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Perceptual Ambiguity and Constraints on Grammar

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perceptual ambiguity

and

constraints on grammars

tah asongwed

In 1967, John Robert Ross proposed that "Gapping is a universal rule: it is to be stated in the most general form in the theory of language, and by convention, every grammar will be able to make use of it in some form. (It is of course to be expected that some grammars may impose language particular conditions on this rule.)" Since the publication of Ross's paper, a number of papers have shown quite convincingly that gapping is not a universal rule. One such paper is by Dingwall (1969), who shows that Ross's statements about other languages other than English are "simply false" and then concludes that gapping is not a universal rule. Similarly, Asongwed (1975) has shown that Ross's statement, "I know of no language which exhibits no gapping behaviour of any kind," (p 849) is untenable, since Ngamambo -- as well as some other languages -- does not have gapping.

Because of the similarities in deletion patterns between gapping and conjunction reduction, Koutsoudas (1971), for example, has proposed that the two rules should be collapsed into one. Stillings (1975) presents

evidence to the contrary and maintains that since gapping and conjunction reduction are two different phenomena, the two rules should be kept apart. Stillings's argument can be taken a step further. Since there are languages like Ngamambo that do not permit gapping but permit conjunction reduction, it would appear to me that any putative universal rule that purports to lump these somewhat different phenomena together inherently makes the wrong predictions.

There have been some attempts to explain the difference between languages that permit gapping and those that do not in purely syntactic terms. Koutsoudas (1971) (like Sanders and Tai (1972)) invokes the Immediate Dominance Principle (IDP) to argue that languages like Chinese, Yoruba and Tai among others that do not gap must obey the IDP unlike languages like English, German and Japanese that do not obey the IDP. The IDP, as they see it, depends crucially on constituent structure. Briefly, it holds that since all languages permit the deletion of subject and predicate in sentence coordination, this must be so because subjects and predicates, being dominated by sentences, satisfy constituency conditions for deletion. However, verbs and objects are not so dominated by sentences. This means that languages that do not allow gapping are so restricted by the IDP which holds that verbs and objects cannot be reduced because they are not immediate constituents of conjunct sentences. One criticism that can be levelled against this dichotomy of languages between immediate and non-immediate dominance is that it is too rigid to be tenable for it fails to account for those languages that lie somewhere between these polar extremes.

The purpose of this paper is two-fold. First, it seeks an explanation for the absence of gapping in Ngamambo not in terms of the IDP, but in terms of perceptual strategy. That is, it will show that if gapping were a grammatical device in Ngamambo, then Ngamambo would violate what might be called the "Universal Constraint on Deletion" (UCD) for languages, for, since in Ngamambo -- as indeed is the case in many African languages -- sentence coordination is not marked by an overt conjunction, but by pauses, the pause in Ngamambo gapped sentences would be totally ambiguous perceptually between a conjunction and a verb gap. While evidence will be adduced primarily from Ngamambo, passing references will be made to Twi and Bangante.² Second, and this is a corollary of the first part, the paper will propose that linguistic theory will be greatly enriched if the pause is considered as a syntactic marker of some sort. So far in the literature there does not appear to be any such proposal that I am aware of.

In order to understand the absence of gapping in Ngamambo, it is necessary first of all to show the devices available in the language for conjoining sentences. Consider the following sentences:

1.
 - a. Castro yé China, Nixon yé San Clemente.
 [Castro went (to) China Nixon went (to) San Clemente]
 "Castro went to China, and Nixon went to San Clemente."

- b.* Castro $\gamma\acute{e}$ China, Nixon $b\grave{a}$ $\gamma\acute{e}$ San Clemente.
[and]
"Castro went to China, and Nixon went to San Clemente."
- c.? Castro $\gamma\acute{e}$ China, Nixon $b\acute{a}$ $\gamma\acute{e}$ China.
"Castro went to China, and Nixon went to China."
-
- d.? Castro $\gamma\acute{e}$ China, Nixon $\gamma\acute{e}$ China.
"Castro went to China and Nixon went to China."
- e. Castro $\gamma\acute{e}$ China, Nixon $b\acute{a}$ $\gamma\acute{e}$ China $b\grave{i}g\grave{a}$.
[too]
"Castro went to China, and Nixon went to China too."
- f. Castro $\gamma\acute{e}$ China, Nixon $\gamma\acute{e}$ $ng\acute{u}$ $b\grave{i}g\grave{a}$.
[there]
"Castro went to China, and Nixon went there too."
- g. Castro $\gamma\acute{e}$ China, Nixon $yw\acute{i}t\grave{i}$ $l\grave{a}$ China.
[returned from]
"Castro went to China, and Nixon returned from China."
- h.* Castro $\gamma\acute{e}$ China, Nixon $b\acute{a}$ $yw\acute{i}t\grave{i}$ $l\grave{a}$ China.
"Castro went to China and Nixon returned from China."
- i.* Castro $\gamma\acute{e}$ China, Nixon $b\grave{a}$ $yw\acute{i}t\grave{i}$ $l\grave{a}$ China $b\grave{i}g\grave{a}$.
"Castro went to China and Nixon returned from China too."

In (1a) in which there is no overt sentence-linking morpheme ("conjunction") the conjoined sentences are simply juxtaposed with the pause between them serving as some form of "conjunction". The two sentences can be interpreted as two completely autonomous sentences with the second conjunct semantically independent of the first one. In (1b) in which there is the occurrence of $b\grave{a}$, a morpheme glossed as "and", the sentence is ungrammatical. In (1c) there is also the occurrence of $b\grave{a}$, but, unlike (1b), (1c) is somehow acceptable although it is better if one uses (1e) in which $b\grave{a}$ occurs with $b\grave{i}g\grave{a}$. There is an explanation for the marginal acceptance of (1c) over (1b) and of (1e) over (1c). In both (1b) and (1c) there are identical verbs. But their objects are different. In (1b), the objects of the identical verbs are different ("China" and "San Clemente" respectively), and in (1c) the objects are the same ("China" and "China"). The ungrammaticality of (1b) is attributable to the fact that $b\grave{a}$ has been used to conjoin sentences whose objects are different, while the partial grammaticality of (1c) is due to the fact that the objects of the conjuncts are identical. In order for (1c) and (1d) to be completely grammatical, the second occurrence of the identical object should be converted into an appropriate pronoun coreferential with the object of the first conjunct as in (1f). Or if $b\grave{i}g\grave{a}$, ("too") is added to the second conjunct as in (1e), then the conjoined sentence is wholly grammatical. (1g) illustrates that if the verbs of the two conjuncts are different, then conjunction with a pause is grammatical without $b\grave{a}$ or $b\grave{a}$. . . $b\grave{i}g\grave{a}$ as in (1h) and (1i). From the above sentences we can draw the conclusion that in Ngamambo sentence coordination, $b\grave{a}$ is prohibited if the conjuncts do not have identical VP's. In this regard, it should be mentioned that the gloss of $b\grave{a}$ as "and" is a

gross translation. Its appropriate designation in English should be "also". That it cannot really be "and" can be seen from the co-occurrence restriction that it only occurs in conjoined sentences that have identical VP's.

In all the examples we have cited so far, we have shown that the pause is always present to link up the conjuncts, even in those examples in which bə occurs. And the pause characteristically appears between the conjuncts. This means that it is to be considered as the "conjunction", which links the sentences. Now consider the following gapped equivalents of (1a) and (1e).

1. a'. * Castro $\gamma\acute{e}$ China, Nixon San Clemente.
 "Castro went to China and Nixon to San Clemente."
 e'. * Castro $\gamma\acute{e}$ China, Nixon $b\grave{a}$ China $b\acute{i}g\grave{a}$.
 "Castro went to China, and Nixon to China too."

While one cannot gap in Ngamambo -- as (1a') and (1e') testify --, that is delete a verb under identity with a preceding one, one can reduce objects and entire predicates of conjuncts. For example, (2e') below is derived from (2e) and (3e') from (3e):

2. e. Castro $\gamma\acute{e}$ China, Nixon $b\grave{a}$ $\gamma\acute{e}$ China $b\acute{i}g\grave{a}$.
 "Castro went to China, and Nixon went to China too."
 e'. Castro $\gamma\acute{e}$ China, Nixon $b\grave{a}$ $\gamma\acute{e}$ $b\acute{i}g\grave{a}$.
 "Castro went to China and Nixon went too."
 3. e. Castro $\gamma\acute{e}$ China, Nixon $b\grave{a}$ $\gamma\acute{e}$ $\eta\acute{g}\acute{u}$ $b\acute{i}g\grave{a}$.
 "Castro went to China, and Nixon went there too."
 e'. Castro $\gamma\acute{e}$ China, Nixon $b\acute{i}g\grave{a}$.
 "Castro went to China and Nixon too."

Unlike sentences, which are conjoined by a pause, noun phrases have an overt conjunction marker in Ngamambo ($f\acute{o}r\grave{a}$), Twi (ne) and Bangante (bo). Both Twi and Bangante forbid the occurrence of the sentence-linker ("conjunction") $en\acute{a}$ for Twi and mba for Bangante, in just those environments that Ngamambo forbids the occurrence of $b\grave{a}$. In Ngamambo, NP's can be linked as in (4) below:

4. Nixon $f\acute{o}r\grave{a}$ Castro $b\acute{i}$ $\gamma\acute{e}$ China.
 "Nixon and Castro will go to China."

However, as in English, if there is a sequence of NP's, then the NP-linker is usually inserted between the last two NP's of the sequence.

5. a. Sah, Lum, Akwen, Achu $f\acute{o}r\grave{a}$ Cho $y\acute{i}?\acute{i}$ $b\acute{o}n$ $ts\grave{o}m$.
 [are children good]
 "Sah, Lum, Akwen, Achu and Cho are good children."
 b.? Sah, Lum, Akwen, Achu, Cho $y\acute{i}?\acute{i}$ $b\acute{o}n$ $ts\grave{o}m$.
 "Sah, Lum, Akwen, Achu, (and) Cho are good children."

Such lists of NP's provide further evidence that gapping cannot be a grammatical device in Ngamambo as (6) below will show.

6. a. Nixon ná? namə Pat, Ford, Betty. . .
 [Nixon past marry Pat]
 i. *"Nixon married Pat, and Ford, Betty."
 ii. "Nixon married Pat, Ford, Betty, . . ."
 b. Nixon ná? namə Pat, Ford namə Betty.
 i. "Nixon married Pat, and Ford married Betty."
 ii. "Nixon married Pat, and Ford, Betty."

In (6a) the juxtaposition of the lexical items Ford, Betty, cannot be interpreted at all to mean that "Ford married Betty". The only possible interpretation it can receive is that illustrated in (6aii) in which the lexical items are interpreted as independent NP's in a sequence. Since it has been shown that in sentence coordination in Ngamambo there is no overt conjunction, but just pause, this means that if gapping were a grammatical device in the language, it would operate on sentences linked by pauses rather than by some overt linker such as English "and". This point is crucial for explaining why Ngamambo and Twi do not have gapping. In order to explain why this may be the case, consider the following sentences:

7. a. Nixon married Pat and Ford, Betty.
 b.? Nixon married Pat and Ford Betty.
 8. a. Charles read Dickens and William, Shakespeare.
 b.? Charles read Dickens and William Shakespeare.

We can see from the above sentences in English that if gapped sentences are to be understood unambiguously, then there must be a pause between the subject of the conjunct in which the verb is deleted and its object. The mark "?" in front of (7b) and (8b) simply means that the two sentences cannot be interpreted as gapped sentences. In other words, in (7a) and (8a) it is the verb that is deleted, but in (7b) and (8b), we cannot tell that there ever was a verb there without a pause. What this illustrates clearly is that the role of pause in sentence coordination and reduction is very important for the (a) and (b) pairs of sentences are different respectively only in that the ones have the pause and the others have not. It was shown in the Ngamambo examples that sentence coordination depended essentially on pauses. If it is the case that in order to gap one must pause between the subject and object of each successive gapped conjunct, then this means that as far as Ngamambo is concerned, one has to have potentially two pauses if there are two conjuncts, four pauses if there are three conjuncts, six pauses if there are four conjuncts and so on. In other words, for each successive conjunct there will be two additional pauses.

9. a. Nixon náme Pat, Ford, Betty . . .
 b. Nixon náme Pat, Ford, Betty, Shriver, Eunice . . .

But then we have seen that this juxtaposition of NP's can not be interpreted as cases of gapping because there is no verb. That is, the nouns are not interpreted as being dominated by an S node but by an NP node. This is certainly the case too in Twi.

10. a. Nixon warree Pat, Ford warree Betty.
 "Nixon married Pat and Ford married Betty."
 b. Nixon warree Pat, Ford, Betty . . .
 i. "Nixon married Pat, Ford, Betty, . . ."
 ii.*"Nixon married Pat, and Ford, Betty."

The same interpretation holds in Bangante.

11. a. Nixon suu Pat, Ford suu Betty.
 i. "Nixon married Pat and Ford married Betty."
 ii. "Nixon married Pat, and Ford, Betty."
 b. Nixon suu Pat, Ford, Betty . . .
 i. "Nixon married Pat, Ford, Betty, . . ."
 ii.*"Nixon married Pat and Ford, Betty."

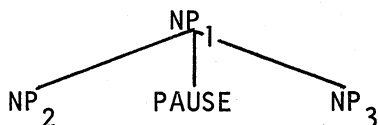
Further evidence that gapping is not a grammatical device in Ngamambo seems to be related to the way in which nouns are modified in the language. In Ngamambo modifiers usually follow the nouns they modify and the possessed (pro)noun generally precedes the possessor (pro)noun. This means that in gapped sentences, if the subject of the gapped conjunct is juxtaposed with the object without any intervening morpheme such as "preposition", or without there being case markings on the nouns, then the "head" noun is interpreted as being modified by the noun that comes after it.

12. a. mìlínguists bàn ìṅwa?ní, mí pastó, mbəyéy.
 [Linguists hate books pastors women]
 i.*"Linguists hate books and pastors, women."
 ii."Linguists hate books, pastors, women, . . ."
 b. mìlínguists bàn ìṅwa?ní, mí pastó mbəyéy.
 i.*"Linguists hate books and pastors, women."
 ii."Linguists hate books, women pastors, . . ."
 c. mìlínguists bàn ìṅwa?ní mí pastó mbəyéy.
 i. * "Linguists hate books and pastors women."
 ii. * "Linguists hate books and pastors, women."
 iii.* "Linguists hate books, pastors, women . . ."

- iv. * "Linguists hate books, women pastors, . . ."
 v. "Linguists hate the books of women pastors."

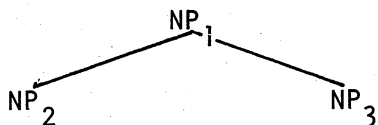
It should be noted that in the examples (12a), (12b) and (12c), the only thing that differentiates the sentence is the place where pause appears. As a syntactic marker, its presence between NP's signals that the NP's are in a sequence and its absence signals that the one NP is modifying the other. This is better illustrated by the phrase markers PM1 and PM2 below.

PM1.



The presence of PAUSE in PM1 means that the NP's are "joined" in a sequence, NP₃ following NP₂. On the other hand, PM2 is to be interpreted not as a case of NP's appearing in a series or list, but as a case of the second NP (in this case NP₃) modifying the first one (NP₂).

PM2.



This is exactly what is obtained in Twi as (13 a - d) below show.

13. a. Nixon pɛ ɔsɔfo, nkramɛn pɛ aduane.
 [Nixon likes pastor dogs like food]
 "Nixon likes a pastor and dogs like food."
 b. Nixon pɛ ɔsɔfo, nkramɛn, aduane.
 i. * "Nixon likes a pastor, and the dogs, food."
 ii. "Nixon likes a pastor, dogs, food, . . ."
 c. Nixon pɛ ɔsɔfo, nkramɛn aduane.
 i. * "Nixon likes a pastor and dogs, food."
 ii. * "Nixon likes a pastor, dogs, food, . . ."
 iii. "Nixon likes a pastor, dogs' food, . . ."
 d. Nixon pɛ ɔsɔfo nkramɛn aduane.
 i. * "Nixon likes a pastor and dogs, food."
 ii. * "Nixon likes a pastor, dogs, food, . . ."
 iii. * "Nixon likes a pastor, dogs' food, . . ."
 iv. "Nixon likes a pastor's dogs' food."

These Twi sentences, like their Ngamambo counterparts, point unambiguously to the fact that pause is crucial in sentence coordination. Consider the following sentence:

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14. Fon is singing and Akwen is dancing.

(14) is definitely vague in English. One reading could be that "Akwen is dancing to the song that Fon is singing" or simply that the two conjuncts are independent, the second one having absolutely nothing to do with the first one. Now look at the Twi equivalents of (14), (15a) and (15b) below.

15. a. Fon re to dwom, Akwen re sa.
 [Fon is singing a song, Akwen is dancing]
 b. Fon re to dwom Akwen re sa.

"Fon is singing and Akwen is dancing."

While (15a) in which pause is present is just as "vague" as its English counterpart (14), (15b) is not vague at all. Without the pause it means unambiguously that Akwen is dancing to the song that Fon is singing. Once again, the only distinction between the two sentences is the presence of pause in the one and its absence in the other.

Similarly in Ngamambo, the presence or absence of pause in the following sentences is crucial to their interpretation.

16. a. Akwen ə nín káp Atúg né? mbí Sáh.
 [Akwen past take money Atug give to Sah]
 "Akwen took Atug's money and gave it to Sah."
 b. Akwen ə nín káp, Atúg né? mbí Sáh.
 i. "Akwen took money and Atug gave it to Sah."
 ii. * "Akwen took Atug's money and gave it to Sah."

Given the evidence presented so far, one can propose what may, given sufficient research, turn out to be a universal constraint on grammars. Call it the "Universal Constraint on Deletion" (UCD).

Universal Constraint on Deletion.

If a language uses only pauses in conjoining sentences, and if there are no case markings or other syntactic devices that specify the role of NP's in the conjoined structure, then such a language cannot permit the deletion of verbs under identity (gapping).

The proviso that the NP's must not be marked for case nor that there should not be any other syntactic devices (such as intervening morphemes like prepositions) is important, for if two NP's are marked for case, then the interpretation of what they mean when they are juxtaposed, with or without pause, is not in question. Emmon Bach has pointed out to me (personal communication) that there are languages that do not have overt sentence conjunctions but have case markers and a rule of gapping. This is not surprising, nor does it vitiate our argument, for even in Ngamambo there are cases in which one can get a gapped interpretation in sentence coordination. In all these cases, however, the NP's have case markers on them or there are prepositions intervening between the NP's.

The only NP's in Ngamambo with case markings on them are the indirect object pronouns.

núm	[to me]
nɛ	[to you (singular)]
nɛn	[to you (plural)]
ná	[to us]
bɔɔ	[to him]

This means that in a sentence such as (17) below, the only interpretation that can be given the second conjunct is that represented by the gloss:

17. a. * Akwen ə né? bɔɔ, Sah núm.
 "Akwen gave (it) to him, and Sah, to me."
 b. Akwen ə né? bɔɔ, Sah né? num.
 "Akwen gave (it) to him and Sah gave (it) to me."

But it should be recognized that (17a) is not grammatical at all in Ngamambo. In other words, the sentence is interpretable but ungrammatical. This is yet further proof that Ngamambo does not lack a rule of gapping just because of perceptual strategies. The syntax itself forbids it.

Since conclusive evidence has been presented that pause is a syntactic marker of some sort, I shall propose that syntactic theory would be greatly enriched if a notation is devised for marking pauses. Further investigation in this area may prove to be very revealing. Along the lines of my proposal then, one of the conjunction rules for Ngamambo will have to be formulated as follows:

Let Π stand for pause.

Conjunction Rule: $S \rightarrow S-\Pi-S$

This conjunction rule is the equivalent of the English rewrite rule, $S \rightarrow S$ and S . If Π were not added to the grammar, then it would be impossible to write one of the Ngamambo conjunction rules. This argues very strongly that Π should be added to the grammar as a new notational device. In fact, this notation will also be necessary for those languages like Ngamambo (Twi and Bangante for example) which have no overt conjunction but pause in sentence coordination.

Footnotes.

This paper owes its life-blood to the comments and criticisms of the following colleagues: Tim Austin, Emmon Bach, Jack Chambers, Barbara Partee, Muffy Siegel, Justine Stillings and Edwin Williams. While they do not necessarily agree with my conclusions, without them, the paper would not have taken its present form.

¹ Ngamambo is a Widekum-Tadkon language of the Benue-Congo family. It is spoken around Bamenda, Cameroon, and there are about 5,000 speakers.

² Many thanks to Akosua Agyanko and Martin Tonouga who willingly supplied me with data on Twi and Bangante respectively.

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