

In such examples, at least in the standard language, verb agreement is determined by the noun phrase that follows *there is/are*. Subject-to-object raising, however, treats *there* as the subject, giving:

I believe there to be a unicorn/unicorns in the garden. (7)

And, indeed, in such instances we find disagreement as to which noun phrase, in (5) and (6), should be considered the subject: different weighting of different criteria gives different results. So even in English there are some construction types where there is no agreement among linguists as to which noun phrase is subject.

Faced with such problems surrounding the characterization of the notion subject, there are two possible approaches. On the one hand, one could claim that the notion of subject is misleading from the outset, and should be banished from linguistic theory. On the other hand, one could try and work out a definition of subjecthood which, while corresponding to linguists' inter-subjective intuitions in the clear cases, would also make insightful claims about the unclear cases. In the present chapter, we follow the second of these paths. Before embarking on the details of the definition, however, we should make some further preliminary remarks. First, we are not committed a priori to the view that subject is a necessary descriptive category in the grammar of every language: there may well be languages where it is not appropriate, though equally there are languages (including English) where it is appropriate. Secondly, we are not committed to the view that, even in a language where subject is generally valid, every sentence will necessarily have a subject. Thirdly, we are not committed to the view that the translation of a sentence from language X where a certain noun phrase is subject will necessarily have that same noun phrase as subject in language Y. Examples of all of these points will occur below.

Finally, although we will argue that the notions of topic and agent must play a role in the definition of subject, we argue that, even in English, it is clear that the notion of subject cannot be identified with either of these notions. If we take, for instance, our criterion of verb-agreement, then it is clear that in the passive sentence *the men were hit by the boy*, the plural verb *were* does not agree with the agent; and it is equally clear that in the topicalized sentence *John I know* the non-third person singular verb is not in agreement with the topic. However close the connection may be among grammatical relations, semantic roles, and pragmatic roles, they cannot be identified with one another.

5.2 ON DEFINITIONS AND CATEGORIES

Before turning specifically to the definition of subject, it is necessary for us to make some preliminary remarks on the nature of definitions, in par-

ticular on the nature of definitions of linguistic categories, in order to avoid certain later misunderstandings. The kind of definition of subject towards which we will be working is the following: the prototype of subject represents the intersection of agent and topic, i.e. the clearest instances of subjects, cross-linguistically, are agents which are also topics. There are two important characteristics of this definition: first, it is multi-factor; second, it is stated in terms of prototypes, rather than in terms of necessary and sufficient criteria for the identification of subjects. The second point is particularly important, given that many subjects in many constructions in many languages are not topic, or are not agent, or are neither.

The use of a multi-factor definition is unlikely to raise any eyebrows, since such definitions are quite widespread in linguistics and other areas, as for instance if we define preposition in terms of the intersection of adposition and position in front of the governed noun phrase. However, the attempt to use definitions in terms of prototypes for linguistic categories has met with an inordinate amount of opposition and prejudice, so that it is worth spending some time on discussion of this issue. Rather than discussing the problem directly in terms of subject properties, we will use some other examples, where the use of prototypes is much more clearly justified. Note that the use of these analogies does not in itself justify the use of a prototype-based definition of subject, but it does demonstrate that we cannot a priori reject this kind of definition, but must rather weigh up the pros and cons in terms of their fit with the data and their evaluation relative to alternative definitions.

In chapter 2, we illustrated one very clear area where definitions of categories in terms of prototype seem to be required, namely with colour terms, where humans seem to recognize a central, focal value for a colour term, rather than clear-cut boundaries. What this means is that there is no set of necessary and sufficient conditions that an object must satisfy in order to be called, for instance, red. But equally, this does not mean that we can state no restrictions on the use of the term red: this term is most appropriate for the focal value, and less and less appropriate as one moves away from this focal area and approaches the foci of other colour terms. This example thus establishes that there is at least one area where humans do categorize in terms of prototypes, thus opening up this kind of definition as a real possibility.

Similar examples can also be found using more clearly linguistic categories, and the example we will use here concerns the distinction between nouns and adjectives in Russian, in particular the relation of numerals to these two. In Russian, in general, the distinction between nouns and adjectives is clear-cut, so that we can establish criteria that correlate with the focal values (prototypes) of noun and adjective. Numerals, however, fall in between these two prototypes, in a way that makes impossible any estab-

ishment of non-arbitrary cut-off points. In distinguishing adjectives from nouns, we may take two comparable construction types, the first being a noun phrase consisting of an attributive adjective and head noun (e.g. *xorošij mal'čik* 'good boy'), the second being a quantity phrase consisting of a head noun defining the quantity and a dependent genitive defining the entity being measured (e.g. *stado ovec* 'flock of sheep').

The following criteria characterize the adjective in the attributive construction: (a) the adjective agrees in number with its head noun, on a singular/plural opposition, e.g. *xorošij mal'čik* 'good boy', *xorošie mal'čiki* 'good boys'; (b) the adjective agrees in case with its head noun throughout, e.g. nominative *xorošij mal'čik*, but dative *xorošemu mal'čiku*, instrumental *xorošim mal'čikom*; (c) the adjective agrees in gender with its head noun, following a three-way masculine/feminine/neuter distinction (though only in the singular), e.g. *xorošij mal'čik* 'good boy', *xorošaja devočka* 'good girl', *xorošee okno* 'good window'; (d) many nouns have distinct accusative forms depending on whether or not they are animate, and adjectives agree with their head noun in terms of this distinction, e.g. inanimate accusative *xorošij stol* 'good table', animate accusative *xorošego mal'čika* 'good boy', even though both *stol* and *mal'čik* are masculine singular. Head nouns in the quantitative construction have none of these properties. Thus we have *stado ovec* 'flock of sheep' where *ovca* 'sheep' is feminine, and *stado gusej* 'flock of geese' where *gus* 'goose' is masculine. For number, we have *massa benzina* 'a mass of petrol' and *massa ljudej* 'a mass of people'. For case, we find that the head noun changes in case, but the dependent noun remains in the genitive, e.g. nominative *stado ovec*, dative *stady ovec*, instrumental *stodom ovec*. Finally, the head noun does not change depending on the animacy of the dependent noun, cf. accusative *massu ljudej* 'mass of people' and *massu karandašej* 'mass of pencils'.

On the other hand, the head noun of a quantitative construction has a number of properties that are not shared by the adjective in the attributive construction, as follows: (e) the head noun can vary in number independently of the dependent noun, e.g. *stado ovec* 'flock of sheep', *stada ovec* 'flocks of sheep'; (f) the head noun in the quantitative construction can take an attribute agreeing with it, e.g. *xorošee stado ovec* 'good flock of sheep', where *xorošee* is neuter singular nominative, agreeing with *stado*, while *ovec* is genitive plural; (g) the noun dependent on the head noun is invariably in the genitive, and if countable in the genitive plural – contrast the attributive construction under point (c), where adjective and head noun must be in the same case.

In terms of their adherence to the above seven criteria, we find that we can divide Russian numerals into several classes. First, the numeral 'one' has all the properties of an adjective and none of those of a head noun: it

can even agree in number, with *pluralia tantum*, e.g. *odni* (PLURAL) *nožnicy* 'one (pair of) scissors'. At the other extreme, the numeral *million* 'million', and also all higher numerals, have all the properties of a noun and none of those of an adjective. Intermediate numbers have a varying number of adjectival and nominal properties, as illustrated in the table. In this table, A means that the numeral has the appropriate adjectival property, N that it has the appropriate substantival property; A/N means that either property can be used, A/(N) indicating that there is clear preference for adjectival behaviour; (A) means that the numeral has the adjectival property, but in a restricted form, in particular the numeral 'two' has only a two-way gender opposition, distinguishing feminine *dve* from masculine-neuter *dva*; (N) indicates a similar restriction on a substantival property, as with the plural of *sto* 'hundred', which has only a few restricted uses. In the table, note that 'four' behaves like 'three', and that non-compound numerals between 'five' and 'ninety' inclusive behave like 'five'.

ADJECTIVAL AND SUBSTANTIVAL PROPERTIES OF RUSSIAN NUMERALS

Property	<i>odin</i> '1'	<i>dva</i> '2'	<i>tri</i> '3'	<i>pjat'</i> '5'	<i>sto</i> '100'	<i>tysjača</i> '1000'	<i>million</i> '1,000,000'
(a)	A	N	N	N	N	N	N
(b)	A	N	N	N	N	N	N
(c)	A	(A)	N	N	N	N	N
(d)	A	A/(N)	A/(N)	N	N	N	N
(e)	A	A	A	A	(N)	N	N
(f)	A	A	A	A	A	N	N
(g)	A	A	A	A	A	A/N	N

If we now ask the question whether Russian numerals are adjectives or nouns, it becomes clear that there is no straightforward answer, except in the case of 'one' (adjective) and 'million' (noun): in particular, we cannot establish a cut-off point between adjectives and nouns, except arbitrarily, i.e. by deciding arbitrarily that we are going to take one, rather than another, of the seven criteria as definitive – and even then, some of the individual criteria are not definitive, as indicated by alternative entries separated by a slash or entries in parentheses. The situation is rather that we have clear prototypes, and a continuum separating those prototypes from one another, much as with colour terms, even though here we are clearly dealing with grammatical categories.

Actually, the continuum-like nature of the distinction between adjectival and substantival properties finds an even stronger manifestation in

Russian numerals if we also take into account statistical preferences where alternatives are possible. For instance, after the numerals 'two', 'three', and 'four', an adjective may be in either the nominative plural (as would be expected if these numerals were adjectives) or the genitive plural (as would be expected if these numerals were nouns). If one counts the occurrences of either possibility in text, it turns out that the preference for the adjectival type is greatest with 'two' and lowest with 'four', i.e. even as between adjacent numerals one can establish that the lower is more adjective-like than the higher.

In conclusion, definitions based on prototypes must be allowed as a possibility.

5.3 ERGATIVITY

In section 5.1, we posed a general problem for the syntactic analysis of any sentence, namely: what is the subject of the sentence? In view of the discussion of section 5.2, we can slightly reformulate that question. Implicit in the original question was that the question would have a clear-cut, discrete answer, i.e. a given noun phrase either would or would not be a subject. However, in terms of our characterization of subject as the intersection of agent and topic, and given that agent and topic are logically independent notions and need not coincide in a given sentence, it is clear that the answer to our question may well be less than clear-cut: it may be the case that a given noun phrase has certain subject properties, but not all, i.e. instead of simply saying that a noun is or is not a subject we will characterize it as being a subject to a certain degree. Similarly, it is possible that subject properties in a sentence will be distributed among several noun phrases, or at least between two, rather than all characterizing a single noun phrase. In many instances, then, it is as pointless to expect a clear-cut answer to the question 'what is the subject of this sentence?' as it is to expect a clear-cut answer to the question 'is Russian *pjat* 'five' a noun or an adjective?' In the present section we will examine implications of this further, with particular regard to ergativity.

In section 5.1, we also posed the more specific question of identifying the subject of the ergative construction. In order to discuss this construction adequately, especially in terms of its similarities to and differences from the nominative-accusative construction, it is necessary to have a set of terms that is neutral between the two systems. The following is the set that we propose: The single argument of an intransitive predicate we will symbolize as S; this is clearly mnemonic for subject, and in general there is little or no controversy concerning the subject status in most intransitive

(single-argument) constructions across languages, so the mnemonically suitable symbol is also suitable in terms of its content. In the transitive construction, there are two arguments, and in order to avoid circularity we shall label neither of these with the symbol S. In the prototypical transitive situation, the participants are an agent and a patient, and this remains constant irrespective of the morphological or syntactic behaviour of the sentence in any individual language. We may therefore, starting originally with transitive predicates describing actions, label the agent as A, and the patient as P, so that in the sentence *I hit you*, or in its translation into Chukchi, irrespective of the case marking of the various noun phrases *I* will be A and *you* will be P. The labels are again clearly mnemonic, for agent and patient, respectively. However, the advantage of having arbitrary labels A and P rather than actually using agent and patient is that we can continue to use the arbitrary symbols even when we pass beyond prototypical transitive situations (i.e. actions) to other constructions in the language that have similar morphology and syntax. In English, for instance, the transitive verb *see* behaves morphologically and syntactically just like the action transitive verb *hit*, so that although in *I saw you* the pronoun *I* is not, in terms of semantic role, an agent, we can still symbolize it as A. A and P are thus syntactic terms, whose prototypes are defined in semantic terms.

In discussing examples (1) and (2) introduced at the beginning of this chapter, then, we can say that in (1) Chukchi *γam* and English *I* are Ss; in (2) Chukchi *γamma*n and English *I* are As, while Chukchi *γat* and English *thee* are Ps. Moreover, in English one case is used to encode S and A – a case of this kind is called nominative; and another case is used to encode P – a case of this kind is called accusative. In Chukchi, one case is used to encode S and P – a case of this kind is called absolutive; another case is used to encode A – a case of this kind is called ergative. The discussion thus far has related essentially to morphology, and we return to ergative-absolutive and nominative-accusative case marking in chapter 6. It is now time to turn to syntactic properties of subjects.

From the remarks made hitherto about subjects in English, it should be clear that English treats S and A alike as subjects for syntactic purposes, certainly for those syntactic points discussed so far, and indeed for most others. We can illustrate this by means of examples using coordination, in particular coordination of clauses that share a noun phrase in common and where that noun phrase is omitted in the second conjunct. If we try and conjoin sentences (8), (9), and (10), taking a transitive clause and an intransitive clause, in that order, then it is clear that we can conjoin, with omission of the second occurrence of the coreferential noun phrase, only (8) and (9), and not (8) and (10):

- The man hit the woman.* (8)
The man came here. (9)
The woman came here. (10)
The man hit the woman and came here. (= (8) + (9)) (11)

Even though sentence (11) contains no overt S for the intransitive predicate *came here*, it is absolutely clear to the native speaker of English that the only possible interpretation for this sentence is that the man came here, even though the alternative interpretation 'the man hit the woman and the woman came here' would make perfect sense. In other words, in order to permit omission of a noun phrase from a second conjunct, English makes two requirements: (a) the semantic requirement that the two noun phrases be coreferential; (b) the syntactic requirement that the two noun phrases be either S or A. For syntactic purposes, English treats S and A alike, so subject in English means S or A.

We may contrast this situation with the situation that obtains in Dyirbal, with the translations of our three English sentences (8)–(10):

- Balan d'ugumbil bangul yarangu balgan.* (12)
 woman-ABSOLUTIVE man-ERGATIVE hit
 'The man hit the woman.'
- Bayi yara banin'u.* (13)
 man-ABSOLUTIVE came-here
 'The man came here.'
- Balan d'ugumbil banin'u.* (14)
 woman-ABSOLUTIVE came-here
 'The woman came here.'
- Balan d'ugumbil bangul yarangu balgan, banin'u.*
 (= (12) + (14)) (15)
 'The man hit the woman, and the woman came here.'

(In Dyirbal, nouns are usually accompanied by a classifier agreeing in class, including gender, and case with the noun; in the above examples, these are *balan*, *bangul*, and *bayi*.) Note in particular that (15) does not, and in Dyirbal cannot, have the meaning of English sentence (11): the two sentences in the two languages are crystal-clear in their interpretations to native speakers, though the interpretations happen to be different in the two languages. Dyirbal, like English, has two restrictions on coordination with omission of a noun phrase, but while the semantic restriction is as in

English (the two noun phrases must be coreferential), the syntactic restriction is different: in Dyirbal, the coreferential noun phrases must be S or P. Thus for syntactic purposes, Dyirbal treats S and P alike, as opposed to A, so that in Dyirbal the appropriate grammatical relation is one that groups S and P together, in other words subject in Dyirbal means 'S or P'.

Although it might seem that the syntactic difference follows the morphological difference between nominative-accusative morphology in English and ergative-absolutive morphology in Dyirbal (as can be seen by comparing examples (12)–(14)), it is important to emphasize that this is not the case. In English, the syntactic identification of S and A proceeds even with non-pronominal noun phrases, which do not have a morphological nominative-accusative distinction. In Dyirbal, personal pronouns of the first and second persons happen to have nominative-accusative case marking, a fact to which we return in chapter 6, but this does not affect the ergative-absolutive basis of the coordination construction:

- ŋad'a ninuna balgan.* (16)
 I-NOMINATIVE you-ACCUSATIVE hit
 'I hit you'
- ŋad'a banin'u.* (17)
 I-NOMINATIVE came-here
 'I came here.'
- ŋinda banin'u.* (18)
 you-NOMINATIVE came-here
 'You came here.'
- ŋad'a ninuna balgan, banin'u.* (19)
 'I hit you, and you/*I came here.'

We should also note that not all languages pattern either like English or like Dyirbal. In Chukchi, for instance, in coordinate constructions the omitted S of an intransitive verb can be interpreted as coreferential with either the A or the P of the preceding verb:

- ŋiləy-e talayvənen ekək*
 father ERGATIVE he-beat-himson-ABSOLUTIVE
ənkʔam ekvetyʔi.
 and he-left (20)
 'The father beat the son, and the father/the son left.'

Moreover, we are not claiming that a language will necessarily have S/A identification for a subject property that correlates highly with an agent property, only that there will be a strong tendency for this to be the case (i.e. a universal tendency rather than an absolute universal). In Dyirbal, for instance, one might expect the same nominative–accusative syntax to carry over to indirect commands, deleting the S or A of the indirect command if coreferential with the recipient of the command. In fact, however, the A of an indirect command cannot be deleted in that form, rather the antipassive must be used, presenting that noun phrase as an S, which can then be deleted by the general rule allowing deletion of either an S or a P:

ŋana yabu gigan ŋumagu
 we-NOMINATIVE mother-ABSOLUTIVE told father-DATIVE
buṛalŋaygu. (34)
 see-ANTIPASSIVE-INFINITIVE
 ‘We told mother to watch father.’

(Note that the dative is one of the possible cases for the patient in the antipassive construction.) If the unmarked voice is used for a transitive verb in the infinitive, then only a coreferential P may be omitted, as in (35):

ŋadʔa bayi yaṛa gigan
 I-NOMINATIVE man-ABSOLUTIVE told
gubiŋgu mawali. (35)
 doctor-ERGATIVE examine-INFINITIVE
 ‘I told the man to be examined by the doctor.’

The example of imperative addressee deletion involved a natural identification of S and A, i.e. natural nominative–accusative syntax. We may now turn to an example of natural ergative–absolutive syntax. In Nivkh, there is a resultative construction, i.e. a construction referring to a state that has come about as the result of a previous event, using the suffix *-yəta*. With intransitive verbs, this involves simply the addition of the suffix to the verb:

Anaq yo -dʔ. (36)
 iron rust
 ‘The iron rusted.’

Anaq yo -yəta -dʔ. (37)
 iron rust RESULTATIVE
 ‘The iron has rusted.’

(The verb-final suffix *-dʔ* is an indicator of finiteness.) If, however, we take a transitive verb, then a number of changes take place relative to the non-resultative form:

Umgu tʔus tʰa -dʔ. (38)
 woman meat roast
 ‘The woman roasted the meat.’

Tʔus řa -yəta -dʔ. (39)
 meat roast RESULTATIVE
 ‘The meat has been roasted.’

First, for the majority of transitive verbs in most circumstances, the A of the transitive verb must be omitted in the resultative construction. Secondly, the P of the transitive verb has the property that it conditions consonant-initial alternation in the verb (cf. the initial *tʰ-* of (38)), and the absence of such alternation in the resultative verb suggests that this noun phrase is no longer P. Whatever the precise details of the syntactic analysis, we can say that the resultative verb has a single argument, and that this argument corresponds to the S of a non-resultative intransitive verb, but to the P of a non-resultative transitive verb. In other words, S and P behave alike, as opposed to A.

The explanation this time is to be sought in the pragmatic structure of resultative constructions. Any such construction attributes a change of state to a certain entity. With intransitive predicates, the change of state is necessarily attributed to the S: in sentence (37), it is the iron that has undergone a change of state. With transitive predicates, although it is in principle possible for the change in state to characterize the A, as in *John has climbed the mountain*, it is more usual, especially with the prototypical transitive predicates describing an action involving a change of state, for the change of state to be attributed to the P. If we say *the woman has roasted the meat*, then we are necessarily talking about a change of state in the meat, and whether or not there is any change of state in the woman is simply left open. What Nivkh does is to grammaticalize this natural topicalization of S or P in the resultative construction, by allowing only S or P to be expressed.

Again, we are not claiming that a language must make this identification in the syntax of resultative constructions. English, for instance, does not, so that *the woman has roasted the meat* is perfectly acceptable as the resultative of *the woman roasted the meat*. We are claiming, however, that languages will tend to show a bias towards ergative–absolutive syntax in resultative constructions.

If we embed (42) and (43) under a verb meaning 'hesitate', then this is a construction which, a priori, favours S/A identification – one can only hesitate about something under one's own control – and here Tagalog allows deletion of the actor, irrespective of whether it is 'focus' or not:

Nagatubili siya -ng humiram ng pera sa
hesitated-ACTOR: FOCUS he: FOCUS
bangko. (44)
'He hesitated to borrow money from the bank.'

Nagatubili siya-ng hiramín ang pera sa bangko. (45)
'He hesitated to borrow the money from the bank.'

(In the last two examples, the suffix *-ng* is a clause-linker; *hiramin* in (45) is the nonfinite equivalent of *hiniram*.)

If, however, we take a construction that is neutral as between identification of S with A or P, then Tagalog treats the 'focus' as subject, i.e. reference is to grammatical relations of set II. For instance, in Tagalog relative clauses, the noun phrase relativized can only be the 'focus' of the relative clause. If we want to say 'that is the woman who bought the dress', then the actor-focus construction (as in (40)) must be used, as in (46):

Iyon ang babae-ng bumili ng (46)
that FOCUS woman bought-ACTOR: FOCUS UNDERGOER
baro.
dress

But if we want to say 'that is the dress that the/a woman bought', then the undergoer-focus construction (as in (41)) must be used, as in (47):

Iyon ang baro-ng binili ng (47)
that FOCUS dress bought-UNDERGOER: FOCUS ACTOR
babae.
dress

To conclude this chapter, we note that treating subject as a diffuse, rather than a discrete, notion, while perhaps seeming at first to weaken the notion of subject, does in fact provide us with a powerful tool which, in conjunction with independently established correlations with agent and topic properties, enables us to describe in a unified way, with a large measure of explanation, disparate phenomena across a wide range of languages.

NOTES AND REFERENCES

The idea of defining prototypical subject as a multi-factor concept is developed initially by Keenan (1976b), although I do not use his classification of properties here. The strongest criticism of this approach comes from Johnson (1977a), but unfortunately Johnson begs the question by assuming that a definition must be in terms of necessary and sufficient conditions. My discussion of the continuum ('squish') from adjective to noun in Russian numerals is based closely on Corbett (1978).

The discussion of ergativity in section 5.3 is based on Comrie (1978b). Very similar ideas, though with certain differences in terminology, emphasis, and concept, are given independently by Dixon (1979); note in particular that Dixon uses O for my P, uses subject for a natural grouping of S and A, and uses pivot for a grouping of S with A or S with P in a particular language. The Dyirbal examples derive originally from Dixon (1972), except for (35), which I owe to a personal communication from Dixon. Numerous studies on ergativity are gathered in Plank (1979) and Dixon (1987); the Chuckchi examples are from the contributions to this volume by Comrie (1979c, 226, 227, 229) and Nedjalkov (1979, 242).

Splitting subject properties between agent (role) and topic (reference) properties is developed, especially for Philippine languages, by Schachter (1976, 1977); the Tagalog examples are taken from the second of these. It should be emphasized that, contrary to the impression given in many accounts of Philippine languages, the notions actor and 'focus' are syntactic, and not directly semantic or pragmatic; the use of 'focus' in this sense, very different from the pragmatic sense discussed in section 3.2, is unfortunate, but has become entrenched. The intuition of subject diffuseness is captured in a number of different ways in formal theories of syntax, e.g. by having different grammatical relations assigned to noun phrases at different levels (the standard theory of generative grammar) or strata (relational grammar), by relying on the interaction of different modules (government and binding, e.g. Baker 1988, 228), or by separating role properties of subjects from reference properties (role and reference grammar, e.g. Foley & Van Valin 1984). The Nivkh examples are from Nedjalkov *et al* (1974). Factors controlling the distribution of nominative-accusative and ergative-absolutive syntax are discussed by Moravcsik (1978b); semantic correlates of the ergative-absolutive distinction are discussed by Keenan (1984). The discussion of imperative addressee deletion is based on Dixon (1979, 112-14), that of resultative constructions on Comrie (1981a); see also Comrie (1984).