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Encoding grammatical relations: acceptable and unacceptable non-distinctness*

With the renewed interest in grammatical relations, more attention has again been paid recently to those overt morphological and syntactic devices that are used in natural languages to encode these relations. These had for quite a while been neglected in favour of less superficial, underlying principles of grammatical organization which were believed to provide an appropriate basis for generalizations with a universal import. That this belief was, partly, mistaken and that the regularities pertaining to relational coding do have typological, historical and universal significance was clearly demonstrated by recent, and not so recent, theories about constituent order or case systems. In this respect, case and linear order theories represent, at least potentially, a considerable advance in our knowledge about what is accidental and language-particular and what is predictable on more general grounds. In another respect, though, they too are bound to fall short of explanatory adequacy, on account of their failure to address themselves to a range of empirical phenomena that forms a natural domain. The only natural domain for a theory concerned with relational encoding, I contend, is the ensemble of formal means available to natural languages for the purpose of encoding grammatical relations in its entirety. Although separate theories about individual coding devices, such as nominal case inflection (occasionally accompanied by patterns of segmental or suprasegmental modification), agreement or cross-reference[1], adpositions, and linear constituent order, may be able to arrive at partially explanatory generalizations, they cannot meaningfully ask, much less answer, important questions like the following. Which particular coding devices can, and which cannot, be utilized in individual languages at the same time? (Why, for instance, should there exist affinities between agreement and case inflection, or incompatibilities of case and order?) Which influences can be exerted upon syntactic processes by different coding devices? In which manner and for which reasons do languages change in time with regard to coding properties of their grammatical relations? If such problems are at issue, an integral theory about the interdependencies of alternative and/or com-

plementary coding devices, rather than a neat compartmentalization of case, agreement, word order and other coding systems, is called for. To demonstrate that such problems indeed have to be at issue, is what I am presently concerned with.

It is obvious, for example, that case and serialization theories individually cannot explain a diachronic exchange of coding systems as happened in the history of the Germanic, Romance, Slavic and many other languages. But "drifts" towards analyticity are only the most conspicuous example of the non-random nature of the way one ensemble of coding devices gains predominance over another. The common accounts of such developments — the phonetically induced decay of inflectional morphology had to be compensated for by new syntactic means of relational enconding — essentially are post hoc attempts at stating what has happened rather than genuine explanations. And even as such they are anything but adequate, in so far as they are at odds with the empirical evidence that quite generally suggests that analytic encoding increases prior to morphological decay (Plank 1977a; 1980).

The present paper takes up a fairly traditional issue, which is usually situated entirely within the confines of one particular coding system, viz. that of case morphology. I am referring to the notion of syncretism, which is often understood as involving formal coincidence of entries of a declensional paradigm, although in another, more traditional usage of the term, case syncretism implies more than mere formal identity.[2] For the present purpose, the question of complete neutralization of paradigmatic categories, on the form as well as the content side, can be disregarded; what is of interest here is formal identity since the relevant categories are such that their distinctness on the functional level can safely be taken for granted. I submit that it is only within a general coding theory that a certain pattern of syncretism, or rather: avoidance of syncretism, emerges. Although the amount of cross-linguistic evidence adduced in support of this claim is necessarily limited, the proposed pattern of coding, rather than case, syncretism appears to be universally significant. The generalization that different grammatical relations are affected differently by syncretism would have to be missed if declensional paradigms alone were taken into account (cf. also Plank 1978a). There no doubt are a number of previous studies that quite convincingly show the non-random patterning of case syncretism to be a consequence of syntactico-semantic determinants of morphology[3]; they still do not sufficiently emphasize the principled manner of the interaction of alternative and simultaneous coding devices in serving their ultimately common purpose.

But what exactly is the purpose of relational coding devices? According

to functional explanations, as advocated by Comrie (1975) or Martinet (1979) among others (cf. also Boeder 1971), their essential raison d'être is simply to distinguish the various grammatical relations co-occurring in actual sentences, especially if other clues to the relational identity of terms are lacking. Thus, coding by means of case marking, which is commonly regarded as an independent domain of such functional principles, has to guarantee that in transitive clauses subjects (S) are overtly distinguishable from direct objects (dO), whereas in intransitive clauses and clause types with only a single term being governed by the predicate (e.g. subjectless transitive imperatives) there is no need to distinguish anything, the particular case used to encode single terms, consequently, being largely arbitrary.[4] As far as I am aware, the absolute distinctness requirement on multi-term configurations at the heart of the functional principle has been assumed to apply with equal force to all grammatical relations potentially co-present in a single sentence, although occasionally particular prominence has been accorded to an allegedly central relational distinction: "those [ambiguities] resulting from the neutralization of substantive S.O distinctions are of a particularly damaging nature" (Vennemann 1975:295; similarly Wurzel 1977:136). In my opinion, these evaluations are both counterfactual. There as a matter of fact do exist priorities with respect to distinctive coding, but rather than pertaining to the S-dO configuration, they single out the non-clausal grammatical relation holding between an attributive term (A) and its head. After substantiating this claim by showing that, synchronically, there is a universal constraint against non-distinctive encoding of A, which is instrumental diachronically in bringing about or preventing pertinent changes of coding systems, I shall suggest an explanation of the differential toleration of relational non-distinctness that simultaneously entails certain modifications of the functional principle.

A few familiar examples suffice to demonstrate that the Modern English predominantly order-based coding system does not entirely successfully prevent S-dO relational ambiguity:

(1) *Mary is too young to marry.*
(2) *Joe likes Sue more than Bill.*
(3) *The chickens are ready to eat.*

The overt main clause subjects are of course clearly distinguishable; what cannot be determined, at least not on account of their encoding, is the relation they are holding with regard to the non-finite or unexpressed verbs.[5] Or consider coordinate clauses in Chukchee, and otherwise highly ergative language with case- and agreement-based coding:

(4) *ʔtlʒg-e talaywʒ-nen ekʒk ʒnkʔam ekwet-gʔi*
     (father-instr. beat-3sg3sg son(absol.) and leave-3sg)
     'The father beat his son and /father or son/ left'

(5) *keyŋ-ʒn na-nmʒ-gʔan ʒnkʔam yara-k qača wa-rkʒn*
     (bear-absol. 3pl-kill-3sg and house-loc. near be-pres. 3sg)
     'They killed a bear and /it/ is near the house'.

Apparently, control in Chukchee identity deletions does not obligatorily conform to an ergative pattern, and verb agreement sometimes (as in(5)) but not always (cf. (4)) helps to avoid relational ambiguities resulting from ambiguous S and dO behaviour and control (cf. Nedjalkov 1979). It could, thus, at first sight look as if S-dO ambiguities are likely to turn up only in non-basic constructions such as nominalizations or complex elliptical sentences, but even a superficial cross-linguistic survey quickly proves this assumption wrong. No matter which particular coding devices are predominant, many (probably most) languages tolerate non-distinctive coding of S and dO to a certain extent. It seems that of all coding systems, relationally determined linear order would be the one best suited to avoid S-dO ambiguities in the long-run, at least in (non-elliptical) basic sentences, because ordering rules are inherently simpler than rules of inflectional morphology, and thus presumably more resistant to diachronic change; nevertheless, most predominantly order-based languages tend to admit variable order even in basic sentences for purposes other than relational encoding (e.g. topicalization), and thus increase the risk of relational ambiguity.

Here are a few instances of languages tolerating non-distinctive S-dO encoding.

— The rather frequent ergative-absolutive case syncretisms in various Basque dialects often cannot be compensated for by verb agreement (Jacobsen 1972).

— Case marking in Tongan formerly failed to distinguish agents and patients, at least with conceptually transitive verbs (such as 'eat') accompanied by a single term, and in the absence of a voice distinction or distinctive S- or dO-orientation in the predicate, this single term could be taken for a (passive or active) S as well as for a dO (Tchekhoff 1979).

— With 3rd person plural S and dO, Huichol cannot avoid relational ambiguity, both orders OSV and SOV being in principle available (Grimes 1964:69).

— In Dakota, 3rd person singular S and dO in main clauses likewise lead to relational ambiguity (Schwartz 1976).

— Lisu (a Lolo-Burmese language) apparently allows S-dO ambiguity in

all transitive main clauses, ordering restrictions being largely of a non-relational nature (Hope 1973).

— Wolof has relationally ambiguous relative clauses if the verb of the relative clause is transitive and either the S or the dO has been relativized (Schwartz 1976).

— In Southern Paiute, the different 3rd person enclitics have no distinctive case forms, and their relative ordering is determined by class (inanimate precedes animate) rather than by grammatical relations; hence S-dO ambiguity is often unavoidable (Sapir — Swadesh 1946).

— In Mandarin Chinese, grammatical relations are encoded by linear order and/or prepositions (cf. *chī jī le* '(someone) eat chicken PAST' with distinctive VdO order, *bǎ jī chī le* 'OBJ chicken eat PAST' with distinctive object preposition, *gěi jī chī le* 'AGENT chicken eat PAST' with distinctive agentive preposition), not quite reliably, though, since sentences like *jī chī le* 'chicken eat PAST' are also acceptable, inspite of their having two readings, 'the chicken has eaten' and 'someone has eaten the chicken' (='the chicken was eaten') (Li 1971).

— Most Indo-European languages often do not overtly distinguish the nominative (S) and the accusative (dO), especially in neuter and in all plural paradigms; complementary coding devices often do not suffice to clear up these relational ambiguities.

— In Hiri Motu, which uses postpositions and cross-reference for coding purposes, 3rd person singular dO's usually are not expressed overtly, and then the transitive S postposition may also be dropped; thus *boroma ese ia ia itaia* (pig S_t-marker him (dO) it (S) saw) 'the pig saw him' becomes *boroma ia itaia* (pig it/he (S) saw), which, however, is ambiguous between 'the pig saw him' and 'he saw the pig' (Dutton — Voorhoeve 1974).

— Certain German dialects give up S-dO case distinctions in paradigms other than neuter, by overgeneralizing either the nominative (cf. Rhenish *Otto hat der Mann gesehen* 'the man has seen Otto' or 'Otto has seen the man', instead of the distinctive Standard German *den Mann*), or the accusative (cf. Low German *Wen is dat gewesen?* 'Who was that?', instead of Standard German *Wer*).

— The Israeli Sign Language lacks a reliable S-dO distinction as the temporal order of signs is not, or at least not consistently, relationally determined; often, the result is failure of communication if there are no appropriate situational or semantic cues (Schlesinger 1971).

Such examples of textually[6] tolerated S-dO ambiguity could be multiplied almost ad libitum, as, on the other hand, no doubt could examples of languages that, obligatorily or optionally, employ coding strategies to prevent this same kind of relational ambiguity.[7] One such strategy, which appears to be fairly common, is to distinctively mark dO's only if the risk

of actual ambiguity is relatively high, i.e. if they have some of the semantic or pragmatic properties (such as animateness, topicality, definiteness) normally characteristic of subjects. A rather language-particular strategy with the same effect is encountered in Jacaltec (cf. Craig 1977:211–30); here, S and dO are identified essentially by their position (VSO) and also by verb agreement[8], and relational ambiguity potentially ensuing from movement or deletion of the S or dO term is obviated by the obligatory introduction of a verbal suffix that merely indicates any deviation from the standard VSO pattern on the part of the S term, and additionally by deleting the S-agreement marker of the verb. The reliance upon an otherwise relationally non-distinctive coding device has been said to be another such strategy, for instance in Russian, where constituent order is claimed to be restricted to SVO if accusative and nominative are not distinctively marked:

(6) *mat' l'ubit doč*
     (mother (nom./acc.) loves daughter (nom./acc.))
     'the mother loves the daughter'

But certainly, this is no general law, and perhaps not even a tendency; it seems to be much more common to rely on contextual rather than compensatory textual disambiguation of S-dO ambiguity, as does German, despite occasional claims to the contrary.[9] Sanžeev (1969) mentions the disambiguating function of parallelism, as in (7):

(7) *Den Vater liebt der Sohn und die Mutter die Tochter*
     (the father (acc.) loves the son (nom.) and the mother (nom./acc.)
     the daughter (nom./acc.))
     'the son loves the father and the daughter the mother'

but this is a contextual rather than textual way of reducing the risk of relational ambiguity.

It was only recently that serious attempts were made to come to terms with the important distinction between acceptable (tolerable) and unacceptable (intolerable) ambiguity.[10] The notion of unacceptable ambiguity has so far been resorted to in situations of the following kind. Certain grammatically well-formed sentences, which on account of the general rules utilized in their derivation (or, more neutrally, in their generation) ought to be derivable from two or more different underlying representations (or, more neutrally, ought to be analysable in two or more different ways), in fact are not ambiguous, all but one of their potential readings being suppressed, independently of their context of use. Gapped

coordinate constructions like (8a) and (9a), and extraposed relatives like (10a) illustrate this:

(8) a. *Max gave Sally a nickel, and Harvey a dime.*
    b. *Max gave Sally a nickel, and* (Max gave) *Harvey a dime.*
    c. *Max gave Sally a nickel, and Harvey* (gave Sally) *a dime.*——
(9) a. *The press characterized Agnew as colourless, and Nixon as low-keyed.*
    b. *. . ., and* (the press characterized) *Nixon as low-keyed.*
    c. *. . ., and Nixon* (characterized Agnew) *as low-keyed.*——
(10) a. *A man looked for his brother, who was blind.*——
    b. *A man, who was blind, looked for his brother.*

(8a) and (9a) cannot result from a deletion of VO (as indicated in (8c) and (9c)), although the identity requirement of Gapping is met by VO as well as by SV in the second conjuncts. (10a) likewise cannot result from an extraposition of the relative clause in (10b), although an appropriate structural constraint on the application of the extraposition rule would be difficult to motivate. To complicate these matters even further, it often happens that one of the potential readings is not suppressed completely. Whereas (9) is a hard and fast case of unacceptable ambiguity, (8) and (10) apparently are such instances where one of the potential readings (8b, 10a) is clearly preferred over its a priori just as likely alternative (8c, 10b), without these latter interpretations being excluded as a matter of grammatical principle.[11]

In the absence of a truly explanatory theory of ambiguity it is not surprising that hardly any attention has so far been paid to another, more drastic way of getting rid of undesirable ambiguity, which simply is not to accept any of the potential readings of an ambiguously coded construction, i.e. to stigmatize potentially ambiguous constructions as ungrammatical, irrespective of any potentially disambiguating context of use.[12] An adequate theory of ambiguity would have to be able to predict under what circumstances ambiguities are likely to arise, are likely to be suppressed by obligatory non-contextual disambiguation, or are likely to result in plain ungrammaticality. With this ultimate aim in mind, I think it is significant first to observe that non-distinctive and eventually ambiguous coding of the non-clausal relation of an A to its head as a rule entails ungrammaticality of the attributive construction, whereas there is a tendency for S-dO ambiguity to be universally acceptable. To pave the way for a somewhat more precise formulation of this generalization, here is a sample of the evidence that is highly suggestive of an entirely different reaction to non-distinctive coding of S-dO and of A-head.

Indefinite plural nouns in German do not cooccur with a determiner, and their own genitival suffix formally coincides with nominative and accusative plural suffixes. Moreover, the relative order of the genitive and its head is not exactly free but neither is it strictly relationally determined. Hence there is no way of encoding a synthetic genitival A in an absolutely distinctive manner under these circumstances. Ungrammaticality is the result, if the analytic prepositional alternative (11b) is not resorted to:

(11) a. *Benachteiligungen Frauen/Männer/Schotten*
         'discriminations (against) women/men/Scots'
     b. *Benachteiligungen von Frauen/Männern/Schotten.*

Adjectives, on the other hand, do have distinctively genitival suffixes, and, thus, can render constructions like (11a) perfectly grammatical:

(12) a. *Benachteiligungen andersgläubiger Frauen/Männer/Schotten*
         '... against heterodox women/men/Scots'
     b. *Benachteiligungen Andersgläubiger*
         '... against heterdox (ones)'.

That the suffix *-er* is distinctively genitival is slightly inaccurate; nominative singular masculine adjectives also take *-er* if not preceded by a definite determiner. This syncretism, however, may be considered irrelevant since singular adjectives would hardly ever occur without distinctive determiner. Feminine nouns likewise lack a distinctive genitive suffix in the singular; if unaccompanied by a determiner or adjective, such nouns (typically mass nouns) also lead to ungrammaticality when used as synthetic A's:[13]

(13) a. *Ich bin kein Freund Milch/Schokolade.*
         'I'm no friend (of) milk/chocolate'
     b. *Ich bin kein Freund von Milch/Schokolade.*

In German certain proper names ending in a dental and alveolar fricative (*s, z, sch*) also have no distinctive genitive, which bars their use as synthetic A's:

(14) a. *Bewohner Moskaus/Londons/*Paris/*Graz*
         'inhabitants (of) Moscow/London/Paris/Graz'
     b. *Bewohner von Moskau/London/Paris/Graz.*

Another, less common alternative is to use two inflectional affixes simultaneously: *Graz+en+s*; *-en*, from the paradigm of the weak nouns, not only prevents the genitive *-s* from being phonetically amalgamated with the stem-final consonants, it also helps to create a maximally distinctive genitive form (cf. also innovations like *Herz+en+s* 'heart (gen.sg.)' instead of *Herzen* or *Herzes*).

In present-day German, certain masculine and neuter adjectives and adjectival pronouns fluctuate between the weak and strong declensional paradigms in the genitive singular without separate determiner:

(15) a. *der Konkurs welches/erwähntes Mannes*
'the bankruptcy (of) which /said man'
b. *der Konkurs welchen/erwähnten Mannes.*

Here the noun itself bears the distinctive marker *-es*. If, however, the substantival declension does not distinguish the genitive from other cases, the weak and strong adjectival forms are no longer in free variation, the distinctive *-es* of the adjective now being obligatory:

(16) *der Konkurs welches/erwähntes/*welchen/*erwähnter*
Konkurrenten
(*Konkurrenten* 'rival' could be gen./dat./acc.sg. and nom./gen./dat./acc.pl.).

The weak adjectival forms of the genitive are innovations already found in the 17th century. It is remarkable, though, that this morphological change, commonly said to be due to euphonic reasons, did not succeed entirely; the old strong forms linger on, and have to be resorted to only in cases of emergency, viz. in order to mark A's that lack other morphological indications of A-hood.

A quite restricted class of German cardinal numerals[14] has an inflectional suffix in the genitive; this inflected form must be used if the numeral is part of an otherwise morphologically non-distinctive genitive:

(17) a. *der Konkurs zwei/zweier alter Konkurrenten*
'the bankruptcy of two old rivals'
b. *der Konkurs zweier/*zwei Konkurrenten*
c. **der Konkurs siebener/sieben Konkurrenten.*

Numerals like *sieben* '7', which have no inflected form, require the analytic prepositional construction.

These were four different instances where strong pressure is brought to bear upon the absolute avoidance of non-distinctive encoding of attribu-

tive genitives in Modern German, if necessary by inhibiting certain morphological changes. Notably, the analytic coding device most commonly resorted to in order to avoid ungrammaticality ensuing from non-distinctive morphological coding was an increase in the use of prepositional A's rather than a restriction on the linear order of genitival A's.

That this last observation concerning preferred ambiguity avoidance strategies cannot necessarily be generalized is demonstrated by the following example from the history of English. Throughout the development of English towards analyticity there occasionally occurred what looks like a syncretism of the genitive singular, otherwise one of the last nominal relics of syntheticity, with the suffixless non-attributive noun form:

(18) Early Middle English (Orrmulum, data from Lehnert 1953):
      hiss a3henn broþer wif, inn hiss Faderr bosemm, þe kyng sonne, þe leffdi3 lac, off twellf winnterr elde, inn hiss moderr wambe, inn ani3 kinne sinne.

(19) Early Modern English and later dialects (cf. Ekwall 1913):
      the emperoure moder, the Frenche Kyng dowthur, Patrik house, The Abbot of Redyng place, Master Wyllde bequest, the oulde goose fether, Thomas Gillman wiff.

These case syncretisms, however, do by no means amount to coding syncretisms. The formerly free genitive order had already been stabilized considerably as early as late Old English (cf. Fries 1940), so that even an uninflected noun preceding another noun could be identified with reasonable certainty as the attributive element.[15] As so often, word order change, from relationally free to relationally determined, antedated morphological change, and made possible the abandonment of one of the most crucial relational distinctions of inflectional morphology. What is also noteworthy is that the lexical elements in those attributive constructions encoded by order rather than inflection fall into semantically natural classes; the heads preferably are typical relational nouns, and the A's preferably denote persons or at least animates and are definite and in the singular. This configuration seems to indicate almost automatically which element is the A and which the head, and hence does not require much relational encoding at all to obviate misunderstanding (cf. Plank 1979). But such functional considerations did not play a prominent role in the further development of English. If adnominal A's were to be postposed, from around 1250 onwards the analytic prepositional construction with *of* was obligatory. It seems that already in early Middle English postposed synthetic genitives such as (20) hardly ever occurred;

(20) *an bite bræde*ss, *shippennd all*re *shaffte* (Orrmulum)

and if they did, they displayed a distinctive genitive suffix. As far as I was able to ascertain, the few Old English nouns with a syncretistic genitive singular (e.g. *broþor*) had to be accompanied by a distinctive determiner or adjective when used attributively. Finally, even if genitive nouns keep their -*s* there still is some case and number syncretism in standard Modern English, with the genitive singular being identical with all plural cases including the genitive. Due to the distinctive analytic coding devices (e.g. *the old sailors'/sailor's ships*), phonological and morphological changes of the earlier declensional system did not need to pay any attention to the requirement of keeping A's distinct morphologically.

The drift towards analyticity in the Romance languages in several respects resembled the Germanic developments; certainly analytic relational coding by means of linear order and prepositions had already gained predominance prior to the decay of crucial morphological distinctions. With respect to the encoding of A, one stage in the development of Old French from Vulgar Latin is particularly reminiscent of the English pattern sketched above (cf. Westholm 1899; Plank 1979). As the Latin system of six cases had been reduced to a two-case system (nominative vs. oblique), with the A being encoded by means of prepositions (*de, ad*), Old French had a pattern of attributive constructions without distinctive cases or prepositions:[16]

(21) *la roi fille, fil maistre Henri, le chienet sa niece, li serf sum pedre, la fille le roi*

The A's in this construction denote exclusively persons and most often are definite and specific (cf. *por l'amor mon pere* vs. *por l'amor d'un pere*) and in the singular; they are, thus, typical possessors (Plank 1979), which generally can often afford abandoning distinctive encoding. Such functional considerations notwithstanding, is this an instance of non-distinctive A encoding? Obviously not. Constituent order had already become largely relationally determined so that the second of two adjacent nouns could safely be taken to be the A. The pattern with the A preceding the head (cf. first example under (21)) played a less prominent role and disappeared in the 11th or 12th century; even here, the A could clearly be told from the head since preceding A's as a rule lacked a determiner. Thus, of two adjacent nouns preceded by a determiner, the first could only be an A.

These examples from German, English, and French evince a pattern that recurs in so large a number of languages of diverse genetic and typological affiliation that the following generalizations seem well moti-

vated: Diachronically speaking, developments affecting synthetic coding devices cannot interfere with the distinctive encoding of A unless analytic coding devices are already available. Synchronically speaking, whenever one coding device is unable to encode the A relation distinctively, another coding device steps in to prevent the intolerable non-distinctness of A's. So far, I have only surveyed languages that are undergoing, or have undergone, one particular type of coding change, viz. a drift towards analyticity, for which reason other regularities concerning supplementary and complementary A encodings and their interactions may have gone unnoticed. If there is a target of optimal A encoding that analytic developments in general aim at in the long run, it would seem to be the use of adpositions. One probable reservation is that developments may be slightly different with A's that semantically are typical possessors.

Consider now a few further examples of requirements on the encoding of A's. First Old Irish, which has a fairly well developed system of nominal case inflection. Syncretisms of either nominative singular and genitive singular, or nominative singular and genitive plural, or genitive singular and nominative plural, or nominative and genitive plural are surprisingly widespread among the 13 declensional paradigms given by Thurneysen (1946) — in fact, only four of them are not syncretistic at all in these respects. However, at least in prose style it is precisely the attributive construction that is characterized by a complete lack of positional variability; the A relation is absolutely distinctively encoded by postnominal position of the nominal A.

Similarly in Modern Georgian, which to a large degree depends on morphological coding: "Si l'orde des termes dans les groupes nominaux est très rigide [adnominal genitives precede their heads], célui des termes de la proposition (verbe, sujet et régime) est absolument libre" (Vogt 1974:48).

The non-distinctive S-dO encoding in the Israeli Sign Language was already mentioned above; the A-head relation, on the other hand, is distinctively encoded: the attributive modifier consistently follows its head (Schlesinger 1971).

In Ostyak, there is only one "case" (in fact, the nominal stem) that encodes S, dO and A. To clear up textual S-dO ambiguities, it may be necessary to appeal to semantic or contextual factors. A-head ambiguities, on the other hand, are obviated textually, since A's consistently precede their heads (Sasse 1977:94–5).

Basque has distinctive case suffixes to encode A's: *etchear-en nausia* 'the house (gen. sg.) the master', *nausiar-en etchea* 'the master (gen.sg.) the house'. Apart from a few idiosyncratic exceptions (e.g. *aita-*

familiakoa 'the father of the family', *San Antonio Padukoa* 'St. Anthony of Padua'; cf. Lafitte 1962:420), A's precede their heads. Thus the possibility of suppressing the genitival suffix as in *ama oitura* 'the mother's costume' (Campion 1884:199–200) does not conflict with the distinctness requirement on A's, as position alone suffices for purposes of relational distinction. It is another question why Basque throughout its entire history has never made a serious attempt to abandon that part of its inflectional morphology that is strictly speaking redundant for the purpose of A encoding.

There is a similar interplay of synthetic and analytic A encoding in Hungarian (Lotz 1968:631). If possessive A's are in the dative case, which is distinctive vis-a-vis other cases, their order relative to their heads is not fixed. If, however, A's are in the nominative, which case also encodes S's, their order is strictly relationally determined; then they always precede their head.[17] Word order also becomes relationally distinctive in another situation in a few Ural-Altaic languages that I have looked at cursorily (e.g. Finnish and Uzbek). Normally, unique identification of A's is guaranteed by case inflection, probably in conjunction with cross-reference on the head; possessive nominal forms, however, often are syncretistic (Finnish *taloni* 'my house-nom./gen. etc. sg.', Uzbek *otiŋni* 'your horse-acc./gen. sg.'), and then linear order takes over the task of encoding A's. Notice, furthermore, that it is no mere accident that it is possessive nouns which are particularly prone to lose or not to develop distinctive A morphology. The reason is again of a functional nature; they are inherently predestined to A-hood, and totally unsuited to be employed as heads in attributive constructions, which apparently makes it superflous to specifically encode them as A's when this is their characteristic function anyway (but cf. Plank 1979).

The Scandinavian languages could have been mentioned above since their case systems are reduced as in the other Germanic languages; in most of them the genitive is one of the last relics of synthetic relational encoding (cf. Teleman 1975). In Swedish, for example, genitives continue to be encoded by case suffixes, and, this is an analytic innovation, by linear order, with A's preceding their heads. Thus, the distinctness requirement on the encoding of A's is met even if case suffixes are absent, which as a matter of fact happens in a few well-defined circumstances (cf. Wessén 1968:25), essentially with place names holding the A relation and heads that are not further modified by adjectives:

(22) *Uppsala domkyrka* vs. *Uppsalas nya domkyrka*
      'Uppsala's (new) cathedral'

These "fasta förbindelser" (Wessén) are genuine A's and, again, typical possessors rather than first elements of compound nouns. This is not the place to enter into a general cross-linguistic discussion of the relationship between A's and modifier-modified structures of compounds; I only note in passing that compound modifiers usually are encoded fairly distinctively, and in so far resemble genuine A's. Their particular coding devices, however, may differ considerably, since stress, which plays a prominent role as compound indicator, apparently is only marginally, if at all, used to encode A's, and also S's and dO's.

Russian too has some syncretism of the genitive. According to Jakobson (1939), reliance upon "l'ordre zéro" head + genitive in such circumstances (cf. (23)) is a safe way of ensuring an unambiguous identification of A's and heads.

(23) a. *dočeri prijatel'nicy*
        (daughter-nom.pl./gen.sg. friend-gen.sg./nom.pl.)
        'the daughters of the friend'
     b. *prijatel'nicy dočeri*
        'the friends of the daughter'.

Another morphological innovation in the Slavic languages endangered the morphological distinctiveness of A's, viz. the accusative case form for animate or personal nominals, which is homophonous with the genitive (for recent surveys cf. Thomason 1976 and Huntley, this volume). Again, an A in construction with a personal/animate dO could be distinguished from this type of head by its position (following the head). In addition to supplementary analytic coding, throughout historical changes of the Russian nominal declensions high priority has always been given to avoiding case syncretism between the genitive and the nominative/accusative, if necessary by supplementing homophonous substantival desinences by an alternating stress pattern:[18]

(24)   gen.sg.   nom./acc.pl.
         svečí   *svéči*   'candle'
         xóloda   *xolodá*   'cold'
         slóva   *slová*   'word'
         mésta   *mestá*   'place'

This pattern may not have become a productive paradigm, and the need of number distinction may have been another force instrumental in its creation; it still fits in very well with the overall tendency to maintain and develop distinctive A rather than distinctive S and dO encoding.[19] In

other Slavic languages the genitive occasionally is syncretistic (cf. Polish *rzeczy, pieśni* (gen./nom.pl.), Czech *duše* (gen./nom.sg.), *pole, paní, znamení* with syncretism of all singular cases), but significantly this happens more often the more a language has already progressed towards analyticity.

Although Arabic has, or rather had, available a coding device of inflectional morphology (case, verb agreement) to distinguish between independent (theme, agent), dependent (adnominal A), and subordinate (dO) status, "the system itself neutralizes the distinction in a considerable number of cases (nouns ending in *-ā*, substantives with the pronoun *-ī* attached, singular and plural demonstratives, etc.)" (Beeston 1970:54). But whereas with S-dO case syncretism an appeal has to be made to contextual clues to resolve ambiguities due to non-distinctive coding because constituent order on the clause level is relationally fairly free[20], linear order is relationally significant in the attributive "annexion" structure: the head obligatorily precedes the nominal A. In addition, the head is distinguished from its A by being unable to co-occur with a determiner of its own.

It seems appropriate to mention in the present context phenomena such as the "status constructus" and the "izāfat" construction characteristic of Semitic and Iranian languages respectively, and especially the alleged analogue in Eskimo, the "super-ordinative" case.[21] In these cases, the head itself, instead of (Semitic, Iranian), or in addition to (Eskimo), the A, is overtly marked as being the superordinate member of an attributive construction. Especially with double morphological marking of the head and the A, the probability of an A being mistaken for a head or vice versa, on account of accidental coding deficiencies is systematically reduced to a minimum.

Although agreement/cross-reference is a coding device that is perhaps more familiar in connection with the S and dO relations, it is in many languages also used to encode the A relation. With respect to S-dO, agreement/cross reference, without complementary analytic or synthetic coding, appears to be of rather limited utility because this indirect method of S-dO identification has to rely on a restricted set of (pronominal) identifying categories (such as person, number, gender/class; cf. Moravcsik 1971) that often do not suffice to absolutely distinguish the particular terms they are supposed to cross-reference or agree with. The Russian example (6), quoted above, illustrates this inherent deficiency. The 3rd person singular verb suffix cannot uniquely identify the S, since both terms, the S and the dO, are 3rd person singular. Although there is no strict distinctness requirement on S and dO, it is probably for this reason that languages with agreement/cross-reference as their sole relational

coding device appear to be the exception rather than the rule. But notice that things are quite different if agreement/cross-reference is used to encode attributive constructions as is illustrated in (25) and (26).[22]

(25) a. Bantu (Meinhof 1936:88–90)
          vi-ti vi̧-a mzungu (chairs they-gen. marker European)
          'the chairs of the European'
     b. Ful (Meinhof 1936:90)
          putj-u ngu lami'do (horse it chief) 'the horse of the chief'

(26) a. Hixkaryana (Carib; Derbyshire 1977)
          toto yowanà (man his-chest) 'the man's chest'
     b. Turkish
          tren-in hareket-i (train-gen. departure-3rd.pers.possessive)
          'the trains's departure'
          şehir plan-ı (city map-3rd.pers.poss.) 'the map of the city'[23].

Irrespective of whether the A agrees with/cross-references the head (as in (25)), or the head the A (as in (26)), there never can be any danger of failure to distinguish the head from its A, since in both cases only one of them bears the distinguishing marker. And obviously, no matter how low the degree of differentiation of agreement/cross-reference categories might be, this does not at all interfere adversely with the functional task of relational distinction. Considering the hypothesis that non-distinctive coding of A is intolerable, it thus should not come as a surprise if languages were not particularly reluctant to base their coding of the A relation entirely upon agreement/cross-reference. There are no doubt additional reasons for the rise of pertinent attributive constructions in languages such as English and German (cf. (27)),

(27) *for Jesus Christ his sake, the king his havens;*
     dem König seine Häfen (with A in the possessive dative),

but it appears, nevertheless, significant that the coding device of agreement/cross-reference simultaneously gains prominence in the attributive construction and loses ground as far as the S and dO relations are concerned.

As a last example, let us consider in somewhat more detail some synchronic and diachronic phenomena in Latin, which heavily relies upon morphological coding, apparently without much support by analytic coding systems. Whereas in most Classical Latin declensional paradigms, genitives do have a distinctive desinence, there also is occasional syncretism:

(28) a. gen.sg. = nom.sg.
      3rd declension substantives: *collis, civis, turris, finis, panis, canis, Neapolis* ...; and corresponding adjectival paradigms: *facilis, natalis, Aprilis, memorabilis* ...
   b. gen.sg. = nom.pl.
      1st and 2nd declensions: *mensae, pueri, horti* ...
      4th declension: *fructūs, senatūs* ...

In early Latin, 5th declension substantives could also have been listed under (28a), but the syncretistic genitive was subsequently replaced by a new distinctive form (cf. *dies, diei*). Masculine substantives like *poeta* also occasionally had similar nom./gen.sg. forms in early Latin (*poetās, poetas*), but this syncretism was likewise eliminated later on (*poeta, poetae*). 4th declension substantives distinguish the genitive and the nominative singular only by vowel length (*fructus, fructūs; senatus, senatūs*); but in this class there continually occurred analogical restructurings, one obvious tendency being to maintain the nom.-gen.sg. distinction (originally *senatus, senatuos;* later analogical genitives like *senati, domuis*). Also, in early and still in Classical Latin many 3rd declension adjectives have parallel -*us*/-*a*/-*um* forms (*hilaris/hilarus, inermis/inermus, auxiliaris/auxiliarius*), the abandonment of which in late Latin eliminated this possibility of obviating nominative-genitive case syncretism. (For some of these and other developments see Coleman 1976.)

Anyway, there certainly was some nominative-genitive case syncretism in Latin, and the ways in which the language reacts to it provide an opportunity to attempt a more precise formulation of the distinctness requirement on A, since up to now it was intentionally left open whether the ungrammaticality of attributive constructions was a matter of actual textual ambiguity or — and this would constitute an even stronger requirement — a matter of syncretistic, non-distinctive coding of the A alone. To take the stronger interpretation first: Does this requirement state that irrespective of any context of use of an A, including the encoding of the head, paradigmatic non-distinctness of its encoding by itself suffices to rule out the attributive construction? "Paradigmatic" is to be understood here, of course, as referring to the entire ensemble of devices a language may utilize to encode the A relation. Accordingly, the above Latin substantives and adjectives, if not accompanied by another, distinctive element, should be unable to occur as attributive genitives regardless of the contextually determined case marking of their heads. The hypothesis would thus predict that not only the attributive constructions in (29a) but also those in (29b) are ungrammatical, although in the

latter case the head constituents could not be mistaken for A's, on account of their distinctive accusative desinences.

(29) a. *canis civis* 'the dog of the citizen/citizen of the dog'
          turris canis 'tower of the dog/dog of the tower'
          senatūs Neapolis 'senates of Naples/the Naples of the senate'
      b. *canem civis, turrem canis, pueros Neapolis* 'the boys-acc. of Naples'.

The second interpretation is that it is only actual textual ambiguities that are prohibited by this constraint; i.e. that attributive constructions are ungrammatical if on account of their coding both the head could be mistaken for the A, and the A for the head. The examples in (29b) would then not violate this constraint against unacceptable ambiguity since here non-distinctness of A's does not amount to actual relational ambiguity. Notice, furthermore, that such constructions as those in (29a) might still be able to escape both the strong and the weak version of the constraint. One of the synthetic coding devices for the S relation (and also the dO relation, with certain periphrastic verb constructions) is verb agreement, and if a complex phrase such as *senatūs Neapolis*, with different number specifications of the A and the head, is used as S (or dO), singular or plural verb agreement helps to uniquely identify the head of the attributive construction, and thus prevents not only textual ambiguity but also non-distinctness of A's.[24] Which alternative of the constraint is empirically preferable is, at the moment, difficult to decide, especially on the basis of a dead language like Latin. Nevertheless, a general tendency is clearly noticeable to avoid, irrespective of actual contexts of use, any coding syncretisms of A's, in particular vis-a-vis the unmarked paradigmatic term form, i.e. the form used for the purpose of citation.[25] Thus, in both cases, (29a) and (b), attributive adjectives (*civilis, caninus, Neapolitanus*) would seem to be equally welcome alternatives to non-distinctive or ambiguous nominal A's. The more restrictive interpretation is probably also suggested by the ungrammatical German examples (11a, 13a, 14a, 16, 17b–c) above, which remain ungrammatical even if the linguistic context requires another, distinctively encoded case of the head term.

Examples like the following could incline one to believe that the restrictive interpretation is basically correct even for Latin. The alternative constructions (30a/b) are possible with neuter adjectives of the 2nd declension, which if used as partitive genitives (30b) could be regarded as nominalizations (cf. Hofmann 1965:57–8).

(30) a. *aliquid bonum* 'something-nom./acc. good-nom./acc.'

     b. *aliquid boni* 'something-nom./acc. good-gen.sg.'

The genitive desinence of 3rd declension adjectives (see (28a) above), on the other hand, is not absolutely distinctive. The neuter genitive *-is* could as well be a masculine or feminine nominative singular; and although this paradigmatic identification would conflict with the neuter *aliquid*, the analogue of (30b), viz. (31b), is almost never found and is probably ungrammatical.

(31) a. *aliquid memorabile* 'something remarkable'

     b. **aliquid memorabilis*.

If partitive genitives as in (31b) can be used at all, then as conjuncts of a distinctively genitival *o*-stem adjective (*quicquam . . . non dico civilis, sed humani*), but even in this kind of context the alternative (31a) is the rule (*nil novi nihilque difficile*).

In Classical Latin there are a few substantives with defective declensional paradigms; *vis* 'force', for example, only has a nominative singular and an accusative (*vim*) and ablative (*vi*) singular. The absence of a genitive has been explained as an attempt to avoid nominative-genitive syncretism (e.g. by Wackernagel 1926:296). Such substantives, then, appear to be among the first which are encoded analytically (*de vi*) when used as A's.

And finally, there in fact are actual textual ambiguities in Latin concerning the A status of genitives (examples from Jespersen 1922:343):

(32) a. *Menenii patris munus* 'the gift of the father of Menenius/of father Menenius'

     b. *expers illius periculi* 'free from that person's danger/free from that danger'.

Here the genitives *Menenii* and *illius* can either be genuine A's, or appositive elements (32a) or determiners (32b) agreeing with a genitive (*patris, periculi*), without any ungrammaticality resulting from this structural ambiguity. Since all genitives here, nevertheless, are distinctively encoded, this type of acceptable ambiguity does not conflict with a constraint against paradigmatic non-distinctness of A's; it rather seems to favour this, in another sense more restrictive, interpretation of the coding requirement on A's over the anti-ambiguity version. It is noteworthy, though, that precisely this particular ambiguity potential tended to be eliminated rather early by analytic coding; Väänänen (1956:13) men-

tions that of two recursive A's one is usually encoded by means of a preposition (*in presentia de domino servi*, rather than *in presentia servi domini*)[26].

So far we looked at the Latin case system basically from a synchronic perspective; the few analogical developments considered above essentially tended to eliminate nominative-genitive syncretisms. The most prominent, if not the only, trespassers against the distinctness constraint for A's were certain paradigms (vowel stems) of the 3rd declension; and since the distinctness of A's is, according to the hypothesis advocated here, the most crucial relational distinction, one would not expect, from a diachronic perspective, that other paradigms with distinctive A case joined this particular 3rd declension pattern. But such a development in fact occurred, quite sporadically in Classical Latin, with substantives like *mens, mensis* analogically replacing their nominative form by the genitive form (*mensis, mensis*; also *canis, navis*), but on a large scale in postclassical and especially in Vulgar Latin (cf. Plank 1979). As a rule, imparisyllabic substantives of the 3rd declension (consonant stems) became parisyllabic; if there was stress alternation as in *aéstas, aestátis* (as opposed to *nómen, nóminis*), it automatically disappeared in this process. This pattern of intraparadigmatic[27] levelling is illustrated in (33):

(33)	Classical Latin	Vulgar Latin
a.	*mors, mortis*	*mortis, mortis*
	mons, montis	*montis, montis*
	flos, floris	*floris, floris*
	aéstas, aestátis	*aestátis, aestátis*
	léo, leónis	*leónis, leónis*
	vírtus, virtútis	*virtútis, virtútis*
b.	*sánguis, sánguinis*	*sanguis, sanguis*
	héres, herédis	*heres, heris*

The diachronic target of parisyllabicity was, thus, attained in two different ways; the paradigmatic nominative-genitive opposition was neutralized either by giving up the erstwhile distinctive nominative form (33a), or, less commonly, the erstwhile distinctive genitive form (33b). In the present context, the crucial problem is not how to predict these two opposite directions of levelling, but how to reconcile this pattern of case syncretism with the hypothesis that A's have to be encoded distinctively. In other words, does this case syncretism amount to coding syncretism? To answer this question it is important to determine when these morphological changes took place, relative to other coding changes in Latin or Romance. According to Gildersleeve and Lodge (1895:430-1), even

in early Latin word order in attributive constructions was not entirely free; rather, the genitival attribute, as opposed to the adjectival attribute, tended to follow its head. But this view is highly controversial (cf. Hofmann 1965:408–9); linear order is certainly no absolutely reliable indicator of A-hood in Classical Latin, nor, presumably, at the later period when the morphological changes at issue were initiated. However, the other analytic coding device for A's, viz. prepositions (*de, ex, ad*), was already competing with the synthetic genitive in Classical Latin, and it was at any rate rapidly gaining ground from the 1st century A.D. onwards (Hofmann 1965:51; Väänänen 1956), certainly prior to the onset of the large-scale nominative-genitive levelling in the 3rd declension. The Latin and Romance developments, thus, turn out to be another instance of the familiar picture: distinctive synthetic A encoding can only be dispensed with if alternative or supplementary analytic coding devices have already rendered it redundant.

Prepositional encoding of A did, however, not replace morphological A's (i.e. genitives, and later also datives: *magister convivio*, cf. Dardel 1964) in a wholesale manner; possessive A's continued to be encoded synthetically long after the other functions of the genitive, such as the partitive one, had already been taken over by prepositions (Väänänen 1956; cf. also the Old French pattern above). Significantly, the few exceptions to the paradigmatic levelling illustrated in (33) have a common lexical-semantic denominator; they are extremely likely to be members of possessive relations. Here is a representative list of the substantives that remain imparisyllabic in Vulgar Latin:

(34) a. *hómo, hóminis* 'man'; *cómes, cómitis* 'companion'; *imperátor, imperatóris* 'ruler'; *pástor, pastóris* 'shepherd'; *cántor, cantóris* 'singer'; *népos, nepótis* 'nephew'; *ínfans, infántis* 'child'
b. *témpus, témporis* 'time'; *péctus, péctoris* 'breast'; *nómen, nóminis* 'name'; *cor, cordis* 'heart'; *fel, fellis* 'gall'.

The first group of exceptions to levelling are masculines denoting persons (34a); it is particularly useful for them to retain the morphological nominative-genitive distinction since they are either typically relational nouns predestined to function as heads (e.g. *comes, nepos*), or, as [+human], typical possessors predestined to function as A's. The second group of exceptions are neuters (34b), and most of them denote entities, such as body parts, that are inalienably possessed; i.e. they are also substantives predestined to function as heads in attributive constructions. The standard handbooks (cf. Rheinfelder 1967:13–4) account for this pattern of levelling vs. non-levelling differently; the [+human] substantives in (34a)

are also likely to be used in the vocative, and the vocative form is identical to, and thus supports the retention of, the nominative form, and the nominative of the neuters in (34b) is supposedly supported by the formally identical accusative. It may be true that these paradigmatic identities were a peripheral factor in preventing this paradigmatic change, but this does not lessen the explanatory value of functional semantic and syntactic considerations, whose relevance for morphological change would seem to be much more general. From a cross-linguistic perspective it is, at any rate, no accident that in Latin and Romance the synthetic encoding of possessive A's was more resistant to the analytic drift than that of other A's (probably because the necessity of absolute relational distinction, the force behind analytic drifts, is more urgent in the case of non-possessive than of typically possessive A's), and that the need to distinguish A's from their heads, be it synthetically or analytically, was instrumental in preventing and inducing changes in the relational coding system, more so than the need to distinguish S's and dO's.

This concludes my survey of pertinent diachronic and synchronic phenomena, and on this empirical basis I would now like to suggest the following observational generalization:[28]

(35) a. Textually ambiguous, or paradigmatically non-distinctive, encoding of the grammatical relations S and dO is, in principle, tolerable.
b. Paradigmatically non-distinctive, but at any rate textually ambiguous, encoding of the grammatical relation A (vis-a-vis its head) is intolerable; rather than necessitating textual disambiguation, this kind of intolerable ambiguity or non-distinctness leads to ungrammaticality.

Although the present evidence seems highly suggestive, an even more extensive analysis of the coding systems of a wide variety of natural languages along such lines would be required before this generalization can be established as a universally valid part of a general relational coding theory. For the rest of the present paper I presuppose that its universal significance can eventually be ascertained, and turn to matters of explanation instead. For this purpose I first propose a yet more general formulation of (35), and this reformulation appeals to the different syntactico-semantic constitution of the relations S, dO, and A.

(36) a. Textually ambiguous, or paradigmatically non-distinctive, encoding of *lexically* governed grammatical relations is, in principle, tolerable.

b. Paradigmatically non-distinctive, or textually ambiguous, encoding of *constructionally* governed grammatical relations is intolerable. ⌐

With the notions of lexical and constructional government it is not intended to distinguish between such coding rules that have to, and ones that do not have to, refer to particular lexical items or classes of lexical items. This distinction is, rather, based on whether the relational term to be encoded itself is demanded or selected by a lexical item or class of lexical items, or whether it is selected by, or rather compatible with, a syntactic configuration whose optional constituent part it is, without any even indirect reference to individual co-constituent lexical items or classes of lexical items. Or, to put it differently, terms holding lexically governed relations are demanded by the inherent valence of the governing lexical items, whereas the co-constituents of terms in constructional governed relations do not possess any actual syntactic valence.[29] Although in some respects the notion of valence poses more problems than it helps solve, it clearly motivates the classification of dO's, and also of indirects objects[30], as lexically governed relations, even if all dO's were encoded by the same case and/or the same position, which obviously could be accomplished without reference to particular verb classes. It also identifies the S relation as lexically rather than constructionally governed, although the actual encoding of S's (e.g. the assignment of the nominative or the ergative[31] or the absolutive case or of preverbal position) is not directly contingent upon inherent characteristics of particular predicates. Moreover, in so far as the choice of one particular term as (basic or derived) grammatical subject is ultimately dependent upon the predicate, there is additional justification for the assumption that S's are lexically governed.[32]

A potentially controversial issue concerns raising (A.c.I./N.c.I.) constructions. It is indeed doubtful whether in sentences such as (37) (from Latin) the raised term, *te*, can be regarded as governed by the main clause predicate, as far as its (syntactic or semantic) valence is concerned.

(37) *Aio te, Æacida, Romanos vincere posse.*
(I-tell you (acc.), Æacida, the-Romans (acc.) defeat can)
'you can defeat the Romans/the Romans can defeat you'.

At least conceptually, the raised term is required by the embedded predicate(s) (*vincere, posse*), though. It, in a sense, is simultaneously governed by the matrix predicate as well, since the rule of raising surely is governed and cannot apply in the constructional context of any arbitrary

matrix verb. That (37) in fact is notoriously relationally ambiguous, nicely attests to the correctness of the classification of raised terms as holding lexically rather than constructionally governed relations. Additional evidence that in this type of construction relational ambiguity is, to a certain extent, tolerable, comes from pertinent coding changes in late Middle High/early New High German (cf. Bondzio 1958 for relevant data). In contradistinction to constructionally governed relations, where any risk of non-distinctive encoding is always avoided well in advance, there at first are no comparable measures of precaution here, although the only coding device available at the time, viz. case marking[33], often proved to be unreliable. Ambiguities as in (38) were, thus, tolerated (and probably still are),

(38) *Lass den Mörder mich finden!/Lass mich den Mörder finden!*
'Let me find the murderer/let the murderer find me!'

before gradually, in the 15th and 16th centuries, analytic devices such as linear order (raised term precedes embedded dO) and prepositions (marking the agent) became available and could help avoid these ambiguities textually. In a recent study of ambiguity-avoidance strategies, Sweetser (1977) assumes that raising constructions such as (38) can never be textually ambiguous in Modern German on account of a fixed word-order constraint: the first of two adjacent accusative terms supposedly is the raised term (underlying S), and the second the dO of the embedded clause. This assumption is no doubt counterfactual, but what is more interesting is that Sweetser postulates another supposedly universal constraint on extraction rules removing one of these adjacent accusative terms: extraction rules whose targets are definite terms can only apply to (underlying) S's in such raising constructions, while extraction rules with indefinite targets can only apply to (underlying) dO's. This constraint is supposed to disambiguate sentences like (39a) and to prevent dO preposing as in (39b):

(39) a. *Der Freund, den ich meinen Bruder anrufen liess, ...*
(the friend that (acc.) I my brother (acc.) call let ...)
'the friend that I had call my brother'
b. **Den Wein habe ich meinen Freund holen lassen.*
'I let the wine (acc.) be brought by my friend (acc.)'.

What makes this constraint interesting in the present context is its claim that the textual ambiguity of certain lexically governed relations is intolerable, which is not exactly incompatible with my generalization (36a).

Given that (36a) and (36b) are valid, one would, however, expect such constraints with respect to constructionally rather than lexically governed relations. And as a matter of fact, the German evidence does not support Sweetser's hypothesis at all; sentences like (39a) indeed are textually ambiguous (the reading 'the friend that I had my brother call' is certainly not suppressed textually, *pace* Sweetser's "six volunteer native informants"), and sentences like (39b) are perfectly grammatical. I cannot evaluate Sweetser's supplementary evidence from Icelandic, Tzotzil, and Navajo, but clearly her constraint against textual ambiguity of certain lexically governed relations is not universally valid.

Occasionally, there are situations where the assumption that all A's indiscriminately are instances of constructional government could seem controversial. In Basque, for example, A's can be in (at least) two different cases, the "génitif possessif" (40a) or the "génitif locatif" (40b):

(40) a. *etchearen nausia* 'of-the-house the master' (proprietor)
      b. *etcheko nausia* 'in-the-house the master'.

From the way Lafitte (1962:419–20) describes the criteria for choosing one or the other alternative for encoding A's:

"Quand le complément exprime l'*appartenance* ou détermine des noms pris dans un sens *abstrait*, on le met au génitif possessif . . . . Quand le complément exprime *le lieu* ou détermine des noms *concrets*, on le met au génitif locatif . . .",

one could probably infer that the case assignment rules for A's are directly contingent upon the lexical item that forms the head of the attributive construction. There still can be no question of there being a bond of valence between A's and their heads, which was our criterion for distinguishing between lexical and constructional government. Moreover, I suspect that it is not the meaning (abstract or concrete) of particular lexical items that ultimately determines the choice of the A case, but rather the constructional meaning of attribution as such ('possession', 'location', 'material' etc.).[34]

How does the distinction of lexical and constructional government of grammatical relations tie in with the functional principle that was mentioned earlier in this paper, according to which the essential task of case marking and other coding devices merely is to overtly distinguish those terms that are co-present in actual sentences? This question presupposes that another, more fundamental question concerning the adequacy of the

functional principle is answered first: Do coding systems that conform to the functional principle already prevent relational ambiguities? They in fact do not, since formally distinctive coding by itself does not suffice yet to link the thus encoded co-occurring terms unambiguously with a specific grammatical relation and, most importantly, a specific semantic role (such as agent, patient, experiencer, and the like). What is important in addition to overt distinguishability of terms is that from their coding it is recoverable which grammatical relation and semantic role each term is to be associated with. The grammaticalization of unified designations for all relations, i.e. the systematic existence of equivalences between relations and their distinctive encoding, could seem to ideally guarantee recoverability, were it not for the obvious import of an economy principle seriously limiting the number of differently encoded grammatical relations vis-a-vis the much greater number of semantic roles. But notice that with respect to recoverability, coding systems are already adequate if there exist no more than implications between the relations and specific coding features, and these can be established, as far as the relations S and dO are concerned, by appropriately linking the coding of one-term clauses with that of two-term clauses.[35]

One could now conceive of the manner of interaction of these two functional tasks of distinction and identification (recoverability) fairly straightforwardly as follows: Identification necessarily presupposes distinction. But why is it, then, that overt distinguishability, as was demonstrated above, is much more crucial if the relation to be encoded is that of A rather than S or dO? It seems to me, and this would explain the generalization (36), that in situations of constructional government, in the absence of any bond based on valence, identification really does presuppose distinction of the members of the attributive construction, whereas with lexical government identification to a certain degree is possible even if absolutely distinctive coding is lacking. In particular, the semantics of the governing lexical item, in conjunction with coding-independent pragmatic and semantic S and dO properties (S's typically are highly referential, topical, high in the hierarchy of potential agency, whereas dO's typically are indefinite, commentative, lower in the agency hierarchy, etc.), provides fairly reliable safeguards against misidentification of non-distinctively encoded lexically governed terms. It is true that on account of their inherently relational nature some terms are more predestined than others to assume the status of heads, so that in attributive constructions consisting of members like those listed in (41) particular identifications of heads (41a) and A's (41b) would seem to suggest themselves, even in the absence of any distinctive encoding.

(41) a. *brother* b. *John*
        voice   *speaker*
        wheel   *car*
        shooting   *hunters*
        top   *hill*

Other semantic features serving the same purpose are definiteness, animateness, and possessivity (cf. Plank 1979). The linguistic context of attributive constructions of course can also help identify heads and A's; entire attributive constructions may function as S or dO, and as such enter agreement relations determined by the head and incompatible with the A, with the result that external coding accomplishes textual avoidance of internal relational ambiguity or non-distinctness. Although there are obvious parallels between the A-head and the S/dO-predicate relationships, I, nevertheless, think that these similarities are vastly exaggerated if it is claimed that heads of attributive constructions and predicates of clausal constructions determine the selection of the terms governed by them in an exactly analogous manner.[36] Despite the inherently relational nature of some terms, and despite typical attribute and head properties, there surely are no systematic constraints against attributive constructions with two equally relational or non-relational, typically attributive or non-attributive, members. In common patterns like (42), one can hardly succeed in identifying heads and A's without clues provided by their encoding.

(42) a. *the uncle*   b. *the neighbour*
        the father   *the brother*
        the king   *the enemy*

It seems that in principle almost any term can co-occur with almost any other in an attributive construction; and since semantic role distinctions, thus, appear to be neutralized in attributive constructions to a much greater extent than in clausal constructions[37], the greater systematic emphasis upon insuring distinctive encoding of A's becomes understandable, paradigmatic identification otherwise being almost impossible, or more or less random.

In conclusion, what bearing have the specific results of this paper on questions of a general coding theory? The hypothesis that there are differently severe distinctness, or anti-ambiguity, requirements on S/dO and on A suggests that an interplay of different coding devices is more crucial in attributive than in clausal constructions, in particular if the predominant coding devices prove unreliable as to their distinctive func-

tion. The tentative generalization might not be too implausible that a greater variety of coding devices is utilized to encode A's than is used to encode S's and dO's, if one of the traditional coding devices is potentially unreliable. If there are any incompatibilities between individual coding devices that are in principle available, case and order is probably the only good candidate; case marking, agreement/cross-reference, adpositions, and fixed order are all found alone as well as in varying combinations, and not necessarily in accordance with the analytic or synthetic coding devices for the S and dO relations. There are also significant diachronic implica-tions, which are beyond the scope of particularistic coding theories, especially some current constituent order theories. Although analogy-based serialization rules ought to link clausal (SVdO) with noun phrase-internal (e.g. A-head) patterns — ideally, all instances of modifier-modified patterns ought to be in 'harmony' with each other—, they often fail to do so.[38] Counteranalogical serialization of adnominal A's vis-a-vis the allegedly crucial model of the V-dO order is often observable, as are different manners and rates in the diachronic development of these two patterns. Rather than subscribing to the view that there merely is a unidirectional analogy from innovative verb phrase (i.e. V-dO) ordering to noun phrase-internal ordering, which, accordingly, often displays sur-vival patterns of earlier harmonious serialization, I submit that it is rather the different, i.e. differently severe, distinctness requirements on the encoding of S/dO and A that are essentially responsible for non-analogical serialization. Constituent order is only one of the coding devices potentially available, and it seems to interact differently with the entire ensemble of coding devices in different types of construction. If a general coding theory can suggest a generalization linking lexically (S, dO) and constructionally (A) governed relations, then it might be like this: if a predominantly synthetic language drifts towards analyticity, analytic coding by means of linear order and/or adpositions tends to first occupy a prominent position with A's, before it assumes distinctive function for lexically governed grammatical relations. And if in this process of constituent order fixation analogy plays any role at all, it ought to be the A relation that provides the model for clausal relations, rather than vice versa.[39]

Notes

1. In the present paper not much attention is being paid to the distinction between cross-reference (based on genuine pronominal forms) and agreement (based on bound forms unable to independently fulfill grammatical functions); cf. Hutchinson (1977) for some discussion.
2. Cf. Delbrück's (1907) classic treatment of case syncretism in Germanic and Indo-European, and also the discussions of syncretism, neutralization, homonymy by Hjelmslev, Trnka, Martinet and others.
3. E.g., Jakobson (1936; 1958), Georgiev (1973), Boeder (1976).
4. Evidence for this view comes from languages such as Finnish or (Old) North Russian, where dO's of transitive imperatives are in the nominative, which case also encodes transitive and intransitive S's.
5. In a way, examples like *Miller sells well on college campuses* or *the shooting of the hunters* are similar; the surface relations S and A are encoded distinctively, but it cannot be determined uniquely what 'underlying' relations, S or dO, they correspond to.
6. Obviously, textual ambiguity need not amount to actual ambiguity within a particular context.
7. Cf. Schwartz (1976), who tries to formulate generalizations about the manner of textual relational disambiguation on the basis of markedness considerations. Givón (1975) also investigates strategies that allow relational identification of terms; from his discussion it looks as if avoidance of S-dO relational ambiguity were indeed of particular importance in derived rather than basic constructions.
8. Craig (1977) actually analyzes these verbal markers as nominal case affixes that are associated with the verb by movement rules!
9. Thus Chomsky (1965:126–7) erroneously claims that sentences like *Die Mutter sieht die Tochter* 'the mother (nom./acc.) sees the daughter (nom./acc.)' are textually not ambiguous, the pre-verbal term invariably being interpreted as S (unless it has contrastive stress), and concludes — also erroneously — that "in any language, stylistic inversion of 'major constituents' . . . is tolerated up to ambiguity". The reading that is the only one possible according to Chomsky may very well be the preferred one, but the interpretation of the pre-verbal term as dO is certainly not textually excluded, irrespective of any reference to contrastive stress, which does not seem to play a major role in relational disambiguation anyway. In contradistinction to Chomsky, Müller (1977:25) claims that syntactic rules (in the above example: dO Fronting) cannot be sensitive to accidents of inflectional morphology, and he consequently looks for other ways to account for the different degrees of acceptability of the two readings of the above mother-daughter example. But Müller thus simply neglects the substantial body of evidence suggesting that syntactic rules can be sensitive to morphological and even phonological factors. Elsewhere (Plank 1977a) I argue that constraints on the generality of syntactic rules due to inflectional morphology can even be a factor contributing to the exchange of morphological coding devices in favour of analytic ones.
10. This discussion was largely stimulated by Hankamer (1973). Also relevant is the notion of transderivational constraints (cf. Lakoff 1973), which have been used in derivational theories to exclude unacceptable ambiguities.
11. That (un-)acceptable ambiguity often is a matter of degree, and not of principle (as Hankamer 1973 suggests), was pointed out by Channon (1974); cf. also Müller (1977).
12. Cf. Plank (1976) for probably another instance of this kind of unacceptable ambiguity, viz. complement subject deletion in English. — Cf. Eliasson (1975) for an account of analogous anti-ambiguity restrictions in phonology; in Swedish, for instance, adjectives ending in *dd* lack an indefinite singular neuter form (*en rädd pojke* 'a scared boy' vs. **ett rätt barn* 'a scared child'), and the reason for this paradigmatic gap apparently is that the

adjective stem is not uniquely recoverable from surface phonetic forms like *rätt*.

13. A more detailed analysis of this set of data can be found in Plank (1978b:§3). Notice that in possessive dative constructions the A may lack a distinctive case indicator *(dem Mann sein Hut* 'the man (dat.) his hat' vs. *Zille sein Berlin* 'Zille his Berlin'), but rather than case, cross-reference and order are the distinctive coding devices in this type of attributive construction. — In German, and in other languages (cf. Old English *he lætte ænne drope blod*), certain 'genitives' can be construed differently, and these variants look as if they did not require a distinctive case suffix: *ein Glas Milch, ein Glas kalte* (nom.)/*kalter* (gen.) *Milch* 'a glass of (cold) milk'. However, it is not clear that this kind of numeral classifier construction involves the A relation in the first place; moreover, constituent order still is an absolutely distinctive coding device here, and the inherent lexical characteristics of the nouns involved can also be relied on for the purpose of relational identification.

14. The inflected form of numerals such as *hundert* '100' and *tausend* '1000' has a different meaning, viz. 'several hundred/thousand'. — There are slight complications if the numerals themselves are heads of partitive constructions, the entire partitive construction being an A. Apparently, the distinctness requirement is already met if one element of the partitive construction, and not necessarily its head (viz. the numeral), has a distinctive genitive suffix: *der Konkurs sieben meiner Konkurrenten* 'the bankruptcy of seven of my rivals'. — The alternation between inflection and non-inflection with quantifiers like *all(e)* 'all' is regulated by entirely different principles.

15. Or, more generally, as the modifying element, if compounds are also taken into account. The above examples clearly are no compounds, though.

16. Cf. Modern French relics like *fête-Dieu, l'hôtel-Dieu, la place Mercier*.

17. For similar phenomena in other Finno-Ugric languages cf. Kont (1973). The eastern Finno-Ugric languages additionally have a cross-reference marker on the head.

18. Cf. especially Jakobson (1957), and also Shapiro (1971a, b), who mentions that there are only two exceptions to pattern (24) (*rukavá* 'sleeves', *obšlagá* 'cuffs'), and these are remnants or replicas of old dual forms.

19. Diachronically, such patterns of purely suprasegmental case differentiation are probably not very stable; for phonetic reasons, they ought to be likely to develop into patterns of segmental differentiation (preservation of stressed, and reduction of unstressed, desinential vowel).

20. Essentially, it is regulated by thematic (topic-comment) principles. Cf. Beeston (1970:45-8, 51-5).

21. Cf. Hammerich (1951) and Boeder (1972), according to whom the superordinative really is a case rather than a possessive suffix on the head cross-referencing the A.

22. It is unclear to me whether the manner of encoding A's that is used, for instance, in Shilha (cf. Meinhof 1936:88-90), where the A is accompanied by a pronominal copy of itself (*tigimi u-gellíd* (house he-king) 'house of the king'), ought to be considered a variety of agreement. At any rate, it is absolutely distinctive. For overviews of these and other varieties of A encoding see Royen (1929:899-909) and Knobloch (1950).

23. Without the genitive marker, the two members of the construction form a closer, inseparable unit, which is a prerequisite for compounding.

24. Not uncommonly, nominative singular-genitive plural and nominative plural-genitive singular syncretism is tolerated in languages with number agreement/cross-reference between the S and the predicate; at least if the A accompanies the S, the A and the head can be identified from attribute-external coding.

25. Notice that in ergative languages with inflectional coding, the ergative case, unlike the nominative in nominative-accusative languages, is morphologically marked, and the

unmarked absolutive typically serves as citation form. It is probably significant that the ergative in fact is often homophonous with the genitive (cf. Eskimo, Burushaski, Chukchee, Caucasian and Mayan languages). For some discussion of such systematic rather than accidental syncretism cf. Plank ((ed.) 1979)

26. Even with a preposition such constructions are still ambiguous ('in the presence of the master of the servant/of the servant of the master'), unless linear order is to some extent relationally distinctive. Cf. Hofmann (1965:65–6) for more examples of multiple A's, which seem to indicate that order was not absolutely distinctive with recursive A's; it may have been with simultaneous occurrences of subjective and objective genitives ('John's shooting of the hunters').

27. Probably also interparadigmatic, if the 3rd declension is analyzed as consisting of two different paradigms (vowel vs. consonant stems).

28. Probably Jacobi (1897) was hinting at a similar generalization when he claimed that the genitive differed from both the nominative and accusative in always requiring a formal marker. His statement is, nevertheless, inaccurate in so far as A's may very well be encoded by fixed linear order instead of segmental markers (such as adpositions or case inflections). Teleman (1975:698–9) also notices that genitives are in greater need of distinctive encoding than nominatives and accusatives. His attempt at an explanation draws on perceptual strategies that supposedly determine the way sentences are processed from left to right by the decoder, and from these strategies he infers that a segmental marker (suffix or preposition) is absolutely essential. In my opinion, this attempt fails because it does not take into account the wide variety of coding devices for A, S, and dO found in natural languages, which often do not conform to the predictions of perceptual strategies like those mentioned by Teleman.

29. Nominalizations, perhaps the most obvious candidates for lexical government in attributive constructions, are, nevertheless, characterized by a loss of syntactic valence vis-a-vis the corresponding verbs (*shooting* Ø-valent, *shoot* bivalent, monovalent if passive).

30. In languages where this relation can be defined.

31. Ergative terms need not necessarily be transitive S's in all ergative-type languages; in some of these languages they can presumably be analyzed as oblique terms which are not required by the inherent valence of the verb. Under such circumstances, ergative terms could be constructionally rather than lexically governed, demanding absolutely distinctive encoding just like A's, which might contribute to the affinity of genitives and ergatives mentioned in note 25.

32. Here are a few examples to illustrate this kind of lexical government of S's: Take a verb like *lican/like* in Old and Modern English, and it becomes obvious that it is due to the verb that different terms are allowed to assume (primary) S status. Or, in Modern German, it is also the verb that determines which objects can (viz. accusative ones) and which cannot (non-accusative ones) be promoted to S status through passivization.

33. Term order was not relationally distinctive; it was, rather, determined by rhythmical principles.

34. The material relation in German, for example, cannot be encoded with an inflectional but only with a prepositional A or with a compound or an attributive adjective (*ein Kessel Kupfers* 'a kettle (made) of copper', but *ein Kessel aus Kupfer, Kupferkessel, kupferner Kessel*). It is again the constructional meaning that determines the encoding of A, and not a particular lexical item functioning as head.

35. I am drawing here on Bechert's (1977) critique of the functional principle in the version of Comrie (1975); Bechert emphasizes in some detail the role of the recoverability requirement in different relational systems. Cf. also Plank (1979).

36. This seems to be the claim made by Boeder (1972:190-1).
37. I.e., the S and dO relations in general are semantically more transparent than the highly opaque A relation. On relational transparency/opacity cf. Plank (1977b).
38. Hsieh (1977) has recently shown that the noun-modifier order cannot be regarded as a simple consequence of the verb-dO order. Canale (1976) has demonstrated, with particular reference to the history of English, that the diachronic development of nounphrase-internal ordering is independent of word order changes on the clausal level.
39. Schmidt (1926), unlike later serialization theorists in the Greenberg tradition, in fact considered the encoding of genitives as basic for the prediction of other structural, especially word order, phenomena.

Note added in proof: Concerning pp. 292ff. (non-distinctive S/dO encoding), cf. now also E. A. Moravcsik (1978), "On the limits of subject-object ambiguity tolerance", *Papers in Linguistics* 11:255–259. Concerning pp. 306ff. (Latin *aliquid bonum/boni*), cf. now also P. Baldi (1978), "The influence of speech perception on inflectional morphology in Latin", *General Linguistics* 18:61–89.

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