Trees in LaTeX Using `qtree`

LGCS 105: Syntax

February 6, 2016

1 Introduction

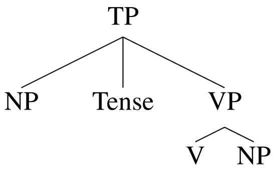
LaTeX on its own can do many things, but it can't do all the things. To help it do *more* things, many developers have written "packages" that give LaTeX new capabilities (essentially little plugins that run inside LaTeX). There are a variety of packages that have been developed for drawing syntax trees; this document gives instructions for how to use `qtree`, which will be sufficient for our purposes in this course.

2 Basic code

`Qtree` takes bracket notations and turns them into trees.

(1) a. `\Tree [.TP NP Tense [.VP V NP ] ]`

b.



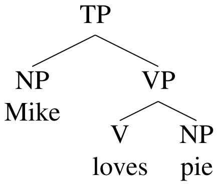
Start every tree with the command `\Tree`. Brackets are used delineate constituents, similar to the bracket notation that we have seen Carnie use. In `qtree` notation, non-terminal nodes require a period in front of them and follow the bracket at the left edge of a phrase. Therefore a non-terminal node is written like this: `[.Nonterminal ... ]`, whereas terminal nodes are given a label that simply stands alone, as you can see above. Please note: `qtree` is sensitive to spacing and all nodes require a space just after them.

3 Words

Words are often written just below the terminal labels in syntax trees. For this, you'll need to use a line break (two backslashes \\).

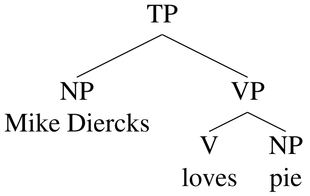
(2) a. `\Tree [.TP NP\\Mike [.VP V\\loves NP\\pie ] ]`

b.



Sometimes, trees have more than one word under a single node. Group words together inside curly brackets { } so that `qtree` reads them as one item instead of multiple items.

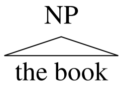
(3) a. `\Tree [.TP NP\\{Mike Diercks} [.VP V\\loves NP\\pie ] ]`

b. 

4 Triangles

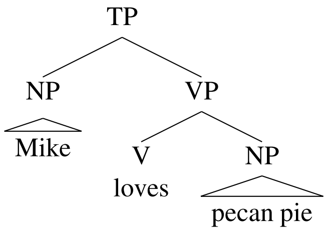
Triangles in `qtree` are called roofs, and are introduced with the command `\qroof{terminals}.XP`. Note that the syntax of the code looks a little different here in that the label of the triangled phrase comes at the end of the `\qroof` command.

(4) a. `\qroof{the book}.NP`

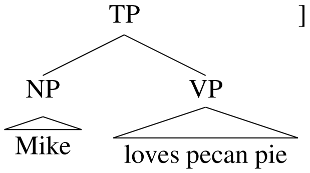
b. 

In `qtree`, roofs are treated in the same manner as terminal nodes.

(5) a. `\Tree [.TP \qroof{Mike}.NP [.VP V\\loves \qroof{pecan pie}.NP ] ]`

b. 

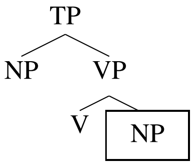
(6) a. `\Tree [.TP \qroof{Mike}.NP \qroof{loves pecan pie}.VP ] ]`

b. 

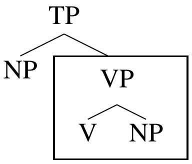
5 Boxes

Boxes are made by putting the (rather laborious) command `!{\qframesubtree}` just after the boxed material. This works for individual terminals or whole constituents.

(7) a. `\Tree [.TP NP [.VP V NP  !{\qframesubtree}  ] ]`

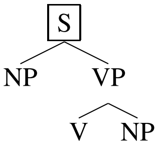
b. 

(8) a. `\Tree [.TP NP [.VP V NP ]  !{\qframesubtree}  ]`

b. 

You can also make boxes around the label of a non-terminal node alone in `qtree` using the `\fbox` command.

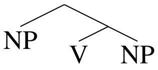
(9) a. `\Tree [.\fbox{S} [.VP V NP ] ]`

b. 

6 Label-less trees

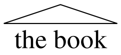
For trees without labels on the nonterminal nodes, simply leave out the `.Nonterminal` parts of the bracket notation.

(10) a. `\Tree [ NP [ V NP ] ]`

b. 

It's also possible to make roofs without labels on the nonterminal node. They require a period at the end of the command to signify an empty label.

(11) a. `\qroof{the book}.`

b. 

7 Formatting

Here are some symbols/shortcuts you can use inside a `\Tree` drawn with `qtree` that may come in handy.

(12)

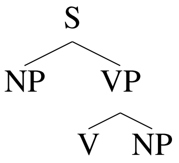
Name	Example	Code
Null	$\emptyset$	`$\emptyset$`
Theta	θ	`$\theta$`
Phi	ϕ	`$\phi$`
Hash	#	`\#`
Trace	*t*	`$t$`
Ellipsis	...	`\dots`
Subscript	NP$_i$	`NP_i`
Superscript	NP^i	`NP^i`
Bold	**bold**	`{\bf bold}`
Italic	*italic*	`{\it italic}`
Small Caps	SMALL CAPS	`{\sc Small Caps}`
Degree symbol	X$^\circ$	`X$^{\circ}$`
Bar-level node	X$'$	`X\1`

By default, LaTeX uses a font called Computer Modern at 10pt size. For Times New Roman, load the `times` package. For 12pt font, write the command `\large` before your tree.

(13) a.

```
\large
\Tree [.S NP [.VP V NP ] ]
```

b.



Note in the trees above that the length of the branches gets smaller and smaller as you go down the tree. If you want the length of branches to be similar throughout the entire tree, you have to use the command `!{\qbalance}`.

(14) a.

```
\large
\Tree [.S NP [.VP V NP !{\qbalance} ] ]
```

b.