

# SOCIAL NETWORKS AND THE LANGUAGE OF GREEK TRAGEDY

Jeff Rydberg-Cox  
Chair, Department of English  
Director, Classical and Ancient Studies Program  
Interim Director, Liberal Studies Program  
[rydbergcoxj@umkc.edu](mailto:rydbergcoxj@umkc.edu)



# WHAT ARE THE PROBLEMS?

- How to bridge gap between distant reading and close reading? I'm not ready to completely give up reading in the face of a million books.
- How can statistical methods help readers get oriented to and explore a work (esp. if they aren't specialists in statistics or in the literature)?
- How to support close reading and the construction of arguments about literature?



# POTENTIAL SOLUTION

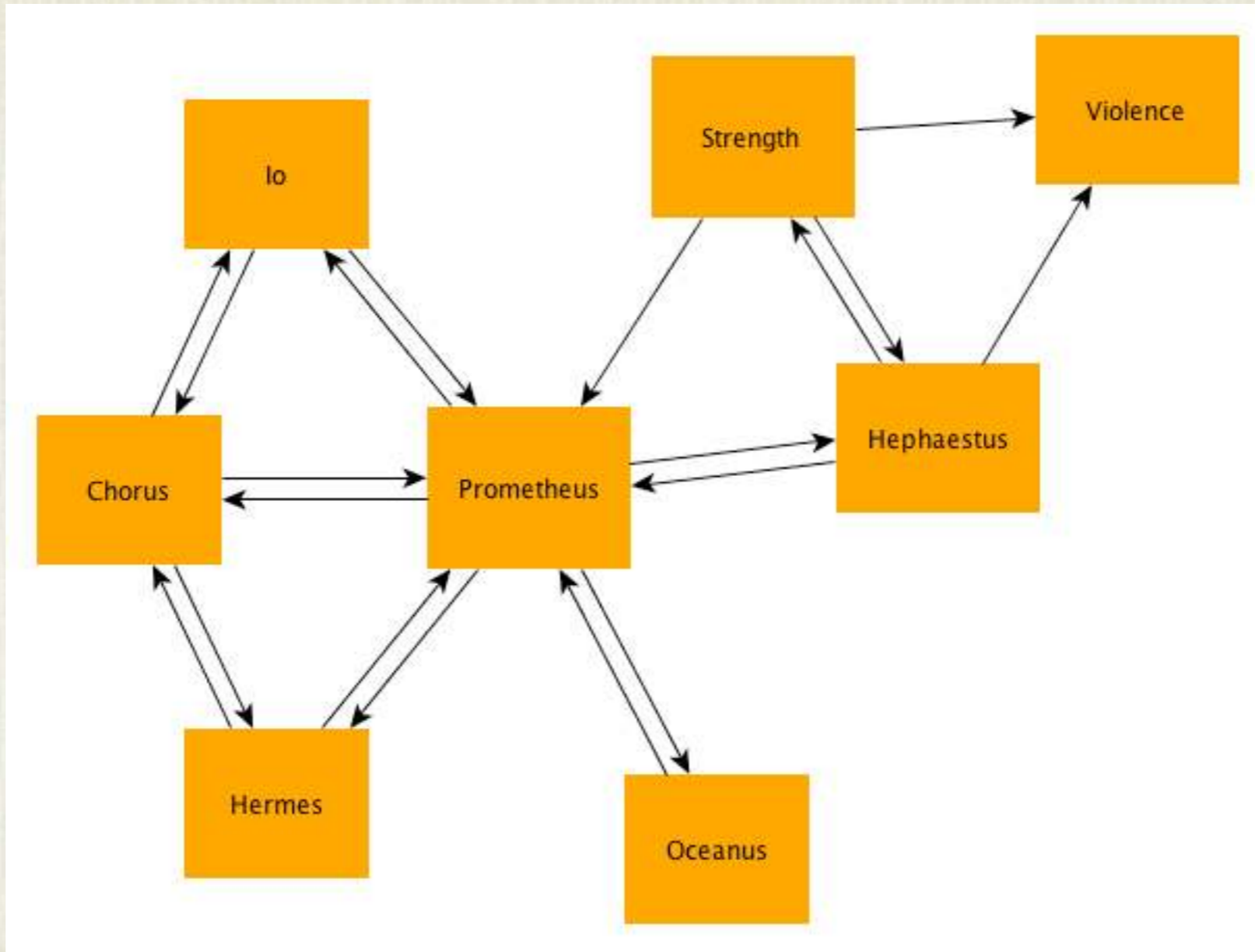
- Social Network diagrams are an easily understandable way to visualize relationships between characters in literary works.
- Perhaps linguistic data can be used as an overlay on these graphs to facilitate the exploration of linguistic features in literary texts.



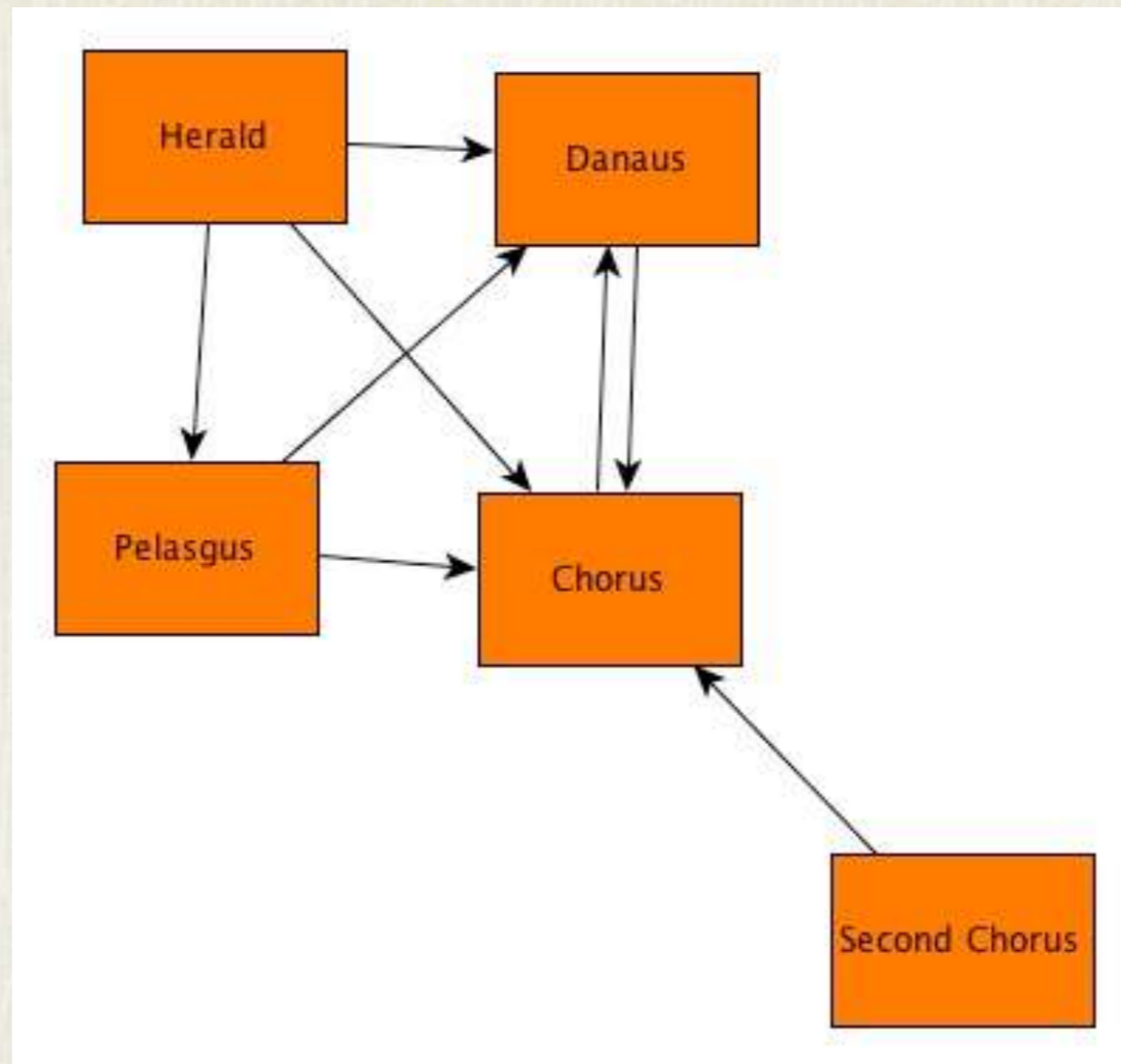
# VARIETIES OF SOCIAL NETWORKS

- In Greek Tragedy means that social networks fall into relatively few types.
  - Type I: A central character occupies the stage and a sequence of characters appear in-turn to speak to that person.
  - Type II: All the characters occupy the stage at essentially the same time and all speak to each other.
  - Type III: Groups of characters appear on stage in turn and speak to each other with no central character remaining on stage throughout.
  - Type IV: Textual difficulties or anomalies create unusual graph patterns.



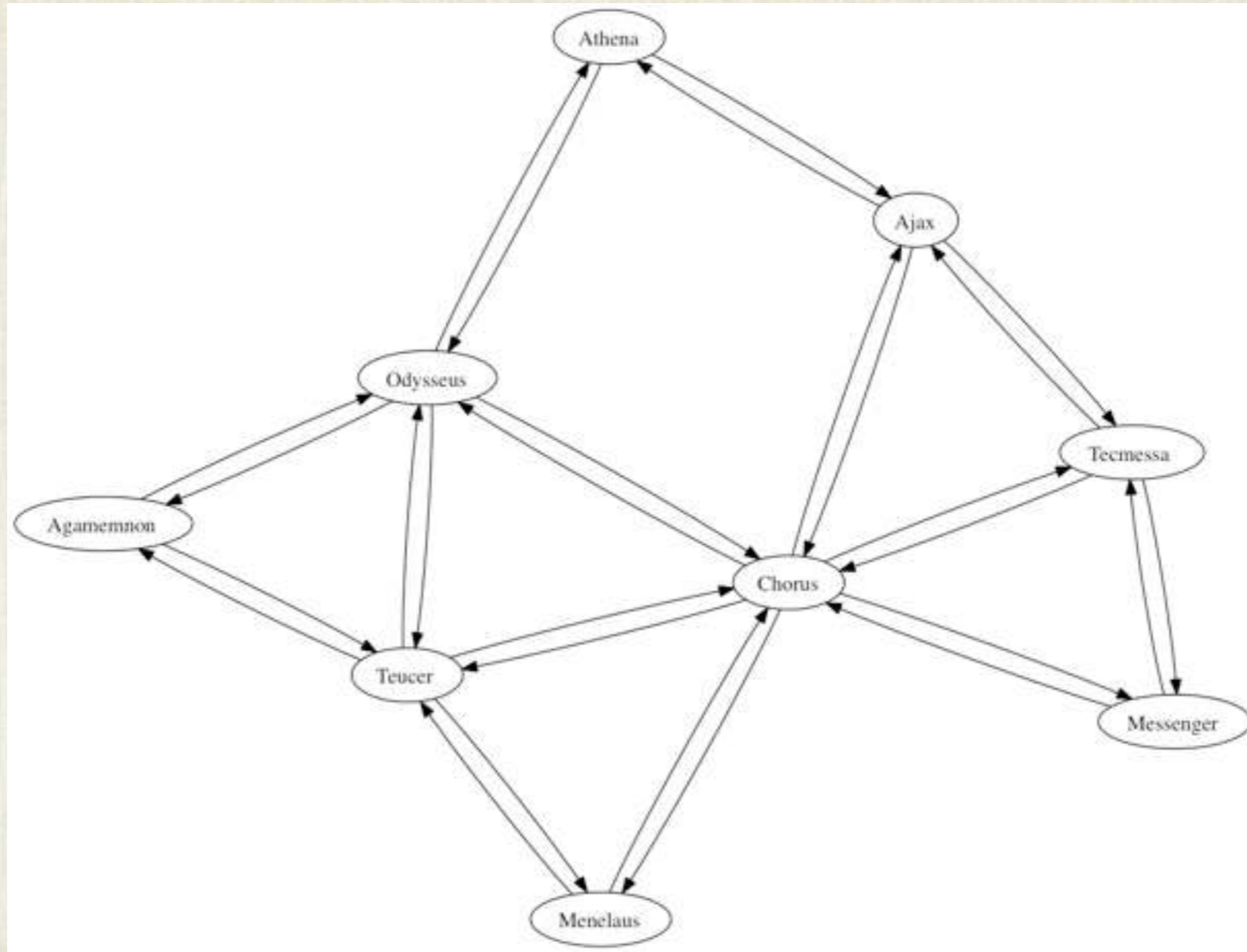


# TYPE I: SOCIAL NETWORK OF PROMETHEUS BOUND

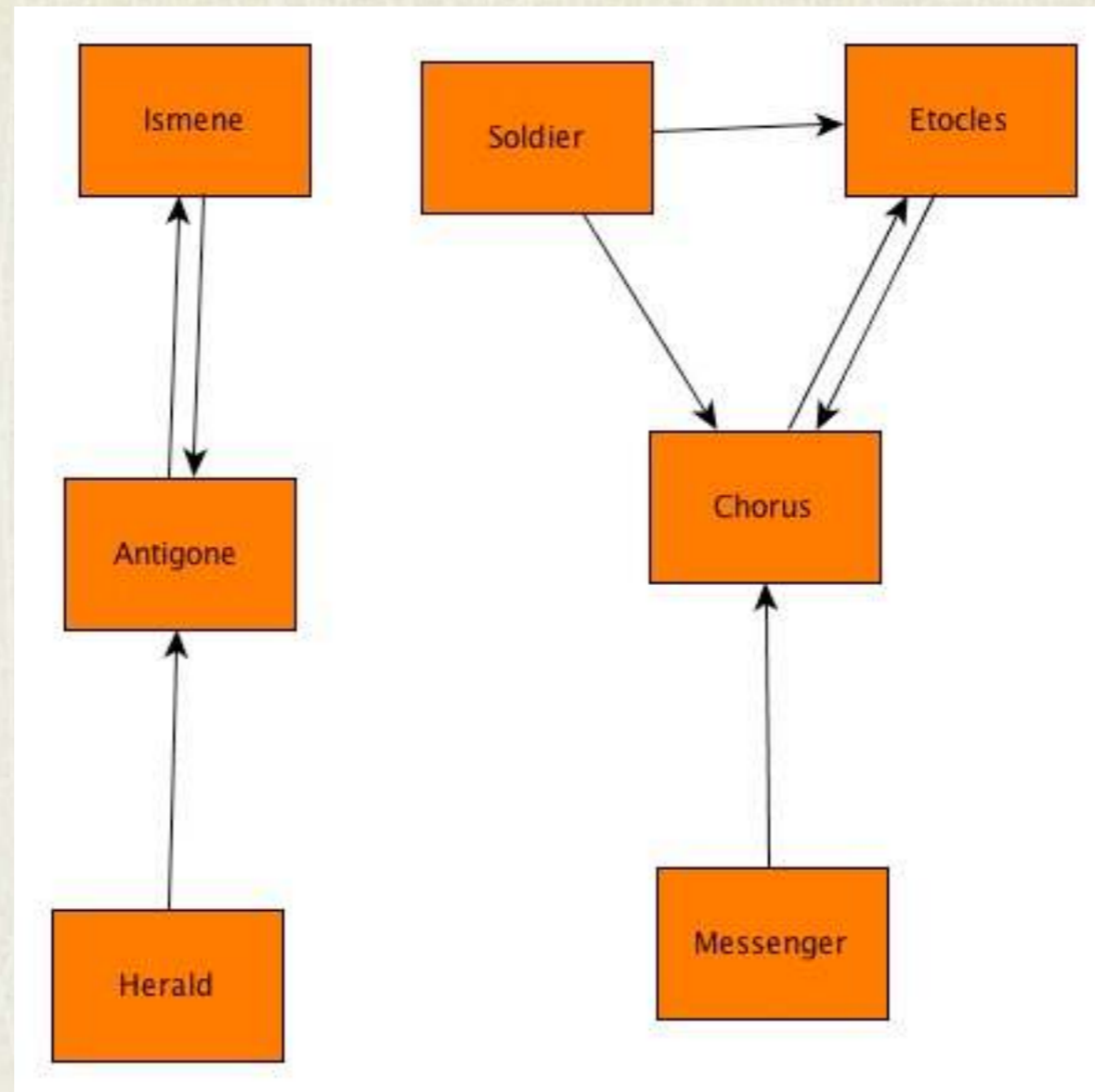


# TYPE II: SOCIAL NETWORK OF THE SUPPLIANTS





# TYPE III: SOCIAL NETWORK OF SOPHOCLES' AJAX



# TYPE IV: SOCIAL NETWORK OF SEVEN AGAINST THEBES



# BUILDING AN INTERACTIVE SYSTEM

- Because the graphs themselves aren't very complicated, they provide a graspable hook for other information based on how we construct and label the nodes and the edges.
- Color/shape coding hopefully allow for potentially useful metadata and statistical information to be understood more easily.
- Explore Live Examples At <http://daedalus.umkc.edu/VisualExplorer>



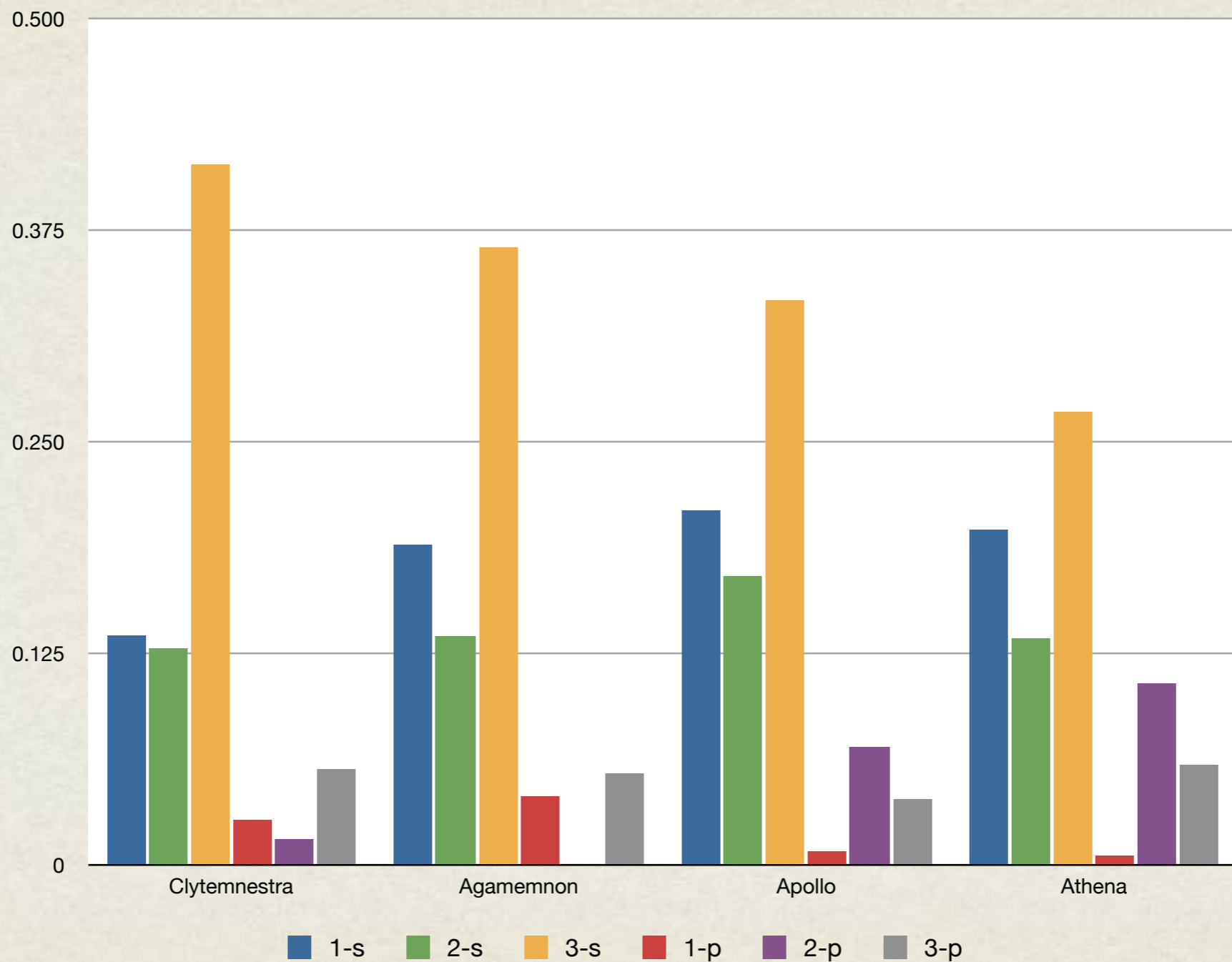
# WHAT DO WE GET

- 1. We can identify distinctive differences in the ways that characters of different classes use verbs
- 2. We can see Cassandra's subservient position in her language even though she is upper class
- 3. We can watch Clytemnestra's language change across registers as she loses relative influence in the three plays



# HOW KINGS, QUEENS AND GODS SPEAK

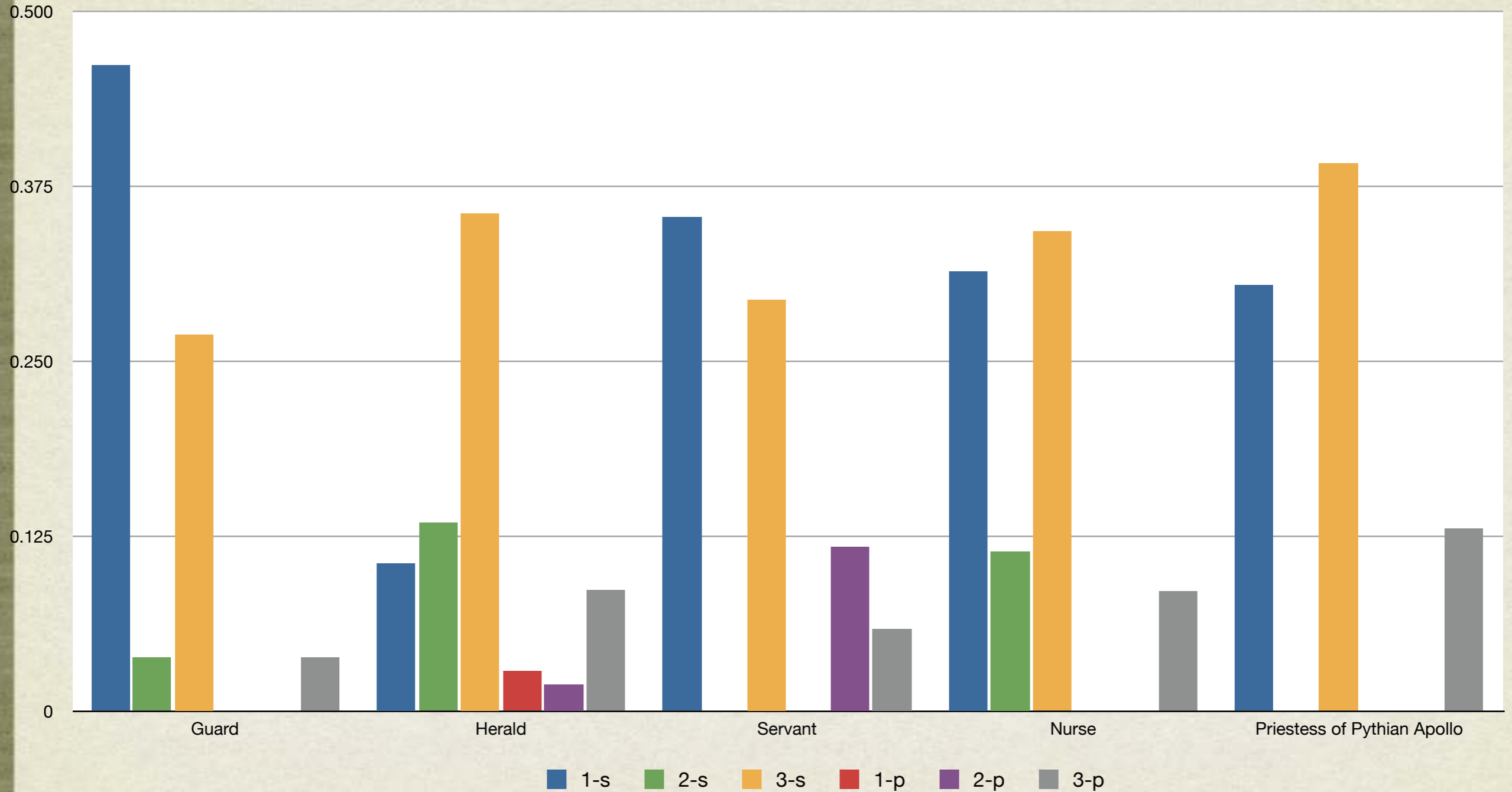
1. How Kings, Queens and Gods Speak





# HOW MESSENGERS AND SERVANTS SPEAK

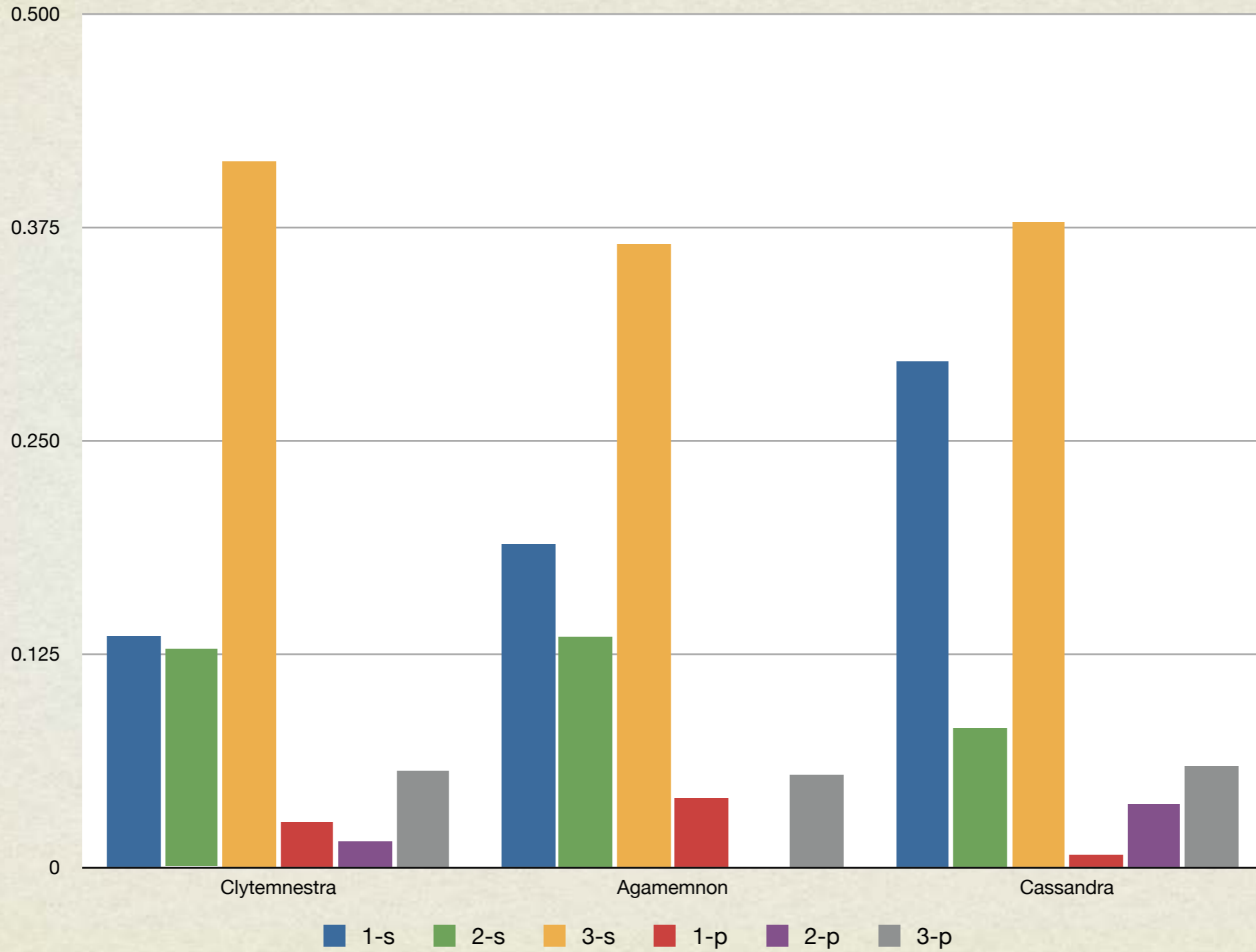
2. How Messengers, Hearlds, and Servants Speak





# CASSANDRA COMPARED TO CLYTEMNESTRA AND AGAMEMNON

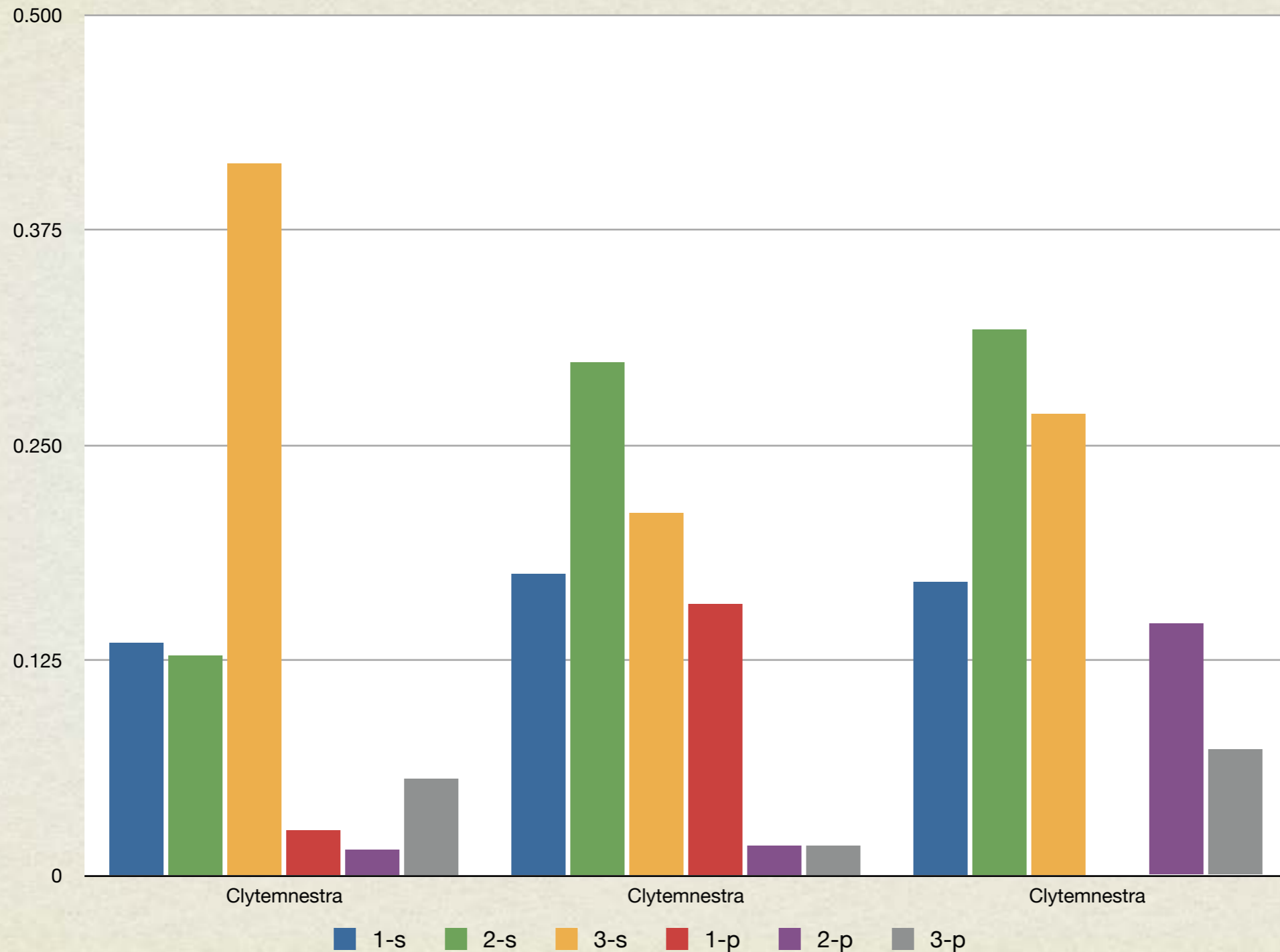
3. Cassandra Compared to Clytemnestra and Agamemnon





# SHIFTS IN CLYTEMNESTRA'S LANGUAGE ACROSS THE ORESTEIA

4. Shifts in Language of Clytemnestra Across the Oresteia



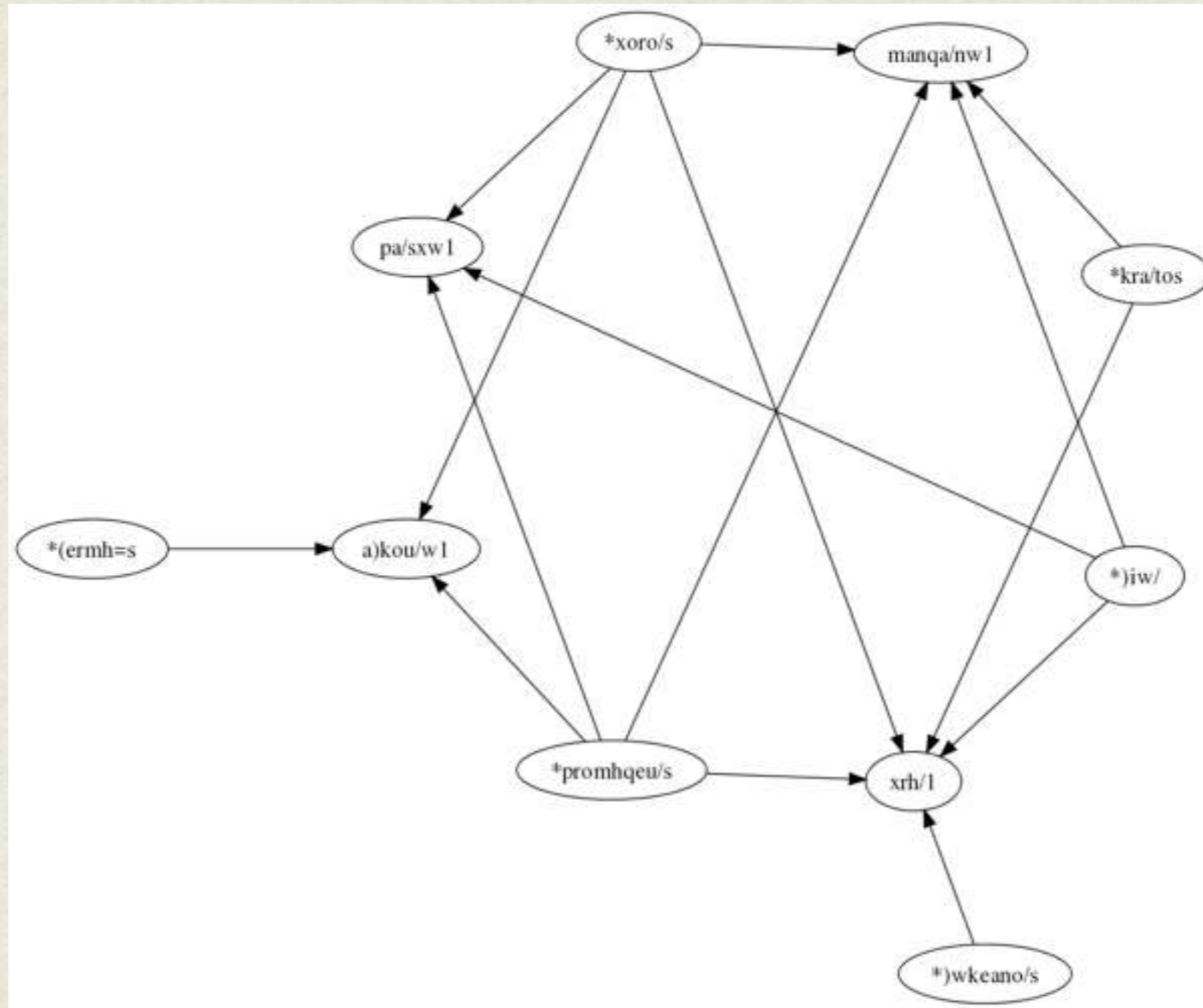


# OUT OF THE INFINITE VARIETY OF WHAT IS COMPUTABLE, WHAT ELSE TO INCLUDE?

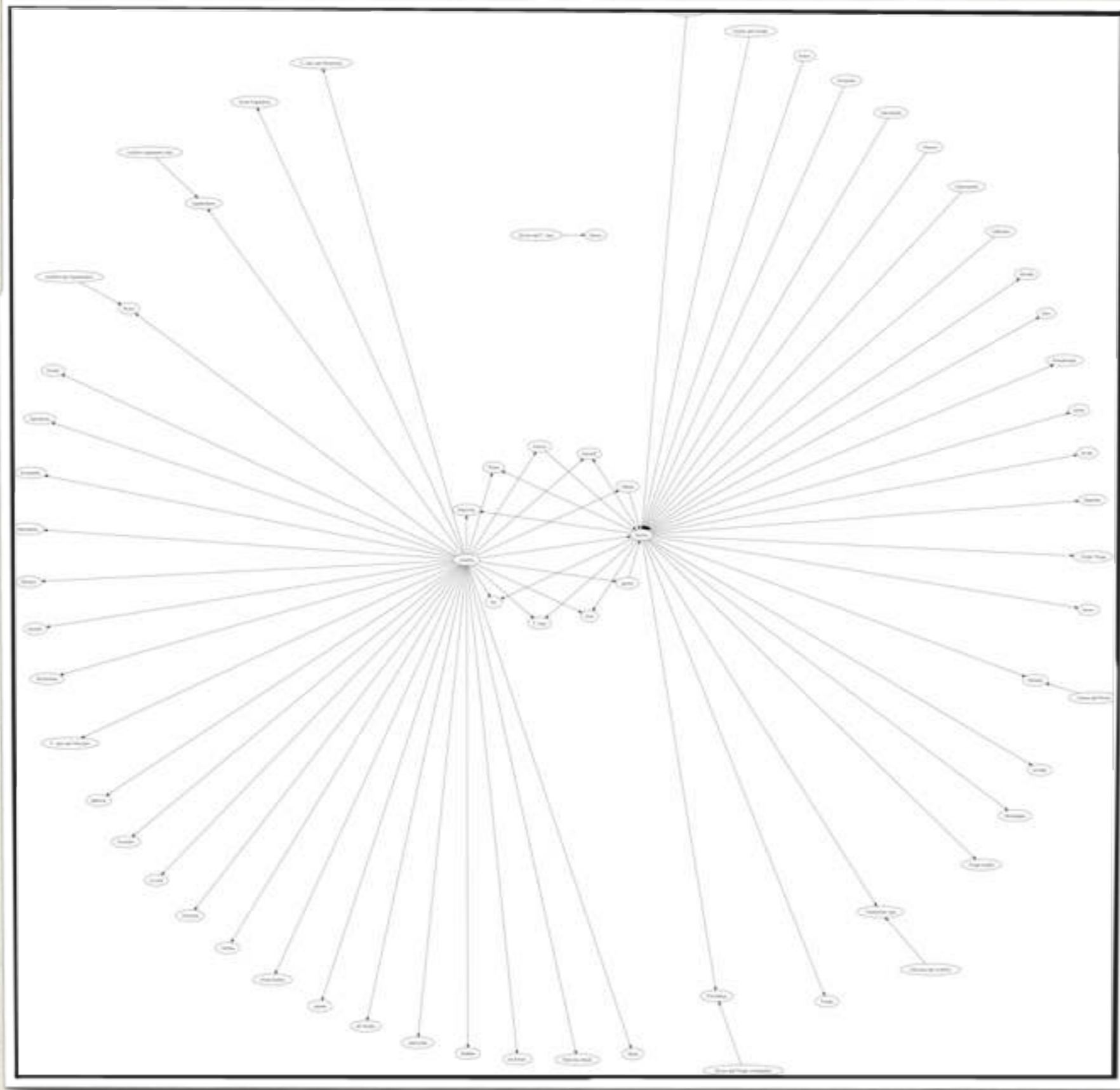
- Sentence length arguably isn't very useful in the current format
- Lots of candidate statistics
- Verb tense and person distribution can be more interesting
- Search Integration for characteristic vocabulary and linguistic information
- Can topics and themes in co-conversations be detected and used those as labels on the edges??
- Linguistic data is tantalizing but hard to incorporate
  - All words produces an unintelligible graph
  - Union of characteristic vocabulary (at least when calculated as TF\*IDF score) for each speaker produces a small and not very interesting set (not surprising given definition of TF\*IDF)
  - Hand-culled lists of 'interesting' words produce 'interesting' results (i.e. 10 most frequent nouns that aren't on a stop-list) but it doesn't scale.



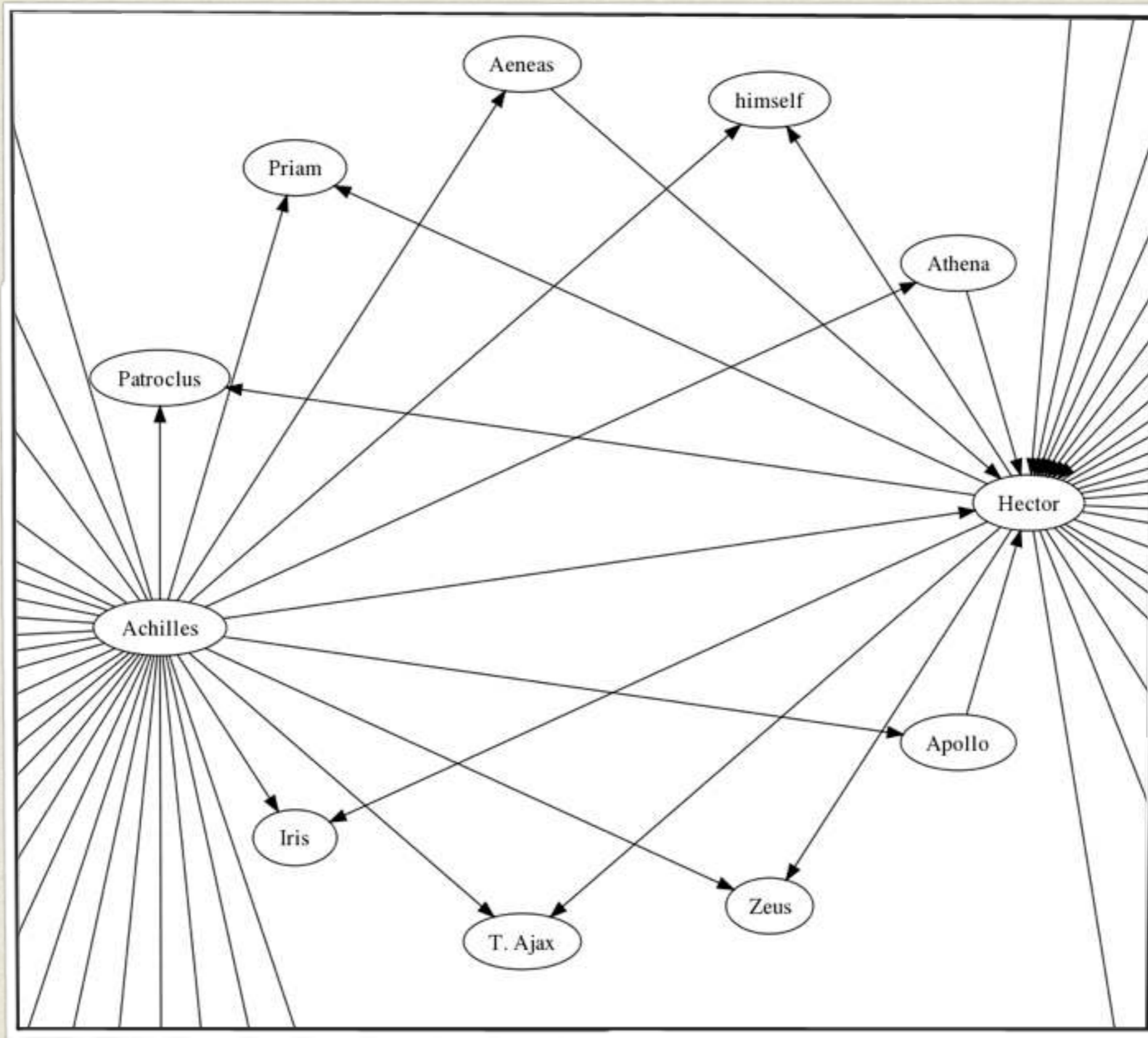
# POSSIBILITY OF A HAND CULLED LIST



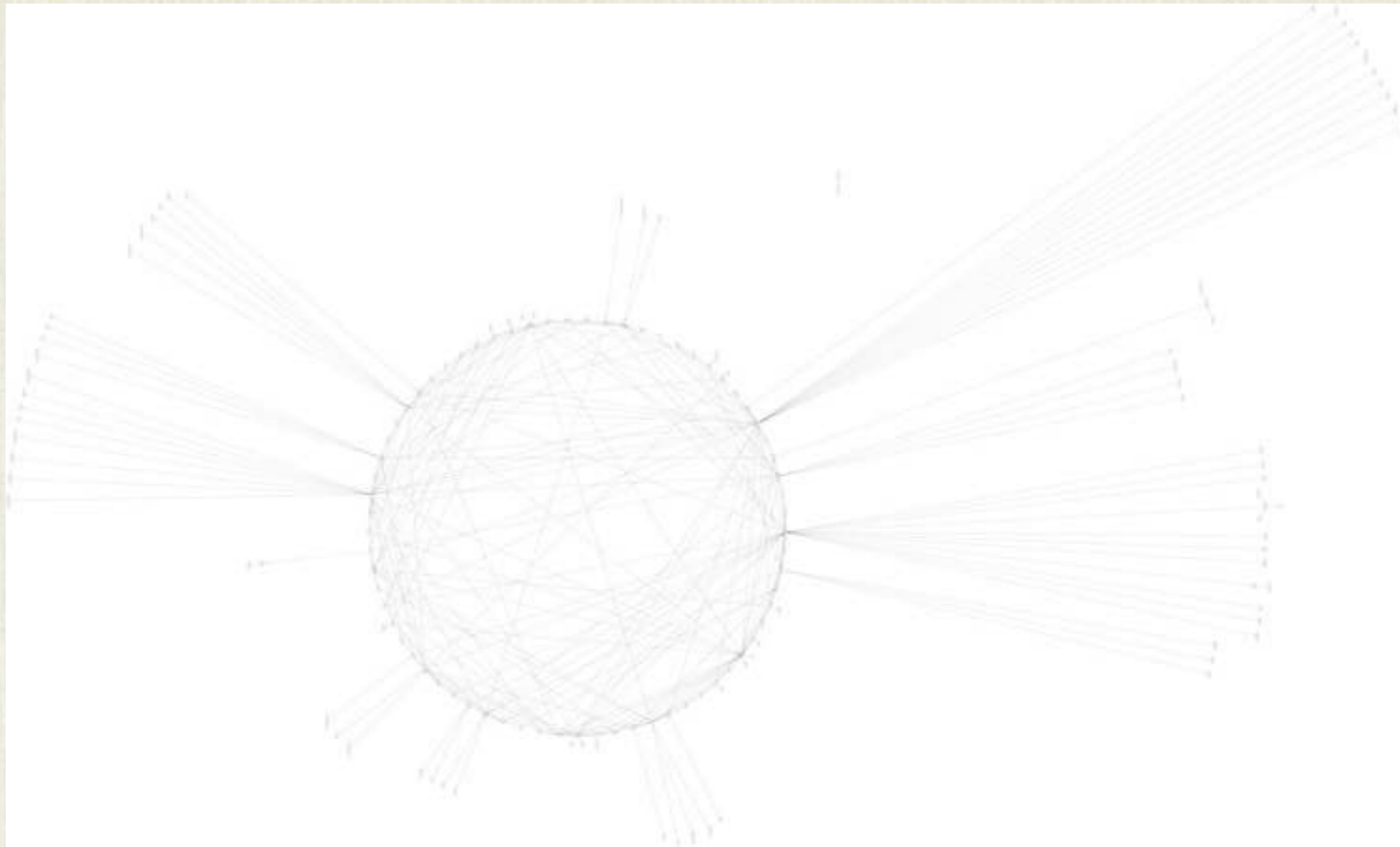




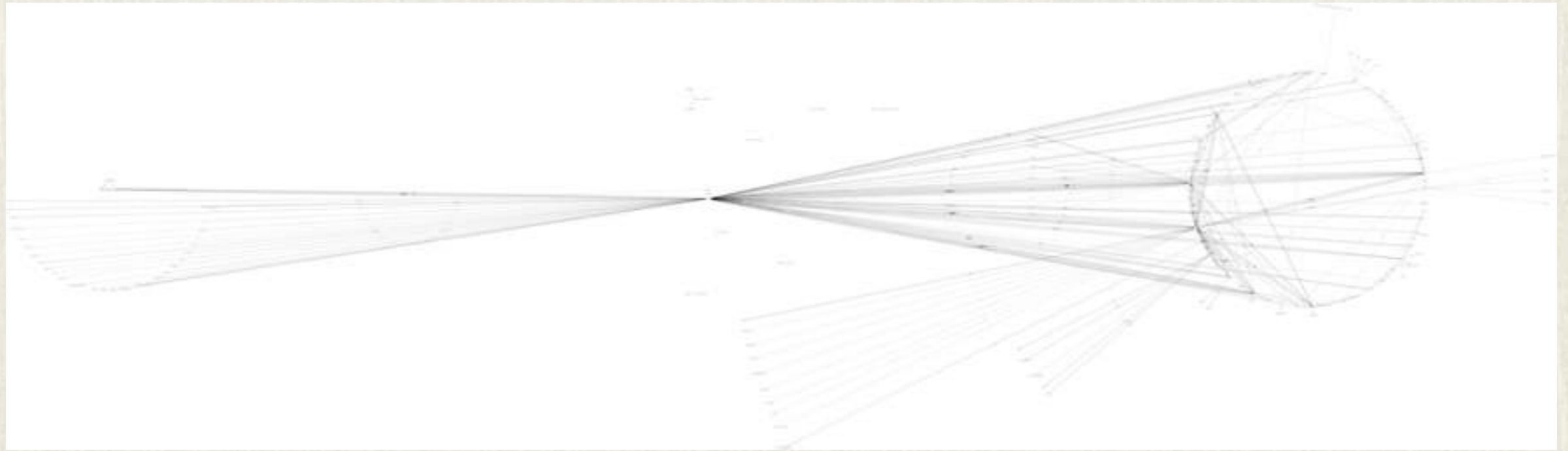
Achilles and Hector Speak To.....







BIGGER WORKS LIKE THE  
ILIAD ARE MORE  
COMPLICATED



THE ODYSSEY IS EVEN  
MORE INTERESTING