Reflexive Anaphora in Attention-Based Syntax

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ABSTRACT

The English language uses reflexive anaphors whenever an action's subject and object match. Despite the universality of reflexive events, generative syntax requires a special binding theory that makes anaphors seem remarkable. Binding theory itself suffers from arbitrary and *ad hoc* principles and the need for exemptions from them. An alternate approach known as attention-based syntax requires only one principle to describe the complete use of relative anaphors. The principles are grounded in the psychology of perception and follow naturally from a theory that shifting attention makes language meaningful.

Introduction

Generative grammar has had surprising difficulty with what would seem like a simple enough usage, known technically as anaphora. These are words or phrases whose meanings match another word or phrase in the same sentence. For example, in the sentence *Tina went to bed as soon as she reached home*, both *Tina* and *she* refer to the same person. Traditionally, *Tina* is called an antecedent and *she* an anaphor. One especially common circumstance is when a sentence's subject and object refers to the same individual, as in 1a (matching direct object) and 1b (matching indirect object). Sentences 1c-f provide other common examples. Anaphora of this type are called reflexive and, presumably, every language has a way of expressing this inevitable relationship. Some languages—e.g., Swedish, Ukrainian—have reflexive possessives too; however, this paper will confine itself to discussing English-language, reflexive anaphora.

1.

a. Peter shot himself in the foot.
b. Peter bounced the ball to himself.
c. Amy and Lizzie cried themselves to sleep.
d. The Supreme Court hurt itself with that decision.
e. I told myself everything would be okay.
f. You need to trust yourself more.

Traditionally, English grammarians have been content to say that the reflexive anaphor ends in *–self-/selves* and comes after the original reference to the sentence's subject. A reflexive pronoun that comes first in the sentence has traditionally been called a cataphor. This distinction, however, is purely descriptive and offers no help in understanding any subtleties of reflexive syntax. An examination of sentence group 1 reveals that none of them can be readily changed to cataphora while sentence group 2 suggests that any sentence with a reflexive cataphor can be rewritten to use an anaphor.

2.

a. Myself, I love flapjacks.
b. I love flapjacks, myself.
c. A fear of himself plagued Robertson.
d. Robertson was plagued by a fear of himself.
e. Speaking for himself at last, John proposed to Priscilla.
f. John, speaking for himself at last, proposed to Priscilla.

Of course any analysis of English, reflexive anaphors must explain why sometimes they can only come after their matching reference and sometimes they can precede or follow their match. This paper aims to make the principle clear. At the start, however, we can begin with the assertion that in this paper cataphora are merely a subgroup of anaphora and we will refer to both as anaphora.

Besides providing an introduction and a conclusion, the paper is divided into 4 sections. Section 1 briefly surveys the generativist approach to anaphora, noting its successes and difficulties. Section 2 then raises some objections to the theory, the main one being that the generative solution makes complicated what

should be simple. Section 3 then presents an alternative way to analyze sentences, attention-based syntax (ABS). This section is the largest in the paper even though it restricts itself to discussing the parts of ABS that are relevant in considering English, reflexive anaphora. Section 4 shows that ABS is able to provide a complete description of the English, reflexive usages, including the source of the rhetorical freedom that makes the distinction between anaphora and cataphora moot.

1. Generative Grammar's Solution

The basic challenge of generative syntax has been to describe sentence structure without reference to meaning. In its system, language is built on a pyramid (Fig. 1) that begins with the atoms of language, usually its sounds; the atoms are then organized according to syntactical rules into phrases of one or more words. Meaning is inserted only after the rules of syntax organize a sentence. On top of that level is the externalization process that makes the sentence public.

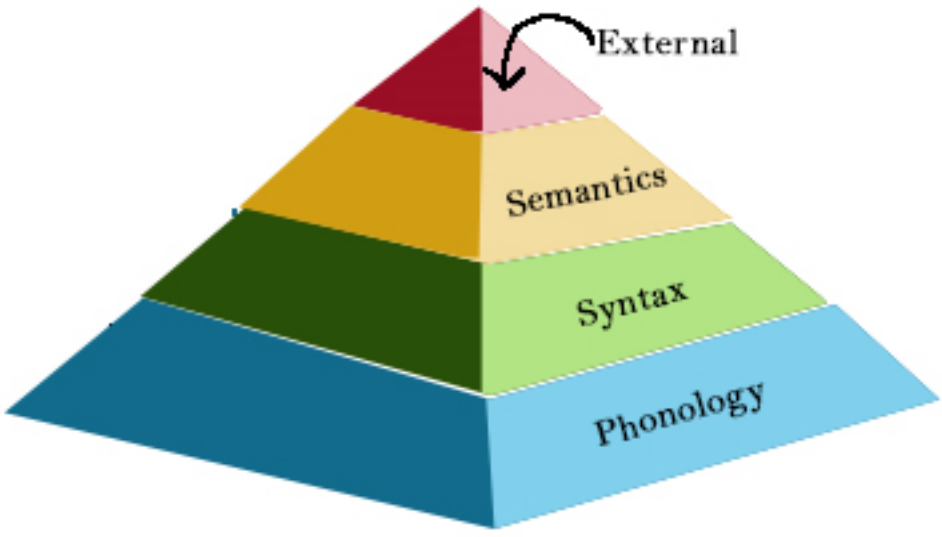

Figure 1 – The Generativist's Language Pyramid

Technically, this last level is an interface separate from the pyramid, but for our purposes it can be considered the final level of sentence generation. The critical point is that the rules of syntax cannot take semantics into account as they produce their structure. However, anaphors are said to take their meaning from elsewhere in the sentence so generativists have found it necessary to "bind" the anaphor and its antecedent together in preparation for the semantic level (Lees and Klima, 1963).

The absence of semantics has also required a revision of the definition of anaphora. For generativists they are words that *must* get their meaning from another word in a sentence. This obligatory, in-sentence reference distinguishes anaphora from other pronouns which may take their meaning from elsewhere in the sentence or from some larger context. Reflexive anaphora are those that use reflexive pronouns, i.e., pronouns that end in *–self* or *–selves*.

The reflexive anaphor is bound to its antecedent, the word that supplies the anaphor's meaning. To determine whether a particular word can serve as an anaphor's antecedent, we begin with a central concept in generative grammar, the hierarchical tree (Fig. 2). This tree is formed by parsing a sentence into its constituent phrases, which are themselves parsed, until the sentence is organized into a hierarchy of individual words.

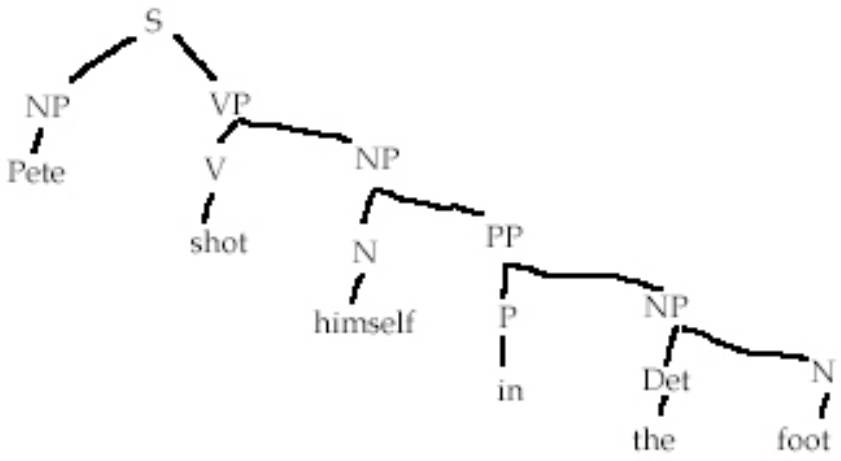

Figure 2 - A Hierarchical Tree

Points on the tree are called nodes, and they are labeled S (sentence), NP (noun phrase), VP (verb phrase), PP (prepositional phrase), V (verb), N (noun), P (preposition), Det (determiner). Node S links to two nodes, NP and VP, so node S is called a branching node. Because node S is further up the hierarchy, it is said to dominate the nodes NP and VP. Meanwhile, nodes NP and VP are called sister nodes. The nodes lower down in the hierarchy are called daughter nodes.

A node is said to "c-command" its sisters and their daughters. For example, in Figure 2 the preposition *in* c-commands the noun phrase *the foot*. This relationship is critical to anaphora because binding theory's Principle A holds that a node can only be bound to another node if it is c-commanded by that other node (Chomsky, 1980). In more general terms, a node can only provide a meaning to a sister node or the daughter of a sister node. Therefore, the nouns in Figure 2 that are bound together are *Pete* and *himself* because *Pete* c-commands *himself*.

Some readers may wonder why *foot* is not bound to *Pete*. After all, it too is c-commanded by *Pete*. The answer depends on a concept known as co-indexing. Nouns can be marked by an index, that is a subscript that stands for the meaning source. For example, sentence 3a contains three nouns, each one dependent on a different meaning source. So each noun is given a different index, $Jack_i$, $Peter_j$, and $foot_k$. In 3c, however, two of the nouns stand for the same person, so they share an index: $Jack_i$, $himself_i$, and $foot_j$. This shared index is called a co-index, and a noun is only bound if it is c-commanded by a co-indexed noun. Note also that *himself* and *Pete* cannot exchange locations in this system. Anaphora must be bound and *himself* cannot be used as an antecedent. Thus, *himself* cannot c-command *Pete*. That rule explains sentence group 3.

3.

a. Jack shot Peter in the foot.
b. Peter was shot in the foot by Jack.
c. Jack shot himself in the foot.
d. Jack was shot in the foot by himself.

When 3a changes to the passive voice, the nouns in 3b change positions, but when 3c becomes passive, the nouns in 3d keep their original positions.

At first c-command and coindexing were thought to be enough to explain anaphors, but there are problems with this blanket rule.

4.

a. Lenora told herself that everything would be okay.
b. *Lenora told everybody herself did it.
c. Lenora told everybody she did it.

Sentence 4a follows the binding rule and has good results, but then 4b follows the same rule and goes wrong. For some reason, 4c is correct. So the c-command rule is not quite right.

Principle A (an anaphor must be c-commanded by its antecedent) has been revised to say an anaphor must share a binding domain with its antecedent (Chomsky, 1981). For our purposes, a binding domain can be considered a clause. So the new Principle A says that antecedent and anaphor must be in the same clause. This rule explains why 4a is correct—both antecedent and anaphor share a clause, while in 4c, *Lenora* and *she* occupy different clauses, so *she* is not bound to *Lenora*.

Yet even with this alteration there are problems.

5.

a. John is bothered by the picture of himself in the post office.
b. The picture of himself in the post office bothers John.
c. John, speaking for himself at last, proposed to Priscilla.
d. Speaking for himself at last, John proposed to Priscilla.
e. Tom is back to being himself.
f. Tom is back to being Tom.

In 5a, the system works perfectly well. *John* and *himself* share a clause, and the two are co-indexed, but in 5b, *himself* comes first despite sharing a clause with

John. Then 5c seems correct even though antecedent *John* is in a different clause than *himself*. Also puzzling is the way 5a can be successfully reversed to 5b and 5c reverses to 5d, despite the forbidden reversal we saw in 3c. 5e is fine, but why is 5f also fine? Isn't the reflexive pronoun obligatory?

One proposed solution has been to say that picture noun reflexives (as in 5a-b) are exempt from the rules on binding (Postal, 1971). Another proposal has been to take a concept from "relational grammar" (Perlmutter and Postal, 1977) and refer to relative obliqueness of words (Pollard and Sag, 1992). Exploring all these solutions lies beyond this paper's scope. Here we must simply notice that the revised Principle A (an anaphor must be bound to a co-indexed noun within its binding domain) is subject to a series of counter examples requiring further revisions or exemptions.

2. Objections to the Generative Solution

Reflexive events are a normal part of anybody's experience, so it is surprising that their expression cannot be governed by the same principles that govern other ordinary sentences. Why should *Pete shot himself in the foot* require more computation than does *Pete shot Joe in the foot*?

Generativists will answer that the extra computation comes from the "necessity" of bound meaning, but that necessity arises from two *a priori* assertions: (1) syntax and meaning occupy distinct levels of a pyramid; and (2) that anaphora take their meaning from another word in a sentence. The separation of syntax from meaning might be true and generativists consider the system to be logical, but it could also be false. Empirical evidence offers very little support for the assumption that the brain processes sentences by first computing a structure and then adding meaning. It might also be false to assert that anaphora take their meaning from elsewhere in the sentence. Perhaps there

is an alternate process for creating meanings, and anaphora get their meaning in the same way antecedents get theirs.

The most striking weakness of the generative approach is its absence of a theoretical guide for making sense of the different usages. When the concept of c-command fails, generative approaches have no grounding in either axioms or psychology that might suggest what alternate procedures would be likely. Instead, a series of *ad hoc* solutions are improvised and whatever works best is accepted. Generativists assume that there is a universal procedure for computing an internal language (i-language) that interfaces with the externalization mechanism, but this doctrine is too broad and vague to constitute a supporting psychology that might explain why syntactical principles take the form they do. Generativists justify this theoretical poverty by suggesting that once they settle upon a universal grammar the appropriate psychology will reveal itself, but this approach offers no help finding that universal grammar.

This absence of grounding is not ruinous, and may be a result of the science's relative youth. After all, it took time for Kepler's astronomy to join up with Galileo's study of motion, or for chemistry to combine with quantum physics. But the generativist's ungrounded approach to syntactic rules does leave one wondering why syntax is this way rather than some other way. The absence of a grounded explanation almost guarantees that some richer view of syntax is waiting to be found.

3. Attention-Based Syntax (ABS): An Alternate Solution

3.1 Grounding

An alternative approach proposes that meaning and syntax are not separate levels of a pyramid. Instead the syntactic structures result naturally from the construction of a meaningful sentence. ABS describes the creation of these structures while a speaker shifts attention (Bolles, 2015). According to ABS,

language in its structure, and perhaps its origins (Bolles, 2011), is a kind of artificial perception. To work, language depends on four psychological functions:

- **Perception**: the ability to recognize and unite subjective phenomena (sensations) into wholes (Bolles, 1991).
- **Attention:** the ability to focus on part of a whole phenomenon.
- **Basic case:** the ability to distinguish between a doer and a done-to.
- **Working memory:** the ability to retain and recall a word or short phrase while speaking or listening to an utterance.

The first two of these functions are common to all primates and require no special evolutionary history to become useful in language. It is also almost certain that primates can distinguish between something that acts and something acted upon, although it is not proven that they can track both at the same time. Working memory may depend on a special human ability; if so, not all utterances should require working memory as this special memory function may have evolved under selection pressures to increase language's utility.

3.2 Meaning

In this system, meaning becomes the mental phenomenon where attention is directed. The word *cow,* for example, need not direct attention to a real cow that is somewhere out there in the world; the subjective phenomenon evoked by the word is sufficient. Thus, a reader can understand the word without needing a real cow anywhere in sight.

Words can direct attention to two kinds of mental phenomena, static and dynamic. In sentence 6, for example, three words pilot attention to static phenomena—*Pete*, *Joe*, *foot*. These words are called static pilots, or SPs. One word in the sentence pilots attention to a dynamic phenomenon—*shot*.

6. Pete shot Joe in the foot.

In sentence 6, both speaker and listener shift attention to *Pete*, then to *shot*, then to *Joe*, and finally to *foot*. However, the focal points are not isolates; the sentence brings them into a dynamic relationship. This dynamism works by binding *Pete* and *Joe* into an active whole. *Pete shot*… can evoke an image of Pete shooting and …*shot Joe*… can evoke an image of Joe being shot. The dynamic binder keeps both parts together, allowing us to imagine Pete shooting Joe. Because this binding is the essential contribution of the dynamic pilot, the pilot is known as a binder. (Note: in generative grammar, "binding" refers to the joining of one word to the meaning of another; in ABS it refers to the union of phrases into a dynamic image or idea.)

Conventional markings are available for parsing an utterance. SPs are placed between vertical lines || and binders are marked off by slanting lines //. Thus, the first portion of sentence 5 will be parsed: **|Pete | /shot/ |Joe|**.

Sentence 6 has another portion, *in the foot*, which contains an SP but no binder. In ABS *in* is called a join because it connects *Joe* and foot. Joining lacks the dynamism of binding, and in sentence 6 the join provides a spatial connection. None the less, the join does connect two separate points of attention. Joins are marked with greater-than or less-than signs <>. So the whole sentence 5 can be parsed: **|Pete | /shot/ |Joe| <in> |the foot|**.

In ABS, understanding emerges with shifting attention. Listeners focus their attention on *Pete* and recognize him before they know anything else about the sentence. Along with recognizing *Pete*, the listener knows something else: Pete is the actor in whatever follows. Listeners recognize this relationship despite the absence of any declension markings because English rules of word order are so fixed. In English the SP before a binder is known variously as the subject, actor, or doer. The SP after the binder is the object, patient, or done-to. This

relationship is so strong that even when English SPs are declined, word order settles any ambiguities.

3.3 Bound utterances

Traditionally, a sentence like 6 is called a simple sentence because it contains a complete idea. In ABS, it is known more technically as a "bound utterance" because all its parts work together to create a single, coherent image or idea. Many utterances of ordinary conversation do not reach the level of a bound utterance—e.g., *wow*, *coming*, *just a sec*—and the language of children before age 3 almost never contains a bound utterance.

Sentences can also include more than a bound utterance. That is to say, not every part of the utterance both contributes to the image and is bound to it. For example, 7a begins with an editorial comment before getting to the image. (Note that in ABS a bound utterance can be shown by placing it between square brackets [].)

7.

a. Terrible news, [Pete shot Joe in the foot].
b. Waving his gun about, [Pete shot Joe in the foot].
c. I heard [Pete shot Joe in the foot].
d. The way I get it, [Pete shot Joe in the foot].
e. Mary told me [Pete shot Joe in the foot].
f. [I went to church] <just before> [Pete shot Joe in the foot].
g. [Pete shot Joe in the foot] <and> [Joe cursed terribly].

7b includes the unbound part, *waving his gun about*. An interesting feature of this part is that it is dynamic, i.e. it gives action to a static phenomenon. It can be parsed **/waving/ |his gun| /about/**… The phrase is missing a subject, but it binds an action and an object. We can call 7b a half-bound utterance.

7c is also half-bound, but this time the binder has a subject only. The fully bound utterance stands in place of the object. The fully bound utterance cannot be the object of *heard* because the point of view changes. *I heard*'s point of view is personal, while *Pete shot*… expresses an outsider's perspective. To be

dynamically bound into a coherent whole, both subject and object must share a viewpoint. If the sentence said *I heard a loud bang*, the object would share the subject's viewpoint and we would have a bound utterance. If the viewpoint changes so that the subject and object are not part of a unified perception, the two parts are not bound together. 7d-f provide further examples of shifts in point of view.

Sentences 7f-g both contain two fully bound utterances that are joined together. Without the joints, the utterances would be separate, simple sentences. Working memory allows bound utterances to work together as a more complex narrative. 8a is an example of a sentence that requires the listener to remember that *Pete* is the subject.

8.

a. Pete shot Joe in the foot and then laughed like a fool.
b. Pete shot Joe in the foot and then laughed at him.
c. ?Pete shot Joe in foot for some unknown reason that must have been serious and laughed like a fool.

Traditionally, *Pete* is said to be "understood" to have been the one who laughed like a fool, and that is fine as far as it goes, but it is more exact to say that working memory supplies the subject. If the speaker meant that it was Joe who laughed like a fool, the sentence would simply be incorrect; however, working memory seems to track simultaneously both subjects and objects, as shown in 8b. Since we are considering English syntax, the critical clue as to which SP is to be supplied comes from word order.

Working memory can be overwhelmed, as illustrated in 8c.

3.4 Joined genitives

We have seen that binding words transform SPs into dynamic images, and there are also joins that brings syntactic structures together, often through a spatial reference. *Pete shot Joe in the foot* joins the *foot* with the shooting.

Traditionally, *the foot* is called the sentence's indirect object and some languages even call for special (dative) case markings to indicate that the word is linked to the binder.

Yet not all joins connect SPs to binders. There are also instances where SPs are joined to other SPs. These linked phrases are commonly called genitives. Genitives express relations between SPs to create a larger SP. As a result, genitive phrases can be subjects or objects themselves.

9.

a. The captain of the guards saluted the general.
b. The saboteur shot at the captain of the guards.
c. The saboteur shot at the guards of the captain.
d. The traveler from Madrid collapsed.
e. The man in the iron mask resembled Louis XIV.
f. The invitation to the ball was printed on gold foil.

Sentences 9a-b show that the same genitive phrase can be used as either a subject or object. 9c demonstrates that the word order of the phrase matters. Reversing the SPs changes what the phrase is about. The phrase *the captain of the guards* joins two SPs: |the captain| <of> |the guards|. These joined SPs are themselves put between horizontal lines to indicate that they make one larger SP: **||the captain| <of> |the guards||**. The first SP can be called the head, and the second the tail. The head is similar to the subject, in the sense that the phrase is about the head just as the sentence is about the subject. However, the head is not necessarily an actor, as shown in 7b. Many traditional grammarians call the tail the object of the preposition, but it is not an object in the sense of being the acted upon. There is no action in a static phrase like *the captain of the guards*. In ABS, genitive relationships are expressed by focusing attention on an SP, followed by a syntactic cue to keep the SP in mind while shifting attention to a second SP (Benedetti, 2015). The syntactic cue may provide some hint of the relationship between the two SPs but the task of interpreting the precise relationship is left largely to the listener.

English has several syntactic cues for expressing a genitive relationship. The head is always the indispensable SP (i.e., the part that would still need to be included in the sentence if the tail were dropped) and its position depends on which cue is used.

10.
a. … the captain of the guards…
b. … the guards' captain…
c. … their captain…

In phrase 10a, the head precedes the join. In 10b-c, the head comes last, following either the word with the apostrophe (10b) or the possessive pronoun (10c).

3.5 Dummy pilots

Not all sentences are bound utterances. That is, not all sentences bind SPs into a dynamic image.

11.
a. It's cold.
b. It's cold down in the valley.
c. Down in the cold valley the creeks froze over.
d. Pete has some nerve.

11a looks like an ordinary sentence, but it is not bound into anything dynamic. *It* pilots attention to nothing. ABS calls *It* a dummy SP, a place filler that cannot direct attention. In 11a, the dummy is included because speakers are used to providing subject SPs. Then the contraction *'s* binds nothing. That is to say the verb adds nothing dynamic to the sentence. 11a could simply say *cold*, and the only information lost would be a tense marker. So *It's* consists of a dummy marker and a dummy binder. Dummies are indicated with curved brackets{}: **{|It|/'s/} cold**.

11b demonstrates that dummy binders have their uses. They can locate something in space and time; however, 11c puts all the news from 11b into an

opening phrase without repeating the dummy binder. Real binders cannot be edited out so easily. 11d shows that *to be* is not the only verb that can serve as a dummy binder.

Table 1.

Attention-Based Syntax: Names and Notation				
Structure	Symbol	Classical Correspondence	Function	Example
Pilot				
Static Pilot (SP)	| |	Noun, pronoun, n phrase	Direct attention	|cow|
Equivalence	=		Formal equivalence	|my friend] = |Bob|
Binder	/ /	Action verb	Bind SPs	/flew/
Clarifier				
Sharpener	( )	Adjective, adverb	Particularize pilots	(big) dog, ran (fast)
Joint	< >	Preposition, conjunction	Link two phenomena	flew <over> Kansas
Dummy				
Dummy static pilot	{| |}	Some pronouns	Mimic an SP	{|It|} snowed
Dummy binder	{/ /}	State-of-being verbs	Mimic binder	It {/is/} I.
Bound Utterance				
Topic	[ ]	Clause	Name a united action or concept	Yet [Jill came here]
Interrogative	¿ ¿		Seek information	Who ¿came here¿

4. ABS and Reflexive Anaphora

ABS immediately simplifies the rules for anaphora. Essentially, it is as easy to understand *Pete shot himself in the foot* as it is to understand *Pete shot Joe in the foot*. For one thing, attention-based syntax gets rid of the notion of obligatory binding. All SPs, anaphora included, take their meaning from wherever they pilot attention, whether an SP is *Pete* or *himself*. This step also removes

consideration of exemptions. If there is no obligation, there are no exemptions. So instead of asking when must we bind a noun, we ask when we can use a *–self/-selves* SP.

The most important general fact about English reflexives is that they are never the subject of an utterance. That is to say they are either the object (direct or indirect) of an action, or the tail of a genitive construction. There are no subject or head reflexives; i.e., no *Iself, youself, heself, sheself, weselves, youselves, or theyselves*. This fact allows us to provide a new Principle A for reflexive anaphora: ***when an object matches a subject, use a reflexive SP for the object; or when a joined tail matches either a binder's subject or object, use a reflexive SP for the tail.*** We can illustrate this principle as shown in figure 3.

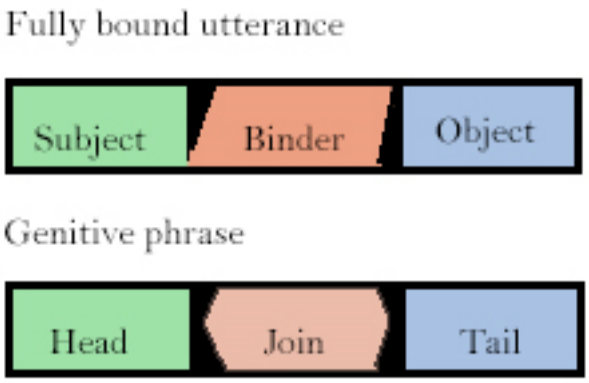

Figure 3 - Principle A in Attention-Based Syntax

Both fully bound utterances and genitive phrases share a structure for this principle. The first SP, with a green background (in Fig. 3), cannot be a reflexive SP. The binder or join, with a brown background, is irrelevant to the principle. The second SP, with a blue background, is the only part that can take a reflexive SP. Principle A explains why all the fully bound utterances in sentence group 1 (reprinted below as group 12) share the same structure. They are both part of a bound utterance:

12.

a. Peter shot himself in the foot.
b. Peter bounced the ball to himself.
c. Amy and Lizzie cried themselves to sleep.
d. The Supreme Court hurt itself with that decision.
e. I told myself everything would be okay.
f. You need to trust yourself more.

Principle A also applies to the genitive phrases mentioned earlier. Note that both parts of the antecedent/anaphor in 13a and 13d are marked in blue. That's because himself in both cases is the tail of the genitive phrase and the proper name is the object of the bound utterance. The head in 13a is *picture* and 13c's head is *fear*.

13.

a. |The picture of himself| in the post office bothers John.
b. John is bothered by |the picture of himself| in the post office.
c. |A fear of himself| plagued Robertson.
d. Robertson is plagued by a |a fear of himself|.

This same Principle A accounts for the reflexive SPs in half-bound utterances. If the utterance contains the object half, it can take a reflexive anaphor; if not, not.

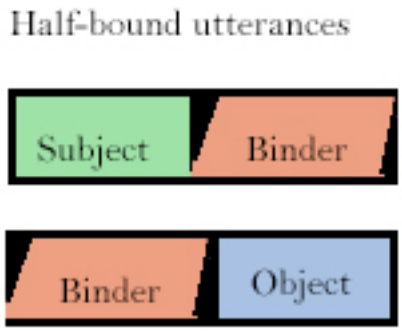

Figure 4 - Principle A and half-bound utterances

This principle explains a couple of other sentences that raise questions for generative solutions. The antecedent and anaphor do not share a fully bound

utterance, so each part is constructed according to its own logic, without reference to which word comes first.

14.

a. Lenora told everybody [she did it].
b. Speaking for himself at last, [John proposed to Priscilla].

Then there are the unbound utterances that the ABS Principle A does not mention. Since they are not mentioned, there are no fixed rules. The speaker can use or ignore reflexives in the unbound portion of the utterance.

15.

a. Myself, [I love flapjacks].
b. Me, I[love flapjacks].
c. As for John, [he sells pizza].
d. As for himself, [John sells pizza].
e. As for him, [he sells pizza].
f. I am me.
g. I am myself.
h. Tom is back to being himself.
i. Tom is back to being Tom.

Sentence group 15 illustrates the freedom that comes with unbound utterances. The bound portion—e.g., *[I love flapjacks]*—adheres to normal principles. Notice that 15f-i use a dummy binder and can take either a reflexive or a standard SP.

Some might object that ABS's Principle A does not really explain sentences like 14b. The reflexive *himself* comes first, leaving listeners with no idea where to focus their attention. Presumably, the listener must hold the word in working memory, waiting for a second reference to clarify where attention goes. If working memory is overwhelmed, the listener will forget about the first reference—*Speaking for himself at last after so long a time of speaking for Miles Standish like some sort of Cyrano de Bergerac whispering the words Roxanne longed to hear, John proposed to Priscilla.*

Conclusion

Reflexive anaphora syntax has proven difficult for generative grammarians to explain, yet attention-based syntax can easily account for the usages. If Occam's razor is a guide, the ABS solution is much the superior choice. Generativists have handicapped themselves in three ways: by not grounding their theory in any concrete psychology, by not proposing a theory of meaning, and by insisting that all solutions must be universal.

The absence of a psychology of language forces generativists to explore without a flashlight. They can try to explain relationships according to c-command, or binding domain, or anything else, but even a successful procedure brings them no closer to understanding why the procedure works. Meanwhile, ABS has a definite theory of what successful language does—bind static concepts or percepts into a dynamic idea or action. With that function in mind, ABS investigators start with a powerful clue to discovering a consistent principle that can either explain usages or show that the theory is on the wrong track.

Traditional philology has said that language is sound plus meaning, but that tradition has been vague as to meaning's nature. Generativists have come no closer to explaining meaning, and their focus on syntactic structure alone may be a tactic to see what progress can be made without getting bogged down in semantic mysteries. The price paid for this tactic, however, has been to force the invention of rules and objects that have no obvious relation to language usage. ABS, on the other hand, says that meaning is the piloting of attention to mental phenomena, static or dynamic. This approach enables investigators to articulate a Principle A for English reflexives that takes meaning into account. Analysis focuses on sentences as they are uttered without the need to refer to high-level abstractions like i-language and the relation between nodes on a hierarchical tree.

Finally, although generativists have no psychological theory, they do assume that their principles and procedures are universal and that differences in languages reflect differences in "externalization." This assumption has been

another factor leading to the introduction of many highly abstract principles and parameters that serve no function other than to preserve universality. By contrast, ABS assumes there are very few psychological universalities beyond shared powers of perception, attention and memory. Thus, ABS discusses languages in their own terms, and the Principle A proposed in this paper is not offered as a universal law.

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