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ANAPHORIC RELATIONS FROM THE VIEWPOINT OF THE REFERENTIAL
AND ATTRIBUTIVE USE OF LANGUAGE SIGN
(Coreference and Cooccurrence)

1.0 The aim of this paper is to attempt an explanation for the
semantic differences in the anaphoric relations encountered in
sentences like:

(1) *Petr včera ztratil svoje hodinky a Marie je dnes našla.*

   (Peter lost his watch yesterday and Mary has found it today.)

(2) *Petr včera ztratil svoje hodinky a Marie dnes jedny našla.*

   (Peter lost his watch yesterday and Mary has found one today.)

(3) *Petr včera ztratil svoje hodinky a Marie věří, že je našla.*

   (Peter lost his watch yesterday and Mary believes she has found it.)

(4) *Muž který dal svou výplatu své ženě byl moudřejší než muž, který*
   ji dal své milence.

   (The man who gave his paycheck to his wife was wiser than the man who

   gave it to his mistress.)

In (1), the pronoun refers to the same watch, while in (2) the
pronoun refers to another watch. In (3), we do not know if the
pronoun does refer to the same watch or not, all we know is
that Mary b e l i e v e s she has found the same watch. Besides,
as we can see in (4) (borrowed from Karttunen 1969), even the
personal pronoun can in certain circumstances refer in a way
partially similar to that of "one".

1.1 Problems similar to those presented above recieved a lot
of attention in the "logically orientated, western linguis-
tics" under various names such as "Identity of Sense Anaphora
vs. Identity of Reference Anaphora (ISA/IRA)" (Grinder and
Postal 1971), "Sloppy Identity" vs. "Strict Identity" (Ross
1967), which are probably the most used terms, "Indirekte
Identität vs. Direkte Identität" (Schiebe 1973), even "Pro-

nouns of Laziness" (Hintikka and Carlson 1977), - the latter
a term usually reserved for quite different phenomenon (see
Karttunen 1977). (For a selective bibliography see Hintikka
and Carlson (1977).)

Generally speaking, two types of solutions were presented. According to
the so-called "sloppy identity approach", the condition for a pronomi-
nalization or a deletion (cf. (5)) is that the two relevant constituents
are identical morpheme for morpheme or that they differ only as to the pro-
nouns commanded by the antecedents in the non-identical sentence parts.
(5) *Karel řekl Petrovi, že ho viděl, a Eva (to řekla) Marii.*
      (Charles told Peter that he saw him, and Eve told (it) Mary.)
The deleted part in (5) can stand for the same morphemes as the first
subclause, but it can also stand for "ona ji viděla" (she saw her),
where the pronouns differ as to grammatical genus and (therefore) even
as to reference. However, such a rule is too "weak" as it cannot exclude
the impossible interpretation of (6):
(6) *Jan řekl Marii, že je hlupák, a Eva to řekla Petrovi.*
      (John told Mary that she was stupid, and Eve told Peter.)
(6) means either 'Eve told Peter that Mary was stupid' or 'Eve told Peter
that he was stupid' but it cannot mean 'Eve told Peter that she was stu-
pid'. Thus the second interpretation (with pronouns differing as to ge-
nus) is possible, while the last interpretation is impossible - the ab-
sent pronoun of the pronominalized subclause is somehow "earmarked" as
to the grammatical function of its antecedent. (In Czech, the first sen-
tence itself is ambiguous as its subclause can even mean 'he was stupid'
but anyway, either the pronoun "contained" in the second pronominalized
subclause has the same referent as the first one, or reference can be
changed provided that the grammatical function of the antecedent is the
same for both subclauses, i.e., we can get four possible interpretations
of (6) only, instead of the mathematically possible six.)
Even the notion of command, which was probably built into this approach
in analogy with the "traditional" generativist rule on pronominalization
(see Bílý 1978), is of no use as can be seen in (7):
(7) A: *Jeho rodiče se na něj zlobí.* (His parents are cross with him.)
     B: *Její taky.* (So do hers.)
(7) can mean 'Her parents are cross with him', or 'Her parents are cross
with her' (sloppy identity where the absent object is not commanded by
its antecedent, the possesive pronoun).
The other solution, the strict identity approach, assumes that, say, in
(5) the first subclause is ambiguous, i.e., it has two different deep
structures and the second subclause is deleted only if it has the same
sort of deep structure as the first subclause. However, this solution is
too "strong" as it excludes the possible interpretation of (8):
(8) *Karel ví, že udělal chybu, ale Petr tomu nevěří, ač mu to jeho žena
      řekla.* (Charles knows he made a mistake but Peter doesn't believe it,
      though his wife told it to him.)
(8) can mean 'C. knows C. made a mistake but P. doesn't believe that P.
made a mistake, though P.'s wife told P. that P. made a mistake'.
There would be one sort of relation between the first and the second
(pronominalized) subclause, while there would be another, different one
between the second and the third subclause, i.e. some very idiosyncratic

deep structure would be needed for the middle subclause in order to save the strict identity approach.

Apart from this, it is beyond my imagination how to explain within both of these approaches (9):

(9) *Jeho rodiče se na Petra zlobí.* (His parents are cross with Peter.)
 Její taky. (So do hers.)

In a way similar to (7), even (9) can mean 'Her parents are cross with her (say, Mary)'. Neither the sloppy identity nor the strict identity can explain how "her" or "Mary" can be deleted being wholly non-identical to "Peter".

1.2 In the (non-geographical) East, the existence of these problems is, of course, known but very little attention has been paid to them. Some isolated remarks casually dropped now and then is what one mostly finds. For example, Korel'skaja and Padučeva (1971, 51) remark that in (10) the pronoun has a meaning different from its antecedent:

(10) Всякий человек хочет чтобы его уважали. (≠'Всякий человек хочет чтобы всякого человека уважали'.)

Also Topolińska (1978) merely points to the difference between what she calls "grupy koreferencyjne" and "prosta replika gramatyczna".

The last term refers to the subcategory of connotation expressed via pronominalization as in (11):

(11) *Chcę być architektem i będę nim.*

As for the use of these anaphoric relations, she says only that "...treści związane... i niezwiązane informacją wyznaczającą mogą być anaforyzowane. W pierwszym wypadku będziemy mówić o grupach koreferencyjnych...w drugim wypadku...o prostej replice gramatycznej..." (Topolińska 1978, 58).

Palek (1972) tries to reduce the anaphoric relations we are discussing to coreference ("cross-reference" in his terminology) only. However this seems only to be a question of a different terminology as his cross-reference is divided into "strict identity" (12) and "type identity" (13).

(12) *My neighbour lives on the same street as I.*
 My neighbour takes the same newspaper as I.

And the "cross-reference of type identity" seems to me to be a rather unhappy term as the term "cross-reference" offers

the natural interpretation 'two (or more) expressions having
the same referent' while "cross-reference of type identity"
must be interpreted as something like the contradictory 'two
(or more) expressions having the same sense as referent' (?!).
(Cf. "his paycheck" and "it" in (4). There exists no category,
no "type" of "his paychecks" the pronoun could refer to.
The pronoun simply stands for the same sense as 'his paycheck'.)
Palek's argumentation against the notion "Identity of Sense
Anaphora" seems to be based on one weird (and completely un-
necessary) example sentence in Grinder and Postal (1971, 269).
(Cf. Palek 1972, 888) Anyway, Palek does not comment on when
one or another of these anaphoric relations is realized.

1.3. It is not easy to establish the domain in which the anaphorical re-
relations take place. Chafe (1976, p. 40-41) mentions an example of "defi-
niteness" lasting over more then one hundred pages of a text (a letter -
the letter). It is probably so that one is justified to speak about ana-
phorical relations within an unlimited distance of time and space provided
that the context is narrow (explicit) enough so that the correct interpre-
tation is possible. However, there are great differences between various
kinds of anaphorical expressions. The semantically most "empty" expres-
sions as personal pronouns can be anaphorically related with very near an-
tecendents only, as in reality they become rapidly "unintelligible", un-
recoverable in a broader context owing to the presence of many less distant
possible antecedents. Thus we may say approximatively that cooccurrence is
limited to the same domain as coreference, which gives, at least some ne-
gative limits: not all NPs refering to the same "thing" are coreferential,
neither all NPs "standing for" another NP nor all replicas of an NP are
cooccurrential. Only the NPs within a discourse, a text unit of varying
lenght defined via a certain unity of thought content, can enter into ana-
phorical relations. The greater the unity, the greater possibilities for
anaphorical relations and vice versa.

2.0. Before we start discussing anaphoric relation, some words
must be said about sense, intension and extension. The question
of "meaning" is one of the most complicated in linguistic theory
(which can be observed even in recent works dealing with meaning,
e.g. Lyons (1977, p. 174-229) - who tries to give his own criti-
cal account of existing theories - or Komlev (1976) - who has
merely collected a huge amount of opposing views) and I am in-
clined to say that modern linguistics has taken a step forward
only thanks to the precise formulations of modern logicians
(and by logic inspired linguists). Without being trained to be

explicit and coherent even when talking about highly abstract, intangible things, linguists can very easily fall into making incoherent, contradictory statements. Thus, to name an example, Arutjunova (1976), in spite of her knowledge of the linguistic streams inspired by logic (which are quoted in her paper), repeats the traditional claims about "the denotative meaning" and the "significative meaning". Personally I can hardly understand how the chair I am sitting in could be a meaning of "the chair I am sitting in" - it's just a chair for me. And even if I forced myself to accept that the chair I am sitting in, is some strange "meaning" of the expression "the chair I am sitting in", it would not be a very interesting meaning, since it is generally accepted that when analyzing meaning of expressions, we are looking for the invariant. The chair denoted by above-mentioned expression is highly "variable" depending on myriads of possible consituations and therefore disqualified to be the invariant meaning. Arutjunova distinguishes "между денотатом имени (реальным или г и п о т е т и - ч е с к и м объектом) и понятием (сигнификатом), элементом мира реальным (или к о н с т р у и р у е м ы м) и э л е м е н т о м н а - ш е г о м ы ш л е н и я о м и р е" (my emphasis) (Arutjunova 1976, 26). I am afraid I cannot see any difference between a "hypothetical object" and "an element of our thinking about the world". As far as I can understand this claim, Arutjunova seems to suffer from the ancient belief that as soon as there is a "name" there must exist some "object named". (Of course, she is not the only victim of this old view, which was already criticized by Saussure (1916, Part I, Chapter 1), e.g. Vinogradov (1953, 10) is of the same opinion). Concerning existential sentences Arutjunova says that in those "...имя присутствует не как знак определенной субстанции, предмета, а скорее как знак концепта, понятия, некоторой совокупности признаков." This is roughly correct but Arutjunova develops the thought, mechanically using the usual linguistic claim about proper names as not having any meaning: "Поэтому в экзистен-

циальных предложениях неупотребительны собственные имена"
(ibid, p. 25), which is, obviously, patently wrong. (E.g.
"Дедушка Мороз не существует.")

2.1. Frege (1892) introduced into logic the difference be-
tween "Sinn" and "Bedeutung", or, to use the more modern
terminology coined by Carnap (1947), who has further devel-
oped Frege's thoughts, intension and extension. For Carnap
intension is the meaning of an expression, which equals the
set of properties given by the expression, while extension
is the object/class of objects denoted, stood for by the ex-
pression. (For sentences, the extension is the truth value
of sentences as this is what remains unchanged if a part of sen-
tence is substituted for another with different intension but
the same extension, e.g. "John is at home" - "My brother is
at home", provided that "John" = "my brother", i.e. these two
expressions have the same extension.) The distinction between
intension and extension helps to solve the logical paradoxes
that arise in "indirect speech context" (in the widest sense
of "indirect speech") such as the classical "Electra Paradox":
Premises: Electra does not know that the man in front of her
            is her brother.
          Electra knows that Orestes is her brother.
          The man in front of Electra is identical to her brother.
Conclusion: Electra both knows and does not know that the man is
her brother. In such "modal", oblique, non-extensional contexts
as in the first two premises, the descriptions "the man in front
of her" and "Orestes" are not in "purely referential positions",
the expressions do not have their "transparent" (extensional)
reading, only the "opaque" (intensional) one. (Quine 1960, 141-
156). Therefore the logical conclusion given above is simply
invalid.

2.2. The notion of intension is closely connected with the notion of
"possible worlds" as elaborated by Hintikka. (See Hintikka 1969). We may
say that the intension of a sentence divides the set of possible worlds
(the set of possible states of affairs, possible situations) into those
where the intension of the sentence (the so-called proposition) is true
and those where it is false. Thus as regards the so-called propositional

attitudes (with all sorts of beliefs, desires, hopes, fears etc.), the number of possible words where a proposition has the truth-value True, is limited to those consistent with the attitude. (E.g., if "A believes that p", this is taken to mean that in all possible worlds compatible with what A believes, p is true). The notion of possible worlds also enables us to asign truth values even to sentences with "unreal modalities" in declarative sentences, which have been traditionally considered by linguists neither true nor false - "It may rain" is thus true if, at least, in one possible world the truth value of "It rains" is True. As for other "unreal", non-declarative sentences, they can be reduced to declarative sentences via the performative analysis (I order you ..., I ask you ... etc.). It is just the sets of properties, the intensions, that make it possible to "follow", say, an object from one world to another, i.e. to find its counter-part (or counter-parts - see Lewis (1968) in another world.

2.3. Donnellan (1971) introduced another distinction relevant for this paper: the distinction between the attributive and referential use of a definite description.

(14) *Smithův vrah musí být šílený.*

      (Smith's murderer must be insane.)

(14) can be used either to say 'Whoever the murderer is, he must be insane' (say, because of the brutal and crazy manner of killing) - the attributive use - or 'The person, who I call murderer, must be insane' (say, it is my neighbout Jones) - the referential use.

Of course, the expression "Smith's murderer" denotes a person in both cases, provided that Smith was really murdered, but the difference in refering to an identified person and describing an unidentified person attributively (presenting a bunch of properties without knowing the denotatum) becomes obvious in the case when the speaker is mistaken and Smith was not, in fact, murdered. Then, in case of the attributive use, "Smith's murderer" does not refer at all, while in the case of the referential use, where the definite description is simply used as a means of identifying the person the speaker wants to talk about, we may still pick out the intended referent, in spite of the fact that the description used was incorrect.

Dahl (1972) does not agree with this view. According to him, if Smith was only severely injured, the speaker may have made a true statement both in the referential and attributive reading. Intuitively, there seems to me to be something wrong with Dahl's claim. An incorrect description used referentially still makes it possible to understand who

the referent is, which the attributive use does not:

(15) *Švédský president je zřejmě negramotný.*

    (The Swedish president is apparently illiterate.)

In the referential interpretation, i.e., if both the speaker and the listener are talking about the young man who happens to be the hereditary head of state in Sweden, the statement makes sense - one can pick out the referent. However, in the attributive use ('whoever the president is') it is quite impossible to pick out the referent with the help of the incorrect description: Do we intend to talk about the Swedish king or the Swedish Prime Minister?

The corresponding logical notation that one can use to express the difference between the referential and the attributive reading,also shows a deep principal difference:

$$\text{a)} \quad (\text{\jmath}x)(F(x) \in (\lambda x)(G(x))$$
$$\text{b)} \quad \forall y((y=(\text{\jmath}x)(F(x))) \longrightarrow G(y))$$

The referential a) (the x such that x is Smith's murderer must belong to the class of the insanes) predicates something of a logical constant - the definite description (\jmath x)(F(x)), while the attributive b) (for any y it is true that if y is identical with the x such that x is Smith's murderer, then y must be insane), predicates something of a logical variable y. And it does not matter whether I call the constant "Smith's murderer" or "Uncle John" or "Alpha", or whatever else, but it is crucial what I predicate about the constant in a) and the variable in b). (The possibility of calling a referential constant anything one wants is obvious in sentences which would be selfcontradictory on the attributive reading. We may say "Smithův vrah nikoho nezabil a je nevinný." (The murderer of Smith didn't kill anybody and is innocent.), meaning 'The person who is called "the murderer of Smith" by somebody, didn't kill anybody and is innocent.'.)

2.4 The most discussed and best known cases of not purely referential positions are sentences with all sorts of "world creating" verbs like "know, believe, seek, think of, imagine", modal verbs etc.

(16) Иван хочет жениться на самой красивой в мире девушке.

(16) can be interpreted in two ways: either there is a certain girl the speaker considers the most beautiful girl in the world, or Ivan wants to marry the unknown, unidentified girl who corresponds to the description given in (16), regardless of who she is (the non-referential, opaque reading).

But there exist many other cases of non-referentially used expressions such as singular NPs in generic sentences:

(17) Бобр строит плотины.

(18) У человека 32 зуба.

(19) ?? Книга имеет около 200 страниц.

(20) Собака - верный друг человека.

(21) Холостяк - это неженатый взрослый мужчина.

(22) ?? Слон мне не нравится.

(23) ?? Дом строится каменщиками.

(The Russian example sentences are used on purpose - in order to abstract from the problem of generic nouns with definite vs. indefinite articles, which is interesting but irrelevant for the sake of my argument - as is the problem of generics in plural). Nobody can falsify (17) by showing a beaver he keeps in his bathtub that has never built a dam, i.e., "a beaver" cannot mean 'all beavers'. Similarly, (18) is true in spite of the fact that most people do not have all 32 teeth, i.e. the generic "человек" cannot mean 'most people'. On the other hand, (19) cannot be used generically, i.e. the generic "книга" cannot mean 'some books', which would be correct. Sentences like (17), (18), and (20) remind one of analytical sentences like (21). (21) is true regardless of how the world looks, just because of the language system. The only natural use of (21) seems to be the metalinguistic use, when one speaker explains to another (or reminds him of) the meaning of the word "холостяк". Even (17), (18), and (20) are a sort of quasi-analytical sentences, which would be used for the same purpose. (17), (18), (20) as well as (21) explain some properties corresponding to the generic nouns. (19) cannot be used generically as "to have about 200 pages" is definitely not a distinctive property of books. Neither can (22), as my dislike for elephants is not elephant's property, nor (23) (interestingly enough).

A remarkable fact of "sex discrimination" can be found in generic sentences:
(24) *Swedes are known as good-hearted and easy to cheat sailors.*
(25) *?? Swedes are known as beautiful girls.*
Though the property ascribed in (24) to the collective of Swedes is, in fact, carried by far less Swedes than the property ascribed in (25), (25) is impossible while (24) is okay. Only the properties of human males seem to count in "European" languages. This cannot be "explained away" via the markedness or unmarkedness of "Swede", as generic NPs for animals (where no reason for bias against females exists) being equally sex marked or unmarked, can be ascribed properties that are exclusively carried by the females of species:
(26) *Whales bear living children.*
(27) *Lions bear living children.*
An analysis of generic sentences similar to that presented here can be found in Burton-Roberts (1977), who claims, among other things, that a sentence like (28) should be derrived from the structure of (29).

(28) *A tiger climbs trees.*
(29) 'To be a tiger is to climb trees'.
This amounts to saying that "a tiger" stands primarily in a predicate
position, i.e., it is used "attributively", non-referentially, i.e.
the same claim as made about generic NPs by me.
Both the distinction of transparent vs. opaque reading and referential
vs. attributive use be compared with the old, well-known distinction
between a 'de re' vs. 'de dicto' interpretation.

3.0 As for proper names, these are claimed by most of lin-
guists to denote without having any meaning, or a minimal,
so to speak "non-identifying" meaning. (Bogusławski (1977,
109 and 111): "...there are no LINGUISTIC postulates or con-
ventions according to which a certain concrete object (per-
son) should bear a definite name or label...", "...from the
point of view of linguistic conventions... a sentence with
a PN/proper name/ does not differ from sentences with con-
structions of the type 'a certain/.../', this means it is
true in any object reference, if only a given object does
fit the predicate occuring in the sentence", "...a sentence
containing 'a certain', regardless of what or who it is that
was thought by the author, is true in ANY adequate reference
... the same thing must hold good about sentences with PN.").
Against this opinion mainly a few philosophers (e.g. Frege
and Russel) have voiced the opinion that proper names were
abbreviations of definite descriptions, which is unsatisfac-
tory even from the logical point of view (see Mondadori 1978).

3.1 However, there are several principal arguments against
the prevailing linguistic view.
1) We have seen that the so-called denotative meaning hardly
qualifies as any meaning at all and the invariant meaning
particularly. However, any language sign is supposed to be
the union of the expression a n d t h e c o n t e n t, there-
fore even proper names must have some content. At least I can-
not remember ever having heard a linguistic claim: The lan-
guage consists of language signs and proper names. (For "the
whole world's most consequent structuralist" Hjelmslev (1943,
52) this is something so obvious that he can quite casually

talk about the content of the proper name "Berlin" without considering the possibility that it could be "contentless").

2) Proper names can be definitely used non-referentially, e.g. in predicates:

(30) Он является новым Пушкиным.

(31) *Stockholm is the Venice of the North.*

In (30), the NP in the question stands for a property / a set of properties. It is worth saying that not only names of prominent persons can be used in this way. Any proper name can be used within the circle of language users who "understand" it. "Он является новым Ивановым" is equally possible to use in spite of being such common proper name, if the speaker and hearer "speak the same dialect", i.e., if this "Иванов" stands for the same properties for both of them. As for (25), we can note that the comparison is not reversible (?? *Venice is the Stockholm of the South.*), i.e. "Venice" stands for a property "full of canals" or something like that, which "Stockholm" does no do.

3) Attributes to nouns increase the specification given by the intension, which equals to deminishing the extension. Proper names can receive attributes as all other nouns, the question is what happens in this case if we insist that proper names have no intensions.

(32) Молодого Пушкина воспитала его няня.

(33) Прага, которую ты помнишь, исчезла много лет тому назад. "Traditionally", restrictive attributes are derived from underlying restrictive relative clauses (e.g., "молодой мальчик" from "мальчик который молод"), while non-restrictive attributes come about via conjunctions (e.g., "молодой мальчик" from "мальчик + мальчик молод"). Those who claim that proper names refer directly, without having any intensions must predict that proper names cannot be head-nouns to restrictive attributes and relative clauses. (There is nothing to restrict if proper names refer directly to objects as a sort of name tags.) Even if we ignored the proper names of (30) and (31) because these are predicates, there is still the counterevidence of (32) and (33) against the above-mentioned claim.

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One could, perhaps, get rid of (32), as the possible under-
lying structure "Пушкина, когда он был молод,..." has a sort
of "temporal restrictive relative clause" to the main clause,
but how is one to account for the undisputable existence of
the restrictive relative clause in (33)?

4) The border between proper names and common nouns denoting
objects that happen to be unique in our world is far from
clear-cut: "the sun" or "the Sun" etc. Are we to claim that
"sun" written with small "s" has intension and that it just
happens to be so that the extension, the class of objects
denoted by it contains just one object (at least in our eve-
ryday, "naive" language - we call the other suns "stars")
while "Sun" with big "s" mysteriously looses its intension?
Searle (1971, 134-137) gives additional three strong ar-
guments against the view that proper names do not have mean-
ing: a) We use proper names in existentional sentences. (Cf
what we have said about Arutjunova). Such proper names do
not refer. "An existencial statement does not refer to an ob-
ject and state that it exists, rather it expresses a concept
and states that the concept is instantiated. Thus, if a proper
name occurs in an existential statement it must have some
conceptual or descriptive content". (One can hardly say that
"Дедушка Мороз не существует" is a false sentence because
s o m e   persons exist and we can call one of them "Дедушка
Мороз".)
b) "Sentences containing proper names can be used to make
identity statements which convey factual and not merely lin-
guistic information. Thus the sentences 'Everest is Chomo-
lungma' can be used to make an assertion which has geograph-
ical and not merely lexicographical import. Yet if proper
names lacked senses, then the assertion could convey no more
information than the assertion made with the sentence 'Everest
is Everest'."
c) "The principle of identification requires that an utter-
ance of a proper name must convey a description... if the ref-

erence is to be consumated. Even for those people who would want to assert that de Gaulle could turn into a tree or horse and still be de Gaulle, there must be some identity criterion."

However, Searle is conscious of the inplausibility of Frege's and Rusell's claim that proper names are shorthand descriptions. In general we do not have any definitions of proper names. Searle (1971) has found a solution to this antinomy: the intension of a proper name is a complex disjunctive entity which consists of the intensions of various descriptions associated with that name. While none of these identifying descriptions alone is analytically true of the proper name (is a tautology), their disjunction is analytically true. In other words, if none of the identifying descriptions believed to be true by the users of a name of a certain object proves to be true of some object, then the latter object cannot be identical with the former one.

Bogusławski's position is hardly defendable in extenso. Searle's argumentation seems to me quite convincing and, last but not least, language is a social convention and therefore it is hardly a true sentence to say that "Ленинград - столица СССР" just because the predicate "столица СССР" is true of one Soviet city. I can choose to call Moskva "Leningrad" as little as I can call dogs "cats" if I want to be understood.

3.2 A synthesis of these opposing views may be made via Sgall et al (1977), who show that the sense of a linguistic expression is still something different from the intension of the expression. Just to give one of the examples:

(34)   *Charles sold a car to Paul.*

(35)   *Paul bought a car from Charles.*

The intensions of (34) and (35) must be identical; in every possible world, if (34) is true, (35) must be true as well and vice versa. However, (34) and (35) differ as to their sense as they show a different "surplus" in representing one of the participants as "active" in a sense in which the other is not. This surplus may be irrelevant from the viewpoint of intension in some cases, while in other circumstances (e.g.

if we used the continuous form in English or the imperfective aspect in Slavic Languages, it becomes relevant. ("Charles was selling a car to Paul" does not have the same intension as "Paul was buying a car from Charles" as we can imagine situations, possible worlds, where Paul didn't want to buy in the former and Charles didn't want to sell in the latter case.) Thus, the identity of truth conditions for (34) and (35) is accidental only, and the two sentences are not fully synonymous, i.e. they have different sense.

This position seems to be necessary anyway, since if one considers language to be an abstract system of oppositions, i.e. a form, not a substance, one cannot simply borrow the notion of intension from logic and identify it with the content of the language sign. What we can do is to assume that intensions, the property sets, are the mental bridge between the abstract language system and its use (primarily denoting the objects of our world).

As for the "irreconcilable" positions of Bogusławski and Searle we may say that Bogusławski talks about the sense of proper names while Searle and I myself in my earlier argumentation talk about intension of proper names. Thus Bogusławski may be right as to the values of proper names, as to the abstract language system as a form, while the other opinion is valid for the use of this system in communication.

3.3 I leave it up to reader to decide whether the intensions, the properties can be identified with the s u b s t a n c e of the content side of the language sign. With all due respect to Hjelmslev (1943), who (e.g. p. 52-53) seems to identify the extension of the Danish language sign "trae" (tree or wood (the material, 'timber')) with the content substance, we may object to this view, because there is no by Nature, God etc. given class of "things" denoted by "trae"; this class being just "cut out" from the amorphous, unstructured reality via the language sign. The unstructured continuum of content substance is much better identified with the amorphous mass of intensions, properties.

In this way, the following system of concepts would be obtained:

On the content side there is the s e n s e , the abstract system of oppositions, the "pure form" of Hjelmslev (1958, 129-132), which consists of abstract values, without any semantic features. Only the s u b s t a n c e , i n t e n - s i o n s contain semantic features. This is what Arutju-nova calls (rather unhappily) "сигнификативное значение", or Apresjan (1974, 60) "сигнификат". The primary function of a language is to refer to objects of the extra-linguistic reality. The relation between the language sign to objects that may be refered to with the sign (i.e. the potential capability of the sign to refer) is d e n o t a t i o n . Denotation is a property of the language system, "langue". First when the language sign is used in a concrete utterance, in "parole", r e f e r e n c e can come about. Thus denotation equals extension, the relation between a sign and the object/class of objects that can be refered to with this sign i.e. denotation is a potential reference. A similar distinction between denotation and reference has already been proposed by Lyons (1977, 206-215). (In analogy with the traditional terminology, terms like 'denotator, deno-tatum', and 'referent' can be used according to the system of concepts outlined above.

But as I have already mentioned, the confusion is great. Hlavsa (1975, 11) calls the relation between the sign and the class of objects which can be named by the sign, "designace", which he also equates with ex-tention, but by "denotace" he means our reference, and (which is abso-lutely incomprehensible and patently wrong), he identifies his "deno-tation" with intension! Another interpretation of Hlavsa's text, i.e. that the terms "extense" and "intense" are reversed by mistake, does not make things much better. In such an interpretation, we would arrive at the identification of Hlavsa's "designation" with his "intension", but we would also reduce denotation to a sort of "utterance extension" (our reference).

3.4. For Kuno (1970, 350ff) all proper names are referential and only common nouns can be either referential or non-ref-erential.

Hintikka (1973, 206-207) has tried to show that proper names can be used

attributively even when being arguments, not predicates:

(36) *Sherlock Holmes believes that the murder was committed by Mr. Hyde,*
      although he does not know who Mr. Hyde is.

However, it seems that he misunderstood the terms "referential" and "at-
tributive". These can hardly be based on our ability to identify an en-
tity visually. One consequence of such a "visual view" on referentiality
would be that blind people not only use proper names but even all other
linguistic signs in an attributive sense only, which probably nobody
would want to claim, since it implies that,when a seeing and a blind per-
son use the same sentences in the same consituations, they are still
"speaking two different languages"! We can also use names of persons,
both historical and contemporary ones, referentially even when we are not
able to identify a person we "know" visually.

(37) *Než jsem se v Lundu setkal s Romanem Jakobsonem, nevěděl jsem*
      kdo to je.

      (Before I met Roman Jakobson in Lund, I didn't know who it was.)
(37) definitely does not mean 'I hadn't been able to recognize R.J. if
I had seen him'. (37) would say something like that I was ignorant of who
was the most prominent figure of the Prague school, co-author of "Pre-
liminaries to Speech Analysis" etc. etc. Similarily, if a non-linguist
asks me "Who is Chomsky?", it would be equally abnormal to answer "Un-
fortunately, I have no photo of him on me". The same is true for (38):

(38) *?? Myslím, že Mácha byl velký básník, ale nevím kdo to je,*
      protože se nezachoval žádný jeho portrét.

      (?? I think that Macha was a great poet but I don't know who it was
      because no portrait of him has been preserved.)

Thus although Hintikka's Sherlock Holmes doesn't have to be able to re-
cognize Mr. Hyde if he sees him, he may identify him via finger-prints etc.
The confusion arises because of the use of the verb "know", which as well
as its Czech translation "vědět", or the Russian "знать" does not specify
the sort of konowledge (or ignorance) in the question.

We have already seen some examples of proper names used attrib-
utively (sentences 30, 31). Even certain anaphoric relations
that proper names can enter into confirm that proper names can
be used attributively, but always only as predicates.

For example, in intersentential anaphoric relations, the
personal pronouns for persons can be used in the nominative
only when the antecedent is referential but they cannot be used
when the antecedent is a predicate, i.e. when the antecedent
is used attributively:

(39) *Petr Novák je můj učitel/je mým učitelem. (On) je ...*

      (PN is my teacher. He is ...)

(40) *Můj učitel (mým učitelem) je Petr Novák. (On) je lepší než ...*

      (My teacher is PN. He is better than ...)

(41) *Mým učitelem (můj učitel) je Petr Novák. Je to ten tlustý pán s pleší.*

      (My teacher is PN. It is the fat bald gentleman.)

(42)   *Mým učitelem/můj učitel je Petr Novák. *(On) je ten tlustý*
       pán s pleší.

       (My teacher is PN. *He is the fat bald gentleman.)

The proper name in (39) is used referentially. The common
noun in the nominative can be either used referentially
(the sentence establishes the identity "PN = můj učitel")
or it can be used attributively. The PN in the instrumen-
talis can be used attributively only. The same is true for
(40). The existence of the proper name that can be inter-
preted referentially in (40) and must be interpreted ref-
erentially in (39), guarantees the correctness of these
two sentences. However, the second sentence in (41) and
(42) annuls the possibility of interpreting the proper name
or the appellativum as referential. (The second sentence
in (41) and (42) just assigns the property of "being (called)
PN" to a person.) Therefore the demonstrative "to" ("it")
is possible in (41), while the personal pronoun in (42) is
wrong.

The same phenomenon can be observed with common nouns used in predicate
positions, i.e. attributively, non-referentially:
(43)   *Moje sestra je učitelka/učitelkou.* (My sister is a teacher.)
         Ona je zodpovědné povolání. (Lit.) *She is a responsible profession.)
(44)   *Moje sestra je učitelka/učitelkou.*
         Je to zodpovědné povolání. (It is a responsible profession.)
(45)   *Karel je lékař. (??) Lékař mi řekl ...*
         (Charles is a doctor. (??) The doctor told me ...)
(45) shows that coreference is impossible between the predicate noun
(= attributively used noun) and the subject of the second sentence. The
result is that the subject must refer to another person and therefore
the text fragment seems ill-formed.

3.5. All this amounts to saying that Kuno (1970), (as well
as Arutjunova (1976)) is wrong when he (she) claims that all
proper names are used referentially. Only the proper names
that are "known" by both the speaker and the listener (i.e.
those that express at least s o m e known properties that
make it possible to pick up their "bearers", not necessarily
only those that are thematic from the point of view of the
narrow scene, the very purpose of communication) are used
referentially. Thus proper names used as themes are always

referential, while proper names used rhematically in predi-
cates can even be non-referential.

Of course, it is true that proper names are mostly used referentially.
Therefore it is unusual to find proper names used predicatively in in-
strumentalis:
(46) *Praha je hlavní město Československa. / Praha je hlavním městem
      Československa.* (Prague is the capital of Czechoslovakia.)
(47) *Hlavní město/hlavním městem Československa je Praha.*
      (The capital of Czechoslovakia is Prague.)
(48) **Hlavní město Československa je Prahou.*
"Hlavní město Československa" in (46) is non-referential (being predi-
cative) if it is pronounced with sentence stress (if it is the rheme
of (35). The same NP in instrumentalis is only predicative regardless
of being rhematic or thematic as the predicativity is signaled morpho-
logically. "Praha" (if unstressed, i.e. thematic) is used referentially,
if it bears sentence stress, it is either referential or non-referential,
as the proper name was in (40). The same is true of (47). (48) seems to
be completely wrong, the proper name does not seem suitable to take the
"predicativeness morpheme" of instrumentalis at all. However, this is
probably due to the unspoken assumption we seem to make when using
proper names, viz. that these are permanent. (49) can hardly be called
ungrammatical:
(49) *Stalingrad je dnes Volgogradem, ale napamatuji si čím je teď Molotov.*
      (Stalingrad is Volgograd today, but I do not remember what Molotov
      is now.)

3.6. As we have already mentioned, it is difficult to decide in many
cases whether a noun is a proper name or a common noun. The orthography
is of no help as it is purely conventional (cf. the Polish "Polak, Czech"
but "krakowianin, warszawianin") and varies from one language to another.
We can manage this decision in the case of common nouns denoting a class
of objects consisting of, at least, several members and "homonymous"
proper names, i.e. those carried by several objects. Then we can see the
systemic difference between, say, all "Mondays", that must immediately
precede all "Tuesdays", and all "Marys", that are in no similar way re-
lated to all "Janes" or any other bearers of proper names. The problem
appears when we go over to nouns that happen to denote one entity only.
Is the Eiffel Tower a commom noun which denotes a class of objects that
happens to consists of one member only? (So that if the 1 to 5 miniature
on Petřín in Prague had been built in a one-to-one ratio, there would
have been two Eiffel towers), or is it a proper name (so that we can
arbitrarily re-name the Empire State Building or the main building of the
Lomonosov university "Eiffel tower"?) The trouble is caused by our way of
approach to the pure content form (where the difference between common
nouns and proper names lies, proper names having the same sense, common
nouns having various different senses) via the content substance, inten-
sions (where no difference exists between them - both common nouns and
proper names have intensions). But one test exists that can decide the
above-mentioned dubious cases: Proper names are what is called in logic
"rigid designators", which means that their intensions quarantee that
the entity named by a proper name is the same in all possible worlds where
the entity exists. Another example of rigid designators are, e.g., certain

mathematical expressions. Cf. (50) and (51):

(50) *Počet planet by mohl být jiný.*

      (The number of planets could have been another one.)

(51) *?? Druhá mocnina tří by mohla být jiná.*

      (?? Three squared could have been another one.)

This test enables us to distinguish proper names used referentially from common nouns:

(52) *Autor Syntaktických struktur by mohl být někdo jiný než autor Syntaktických struktur.*

      (The author of Syntactic Structures could have been somebody else than the author of Syntactic Structures.)

(53) **N. Chomsky by mohl být někdo jiný než N. Chomsky.*

      (* N. Chomsky could have been somebody else than N. Chomsky.)

(52) is possible as one of the NPs can be interpreted referentially and the other one attributively. This is not possible in (53). However, the test can be used for proper names of real entities only, it does not work for fictitious persons:

(54) *Anna Karenina by mohla být někdo jiný než Anna Karenina.*

      (Anna Karenina could have been somebody else than Anna Karenina.)

This amounts to saying that proper names of fictitious entities can be used attributively even in such cases where proper names of real entities can be used referentially only. (54) says that in the (fictitious) world where Anna Karenina exists, she could have some other properties (another intension) than the person called Anna Karenina. The test can even be used in another way, for deciding whether we consider certain "dubious entities" real or not:

(55) *Shakespeare by mohl být někdo jiný než Shakespeare.*

      (Shakespeare could have been somebody else than Shakespeare.)

(56) *Homeros by mohl být někdo jiný než Homeros.*

      (Homeros could have been somebody else than Homeros.)

Opinions differ about the correctness of (55), depending on our uncertainty concerning the identity of the playwright (one instance of the proper name may be interpreted attributively as something like 'the man who wrote ...', but everybody seems to agree about the correctness of (56).

   However, it is true that the non-referential use of proper names is marginal. Therefore we shall leave the problem of proper names here as cooccurrence (the attributive anaphoric relation) for proper names normally implies even referential identity (coreference) and these two anaphoric relations are what the rest of this paper will be about.

4.0. The terms coreference and cooccurrence seem to cover the whole area discussed. Coreference and cooccurrence relations are not identical to the referential and attributive use of an expression. Coreference is the referential use of the anaphoric relation between two expressions, cooccurrence is the attributive use of the anaphoric relation. Thus an attributively used NP can be coreferential with another NP as well as a referentially used NP:

(57) *Karel musí mluvit s nějakým odborníkem. Potřebuje se ho zeptat...*

(Charles has to speak with a professional. He needs to ask him...)

"S nějakým odborníkem" is most naturally interpreted as an attributively used NP. (Of course, the referential use is not out of question - NP can mean 'a certain professional'.) However, there is an anaphoric link of coreference between this NP and the pronoun in the second sentence: If you pick out a possible world where the attributively used NP refers to a professional, i.e. a world where the sentence (57) is true, then t h e   s a m e professional is refered to by the pronoun in the second sentence. Even logically impossible objects can enter coreference relations, as (58), taken from Lakoff (1968, 10) witnesses:

(58) *I dreamed that I found a round square and that I sold it*
for a million dollars.

Lakoff draws from (58) the conclusion that possible worlds can contain logical contradictions (that the logically impossible round square can exist in the world of the dream), but I think a more plausible thing to say is that one can dream even about impossible things and worlds. Then the extension of the phrase "a round square" iz zero in all possible worlds as it is logically impossible that a round square could exist. The NP is purely attributive, it gives a bunch of properties that cannot denote anything.

However, it is coreferential with the pronoun in the second clause. What has been said about (57) can be made more general in the following way: x a n d x' a r e c o r e f e r - e n t i a l i f t h e t r u t h v a l u e o f "x e x i s t s" d e t e r m i n e s t h e s a m e n e s s o f t h e t r u t h v a l u e o f "x' e x i s t s" a n d v i c e v e r s a. If not, the anaphorical relation of x and x' is a cooccurrence, or x and x' are not anaphorically related.

Thus only arguments can be coreferential, the anaphoric relation of predicates can be a cooccurrence only.

(59) *Eva Marii uhodila a Petr taky.*

(Eve gave Mary a blow and so did Peter.)

The truth of the predicate of the first clause determines in no way the truth of the anaphorically related predicate "taky" in the second clause. The anaphorical relation is that of co-occurrence.

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4.1. As long as the utterance remains within one possible world, we may say as the first approximation that p e r - s o n a l p r o n o u n s (a n d 'z e r o p r o n o u n s' e x - p r e s s e d v i a v e r b a l c o n g r u e n c e) a r e u s e d f o r c o r e f e r e n c e r e l a t i o n s, w h i l e p r o - n o u n s o f "t y p e" (e.g. "j e d e n" /o n e/, "d r u h ý, j i n ý" /a n o t h e r/ e t c.) a r e u s e d f o r c o - o c c u r r e n c e. (This is what "normally" happens in most of sentences.) (An interesting fact showing a difference between coreference and cooccurrence is the impossibility of coreference between an NP and its full replica in many cases. (See Bílý /1978/). Cooccurrence always allows the full repetition of an NP.)

4.2 Things become more complicated when the utterance "jumps" from one world to another. We can put aside cases where the text becomes incoherent because of the jump. These have hardly anything to do with linguistics, they are a problem for logicians and philosophers:

(60)   *Karel chce koupit nové auto. Je modré.*

        (Charles wants to buy a new car. It is blue.)

"Nové auto" must be used referentially. There must exist a specific car, if "nové auto" were used attributively, i.e. if there were no specific car, the second sentence of (60) would not build a coherent text with the first one; the worlds of Charles' wishes are not compatible with the real world of the second sentence. To make a coherent text, one would need to substitute the real world with some suitable possible worlds:

(61)   *Karel chce koupit nové auto. Musí být modré.*

        (Charles wants to buy a new car. It must be blue.)

But as I have said already, it is not a linguistic problem to discover which sets of possible worlds are compatible with which other sets. Therefore, only one more illustration is presented to show what this problem is about:

(62)   *Bobby Fischer se chce oženit s dívkou, která ho pravidelně porazí v šachu, ale je si vědom, že se ještě nenarodila.*
        (B. F. wants to marry a girl who can beat him at chess regularly, but he realizes that she has not been born yet.)

(63)   ?? *Bobby Fischer má v úmyslu oženit se s dívkou, která ho pravi-*
       delně porazí v šachu, ale je si vědom, že se ještě nenarodila.
       (B. F. intends to marry a girl who can beat him at chess regu-
       larly, but he realizes that she has not been born yet.)
What one realizes is true in one's worlds of realizations. Still it is
possible to want something impossible, while it is not possible to in-
tend something impossible. Thus the possible worlds of one's intentions
are somehow more closely related to the worlds of realizations than the
worlds of wishes are.

4.3   T h e   a n a p h o r i c   r e l a t i o n s   d e p e n d   o n   t h e
f o l l o w i n g   f a c t o r s :   t h e   d i f f e r e n c e   b e -
t w e e n   d e f i n i t e   d e s c r i p t i o n s   v s .   n o n - d e -
f i n i t e   d e s c r i p t i o n s ,   t h e   d i f f e r e n c e   b e -
t w e e n   a t t r i b u t i v e   v s .   r e f e r e n t i a l   u s e   o f
a n   e x p r e s s i o n ,   a n d   t h e   d i f f e r e n c e   b e t w e e n
o n e   w o r l d / s e t   o f   c o m p a t i b l e   w o r l d s   (u n i -
v e r s e   o f   d i s c o u r s e)   v s .   t w o   (o r   m o r e)   s e p a -
r a t e   w o r l d s / s e t s   o f   w o r l d s .   Definite descrip-
tions in the logical sense of the word, which is that used here,
are those NPs that influence the truth value of the sentence
they belong to in a way different from that of non-definite
description:

(64)   *Četl nějakou knihu.* (He was reading a book.)

(65)   *Tu knihu nečetl.* (He didn't read the book.)

(64) is true provided that he was reading a n y book, while
(65) is true only if he didn't read a specific book that is
known, "given" by the consituation. As Hlavsa (1975) shows,
it is justified to differentiate between these two kinds of
descriptions even in languages where the NP itself does not
usually signal the kind of description explicitly. (This
does not amount to claiming the existence of some "deep ar-
ticles" in, say, Slavic languages. The distinction is a se-
mantic one, but it may happen to be grammaticalized in some
languages, e.g. via articles.)

The reason why "one world" is complemented with "one set of compatible
worlds" is the phenomenon encountered in 4.2. For example, in (62), the
world of all what Bobby Fischer realizes, is probably different from
the world of all he wants but these worlds, having the same "world
bearer", being semantically compatible (cf. (63) with its incompatible
worlds), build a set of compatible worlds.

4.4 Within one world/set of worlds the nature of anaphoric relations depends on what the second N P ("the postcedent") is. If the second NP is a definite description, coreference is the result. If the second NP is a non-definite description, cooccurrence is the result. Thus, in (57), the first NP is, as we have already said, either referential or attributive. The first NP is a non-definite description, the second NP is a definite description. The anaphoric relation is that of coreference. This is, of course, what we meet most often when studying anaphoric relations.

The same situation can be found in (16), which can be continued

(66) Иван хочет жениться на самой красивой в мире девушке
         и уехать с ней в Советский Союз.

The definite description of the first clause is either referential or attributive, and so is the definite description (the pronoun) of the second clause. The anaphoric relation is that of coreference again.

Definite pronouns that are not predicates (see 4.5.) are considered definite descriptions throughout this paper when belonging to one world/set of worlds with their antecedents. This is rather unusual and against the opinion of logicians, for whom pronouns are variables or indices. (This is also the position of the Polish linguist Bellert (1971) and, of course, of all American generativists who use logical notation in their descriptions of language.) However, already Hlavsa (1975, 56) objected against this view. Personal definite pronouns do not differ in the way they function from other definite NPs. In our terminology, even other definite NPs, e.g. "Tu knihu" (the book) in (65), are "variables" as regards their denoting function. Both definite pronouns and other definite descriptions can refer first when in an utterance. Hlavsa supposes that only proper names would deserve to be called "constants" according to the "logical" concept, but we have already seen several examples of attributively used proper names, so even this is dubious. And, indeed, for Lyons (1977, 179), both definite NPs, personal pronouns, and proper names are definite descriptions from a grammatical point of view. All this does not mean that we have proved here that the attempts to describe natural languages with logical notation are wrong; if one uses the logical notation, pronouns equal variables, but this comes about via the peculiarity of logic. From the linguistic point of view, even personal definite pronouns function as definite descriptions.

4.5 When, within one world/set of worlds, the second NP is a non-definite description, only cooccurrence is possible. The sentence (11) can exemplify this. Both NPs in predicate are attributive (it is not so that the subject in (11) wants to "possess" a certain architect) and both are non-definite descriptions, too.

One can hardly claim that the pronoun is a definite description standing for 'the architect I want to be', as we can construct a similar sentence where this "interpretation" is wholly excluded:

(67) *Chcę być architektem ale on by nim nie chciał być.*

(67) certainly does not mean '... he would not want to be the architect I want to be'. (This is a remarkable fact one does not meet in usual descriptions of personal pronouns: Slavic personal pronouns when used as predicates are non-definite descriptions. This phenomenon is restricted to pronouns in the instrumental case (Cf. "Chce být architekt a bude *on.") The pronoun that is used in languages withouth the grammatical instrumental case must be indefinite – e.g. "He wants to be an architect and he will be one." But we shall see later that personal pronouns used attributively can be non-definite descriptions, (when two worlds/sets of worlds come about), even for other grammatical cases.

This amounts to saying that indefinite pronouns are marked +Non-definite, while personal pronouns are unmarked (in the structuralist sense of markedness), $\pm$Non-definite.

A corresponding sentence where both NPs are referential is (68):
(68) *Karel si koupil nové auto a Petr nějaké ukradl.*
    (Charles has bought a new car and Peter has stolen some.)
Non-definite descriptions can also be nouns deleted on the basis of lexical identity with their antecendents, as in (69):
(69) *Karlův dopis už přišel, ale Petrův ještě ne.*
    (Charles' letter has already come but Peter's has not yet.)
The zero standing for "dopis" is no definite description in this context, only the whole NP, "Petrův 0", can build a definite description. The anaphoric relation is cooccurrence again.

4.6

(70) *Ač je medvěd hájený, Petr jednoho zastřelil.*

(Though the bear is a protected species, Peter shot one.)

In Czech it is difficult to decide whether the generic (and therefore, as we have seen, attributive) "medvěd" is a definite or non-definite description. We could say that in analogy with the English translation where in this case (as in many other) only the generic NP with the definite article is possible, the generic "medvěd" is considered to be a definite description. However, as we shall see in 4.7., ther is a group of anaphoric relations where the second NP is a generic one and only cooccurrence is possible. This would mean that the principle presented here for anaphoric relations within one world would not be valid for generic NPs. But we have to differentiate between a semantic distinction and a grammatical device which has its origin in the semantic distinction but that exists independently synchronically. (It is obvious to everybody that, e.g. the grammatical genus in, say, German has nothing to do with the semantic features of various sexes). Therefore I dare say that definiteness and non-definiteness is something separate from definite and indefinite articles in languages where these exist (there is no one-to-one correspondence between a definite article and a definite description.). It seems reasonable to say that "medvěd" in (70) is a nondefinite NP as well as its English counterpart with the definite article and the rule holds even for the generics.

All this also means that one has to remember that "definite description" is not synonymous with "context-dependent NP" either. We have seen this in (16) and (66). The relevant NP in (16) is a definite description but it can be context-independent, the same is true for the first NP in (66), while the second NP in (66) is context-dependent and it is a definite description. (We have seen this in (11), too, where the pronoun is context-dependent but it is still a non-definite description.)

Another result of the accepted view that all generic NPs are non-definite description is that the anaphoric relation between

two such NPs is cooccurrence only. They may be context-de-
pendent and expressed via pronouns or verbal congruence
only but they never refer, they, are, so to speak, purely
attributive and one cannot say (as we did in (57): "pick
out a possible world where the attributively used NP refers
to something and 'follow' the referent throughout the world".
We cannot say this since a generic NP is always attributive
only – it does not refer to a mysterious "generic object".

(Provided that we do not believe in the Platonic world of pure ideas
which would be good candidates for the referents of generic NPs - but,
at least, I don't. And they would be strange referents anyway since
it is possible when talking about a generic noun to combine features
which are in reality incompatible, e.g. those belonging to the opposing
sexes: ... Lev se vyznačuje mohutnou hřívou... je savec a tudíž rodí
živá mláďata. (The lion is noted for a stately mane... it is a mammal
and therefore it bears living children.))

4.7

(71) *Nikdy jsem na velbloudu nejel, protože páchne.*

    a) (I have never ridden a camel because it stinks.)

    b) (I have never ridden the camel because it stinks.)

A sentence like (71) is, as we can clearly see with the help
of the translations, ambiguous: either both NPs (the second
one expressed via the verbal congruence) are attributive non-
definite descriptions (the second NP being what we call a ge-
neric noun) and these two NPs are cooccurrential, or both NPs
are definite descriptions (there is only one camel in the
consituation) and they are coreferential. Another possibility
is that the first NP is a definite description while the
other, being a generic noun, is a non-definite description –
the NPs are cooccurrential. The English a) translations dis-
ambiguates the first meaning from the other two, but the b)
translation is still ambiguous.

The third interpretation seems to be, at the very best,
marginal. It is much more natural to interpret the pronoun
expressed via verbal congruence as a referential definite
description. In the context of (71) it would be much more
usual to express the genericity with plural, ("...protože

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páchnou." (...because they stink.), but (72) shows that this third interpretation is theoretically possible even in (71):

(72) *Petr medvěda zastřelil, ač je hájený.*

(Peter shot the bear, though it is a protected species.)

In (72), the first NP is a definite description, while the second NP is generic, i.e. it is an attributive non-definite description. Nobody can claim in the context of (72), that it is a specific bear that is a protected species.

(73) *Nikdy jsem na velbloudu nejel, protože páchnul.*

   a) (I have never ridden the camel because it stank.)

   b) (* I have never ridden a camel because it stank.)

(74) * *Karel nic nekoupil, protože to bylo příliš drahé.*

(* Charles has not bought anything because it was too expensive.)

(73) is unambiguous. The only possible interpretation is that both NPs are coreferential definite descriptions. Because of the past tense in the subclause, the second NP cannot be generic and since the negated main clause does not establish a referent (refered to by a non-definite description) which could be refered to by the pronoun (zero in Czech), the second NP cannot be a referential definite description coreferential with a non-definite description either. (A fourth interpretation of (71) amounting to the last interpretation condemned in (73) is out of the question for the same reason.)

(74) can get no interpretation at all, because the generic interpretation of the second NP is excluded (= cooccurrence is excluded). A change of tense cannot help here, because there is no generic "something", anyway. The negated main clause does not allow picking out a referent and following it either. (= the second NP cannot be a referential definite description coreferential with the first non-definite NP.) Of course,(74) is a perfectly correct sentence if the two NPs are not supposed to be anaphorically related.

4.8 Thus we have obtained the following system of anaphorical relations within one world, that specifies the approximative statement of 4.4.: I f t h e s e c o n d N P i s a n o n - d e -

finite description, cooccurrence is
the result. If the NDD is referential,
a pronoun of "type" (e.g., in (2) or (70)) or
a zero expression (e.g., in (69)) or a full
NP is used. If the NDD is attributive,
a definite personal pronoun (e.g. in (11),
(67))) or a zero (e.g., in (72) or in two of the above-
interpretations of (71)) or a full NP is used.
All this regardless of whether the first
NP is a NDD or a DD (cf. the interpretations of (71)
and (72) in 4.7.) and whether it is attributi-
vely (e.g. in (67), (70)) or referentially (e.g.
in one of the possible interpretations of the relevant NP
in (2)) used.
If the second NP is a definite descrip-
tion, it is coreferential with the pre-
ceding NP, provided that both NPs are at-
tributively used (as in one of the interpretations
of, e.g., (57), (66), or in the unambiguous (61)) or both
NPs are used referentially (as in the other in-
terpretation of (57), (66) or in the only interpretation of
(60). The second NP can be expressed by a
definite pronoun, a zero, or a full NP
within the limits presented in Bílý (1978).
If the second NP is a DD used referentially
while the preceding NDD is used attribu-
tively, these NPs are cooccurrential:
(75) (We are talking about a bear/the bear.)

　　　Ač je hájený, Petr jej zastřelil.

　　　(Though it is a protected species, Peter shot it.)
This would seem to be a counter-example to the original state-
ment from 4.4. However, if we say the anaphoric interpretation
of the non-definite description must be prior to the anaphoric
interpretation of the definite description, we first get cooc-
currence between the NP from the preceding context and the ge-
neric NDD, then coreference between the former NP and the def-

inite description and, finally, some sort of Consistency Con-
dition (cf. Jackendoff 1972, 111-117) rejects the possibility
of coreference between the NDD and the DD of (75). (The Con-
sistency Condition is a sort of rule needed to limit corefer-
ence interpretations to one only. Thus, e.g., the pronominal
object in (5) is ambiguous, but it cannot be coreferential
with b o t h NPs of the main clause a t t h e s a m e t i m e.)

As the case that (75) exemplifies is based on the use of
a generic NP, t h e c o n t r a r y p o s s i b i l i t y, v i z.
a n a t t r i b u t i v e l y u s e d D D p r e c e d e d b y
a r e f e r e n t i a l N D D , c a n n o t c o m e a b o u t.
(Generic NPs cannot be definite descriptions.)

4.9

(76) *Nikdy jsem na velbloudu nejel, protože se bojím, že by mě kousl.*

    a) (I have never ridden the camel because I am afraid it would

       bite me.)

    b) (I have never ridden a camel because I am afraid it would

       bite me.)

In (76), both NPs can be coreferential definite descriptions,
or both NPs are cooccurrential. However, there is a great
difference between the cooccurrential interpretations of (71)
and (76): the second NP in (76) is a definite description.
How is it possible that the rule does not seem to work here
(and why do I claim that the second NP in (76) is a definite
description)? With the last interpretation of (76) we have
gone over from the one-world/one-set-of-worlds area to two
worlds/sets of worlds. The first NP belongs to "our world" -
the main clause says that "I have ridden a camel" is not true
in our world", the subclause can be paraphrased "I am afraid
that if I rode a camel, it would bite me." The subclause talks
about the possible world(s) of my fears and within the world
of my fears, the non-definite description and the definite de-
scription of the paraphrase are coreferential, as our rule
for one-world situations predicts, but there is no referential
connection between the non-definite description from our world

(the NP from the main clause of (76) and the descriptions
from the world(s) of my fears, therefore we get cooccurrence
only. The conditional subclause from the paraphrase is not
present in (76) and I do not want to claim that it is present
in the deep structure of (76), either. All I claim is that
(76) must be interpreted in some way such as this and the sec-
ond NP of (76) must be a definite description because of the
context.

(77) *Nechce jet na velbloudu, protože se bojí, že by ho kousl.*

        (He does not want to ride a camel/the camel because he is afraid
        it would bite him.)

There are these possible interpretations of (77): either the
first NP is a non-definite description used attributively
and the second NP is a definite description used attribu-
tively. As the worlds of "non-wanting" and fears build one
set of worlds (the common denominator is just a sort of "non-
wanting"), the two NPs are coreferential. Alternatively the
first NP is a non-definite description used referentially and
the second NP is a definite description used referentially
(or both NPs are referential definite descriptions) - all this
means that the descriptions are made "from the outside" of the
world(s) discussed and the one-world situation is obtained
again and the NPs are coreferential.

    The different interpretations of (77) still lead to the
same anaphoric relation - coreference, because we do not leave
the one-world area and it does not matter whether it is the
real world or the world of "undesirables".

4.10 T h e   o n l y   p o s s i b l e   r e l a t i o n   b e t w e e n
t w o   N Ps   d e s c r i b i n g   " t h i n g s "   b e l o n g i n g   t o
d i f f e r e n t   w o r l d s   i s   c o o c c u r r e n c e :

(78) *President Pobřeží slonoviny ma dnes větší moc než před deseti lety.*

        (The president of the Ivory Coast has more power today than he had
        ten years ago.)

(78), for the sake of argument a slightly modified version of
the "classical" example about the American president, can be

interpreted as a one-world situation, which means that the two NPs are coreferential regardless of whether they are referential or attributive (but t h e y m u s t b e u s e d i n t h e s a m e w a y i f t h e y a r e t o b e c o r e f - e r e n t i a l - b o t h m u s t b e e i t h e r r e f e r e n - t i a l o r a t t r i b u t i v e, it is impossible to imagine a one-world situation where an NP's referential identity would be known and unknown at the same time). The one-world interpretation equals seeing the two timepoints as two stages of one world developing in time. But (78) can also be interpreted as a t w o - w o r l d s s i t u a t i o n: we have a set of properties defining the president of the Ivory Coast and we apply this "gauge" to two different worlds that are defined via different points of time. T h e a n a p h o - r i c r e l a t i o n b e t w e e n t h e t w o a t t r i b u - t i v e N Ps i s c o o c c u r r e n c e.

We have not yet taken into consideration t w o w o r l d s w i t h t w o r e f e r e n t i a l N Ps o r w i t h o n e N P r e f e r e n t i a l, a n o t h e r a t t r i b u t i v e a n d v i c e v e r s a. I t s e e m s t h a t t h i s i s a n i m - p o s s i b l e s i t u a t i o n i f a d e f i n i t e p r o - n o u n o r (z e r o "s t a n d i n g f o r" a d e f i n i t e p r o n o u n) i s u s e d, as we can observe in (64):

(79) (We are talking of the last American president, his po-
      litical career etc., i.e. the antecedent NP is referential.)
      Snaží se ..., ale setkává se s potížemi, protože je dnes mnohem
      důsledněji kontrolován Kongresem než byl před Watergatskou aférou.
      (He tries to ... but he runs into trouble because he is much more
      consistently checked by the Congress today than he was before the
      Watergate affair.)

(79) can get the one-world interpretation only. (Carter is more checked today than he was before Watergate.) The two-worlds interpretations - 'Carter is more checked today than Nixon was before Watergate' (both NPs referential) or 'Carter is more checked today than the president, whoever it was, before Watergate' (the first NP used referentially, the second NP used attributively) or vice versa, are impossible.

The last case, the first NP being used attributively and the other NP referentially seems to be found in sentences like (80). However, (80) is hardly stylistically neutral and the stylistic effect is achieved purely by the fact that B does not accept the attributive use of the NP by A and continues as if both NPs were referential:

(80) A: *Karel se chce oženit s nejkrásnější dívkou na světě.*
          (Charles wants to marry the most beautiful girl in the world.)
      B: *To není možné. Ji (tu) si zítra bere Petr.*
          (It's impossible. Peter will marry her tomorrow.)

(81) *Ještěrce upadl ocas a já jej našel.*

      (The lizard lost its tail and I have found it.)

(82) *Ještěrce upadl ocas, ale brzy ji naroste znovu.*

      (The lizard lost its tail but it will grow out soon again.)

Parts of bodies and other parts of wholes can also bring about the two possible interpretations. (81) and (82) correspond to the two interpretations of (78), being disambiguated by the semantics of these two sentences.

(83) Иван хочет жениться на самой красивой в мире девушке,

      а Петр только хочет соблазнить ее.

(83) is another example of these two interpretations: Either we obtain a one-world situation with coreferential definite descriptions (both NPs are used referentially) or a two-world situation with two attributive definite descriptions that are cooccurrential. The "classical" example sentence (4) gets the two interpretations, too.

Two more examples:

(84) *Profesor A oznámil, že našel řešení rovnice, ale asistent B tvrdí,*
      že je našel on.

      (Professor A has announced that he has found the solution to the
      equation, but the lecturer B claims that it is he who has found it.)

(85) *Před dvaceti lety byly jeho názory považovány za výstřední, ale*
      dnes ne.

      (Twenty years ago his opinions were considered excentric, but
      not today.)

Also (84) can get two interpretations: either the relevant DDs are coreferential (lecturer B accuses professor A of a scientific theft) or the two-world situation comes about and the at-

tributive DDs are cooccurrential only. (Perhaps both gentlemen are mistaken and none of them has found the solution, or one of them is wrong. All we are told is that both A and B s a y s he has found what he considers the solution.) Similarily, (85) can mean that the two DDs are coreferential (the judgement of the same opinion has changed) or we get a two-world situation, the opinions are modified and the attributive DDs stand for different entities defined by the same bearer of the opinions but by different time frames.

4.11

(86) *Karel se chce s nějakou bohatou vdovou oženit, a Petr ji chce oloupit.*

(Charles wants to MARRY a rich widow and Peter wants to ROB her.) In (86), if there is a specific rich widow, though unspecified for the reader, (the referential use) and Charles wants to marry her and Peter wants to rob the same person (which amounts to saying that, inspite of the two different world of Charles' and Peter's wishes, we can consider (86) an example of one world, because the description is taken from one "outside" world), coreference is obtained between the first non-definite description and the second definite description. If two worlds were involved, the NPs must be attributive non-definite descriptions and the anaphoric relation would be cooccurrence. (It is impossible that the first NP would be an attributive non-definite description while the second, pronominal NP would be an attributive definite description as there is no guarantee that the second world, the world of Peter's wishes contains a counterpart to the attributively presented entity of the world of Charles.) However, the two-worlds interpretation with two non-definite descriptions is not exactly that one gets it one's mind first and it seems to be slightly wrong or,

at least, a matter of "bad style". Perhaps, the following
example would be more acceptable:

(87)   (We are talking about the latest fad, the octophonic
       stereo (cf. the really existing quadrophonic stereo))

    A: *Karel chce koupit osmikanálové stereo za padesát tisíc.*

    B: *S Petrem je to ještě horší. On si je chce postavit sám. Doma
       už nedělá nic jiného a jeho žena uvažuje o rozvodu.*

  (A: Charles will buy an octophonic stereo for fifty thousand.

    B: It is even worse with Peter. He wants to build it himself.
       At home he does not do anything else any more and his wife
       deliberates a divorce.)

As far as I know, it has been generally accepted that the anaphorical
relation that I call cooccurrence between attributive non-definite de-
scriptions in a two-world situation as exemplified in (86) and (87), is
not possible. (Cf., e.g., Hintikka - Carlson 1977, 18.) However, the co-
occurrential reading of (86) and (87) shows that, provided that the at-
tributive non-definite descriptions are context-dependent, cooccurrence
is possible. (Thus even (86) needs some suitable context like "Co si to
Karel s Petrem šeptají o vdovách?" (What is it Charles is whispering to
Peter about widows?). The false judgement is, in my opinion, caused by
the identification of context-dependence and definite descriptions,
which often coincide but are not synonymous, as it was already mentioned
in 4.6. If one constructs an example with context-dependent non-definite
descriptions like (86) and (87), the difference becomes obvious.

    Even generic NPs can be used in the contexts of two or several worlds:

(88) *Čím dál jedete na sever, tím je Švéd málomluvnější.*
    (The farther you travel northward, the more taciturn the Swede
    becomes.)

(88) can get one absurd interpretation - if you take a Swede with you
when travelling northward, he will become less and less eloquent - and
a sort of generic interpretation depending on a scale of worlds defined
via the reached northern longitude - "the generic Swede of Lapland model"
speaks less than "the generic Swede of Stockholm model", who speaks less
than "the generic Swede of Scania (Skåne) model" etc.

It remains to add that, while c o o c c u r r e n c e cannot
be expressed i n a t w o - w o r l d s i t u a t i o n with other
NDDs than two attributive NDDs, via a definite personal pro-
noun, i t c a n b e o b t a i n e d v i a a p r o n o m i n a l
r e f e r e n t i a l N D D o f "t y p e" s t a n d i n g a s t h e
"p o s t c e n d e n t":

(89) *Eva si chce vzít Svéda, protože Anna si taky jednoho vzala.*

    (E wants to marry a Swede because A has also married one.)

4.12. To sum up: the different worlds in the two-world situations presented in this paper were defined by some semantic features which specify what sort of possible world the world in question is, and by various "frames", indicating the place of the world in time, in space, and who the "bearer" of the world is (in the case of intensional verbs), etc. Attempts to define various worlds have already been made in logic. (For a critical account of this sort of logic see, e.g. Saarinen (1977)). These are necessary in order to solve problems connected with the truth values of statements in which the temporal or other framework is crucial. For example: In 1930 John married Ann. Ann is a widow. The (false) conclusion: John married a widow. Referential definite descriptions, attributive definite descriptions, referential non-definite descriptions, and attributive non-definite descriptions, can be translated into the following (simplified) logical notations:

$$(\jmath x)(F(x)) \in (\lambda x)(W_{RP}(G(x)))$$

(the x such that it is ..., is an element of the class of the entities of the world ... which is delimited by the referential points ... and the entities are ...)

$$\forall y (y = W_{RP}(\jmath x)(F(x)) \longrightarrow G(y))$$

(it is true for all y's that if y is identical with the x of the world ... delimited by the referentic points ... such that x is ..., than y is ...)

$$\exists ! x (F(x) \wedge x \in (\lambda x)(W_{RP}(G(x))))$$

(there is one and only one x such that x is ... and x is an element of the class of entities of the world ... which is delimited by the referential points ... and the entities are...)

$$W_{RP} \exists x (F(x) \wedge G(x))$$

(in the world ... which is delimited by the referential points..., there is an x such that x is... and x is...)

Thus the sentence (1) can be "translated" in this way:

$$(\jmath x)(F(x))\varepsilon(\lambda x)(W_{RP}G(x)\wedge H(x))$$

(the x such that it is Peter's watch is an element of the
class of entities of the world ... which is delimited by
the referential points ... (say, it is the "real world" we
live in), and the entities are such that they were lost by
Peter yesterday and have been found by Mary today).
A one-world situation is described. According to the prin-
ciples in 4.8., the anaphoric relation is coreference.
The unnecessarily complicated formula is used in order to
show the difference between (1) and (3):

$$(\jmath x)(F(x))\varepsilon(\lambda x)(W_{RP}(G(x)))\wedge\forall y(y=W'_{RP}, (\jmath x)(F(x))\longrightarrow H(y))$$

(the x such that it is Peter's watch, is an element of the
class of entities of the world ... which is delimited by
the referential points ... (say, it is the "real world"),
and the entities are such that they were lost by Peter.
And it is true for all y's that if y is identical with
the x in the world of Mary's beliefs such that the x is
Peter's watch then Mary has found y). The second $(\jmath x)(F(x))$
is not taken from the outside of the world of Mary's be-
liefs, a two-world situation is obtained and we get the
cooccurrential interpretation. Similary, (10) can be de-
scribed as the following:

$$\forall x(F(x)\longrightarrow x\varepsilon(\lambda x)(W_x(G(x))))$$

(for all x it is true that if x is a human being then x be-
longs to the class of entities of the world of wishes of x
and the entities are such that they are esteemed). In this
case, a slightly different world appears, a world defined
by a referential point that is a variable. Neverthless
the x that are predicated about, also stand outside of the
world of wishes and we get a one-world situation with co-
reference.
(4) can get the following cooccurrential interpretation:

$$\exists a\exists b(a=(\jmath c)(Man(c)\wedge\forall d(d=\underline{W_c}(\jmath e)(\text{Paycheck of }(e,c))\longrightarrow$$
Gave to his wife $(c,d))\wedge a\varepsilon(\lambda x)(W_{RP}\text{ wiser than }(a,b)$
$\wedge b=(\jmath c)(Man(c)\wedge\forall d(d=\underline{W_c}(\jmath e)(\text{Paycheck of }(e,c))\longrightarrow$
Gave to his mistress $(c,d))\wedge b\varepsilon(\lambda x)(W_{RP}\text{ wiser than }(a,b))$.

4.13 An unsolved problem in linguistic logic is how to translate generic nouns, which we have described as non-definite attributive descriptions. As we have seen in 2.4., a generic 'x' is not equal to 'every x'. Therefore a sentence with a generic noun cannot be translated as

$$W_{RP}\forall x(F(x) \longrightarrow G(x))$$

Some linguists try to introduce a special generic quantifier in the place of the universal quantifier but none of these attempts is convincing. We cannot say that what is predicated about a generic noun is true in a sort of "lexicon world", a sort of "ideal" world where everything is "perfect" and has all properties it "ought to have", either. This would amount to describing the generic interpretations of 4.6. and 4.7. as two-world situations. However, this wouldn't work. The system of anaphoric relations for two-world situations where one of the NPs is a generic noun would be quite different from other two-world situations. For example, (90) is not possible in the interpretation of two cooccurrential non-definite descriptions the first being referential, the second attributive:

(90) *Karel chce zastřelit medvěda a Petr jej chce ochočit.*

    (Charles wants to shoot a bear and Peter wants to tame it.)

We cannot save the assumption that generic nouns belong to the world of the lexicon by saying that the problem with (90) is that the two-world interpretations demand a sort of structural parallelity (parallelity of the FSP structure), which the example sentences in 4.10. and 4.11. witness about. (91), where no structural parallelity can be found, allows the sort of interpretation that is impossible in (90):

(91) *Karel zastřelil medvěda, ač je hájený.*

    (Charles has shot a bear though it is a protected species.)

A solution (admittedly a vague one) to the problem of generic nouns would be to introduce a "generic predicate" in the formula for attributive NDDs that takes the implication as its argument: $\forall x("TYPICALLY"(F(x) \longrightarrow G(x))$.

(The above-mentioned parallelity of the FSP structure in
two-world cases can also explain the "earmarkedness of the
syntactic relations" in (6) of 1.1., where the cooccurren-
tial interpretations must keep the same relation between
the cooccurrential NPs and their coreferential antecedents,
e.g. when one of these NPs is coreferential with the sub-
ject of the main clause, even the other NP must be corefer-
ential with the subject of its own main clause. Otherwise
the FSP structures would be different.)

4.14   As we can see from (87), i t   i s   n o t   u n u s u a l
w i t h   c o o c c u r r e n t i a l   n o n - d e f i n i t e   d e -
s c r i p t i o n s   t h a t   t h e r e   i s   j u s t   a   p a r t i a l
i d e n t i t y   o f   s e n s e   between the two NPs (the pronoun
in (87) does not stand for "osmikanálové stereo za padesát
tisíc" it stands for "osmikanálové stereo" only). (92) con-
firms this:

(92)   *Ve Spojených státech odposlouchává FBI i telefony bývalých*
       členů komunistické strany. To by se v Československu nemohlo stát.
       (In the United States the FBI even bugs the telephones of former
       members of the communist party. It could never happen in Czecho-
       slovakia.)

The pronoun in the second sentence can be interpreted in sev-
eral ways: it can stand for the whole proposition (the whole
predication from the first world defined by its place - the
USA) - then it means that the FBI could not bug the phones
of former party members in Czechoslovakia. Alternatively it
stands for "somebody bugs the phones of former party members"
or just "somebody bugs the phones" etc.

An interesting case of the only partial identity of inten-
sion can be observed in (9). Under circumstances that are not
quite clear for me, even proper names can be used in a two-
world situation. Then, when being interpreted, they get "de-
composed" as to their intensions. The proper name and the de-
leted NP of (9) have in common the property of "being a person".
The common part of the intensions is the basis for cooccurrence.

4.15 As was mentioned in 4.0., predicates can be cooccurrential only, (93) and (94) can exemplify this:

(93) *Karel vydělává zrovna tolik jako jeho žena a Petr vydělává ještě o něco víc.*

(Charles earns as much as his wife and Peter earns still a bit more.)

(94) *Karel vydělává zrovna tolik jako jeho žena a Petr ještě o něco víc.*

(Charles earns as much as his wife and Peter still a bit more.)

(93) allows these interpretations: either P. earns a bit more than C./C.s wife (the coreferential interpretation) or P. earns a bit more than his own wife (the cooccurrential interpretation). (94) has one interpretation only: Peter earns more tha his own wife. The "missing", deleted part of the second clause of (94) is a predicate. However, the phenomenon is more complicated than (93) and (94) would hint.

It remains to comment on an interesting case of an anaphoric chain in (8). In the interpretation mentioned in 1.1., the first two NPs (the sub-clause and the first sentential pronoun) are cooccurrential, while the second and the third NP are coreferential. We cannot simply say that the interpretation of the latter pair of NPs is somehow independent of the interpretation of the former pair. This doesn't sound probable and it would even annul our argumentation about (79) in 4.10. Besides, the opposite (the first pair coreferential, the second one cooccurrential) is not possible as (95) shows:

(95) *Karel očekává, že dostane přidáno, ale Petr tomu nevěří, ač i Ivan s tím počítá.*

(Charles expects that he will get a raise (in his wages) but Peter doesn't believe it though even Ivan counts upon it.)

(95) cannot mean 'C. expects that C. will get a raise but P. doesn't believe that C. will get a raise even though I. counts upon it that I. will get a raise.'.

A solution to this problem may be that the interpretation of units that are analyzable into sub-units (as our sentential pronouns are), can be done in two ways. In sentences like (8) and (95), one takes the sentential pronoun as whole and interprets it referentially or attributively. If the interpretation

is referential, it implies that even the parts of the expres-
sion must be interpreted referentially, and therefore the in-
terpretation of (95) that was mentioned above is excluded.
If the whole expression is interpreted attributively first,
it is possible to interpret its parts (in the case of (8):
the pronominal subject of the sub-clause replaced by the sen-
tential pronoun) referentially. As we have already said, pred-
icates themselves are not referential. Only the combination
of a referential argument and a predicate can build a new ref-
erential expression. Thus the result of such a decomposition
and analyzing of the argument(s) referentially, gives us the
possibility of interpreting the whole expression referentially
with coreference as result. (8) starts with cooccurrence, with
the attributive interpretation of the first two relevant NPs.
It can continue with the referential interpretation of the
argument resulting in the referential "re-interpretation" of
the whole sentential pronominal NP.

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DISCUSSION

In the discussion participated: R. Laskowski, B. Nilsson, and
K. Rymut.
The following questions were discussed:
a) the theory of possible world(s), esp. whether a possible world
   or a set of possible worlds is to be taken into consideration;
b) the coreferential relation seen as the result of a "one world
   situation";
c) the question whether definite personal pronouns can be consid-
   ered definite descriptions;
d) the problem of proper names vs. common nouns. According to the
   author, even proper names have intensions, not only referents;
e) the existence of non-generic thematic non-definite descriptions;
f) the subject status of NPs in sentences like "Moskva - stolica
   SSSR" and "Stolica SSSR - Moskva".