic functions linked by it are not ordered on this hierarchy.

An important feature of the subhierarchy of adverbial functions is that these have to be subdivided into **complements** and **adjuncts**, the complements occupying the upper four positions of the hierarchy. Complements have syntactic functions governed by the verb, i.e. inherent in the valency of the verb; adjuncts (i.e., basically, adverbials) have syntactic functions outside the valency of the verb and are somehow additional to the core of the clause. The complements are generally higher up in the hierarchy than the adjuncts, since their governors make one expect them, while nothing makes one expect an adjunct.

It should also be noted that the hierarchy represents an empirical generalization which tends to be true for the RC strategies of many languages. I know of no version of it which does not run into some counterexamples. One of the worst may be found in Indonesian. This language has a postnominal strategy which has access to subjects and their genitive attributes by one of a pair of subordinators, and to local complements by the other subordinator. Other complements cannot be directly relativized. Any satisfactory treatment of such exceptions on the typological level presupposes their motivation within each language.⁴

³ 'Adverbal' (≠ adverbial) here means 'depending on a verb', 'adnominal' means 'depending on a noun', where 'noun' is taken in its classical wide sense which includes 'adjective'.

⁴ The fruitful intuition behind the hierarchy seems to me to be the following: any strategy which can relativize a given syntactic function should be able to relativize all simpler syntactic functions, possibly with simplifications in the strategy such as drop of a resumptive pronoun. However, this would have to be made more precise before it can be sustained. An obvious exception is English, which cannot have the *apokoinou* construction for subjects. An even more

3.2. We should be aware that the hierarchy of syntactic functions answers some of the questions that we may ask about the achievement of a RC strategy with regard to relativizable syntactic functions, and others it does not answer. The hierarchy tells us that any RC strategy must break off at just one point and must start inserting representatives of the head into the RC from just one point downward the hierarchy. It does not tell us at which point a given strategy will break off or start inserting representatives. There are striking differences among languages in this respect. There are postnominal RC strategies such as those of Malagasy and Dyirbal which relativize only the subject or absolute, respectively; and there are those of Persian and Latin which relativize practically all syntactic functions in all conceivable configurations. Again, some strategies have representatives of the head in the RC almost from start; e.g. Arabic already for the direct object, Tongan for the ergative. Other strategies such as the Turkish one do not use a representative for any adverbial function, and the Japanese strategy never involves a pronominal representative, although it reaches far down the hierarchy of syntactic functions.

Our question is: do RCs have any features which determine their achievement and behavior on the hierarchy of syntactic functions, or does this vary arbitrarily among strategies? Any connection of the sort looked for would contribute to the typology of RCs, since it would mean that the behavior of a strategy with regard to the hierarchy is one of the features constituting its type. The typological connections we are looking for do exist, and the next section will lay the ground for them.

4. Nominalization of the RC

4.1. It was said in 2.4 that all RCs are subordinated. Subordinate clauses may be nominalized to varying degrees.⁵ In order to get an idea of what this means, consider E6 through E13.

E6 KASKALz-a kwit assu utahhun,
 HIT [campaign:ABL-CONN REL:ACC:SG:INAN goods brought:1.SG]
 n-at apedanda halissiyanun.
 CONN-3.INAN.ACC D3:INST decorated:1.SG
 "With booty that I brought from the campaign, I decorated them." (*KBo* III vs. 57f + *KUB* XXVI 71 6f)

E7 njuntulu-!u kutja-Ø-npa wawiri pantu-ŋu,
 WAL [you-ERG SR-AUX-SBJ.2 kangaroo spear-PAST]
 ŋula kapi-ŋa pura-mi ŋatjulu-!u.
 DEM FUT-SBJ.1 cook-PRS I-ERG
 "The kangaroo that you speared, I will cook." (Hale 1976:79)

E8 autíka d' égnō oulēn,
 AGR at.once however recognized:3.SG scar:ACC.SG.F
 tēn poté min sūs ēlase
 [DEM:ACC.SG.F once him boar:NOM.SG stroke:3.SG]
 "At once she recognized the scar which once a boar had struck him." (*Od.* 19, 392f)

serious one are the Ancient Semitic languages. Accadic, for instance, has a postnominal strategy in which the head noun is in a special morphological form called status constructus and the RC is finite and not introduced by any subordinator or relative pronoun. This strategy relativizes only direct objects.

⁵ 'Nominalization', the transformation of a clause or verbal into a nominal or a noun, here is to be taken in the classical wide sense corresponding to the wide sense of 'noun' as mentioned in fn.3.

- E9 (shí) lééchaqá'í b-á hashtaal-ígíí nahal'in.
 NAV [I dog 3-for IMPF:1:sing:NR] IMPF:bark
 "The dog I am singing for is barking." (Platero 1974, (40))
- E10 o anthropos pu (ton) skotosa
 MGR the man [SR him killed:1.SG]
 "the man that I killed"
- E11 Ini-meʔe hu-me haamuč-im in ame-t noka-k-aʔu.
 YAQ DEM-PL DET-PL woman-PL [POSS.1 3.PL-about speak-REAL-REL]
 "Those are the women that I spoke about." (Lindenfeld 1973)
- E12 Kore-wa ano hito-no kai-ta hon desu.
 JAP D1-TOP [D3 person-GEN write-PAST] book COP
 "This is the book that man wrote." (Kuno 1973)
- E13 iç-in-den cık-tıg-ım-ız ev
 TUR [interior-POSS.3-ABL leave-NR-POSS.1-PL] house
 "house which we left" (Andrews 1975:54)

E6 through E8 illustrate adjoined RCs. The preposed RC of E6 displays the full syntax of independent clauses and thus shows no sign of nominalization. The same is true for the preposed RC of E7, the postposed RC of E8 and, by the way, for E1. In E3 the direct object would probably be represented by an anaphoric pronoun if the RC were independent.

E9 has a circumnominal RC. This is nominalized insofar as it functions like any other NP in the matrix clause. This is brought about by the nominalizing suffix. However, there are no internal syntactic modifications of the RC accompanying the external nominalization. The Mohave circumnominal RC, which was illustrated in E2, does show some symptoms of nominalization insofar as its verb is prepresented by a special subordinate stem and its subject lacks the nominative suffix.

The RCs in E10 and E11 are postnominal. They, as well as all the following RCs, are externally nominalized insofar as they form attributes to their heads. The Modern Greek RC in E10, just as the Persian one in E4, has no internal features of nominalization, apart from the fact that the object of the verb need not be expressed, to which we will return in the next section. The Yaqui RC is nominalized to a greater degree, since there are constraints on modal suffixes in the RC, and its subject is in the genitive.

Finally, we come to the prenominal RCs. The Japanese RC optionally has its subject in the genitive, as is to be seen in E12. More often than in independent clauses, the subject remains unexpressed. The Turkish RC, too, has its subject in the genitive; in E13 it appears in the form of a possessive suffix to the RC. The verb is infinite. There are also constraints on the tense in the RC, since the tense suffix of the verb is replaced by one of the two nominalizers which reduce the tense paradigm to the opposition 'real vs. future'.

The evidence may be systematized as follows: A clause may be nominalized to varying degrees. At one pole of the scale we have mere subordination without nominalization, typically effected by a conjunction or a relative pronoun. At the other pole we have strong nominalization which condenses the clause to its verbal center, typically effected by a verbal affix. This process is accompanied by a number of syntactic changes inside the nominalized clause. The following

phenomena add up stepwise to increase the degree of nominalization of a clause: constraints on the sentence type, constraints on modal categories, on tense and aspect, dispensability of complements, infinite verb forms, subject in the genitive, constraints on possible complements. After the first step, we have a subordinate clause; after the last step, we have a verbal noun.

4.2. The degree of nominalization of a RC correlates with two other properties: with its positional type and with its achievement on the hierarchy of syntactic functions. Adjoined RCs generally show no signs of nominalization. Circumnominal and postnominal RCs tend to be weakly nominalized. Prenominal RCs are nominalized most strongly. At the point of strongest nominalization, we find the so-called **relative participle**, e.g. in Turkish, Quechua and Dravidian, where the RC is maximally similar to an adjective (or genitive) attribute.

Given this correlation between degree of nominalization and positional type, I will occasionally resort to the following simplification: I will be referring to a prenominal RC and, by implication, mean a strongly nominalized RC, and similarly I will be referring to a postnominal RC and mean a moderately nominalized RC.

Again, increasing nominalization involves constraints on the expandability of the clause by nominal constituents. This implies the following generalization:

The more a RC is nominalized, the less it can systematically make various syntactic functions available for relativization. Consequently, nominalization correlates inversely with achievement on the accessibility hierarchy.

The adjoined RCs can relativize all syntactic functions. Circumnominal strategies are somewhat less effective; Navaho, e.g., has constraints on complements of postpositional clitics. Similarly, postnominal RCs are somewhere in the middle, varying between the extreme flexibility of the Persian strategy and the extreme poverty of the Malagasy strategy. Prenominal RCs perform most badly on the hierarchy. While there are some exceptional cases such as the Japanese one, which can relativize almost all the syntactic functions, most are in the neighborhood of the Basque strategy, which has access only to absolutive, ergative and indirect object.

These are claims about tendencies which can neither be proved by the examples I have adduced nor be disproved by some counterexamples. Therefore I have performed a count on the data in Keenan & Comrie 1977. The results of such a count cannot be taken too seriously, since the data are not all correct and refer to a version of the hierarchy of syntactic functions which I think is improvable. Furthermore, sufficient data are available only for postnominal and prenominal RCs. For these, however, the results of the count are impressive: postnominal RCs can relativize 5.7 positions of the hierarchy, on an average, while prenominal RCs can relativize 3.5 positions, on an average. I take this to be significant in spite of the provisos mentioned.

5. Anaphora in the RC

5.1. We now come to the use of a representative of the head in the RC and its typological implications. For a long time since the early days of transformationalism, relative constructions have been attacked by the so-called **coreferential NP analysis**, by which is meant a supposition that at some deeper level every relative construction contains two coreferential NPs, one outside and the other inside the RC, the former being the head and the latter its representative in the RC. The exemplar of the head inside the RC then usually underwent various transformations, being

pronominalized, fronted or even deleted. Later on internal-head RCs came to the knowledge of linguists; and now the same mechanisms were applied, alternatively, to the external exemplars of the identical NPs, although this was still assumed to be the head. Even in modern treatments of the RC (e.g. Mallinson & Blake 1981:359) one can read that internal-head RCs are really headless because their head has got deleted.

The coreferential NP analysis was misguided for at least three reasons. First, the head of a restrictive RC is generally not an NP, but a nominal. If it were an NP, it would not be able to take a restrictive adnominal RC, given that adnominal RCs are attributes. Second, the idea that there always is an anaphoric relation between the head of a RC and the position relativized into is wrong, as we shall see in §5.4. Third, even when there is such an anaphoric relation, it is a gross misunderstanding of the workings of anaphora to assume that an identical referent always should be represented by an identical, fully specified NP. This is even logically impossible, as the Bach-Peters paradox has nicely shown, quite apart from its unnaturalness in human languages.

5.2. When we ask for the regularities underlying the use of a representative of the head inside the RC, we first have to do away with the **internal-head RCs**. An internal-head RC contains a representative of the head, namely the head itself, for any syntactic function that is relativizable. Recall that this does not necessarily imply maximal achievement on the accessibility hierarchy. Namely, it does not imply this for the circumnominal RCs, which do not perform better than postnominal RCs in this respect.

5.3. Having momentarily excluded the internal-head RCs, we now have to spend a special thought on **agreement** in external-head RCs (again taking up here Keenan & Comrie's thinking). A term controlling an NP (e.g. a verb) may agree with that NP. In most cases, the agreement affix maintains a pronominal function in the sense that, for syntactic purposes, the corresponding actant is sufficiently represented by the agreement affix, so that we do not require an additional pronominal representative of the NP. The same goes for RCs: we normally do not need a representative of the head in the relativized position if there is an agreement affix bound up with its syntactic function. Now the regularities underlying the use of agreement affixes for the various syntactic functions are virtually converse to the regularities underlying the use of pronominal representatives of the head in RCs. Namely, while the rule for the presence of agreement affixes is that if a language has agreement at a given position on the hierarchy of syntactic functions, it will have agreement for all higher positions, the rule for the pronominal representation of the head in the RC is that if a given strategy requires the pronominal representation of the head in the RC at a given position of the hierarchy, it will require such representation for all lower positions.

Some languages can relativize just those syntactic functions which involve agreement of the superordinate term; Basque is the most famous example. Since an agreement marker is not a pronominal representative of the head in the RC, we here have a first hint to what we will find confirmed in the next subsection, namely that it is not the pronominal representation of the head that makes relativization of various syntactic functions possible, but rather the identifiability of the syntactic function of the relativized position, in this case by the agreement marker. Relevant examples are E11 and E13.

5.4. Having set aside for the moment internal heads and agreement, we can now turn to the central point of interest of the present section, namely the regularities underlying the representation of the head inside external-head RCs. Now here the nominalization of the RC comes into play. The

adjoined RCs are the most sentential, least nominalized ones. While the preposed RC almost always contains the head, the postposed one contains a pronoun referring back to the head in conformity with the rules of normal interclausal anaphora. Our two examples of postposed RCs show this indirectly. Although the RC in E3 does not contain an anaphoric pronoun, it might contain one, e.g. *on-u* 'it-ACC'. The Greek RC as in E8 contains an anaphoric pronoun for all syntactic functions, since this is a relative pronoun. Nevertheless, this is in conformity with the hypothesis, since the relative pronoun, because of its omnipresence through the various syntactic functions, does not occur in the strongly nominalized RCs.

The postnominal RCs exhibit great variation in the use of anaphoric pronouns in the relativized position. On the one hand, we have languages such as English which practically do not admit of a resumptive pronoun in the RC, and others such as Arabic which use it in all functions but the subject function. On the whole, the rules of free interclausal anaphora are not valid for the representative of the head in postnominal relative constructions. On an average, zero anaphora is more often admissible in RCs than in free anaphora. For instance, while the resumptive pronoun in E10 is optional, it would be obligatory if the clause were independent. Recall that postnominal RCs are at least weakly nominalized insofar as they help to form a nominal constituent in the main clause.

Prenominal RCs are quite uniform in their common aversion against pronouns in the relativized position. Turkish, Japanese, Quechua and the Dravidian languages never allow anaphoric pronouns in their RCs, and Chinese reluctantly admits of them only from the indirect object downward the hierarchy. E5 and E12 are absolutely typical for the general situation. Recall, again, that prenominal RCs are generally the most strongly nominalized ones.

My hypothesis is thus the following:

Representation of the head in various syntactic functions in the external-head RC correlates inversely with the degree of nominalization of the RC; i.e., the more strongly nominalized a RC is, the less it will allow of pronominal representation of the head in the relativized position.

Given the principle of the accessibility hierarchy, which predicts use of pronouns from a given position downward the hierarchy, this would appear to mean that the more strongly nominalized a RC is, the further down in the hierarchy it will start using pronouns. However, we saw in §4 that the more strongly nominalized a RC is, the higher up in the hierarchy it will quit altogether. This means that most of the strongly nominalized RCs, such as the Dyrbal, Quechua and Dravidian ones, do not even reach the point in the hierarchy where they might start employing pronouns.

When we ask why this should be the case, we find that the more a RC is nominalized, the more it becomes similar to a simple attribute, mostly an adjective attribute. The latter, however, does not bear any anaphoric relation to its head noun; it merely has an empty place for the latter. We never find an anaphoric pronoun by an adjective signalling the position that the adjective opens for the head. The conditions of free interclausal anaphora gradually become invalid in RCs to the degree that the RC becomes similar to a simple attribute. The more the RC is nominalized, the more the relativized position will reduce to an empty place or, syntactically speaking, to a slot not susceptible

nor in need of being marked by an anaphoric pronoun.⁶ Not susceptible, insofar as a modifying word generally cannot carry an anaphoric pronoun. Not in need, insofar as the syntactic function that the head may have as against a simple modifier as, e.g., an adjective or a participial attribute, cannot vary and thus needs no expression.

Again, the normal anaphoric situation implies the sequence ‘referent - anaphoric pronoun’; backwards anaphora is constrained. To the degree that the relation ‘head - relativized position’ is analogous to the relation ‘referent - anaphoric pronoun’, the use of resumptive pronouns is also determined by the positional type of the RC. In the adjoined RC, the head normally comes in the first, the anaphoric pronoun in the second clause, irrespective of whether the RC is preposed or postposed. This can be seen clearly in E1, E6 and E8. Walbiri allows of the inversion of the sequence ‘relative clause - main clause’; and if we apply that to E7, the head remains in the first clause, thus migrating from the relative to the main clause:

E7'. η tajulu- $\dot{\iota}$ u kapi- η a wawiri pura-mi,
 WAL I-ERG FUT-SBJ.1 kangaroo cook-PRS
 kutja-npa pantu- η u njuntulu- $\dot{\iota}$ u.
 SR-AUX.2.SG spear-PAST you-ERG
 "I will cook the kangaroo you speared."

The postnominal construction is in principle compatible with the use of anaphoric pronouns in the relativized position; so this is constrained only by the nominalization of the clause. In the prenominal construction, however, the use of pronominal representatives of the head would imply backwards anaphora; therefore it is heavily constrained there. The factor of the generally stronger nominalization of prenominal as against postnominal RCs adds up to the factor of their position vis-à-vis the head, which is unfavorable to anaphoric processes for prenominal position. We therefore expect significant quantitative differences between postnominal and prenominal RCs as regards the use of pronominal representatives.

Again, I have performed a count on the Keenan & Comrie data, with the following result: There is no pronominal representative of the head in postnominal RCs on the first 1.5 positions of the hierarchy of syntactic functions, on an average. There is no such representative in prenominal RCs on the first 2.5 positions of the hierarchy, on an average. This result again has to be taken with the provisos mentioned in §4.2 and yet seems to be significant enough.

It also emerges from this discussion that any model which assumes a universal logical form of RCs implying an anaphoric relationship between the head and the relativized position and from this deduces that strategies with ‘pronoun retention’ are more successful because they are closer to the logical form (cf. e.g. Keenan 1975), is in error. On the one hand, we have seen that the use of a pronominal representative in a RC strategy is not a necessary condition for its success on the hierarchy of syntactic functions. On the other hand, there is no such thing as a common logical structure to all RC types, one of the reasons being that there is a gradual transition between free anaphora and empty place formation. Only if ‘logical form’ does not mean a particular structure

⁶ The closest thing that comes to mind here is the agglutination of erstwhile demonstrative pronouns to adjectives in attribution, which gives rise, among other cases, to the Lithuanian so-called definite adjective inflection (geras vilkas ‘(an) old wolf’ vs. geras-is vilkas ‘the old wolf’) and, ultimately to the agreement of attributes with their heads, as, e.g., in Swahili; see Lehmann 1982, ^U7.2. However, these demonstrative elements do not serve the expression of the syntactic function of the head vis-ü-vis the attribute but, instead, of the attributive relationship.

representable in some logical calculus, but rather a specific combination of functional operations, the notion would seem unobjectionable and, in fact, to be instantiated by the set of operations constitutive of relative clause formation which is enumerated in §2.4.

6. Conclusion

We have started from the central observation of the hierarchy of syntactic functions, namely that when syntactic functions become less accessible, RC strategies either break off or start inserting pronouns. Our question was: how is this behavior of RC strategies with respect to the hierarchy of syntactic functions related to their other syntactic features? We have found a bundle of correlations. The positional type of the RC correlates with its degree of nominalization, this correlates with its achievement on the hierarchy of syntactic functions, and both the degree of nominalization and the positional type correlate with the use of representatives of the head inside the RC. Throughout I have insisted that the correlations are not strict, but rather reflect tendencies. This is because linguistic categories are focal instances on multidimensional scales, and differences among them are gradual. There are also gradual differences in such linguistic operations as nominalization and anaphora-empty place formation.

The result of such a typology is a set of types which are **prototypes**. Thus we have, e.g., the typical preposed RC, with the head in the RC, an anaphoric pronoun in the main clause, an invariable sequence of RC and main clause and no signs of nominalization of the RC. On the other hand, we have the typical prenominal RC, nominalized to a high degree, forming a nominal with its head and not containing any representative of the head in the more accessible syntactic functions. The other types are located on a complex continuum between these two poles. There is some variation around each of the types, and transitions among them. Nevertheless, the types are real, because the clustering of properties which they display can naturally be understood as a consequence of the interaction of the relevant linguistic operations.

Abbreviations

Language names:

Ancient GRreek	NAVaho
BAMbara	PERsian
HITtite	TURkish
JAPanese	WALbiri
Modern GRreek	YAQui
MOHave	

Grammatical category labels:

ABL	ablative	IND	indefinite
ACC	accusative	INST	instrumental
AUX	auxiliary	LOC	locative
COMPL	completive	NOM	nominative
CONN	connective	NR	nominalizer
COP	copula	PERF	perfect
DEF	definite	PL	plural
DEM	demonstrative	POSS	possessive

D1/2/3	demonstrative element of 1/2/3. ps. deixis	PRS	present
ERG	ergative	REAL	realis
EXIST	verb of existence	REL	relative pronoun, particle, affix
F	feminine	SBJ	subject (personal affix slot)
FUT	future	SG	singular
GEN	genitive	SR	subordinator
HABIT	habitual	TOP	topic
IMPF	imperfective aspect	1	first person
INAN	inanimate	2	second person
		3	third person

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