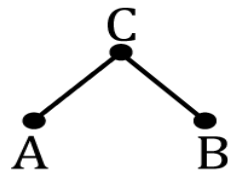


Introduction to Syntax Graphs

Adam Szczegielniak

Graph

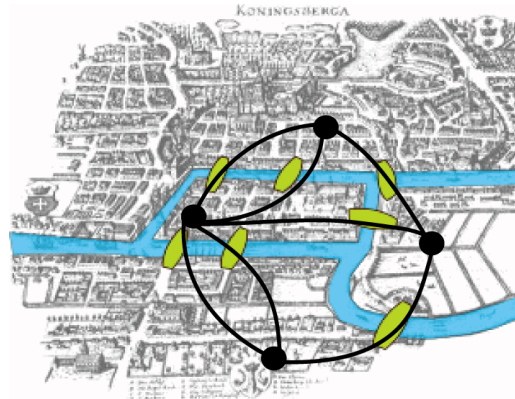
- The two main components of a graph are its branches (in GT: edges) and nodes (in GT: vertices). Below is a graph with three nodes (C, A, B) and two branches (AC, BC):



- node A is related to node B, but only indirectly via node C

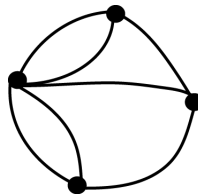
Using graphs

- Euler 7 bridges at Königsberg. Cross each, but only once and visit all 4 land masses.



Closed graph

- Impossible, each node needs a even number of braches – one to get in and mirror one to get out.



- Shows that we can abstract away from the physical model relationships in the abstract.

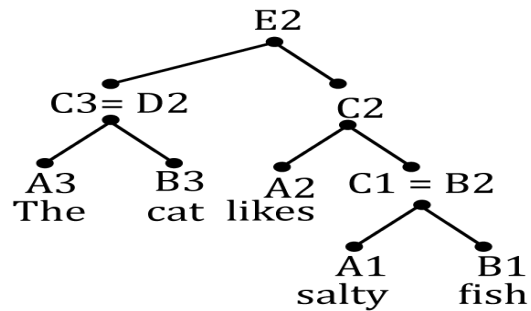
Graphs and sentence structure

- The formalism of graph theory can be utilized in establishing the relationships between words and between sets of words.
- Each node has to be defined
- Do we need to differentiate between words and sets of words?
- Let us see...

Constituents

- The cat likes salty fish
 - a. [the cat] = she
 - b. [salty fish] = it
 - c. [likes salty fish]= ellipsis
 - d. [the], [cat], [likes], [salty], [fish] - a word
 - e. [the cat likes salty fish] – clause can be replaced by it:
- The cat likes salty fish, I don't believe it!

The graph

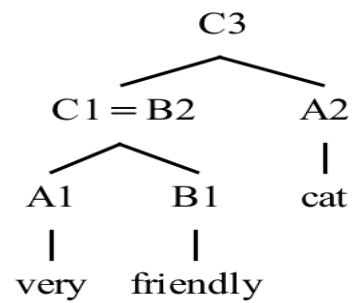


- node A adds to node B giving node C.
- Node C, when being added to another A node, becomes B.
- Otherwise, node C can add to node D giving node E

Exercise

- Graph the following:
- Very friendly cat
- Consider that we can say:
 - Very friendly and fluffy cat
- Which can mean cat is very fluffy or just fluffy

Answer

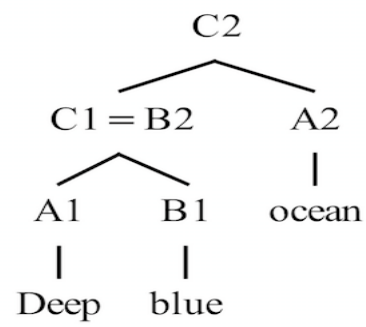


- Very needs to modify friendly and form a constituent with it so it can be coordinated

Ambiguity

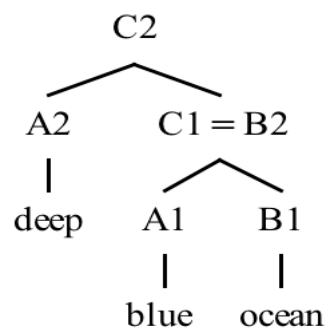
- Deep blue ocean
 - Blue is deep, ocean undefined
 - Ocean is deep and blue

Answer



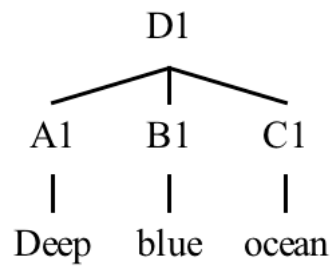
- Blue is deep

Answer 2



- Blue ocean is deep.

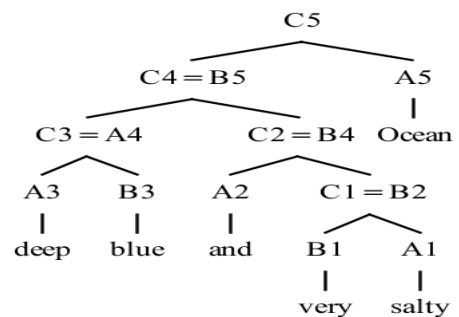
Why not three branches?



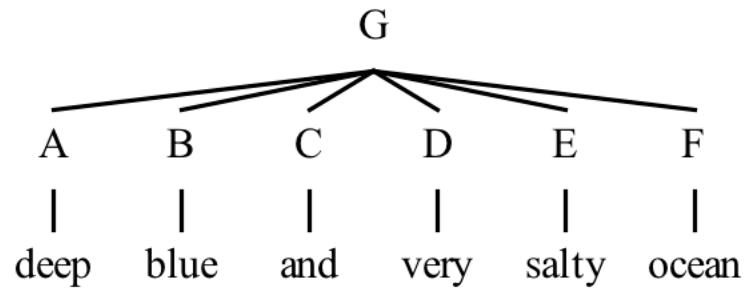
- Deep blue is not a unit.

Prediction

- Deep blue and very salty ocean
 - Can only mean that blue is deep.



Flat structure



- Flat structure makes wrong prediction