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Elements of the Non-Linguistic Approach to Subject-Relationships

The non-linguistic approach is based on the direct observation of *subjects*, which are always found in connection with other subjects. According to whether a change is observed or not (or inferred, if we deal with immaterial subjects), we talk about a dynamic or a static connection, respectively. These connections are shown to be decomposable into the subjects they contain, by which procedure the linguistic verbal elements are expressed by main subject, object, related subjects, etc.
As regards static connections (and consequently dynamic connections as well) a general model is introduced which gives rise to two linguistic formulas, by the application of which the subject roles in the connections are disclosed. This leads to an investigation of the relationship between a subject and the corresponding linguistic expression – which is a most important matter, since the definition of a subject usually has several linguistic expressions – concluding with a suggestion of how to classify subjects according to their internal structures.   (Author)

1. Introduction

It is a well-known fact that linguistic expressions and language content *(subjects)* are quite different, since they represent two levels – a difference which will manifest itself very clearly if we imagine two persons, each giving a (different) linguistic account of the same situation. – The situation is as it is, while the linguistic accounts will differ, one observer omitting what the other mentions, one exaggerating, the other understating, one's phraseology different from that of the other.

When relationships between subjects are involved, these two levels can be viewed as the *non-linguistic* and the *linguistic* level, respectively; the first is the object of this paper, elaborating on an earlier paper by the author[1].

The comprehension of subject-relationships implies (in a much higher degree than on the linguistic level) that we are forced to concern ourselves with the subjects themselves, which should be understood literally. As a subject, however, is necessarily expressed linguistically, linguistic comprehensions will involuntarily play an important role. – It is the aim of this paper to show that verbs and verbal nouns may be substituted for what we shall call related subjects.

Without entering into what a subject is[2], we shall assume that every subject has at least one linguistic expression – these expressions consisting of words, composite words (compounds), verbal nouns, sentences and composite sentences. Correspondingly, the mutual relationships of subjects are indicated by case-endings, prepositions, sentence-combinations, stress, and word-order.

Not any combination of words etc., however, necessarily does denote a subject, not even if it is grammatically correct; it must also be meaningful, that is, we must be able to decide what 'it actually does mean'[3].

When a subject is observed it will always be in connection with other subjects. The observer can concentrate his attention on one subject, several subjects, or or on the entire subject-connection, which is thus synthesized into one subject.

This means that we are dealing with three types of subject-relationships: Relationships between
– two subjects in a connection
– a connection and one of the subjects contained in it
– a subject and the connection in which it is contained

2. Static connections

The simplest form of relationship is the one where two subjects, main subject and related subject, are bound together due to a certain type of relationship, main subject being the subject on the basis of which we evaluate the relationship. If the connection is unchanged at least for a certain duration of time, we have a *static connection*[4].

Example: 'John has a car', here John is main subject, but if we have 'the car belongs to John', the car will be main subject[5].

As regards these connections, they distribute themselves into three types according as the main subject is
– always connected with a given related subject, which is incommutable with another one. E.g: 'John's (ms) father (related s).
– always connected with a related subject, but where this can be replaced by another one, connected with the main subject by the same type of relationship. E.g.: 'A fortune (ms) and its owner (related s)'.
– not necessarily connected with a related subject, when we consider a certain type of relationship. E.g.: 'The owner (ms) of a fortune (related s)'. (A person does not necessarily own a fortune).

Another principle of division cuts across these types, since certain types of relationships are observable in a single connection, (for instance 'the color of an object'), while others – from the point of view of an outside observer – only manifest themselves by observing several connections, (f. inst. 'the minister of agriculture').

A static connection (as defined) is invariant for a certain period of time, and an observer will thus be able to observe several connections at a time, which can be synthesized into a single connection.

In order to investigate different types of relationships, we shall use a quite abstract model; first, however, the concepts of symmetrical and asymmetrical relations will have to be defined.

If the relationship between two subjects, A and B, is the same as the relationship between B and A, the type will be symmetrical, if this is not the case the relationship will be asymmetrical.

Example: 'A is like B' is equivalent to 'B is like A', but 'A is part of B' is *not* equivalent with 'B is part of A'.

We imagine a set, S, of subjects, s, comprising all the subjects that have a given asymmetrical relationship to a subject, M. Looking at a certain subject, a, belonging to S, we can study the relationships between M, a, and S, if we express them with two linguistic formulas or 'equations':

M *has* a *as* s[6]
a *is* s *of* M,

(where 's' is the linguistic expression common for all subjects belonging to S).

If we in relation to 'static relationship' identify

M with main subject
a with related subject,

then s (the common designation for the subjects belonging to S) will indicate which type of relationship we are concerned with, hence we call it 'indicator of type of relationship', abbreviated to *indicatòr*.

Example: 'The sky is blue'
main subject	'sky'
related s	'blue'
indicator	'color',

as 'color' satisfies the 'equations':
the sky *has* blue *as* color
blue *is* the color *of* the sky

Correspondingly it is seen that 'astronomical knowledge' will have 'object' as indicator, and 'feeling of hate' will have 'form' as indicator, as

(this) knowledge has astronomy as object
astronomy is the object of (this) knowledge

and

(this) feeling has hate as form
hate is the form of (this) feeling

3. Processes

Very often observations stretching through a period of time will show that changes take place.

If a static connection disappears or appears, or if a subject related to the main subject by a certain relationship in a static connection is replaced by another one related to the main subject by the same type of relationship, we talk about a *process*[7].

The last case mentioned can be considered as the 'complete' form of a process and it is determined by the four subjects

object (main subject in the two static connections)[8]
prerelated subject
postrelated subject
indicator,

and the two other ('incomplete') processes

by
object
prerelated s
indicator

and

object
postrelated s
indicator,   respectively

A fact of significance is, that we − as mentioned − can observe several static connections at the same time, but normally only one process.

Example: 'John presented Alice with a book'.
object	book
prerelated s	John
postrelated s	Alice
indicator	owner

Before the change the book has John, afterwards Alice as its owner.

On the relationship between an object ('thing') and the material of which it consists.

Consider the example 'A wooden chair'; our spontaneous reaction would possibly identify the main subject as 'chair' and 'wood' as the related subject. In this case the indicator will be 'material', and the relationship will be of the type where the related subject is incommutable. (Cf. the examples in section 2). This implies that a 'thing' cannot appear as the object in a process when the related subject is the matter of which it is composed.

If we, however, consider the material (here 'wood') as the main subject and the 'thing' (the chair) as related subject, we achieve a flexibility, since the relationship now belongs to the type where the related subject is commutable: I.e. the main subject can now appear as the object in a process[9].

Example: 'The house was built of bricks'.
object	material
prerelated	bricks
postrelated	house
indicator	form

4. Dynamic connections

Now we extend the considerations to the situation preceding a process − equivalent to asking about its cause.

This cause is the *agent*, which sometimes appears in connection with an *instrument*, by means of which the process is brought about. − A *dynamic connection*, then, is composed of a process and the corresponding agent, and possibly of an instrument as well.

Example: 'John turned on the light'. This is brought about by pressing the switch, and the decomposition will be
object	light
prerelated s	turned off[10]
postrelated s	turned on
indicator	state
agent	John
instrument	switch

An instrument, being inanimate, can bring about nothing by itself, but will be used by an agent, i.e. it enters a dynamical connection in which it appears as the object − the instrumental dynamic connection − that is contained in the dynamic 'main connection'. But this has the consequence, that the instrument in the above decomposition should be replaced by the instrumental dynamic connection:

object	switch
prerelated s	off-position[10]
postrelated s	on-position
indicator	position
agent	John,

so that the decomposition of 'John turned on the light', has two levels.

As we, however, could rightly ask why the agent acts at a given time, we are lead to the conclusion, that this is due to a newly-established static relationship between the agent and another subject, a relationship that 'activates' the agent. In other words, the agent is the object in a preceding process, in which the activating subject is postrelated. This means, referring to the example in question, that the cause of John turning on the light, is a newly-established state of mind, for example because he found that the room was too dark[11].

As an animate agent cannot act without using its faculties such as voice, hands, etc., it is natural to count these as instrument too[12]. When an animate subject appears as an agent it will always be connected with one or several instruments chosen by the agent. − On the other hand an instrument − as mentioned − will always be connected with an animate agent[13].

Not any subject, however, can be used as an instrument by the animate agent. The limitations are determined by the *governing subject* that may be identified by the rules according to which something happens, or as the subject that determines the framework within which an animate agent with the chosen instrument is able to bring about a certain process.

If the agent on the other hand is inanimate there is no instrument, in accordance with what has been mentioned above, and the process, then, will always pass off in the same way, provided that the static relationships forming the starting-points are the same in all cases.

Example: 'The heat (that had arisen) made the snow melt'.

object	substance
prerelated s	snow
postrelated s	water
indicator	form
agent	heat

On the linguistic level we are concerned with the concepts of processes, actions, and action-processes[14], but from the non-linguistic point of view there is in principle no need of making these distinctions since a process is always caused by an action, and an action always results in a process (as defined here) − which holds true even if the corresponding linguistic expression does not contain the expression of the agent or the process.

In this connection the concept of 'experiencer' should be noted: 'An animate entity whose registering nervous system is relevant to the predication'[15]. Treated on the non-linguistic level we are here handling connections with an object or main subject (nervous system), which is only found in animate subjects.

Example: 'John caught sight of Alice'.

object	John
prerelated s	−
postrelated s	Alice
indicator	visual impression[16]

I.e. 'John got Alice as a visual impression'.

In connection with this it should be mentioned that the correct application of Chafe's rule will be the question:

'What happened to John?' (i.e. John is the object) and not:

'what happened to Alice?' (as nothing happened to her).

Processes and dynamic connections are limited by static connections − but if we use a longer perspective we can say that a static connection as a rule will be limited, too − by dynamic connections, thus the time factor is after all relevant to the static connection.

As far as connections are concerned we have an extension and a location in *space*, but also in *time*, but the *observer's place in time* is relevant too, as a connection may belong to the past, present, or future in relation to him or her.

5. Subject versus linguistic expression[17, 18]

In the previous sections we have endeavoured to disclose the nonlinguistic structure in the two types of connections, i.e. to disclose the mutual relationships between subjects contained in the connection, and their relationships to the connection itself. Here it should be mentioned again, that due to the course of nature the relationships of static connections will have a more durable character than those of dynamic connections.

Dynamic relationships well demonstrate the relation between subject and linguistic expression, because they are often expressed in one word covering the whole structure:

object
prerelated s
postrelated s
indicator
agent
instrument

Generally none or only some of the linguistic expressions of the elements in the structure of a subject will be present in the linguistic expression of this subject.

Example: 'Conversion of schools to hospitals'. Looking at the structure it is found that only the linguistic expressions of prerelated s (schools) and postrelated s (hospitals) are present.

Obviously this is because the linguistic expression of a subject

− covers one or several elements in the decomposition of this subject. − In the above example 'schools' and 'hospitals' cover the object (building) and the indicator (form).
− is very general: The subject may be anything possible ('possible' her taken literally). In the above example this holds true for agent and instrument.

To designate these two cases of missing linguistic expressions we shall use the 'place-holder' terms

covered by . . .,
and
unspecified[19]

The above example, then, can be decomposed like this:

object	covered by 'schools' and 'hospitals'
prerelated s	schools
postrelated s	hospitals
indicator	covered by 'schools' and 'hospitals'
agent	unspecified
instrument	unspecified

In order to disclose the structure of a subject it is near at hand to use its definition, which displays the subjects analytically contained in the subject, and their mutual relationships; but here we are at once confronted with a difficulty in the form of the fact mentioned above: That a subject is covered by the linguistic expression of another subject, thus concealing the structure.

As an illustration we take a subject and show several definitions corresponding to several levels.

Example: (To) 'drink'. If we apply the structure-formula of a dynamic connection directly, we shall of course get the tedious result:

Object	covered	by	'drink'
prerelated s	–	–	–
postrelated s	–	–	–
indicator	–	–	–
agent	–	–	–
instrument	–	–	–

Now we look for a definition of 'drink' and find 'Swallow a liquid', after which the structure-formula gives:

object	liquid		
prerelated s	covered	by	swallow
postrelated s	–	–	–
indicator	–	–	–
agent	–	–	–
instrument	–	–	–

Then we define 'swallow' as 'Transfer of something into the stomach'; if we introduce this in the definition above, we get:

object	liquid		
prerelated s	covered	by	'transfer'
postrelated s	stomach		
indicator	covered	by	'transfer'
agent	–	–	–
instrument	–	–	–

If we finally define 'transfer' as 'changing the location of something from one place to another', and introduce this in the above definition, we get:

object	liquid
prerelated s	the outside of an animate being
postrelated s	stomach of an animate being
indicator	location
agent	animate being
instrument	throat

The verbal expression corresponding to this decomposition we call the 'non-linguistic definition'. It has the characteristics that the only word expressing the change is simply 'change' which is expressed in the decomposition by the two related subjects – in contrast to the other definitions, where 'swallow' and 'transfer' are used.

6. Subject-structures

It has been mentioned in the introduction that a connection of subjects can be summarized into one subject, and that – on the other hand – a subject can be decomposed into a connection of subjects, on the basis of the definition of the subject. Hence we are dealing with a suite of levels. Three consecutive ones, then, will be:

subject	=	connection-1
subject in connection-1	=	connection-2
subject in connection-2	=	. . .

Subjects regarded as connections may be structured in several ways: Symmetrical structure means that the connections constituting the subject are on the same level and have the same relations to the subject of which they are parts. Correspondingly asymmetric structure means that at least two levels are represented in the decomposition, and that the connections in question then have different relations to the subject.

It is inferred that the difference between symmetrical and asymmetrical will not manifest itself, if the subject consists of only one connection.

Example: 'The card belonging to the pack' and 'the objects on the table'. These two connections are unstructured in the above sense of structure.

As regards dynamic connections this will be so in few cases, for instance: 'lifting the arm'. Movement (including for instance speech, which in fact is a movement, albeit a complicated one) is the simplest form of action, and therefore these cases will surely be found among dynamic connections with 'location' as indicator.

6.1 Subjects with symmetric structures

6.1.1 Subjects with symmetric structure composed by static connections

The structure of a subject of this type can be illustrated by an order of static connection-formulas:

main s-1	–	main s-2
related s-1	–	related s-2
indicator-1	–	indicator-2

If we go back on the general model for static relations in section 2, it appears that if the indicator is the same in all connections, then all the related subjects will belong to the same set of subjects, s, determined by M.

There are here four situations, which we shall demonstrate by the following examples, where we summarize the related subjects into a single subject.

1. 'The table with the things':

main subject	table
related s	things
indicator	located subject –,

'things' being the diverse objects on the table (lamp, writing-pad etc.).

2. 'A pack of cards'.

main subject	pack
related s	cards
indicator	item –,

'cards' are the individual cards, belonging to the pack (ace of spades etc.).

3. 'A car'

main subject	car
related s	parts of car
indicator	part –,

'parts of car' are the objects which constitute the car (motor, clutch, transmission etc.)

4. 'An object'

main subject	object
related s	properties of object
indicator	property –,

'properties of object' are here color, weight etc.

It is seen that we are concerned with two cases: 1) The first and 2) the three other situations as a group. And the difference is that in the first situation the main subject is different from the set of subjects it determines ('table' is not the same as 'things on table'), while in the other three situations the main subject is identical with the set.

pack	=	the set (the pack) of cards
car	=	the set of single parts
object	=	the set of properties

Further we observe an increasing degree of 'strenght of relationship' through the four examples:

1. The set of things does not constitute a unity
2. The set is a unity with the single items physically separated from each other
3. The items of the set are physically connected, but can be separated, and
4. They cannot be separated, since a 'property' has no independent existence.

Another fact worth noting is that in the first case we can also use 'table' as related subject:

main subject	things
related s	table
indicator	locating subject (location),

as 'the things have the table as locating subject', but this is not profitable in the other cases, for instance:

main subject	card
related s	pack
indicator	?,

'The card has the pack as?'.

This stems from the fact that in these cases the main subject is identical with the set it determines, and since the word 'has' expresses the relationship (in the meaning of 'include') between the subject and (one of) its constituents, it cannot be used to express the converse relationship.

6.1.2 Subjects with symmetric structure composed of dynamic connections

Contrary to what is the case with static connections, we generally observe only one dynamic connection at a time, thus subjects of this type will be seen as a set of dynamic connections occurring one after another.

Hence we shall have to study two consecutive connections:

object-1	—	object-2
prerelated s-1	—	prerelated s-2
postrelated s-1	—	postrelated s-2
indicator-1	—	indicator-2
agent-1	—	agent-2

Again the connections bound together are equivalent to their having joint subjects; the possibilities in this respect are apparently numerous. Accordingly we shall restrict ourselves to mention of two types well-known from everyday life.

The closest form of relationship is the one where

(1) Object-1	=	Object-2
(2) postrelated s-1	=	prerelated s-2
(3) indicator-1	=	indicator-2

The identities (1) and (2) signify that the static post-connection in the former connection is identical with the static pre-connection in the latter connection.

If the indicator is 'form' there are two main cases whether or not the static post-connection in the former connection is identical with the agent in the latter.

Under these circumstances we are clearly concerned with a series of processes where the final product in one of them 'automatically' releases the next one, until the product no longer can act as an agent.

Example: 'Fermentation', which by its constituents will be decomposed as:

Object	substances
prerelated s	sugar, yeast, water
postrelated s	alcohol etc.
indicator	form

If the identity between agent-2 and the connection: Object-1/postrelated s-1, which was the basis in the example above, is not valid, we get a series of processes which separately is brought about by an agent which may be the same or different from process to process.

This case is represented by any subject being a repeated preparation of a basic material until the final product becomes available. — Typical linguistic expressions for such subjects will be: Production of . . ., manufacture of . . ., preparation of . . .

6.2 Subjects with asymmetric structure composed of several connections

These subjects are much more frequently encountered than those mentioned above, which is really not surprising, since symmetry is rather special in contrast to asymmetry.

The varieties in respect to structure are many, but the main division will based upon the subject as being either a static or a dynamic connection.

Example: 'I regard John as pompous'[20]. This expression is decomposed into:

I have 'John being pompous' as impression
John has 'pompous' as property;

1. level:

main subject	I
related s	'John being pompous'
indicator	impression

2. level:

main subject	John
related s	pompous
indicator	property

Example: 'I liked the play', i.e.

I had the attitude to the play as a positive attitude
the attitude had the play as object
the attitude had 'positive' as property

1. level:

main subject	I
related s	attitude to the play
indicator	positive attitude

2. level:

(1)	main subject	attitude
	related s	play
	indicator	object

2. level:

(2)	main subject	attitude

related s	positive
indicator	property

Example: 'Buying'. This means that a change of ownership takes place with regard to what is bought but also with regard to the payment, which enters an instrumental dynamic connection as object.

1. level:

object	subject acquired
prerelated s	former owner
postrelated s	new owner
indicator	owner
agents	buyer, seller
instrument	new owner pays former owner

2. level:

object	payment
prerelated s	new owner
postrelated s	former owner
indicator	owner
agent	new owner[21]

If a certain level contains several connected subjects which can be decomposed (e.g.: 'I liked the play'), the next level will contain several parallel connections. The relationship between these connections will not, however, correspond to the relationships of the connections composing subjects of type 6.1, since their relationships to the subject on the higher niveau are *not* similar — they play different roles in relation to that subject.

7. Indicators

According to the formulas in section 2:

(Main subject) has (related s) as (indicator), and (related s) is (indicator) of (main subject),

the indicator will depend on the types of subjects to which the main subject and the related s belong. Hence it will be most appropriate to consider the subject-types in general.

Six basic properties are here of the greatest significance: Whether the subject is

material or immaterial (as in ordinary usage)
animate or inanimate
an item or a collection

This occasions the following classification:

immaterial	concept, idea . . .
inanimate, material	thing . . .
inanimate, immaterial	sound . . .
animate, material	person, animal . . .
animate, immaterial	thought, knowledge . . .
collection	item . . .[22]

A subject from each of these types can be set over against a subject from the same type or other types in a connection, as main subject, object or related subject.

Which subject should in this case be considered to be the main subject can be determined from the above-stated formulas.

As we are accustomed to mentioning main subject or object etc. in a fixed order when subjects enter a static or dynamic connection; we may omit the designations and confine ourselves to the subjects.

Below are given *some* characteristic examples — as a combinatorial consideration will show that the six of subjects will allow for 36 combinations. — In case that

the 'opposite' type of relationship is stated, it will be placed to the right of the first type:

Example 1: Collection and person

parliament
John
member

Example 2: Concept and concept

'whales'	'mammals'
'mammals'	'whales'
superordinate generic concept	subordinate generic concept

Example 3: concept and animal

'tiger'	this (tiger)
this (tiger)	'tiger'
specimen	concept

Example 4: Thing and 'thing'

wall	painting
painting	wall
ornament	substrate

7.1 Unspecific indicators

'Unspecified' in contrast to 'specified' here means that the indicator may be any possible subject. Hence we are concerned with two cases:

main subject	A	main subject	A
related s	B	related s	unspecified
indicator	unspecified	indicator	unspecified

An unspecified indicator means that the main subject and related s are related to each other by several types of relationship.

In the first case the two subjects, A and B, will normally be connected by only one type of relationship. Thus we conclude that this case will not occur very often.

Example:

Alice	Alice
John	John
friend	employer

The other case, however, will be most commonly found, since the decomposition shows the relationships between the subject A and any other possible subject. Corresponding to the diverse related subjects we shall normally have different indicators.

Example:

Alice	Alice
John	fortune
friend	property

7.2 Example of a subject with unspecified indicators

We shall decompose the subject of 'astronomy', which we define as 'the science which treats of the heavenly bodies, describing their magnitudes, positions, motions, etc. and all the phenomena therewith connected'[23].

This is equivalent to the two coordinate connections:

1 Astronomy is a science
2 Astronomy has the heavenly bodies as object

1. level:

(1)	astronomy	(2)	astronomy
	science		heavenly bodies
	superordinate generic concept		object

On the second level, 'astronomy has the heavenly bodies as object' will be equivalent to all the individual static

and dynamic connections containing 'heavenly bodies' in one of the places indicated with an 'x'[24]:

x (main subject) x (object)
x (relateds)   x (prerelated s)
unspecified (indicator) x (postrelated s)
                  unspecified (indicator)
                  x (agent)
                  laws of nature
                  (governing subject)

In contrast to that, 'celestial mechanics', being a subordinate science of astronomy concerned with the mutual attraction of heavenly bodies, will be composed of connections of this type:

heavenly body-1 (2) (object)
unspecified   (prerelated s)
unspecified   (postrelated s)
location   (indicator)
heavenly body-2 (1) (agent)
law of gravitation   (governing subject)

8. Concluding remarks

It will have appeared that in contrast to linguistics where the verbs are the focal point of investigations[25], − from the non-linguistic point of view they play a subordinate role. In the non-linguistic view the basic concern is to express verbal elements in the terms of subjects related to the main subject or the object, the only verbs 'allowed' being: 'Be', 'have', and 'change'.

This is due to the basic non-linguistic attitude, that what is expressed by a verb or a verbal noun is, after all, of a rather unperceivable character. If we, for instance, observe a dynamic connection we have a certain arrangement of subjects before the change takes place and another arrangement afterwards, but no more.

Hence the non-linguistic view is equivalent to describing subject-connections by means of nouns (but not verbal nouns) and adjectives etc.; this is applied in the case of immaterial subjects as well.

We have made an attempt to sketch a method of disclosing the structure of a subject by examining its constituent elements and their mutual relationships. They are found on different levels in the decomposition which could be taken as a measure of the 'strength of relationship'[26].

It will be much more difficult to move in the opposite direction, i.e. to find the subjects in which a given subject is contained, and the procedure on the non-linguistic level would probably lead on to series of questions: Corresponding to different indicators, can the subject present itself as main subject, object, related subject in a connection? − The answer would be highly interesting[27].

Notes

1 See references.
2 Neelameghan gives this definition: 'A subject is an organized or systematized body of ideas, whose extension and intention are likely to fall coherently within the field of interest and comfortably within the intellectual competence and the field of inevitable specialization of a normal person.' (p. 140).

3 According to Wilk's view: 'I propose that we call an utterance meaningful, in some primary sense, if and only it we can decide which of a number of things that it might mean it actually does mean. Or to put the suggestion another way: to be meaningful is to have one and only one of a number of possible interpretations.' (p. 23).
4 The term 'state ambient', for instance 'it's hot' (Chafe, p. 101) will be considered a static connection, as it is equivalent on the nonlinguistic level with 'the temperature is high'.
5 This is indicated by the linguistic expression of the main subject being the surface-grammatical subject.
6 The first formula was derived from a certain type of Sanskrit compounds, of which Indian grammarians recognize four main types, this one being a sub-type of those functioning as adjectives, labeled 'appositional possesives' by Whitney (§ 1302). For instance: 'Bhumigriha', 'having the earth as house', i.e. 'he *has* the earth *as* house'.
7 For an account from a linguistic point of view of the subjects entering processes (and dynamical connections, section 4) see especially Fillmore (1968), (1971), Chafe, and Longacre.
8 Fillmore's objective case covers inanimate objects and main subjects: '. . . the case of anything representable by a noun whose role in the action or state identified by the verb is identified by the semantic interpretation of the verb itself; . . .' (p. 25), while animate objects and main subjects are covered by the dative case: '. . . the case of the animate being affected by the state or action identified by the verb.' (p. 24). Chafe (p. 104, 144) uses the designations 'patient' and 'experiencer', also Longacre (p. 27f.).
9 This idea was found in the Chandogya-upanishad 6.1.4: 'Dear boy, just as through a single clod of clay all that is made of clay would become known, for all modification is but name based upon words and the clay alone is real'. − The same point of view might perhaps be applied to the relationship between language-content and varying linguistic expressions representing this content.
10 'Turned off, turned on' and 'off-position, on-position': If we refer to the general model in section 2, it is seen that the set, S, of subjects in this case only contain these two items, which are contradictory.
11 One could ask: Does an animate subject always act due to an intention? − A question closely connected with the question of man's free will!
12 In fact, John's finger with which he presses the switch, should be considered as the object in an instrumental dynamic connection entering the dynamic connection in which the *switch* is the object.
13 Cf. Longacre's example, p. 55: Our dog was frightened (i.e. became frightened) by Terry's black beard.' − From the non-linguistic point of view it is not the beard in itself that frightens the dog, but the sight of it, that is, the agent is the static connection between the dog's mental system and the beard, this connection being considered as the postrelated connection in an instrumental dynamic connection.
14 Chafe, p. 95ff.
15 Longacre, p. 27.
16 We do not know who or what is the agent.
17 In comparing the complexity of subject-structures with the length of the corresponding linguistic expressions − without regard to the language used − empirical investigations have shown, 'das zwar eine gewisse Tendenz besteht, die Komplexität eines Begriffes (gemessen an seiner Stellung in einer hierarchischen Struktur) auch in seiner Bezeichnung zum Ausdruck zu bringen, daß aber Fachsprachen ab einer bestimmten Komplexität dazu tendieren, die Bezeichnungen wieder zu vereinfachen'. (Wersig, p. 57).
18 '*The principle of relevance:* In its use human language adapts itself to the need of its users. The more relevant something is the more overtly it is expressed as a linguistic entity'. (Ballmer and Brennenstuhl, p. 430).
19 'Unspecified' is in fact ambiguous as it may indicate that the subject can be any possible subject, but also that it is unknown to us.
20 This and the next example were taken from Chomsky, p. 162.
21 Sparck Jones and Kay mention that as to the form of deep structures some linguistic philosophers (notably Chomsky) think

'that the complexity of real sentences should be accounted for by embedding simple sentences inside one another. Thus, for example, the sentence 'John saw a big bear' might come from a deep structure with a terminal string something like 'John saw a bear (the bear was big)' . . .' (p. 95).

22 See also Johansen, p. 76.

23 Collins national dictionary.

24 We do not carry the decomposition of 'heavenly bodies' further, since stars etc. are generic subordinate subjects, which are not our primary concern.

25 Cf. Cook, p. 52 (on covert case roles). 'Although these approaches differ in many respects, they collectively present a picture of grammar built around a central verb. This verb has a valence, or set of dependency relations, which spring from the verb'.

26 The method is only sketched in this paper and will need further elaboration, especially to ensure unambiguous decompositions.

27 Thus the two objectives represent the subject from the semantic and the syntactic point of view, respectively.
Cf. Katz and Fodor discussing the entry in dictionaries: 'For example, the word *play* receives an entry which has grammatical and semantic components . . . The grammatical section classifies the syntactic roles which the lexical item can play in sentences, while the semantic portion supplies one *sense* of the lexical item . . .' (p. 184).

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20th International Numerical Taxonomy Conference

This conference took place from Oct.24-26, 1986 at the State University of New York in Stony Brook, USA. It was organized by R.R.Sokal, F.J.Rohlf and N.C.Creel; some 80 persons participated. The 34 papers were concerned with topics of biological classification, analysis of evolution trees and pertinent mathematical methods. The following 19 papers represent only a selection from the program which contained 15 further papers:

ARCHIE, J.W.: Comparing the number of steps on minimum length and random trees for random evolutionary data. - BOOKSTEIN, F.L.: The limits of morphometrics. - BURGMAN, M.A.: The relationship between tree length, phenograms, and predictive value. - CORTI, M., ESTABROOK, G.F.: Hybridization and parallelism in chromosomal speciation. -CREEL, N.C.: Can the human phylogeny be resolved? - DAY, W.H.E.: Most interesting problems of phylogenetic reconstruction are too difficult to solve. - EHRLICH, R.: Analysis of shape frequency distributions of Fourier amplitudes. - ESTABROOK, G.F.: The future of numerical taxonomy. - FELSENSTEIN, J.: Statistical inference of phylogenies from molecular data. - FITCH, W.M., UPPER, K.: Evolution of the genetic code. - JENSEN, R.J.: The seasonal effects on among-tree relationships. - KIM, J., BURGMAN, M.A.: Accuracy of phylogenetic estimation methods under unequal evolutionary rates. - LEE, A.R.: Cladistic analysis of manuscript relationships: The Summa contra Gentiles of Thomas Aquinas. - MACDONELL, M.T., SWARTZ, D.G.: Pattern recognition in molecular phylogeny studies. - McKENNA, M.C.: Mammalian phylogeny. - NEFF, N.A.: An analysis of the sensitivity of minimum length tree topology to changes in data. - ROHLF, F.J.: Size and shape -again! - ROUX, M.: Steiner trees revisited for taxonomic purposes. - SCHNELL, G.D.: Twenty years of numerical taxonomy: A retrospective.

There were also two Workshops which completed the program: (1) Numerical taxonomy on the IBM PC, (2) Spatial analysis on the PC.

H.H.Bock

Indexing for the Future

The Society of Indexers will hold a Weekend Conference on 10-12 July 1987 at Chester College. It will start out with a Conference Dinner at which occasion Viscount Macmillan of Ovenden will deliver the inaugural Norman Knight Memorial Lecture. Alex Wilson CBE will give an after dinner talk on "The future for indexers". The program for July 11 and 12 lists the following papers: Alan PEACOCK (Cheshire Libraries and Museums): The use of STAIRS in Cheshire Information Service. - Lawrence RAWSTHORNE (Clwyd Library and Museum Service): Clwyd's use of computers to provide community information, including information for small businesses and startups. - Norman NUNN-PRICE (CONTEXT Legal Systems Ltd.): Electronic publishing. - At the Computer Workshop, indexers will demonstrate a range of indexing programs on several different computers. Members of the Society's Training and Accreditation Board will lead a discussion on the registration procedure for indexers. A question and answer session on all aspects of indexing and a disucssion of Society business will conclude the conference. For further information contact: Mrs.Connie Tyler, Hillcroft, Kettle Lane, Audlem, Cheshire CW3 0DR, England.