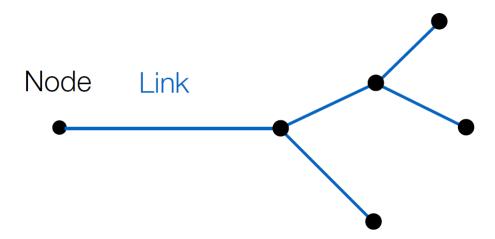
Networks in Linguistics

14 September, 2020

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Network Basics

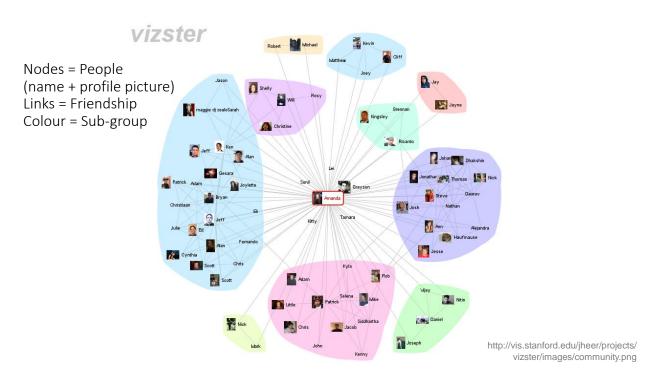


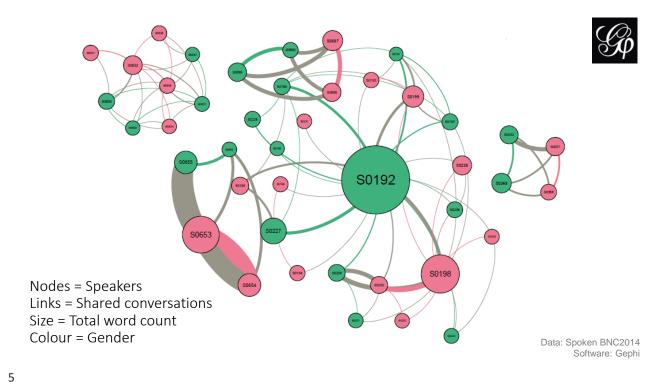
What are networks useful for?

- Overview
 - Glance at the network's overall structure
 - Detect clusters and patterns
- Topology
 - What are the neighbours of a given node? How many are there?
 - What is the shortest path between two nodes?
 - Given a set of nodes, which nodes are linked to all of them?
- Attributes
 - What are the nodes with specific attributes (e.g. gender, age, ethnicity)?

Lee et al., 2006

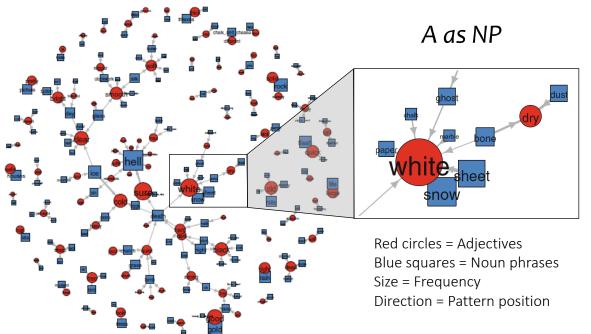
3





Other Applications in Linguistics

- So far, we have only considered social networks, where each node represents a person
- We can also use networks to model *linguistic features* or *lexical items* of interest
 - Such networks are useful for analysing specific linking patterns in a corpus



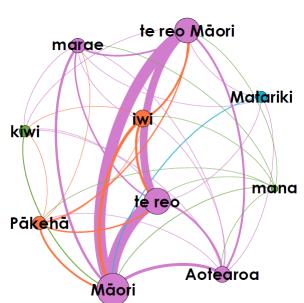
Desagulier, 2017

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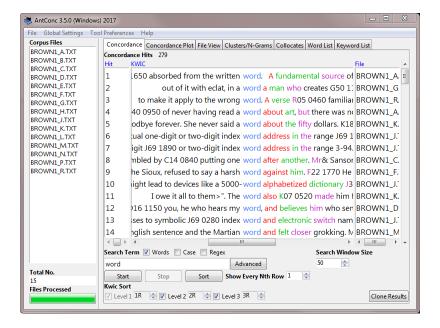
Loanword Co-occurrence



Nodes = Loanwords Links = Co-occurrence (at the text-level) Size = Frequency Colour = Degree



Data: Māori Language Week Corpus Software: Gephi



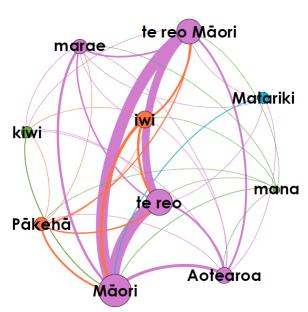
Software: AntConc

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Loanword Co-occurrence



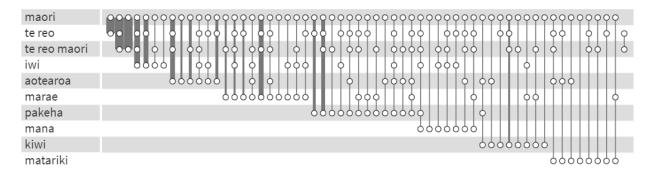
Nodes = Loanwords Links = Co-occurrence (at the text-level) Size = Frequency Colour = Degree



Data: Māori Language Week Corpus Software: Gephi

Hypergraphs

Moving Beyond Pairwise Networks

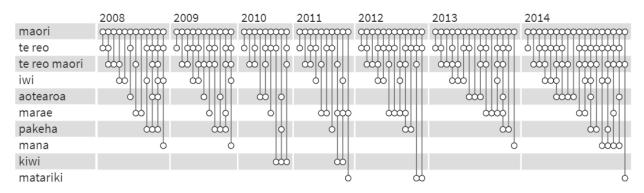


Nodes (LHS) = Loanwords Hyperedges (vertical lines) = Exact combination of loanwords (at the text-level)

> Data: Māori Language Week Corpus Software: PaohVis

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Dynamic Hypergraphs



Nodes (LHS) = Loanwords

Hyperedges (vertical lines) = Exact combination of loanwords (at the text-level)

Data: Māori Language Week Corpus Software: PaohVis

