

Goal of Project

For my final project, I attempted to make a program that could take a tree data structure with an indicated WH-element in its base positions (where there are initially merged into the tree) and return a tree structure for the same sentence represented by the original tree, but with the WH-element's copies (Boskovic & Nunes, 2007; Chomsky, 2005) in the specifiers of the phase edges it passed through during WH-movement. Sentences to base the tree structures on were to be original English data and Mon data from Gould 2021. The output trees were meant to indicate which copies are overt at the phonological level.

Methods

This program was written in Python, in an attempt to apply what I have learned in the course to a different language than we have practiced in homework and in an attempt to create a functions that would be applicable to my other work which is also in Python. To build the tree structure, a class 'leaf' was defined, which included attributes to specify a leaf's relationship to other leaves, as well as properties that could designate it as a landing site in a phase edge or as a WH-element. This is how the WH-element was indicated in the tree structure. A list of all leaves in a given tree was also created.

Functions throughout the code, such as ones made to identify WH-elements or to collect the words in terminal nodes (stored in the 'content' attribute of a leaf), worked in one of two ways. The first of these was to search through the tree from the root leaf to the outermost leaves (root to frontier), checking the attributes of the leaves to identify the target. The second was to iterate through the list of leaves till the target was identified.

The output for each sentence includes the tree structure represented in bracketing and the string it represents. Covert copies are displayed in parentheses. DPs that have undergone movement are displayed with an underscore followed by a lowercase ‘i’ (ex. DP_i) and its traces throughout the tree and string are shown as ‘t_i’.

The data used for Mon included the English gloss from examples 11a, 11b, and 12 in Gould 2021. This data, as it is originally found in Gould 2021, is reproduced below:

Fig. 1

- (11) a. **ɲèhkɔ̌h** Mi Ce khyɔ̌p mɔ̌ŋ [Chan Mon ɲàt **mù?**] rao? = (3b)
 who Mi Ce think ASP [Chan Mon see what] Q
 b. **ɲèhkɔ̌h** Mi Ce khyɔ̌p mɔ̌ŋ [**mù?** Chan Mon ɲàt] rao?
 who Mi Ce think ASP [what Chan Mon see] Q
 ‘Who does Mi Ce think Chan Mon saw?’

Examples 11a and 11b from Gould 2021

Fig. 2

- (12) **ɲèhkɔ̌h** Mi Ce khyɔ̌p mɔ̌ŋ [**ɲèhkɔ̌h** Chan Mon ɲàt **ɲèhkɔ̌h**] rao?
 who Mi Ce think ASP [who Chan Mon see who] Q
 ‘Who does Mi Ce think Chan Mon saw?’

Example 12 from Gould 2021

Successes

The program outputs trees and strings with WH-elements and their copies in the expected places. Those copies that are indicated to be overt (by lack of parentheses) are where they are expected in English by native speaker’s grammaticality judgement and as expected in Mon according to

data in Gould 2021 and Copy Theory (Boskovic & Nunes, 2007; Chomsky, 2005). Traces for DPs that underwent movement are also found where they were expected.

Areas for Improvement

Syntactic Representations

The program in its current state cannot handle the phi-features or animacy. Any agreement of person, number, or grammatical gender must be entered manually. Similarly, the program has limited ability to handle tense. While these can be added in future versions of the program with the addition of attributes for each feature, they are not included in the current version due to time constraints. The absence of these features does not appear to impact the program's ability to display the expected location and overttness of WH-elements and their copies; however, the issue of animacy is why all WH-elements are currently represented as 'what/who'.

Data and Examples

The program includes only one example of English (object) WH-movement. The goal was to include multiple examples; however, this was not managed due to time constraints. Future versions can include more examples using the same tree structure implementation method as is currently used for this program. Similarly, while there are three examples from Mon, more can be implemented in future versions.

Summary

The program is able to display bracketed tree structures and strings, for English and Mon. The WH-elements and their copies are found in the location as expected and the overttness of the

WH-elements and their copies is indicated as expected. However, not as many examples were included as originally intended nor are all syntactic features (phi-features, animacy, etc.) accounted for in this representation. These are both areas for improvement in future versions of the program.

References

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Chomsky, N. (2005). Three factors in language design. *Linguistic inquiry*, 36(1), 1-22.

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