August 28th: TAG vs. MG

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1 Adjunction with TAG

TAGs allow us to capture crossing dependencies like those in Swiss German. However, this is unnecessarily convoluted. Instead, we can liken it to the copy operation over a string language.

$$\{ww|w \in \sum^*\}$$

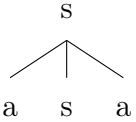
In this copy languge, the following strings are accepted:

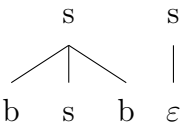
aa
bb
abab
bbbb
aabaaaba

But these are not allowed:

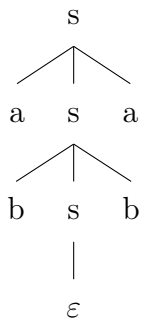
*abba
aba

Let us assume the following tree structures for the copy language

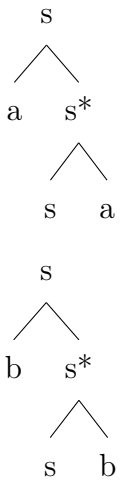




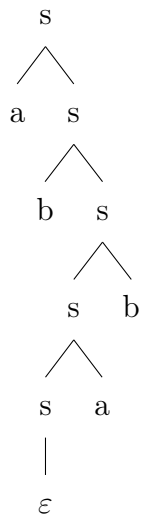
If we adjoin them, we see that they do not capture our copy language as they produce the illegal string *abba.



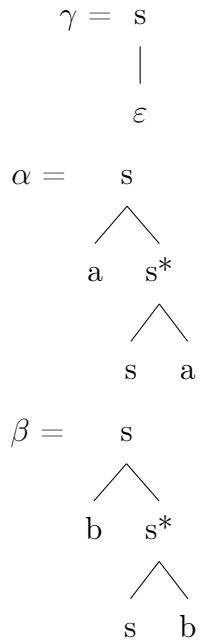
Instead, to account for the copy language we modify our trees and posit the following structure.

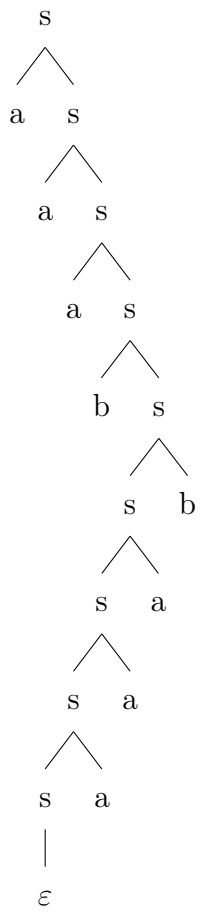


In these trees, we use s* to indicate the adjoining point. With this structure, we can now derive the string abab successfully.



With this new structure, we can capture any instance of our copy language. Let us now attempt to derive from the language aabaaaba.

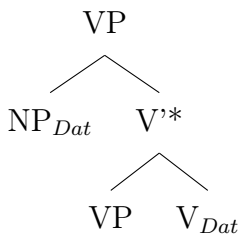




Based off of these trees, we can assume the dependency for the grammar aabaaaba would be $(\gamma \to \alpha \to \alpha \to \alpha \to \beta)$. Since TAG is unable to provide us with information that explains what we have in German, we will look into the Minimalist Grammar approach.

1.1 Applying TAG to a Real Language

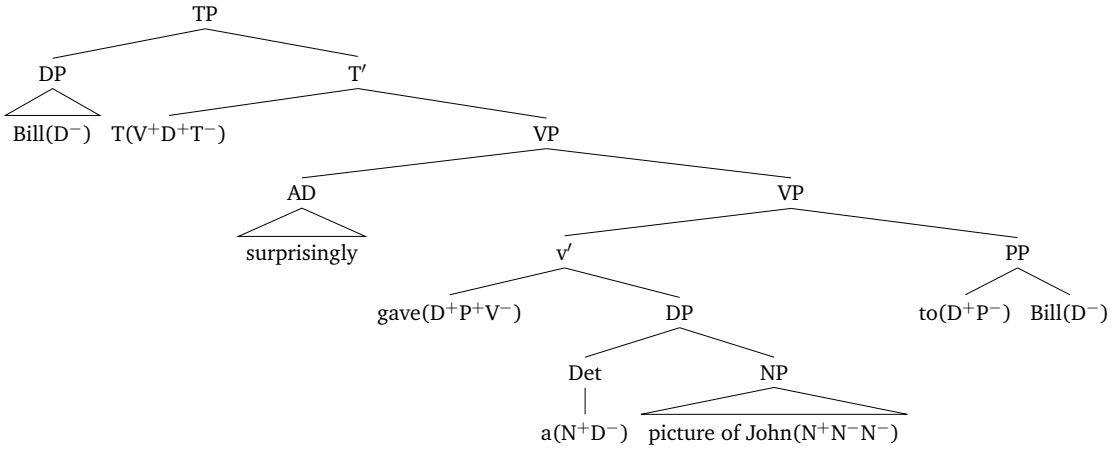
Applying the above derivation on German yields the tree structure below for VP.



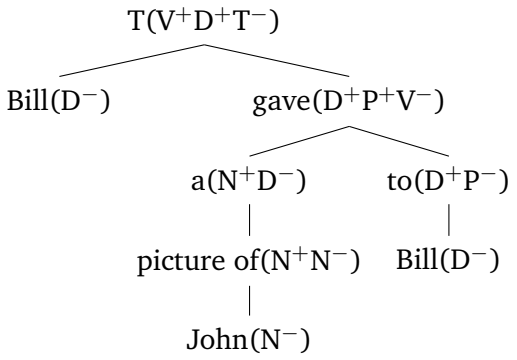
This tree does not make any sense syntactically. Further information is needed and we need another way to figure out this tree and derivation. An understanding of the dependency of the language aabaaaba may provide additional information to the limitation of TAG.

2 Minimalist Grammar

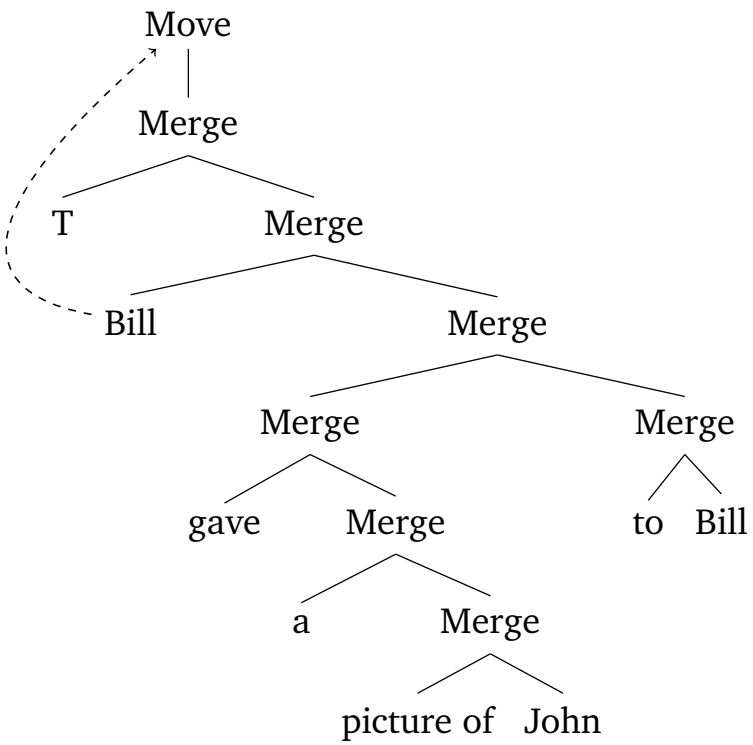
Minimalist Grammar (MG) : MGs are very similar to TAG. In MG, features are divided into Merge features on the one hand and Move features on the other. Let us consider the sentence "Bill surprisingly gave a picture of John to Bill." And we can draw out the syntax tree and compare it to that of the MG tree to see the difference. In minimalist syntax, the tree for the sentence 'Bill surprisingly gave a picture of John to Bill' will be as below:



The dependency tree for this sentence will be as below.



And a complete operation of minimalist grammar including merge and movement will be as below.


Move
Merge
T
Merge
Bill
Merge
Merge
Merge
gave
Merge
to
Bill
a
Merge
picture of
John