

Social Network Analyses of Marvel Comic Book as well as MCU Characters based on Asgardian type.

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Introduction

I was interested in creating various social networks based on fictional characters and how they interacted with each other. I decided to go with a Marvel characters comic book dataset created by Melanie Walsh(Walsh, 2018) due to my knowledge of marvel characters. The edges are weighted undirected with one-mode of node(characters). My primary focus of this project was to analyze different network aspects of Asgardian characters in particular as I wanted to see the ways they interacted differently due being alien. The Marvel bimodal database that I am using comes from Melanie Walsh again for my bipartite graphs (Walsh, n.d.). The edges are weighted and undirected with for my purposes in this dataset two-modes of nodes(characters and comic books) to compare the characters appearance together in the same comic book with solely Asgardian and all types. I believe my research questions I am asking will help us understand how tight connections form between entities of the same type.

Research Questions

1. Controlling for weights equal or greater than 150, do those who have an Asgardians component in the Asgardian dataset tend to be more well connected to Asgardians than the regular Marvel dataset?
2. Is the edge betweenness community high between Asgardians compared to the regular Marvel dataset?
3. What is the difference between the bipartite graph with Asgardians and without?

Methods

For the Marvel unimodal dataset I filtered out the Asgardians from the regular dataset and made a new dataset from it from any Asgardians in the Source or Target columns. For the bipartite network I filtered out the original bimodal dataset into solely Asgardian types into a new dataset and kept the original to compare them both.
RQ 1.)

I made the eigen centrality graph by filtering out the weights of the edges, creates a vertices data frame, mutating the edges to display the weights, making a graph data frame to contain edges and vertices, made the eigen centrality value in order to perform it on a graphical display, and plotted the eigen centrality in igraph for both Asgardian and regular Marvel dataset.
RQ 2.)

I converted both datasets into graph objects to do the edge betweenness and the plot. As well I created a new data frame to cluster edge betweenness and then assigned modularity data frame based on said modularity of cluster edge betweenness, and then plotted said data frames .
RQ 3.)

For both of the bipartite graphs I used the function unique on them to parse the values in the columns, created a matrix, a graph edge list, and plotted them out in order to make the bipartite graphs.

Figures and Results

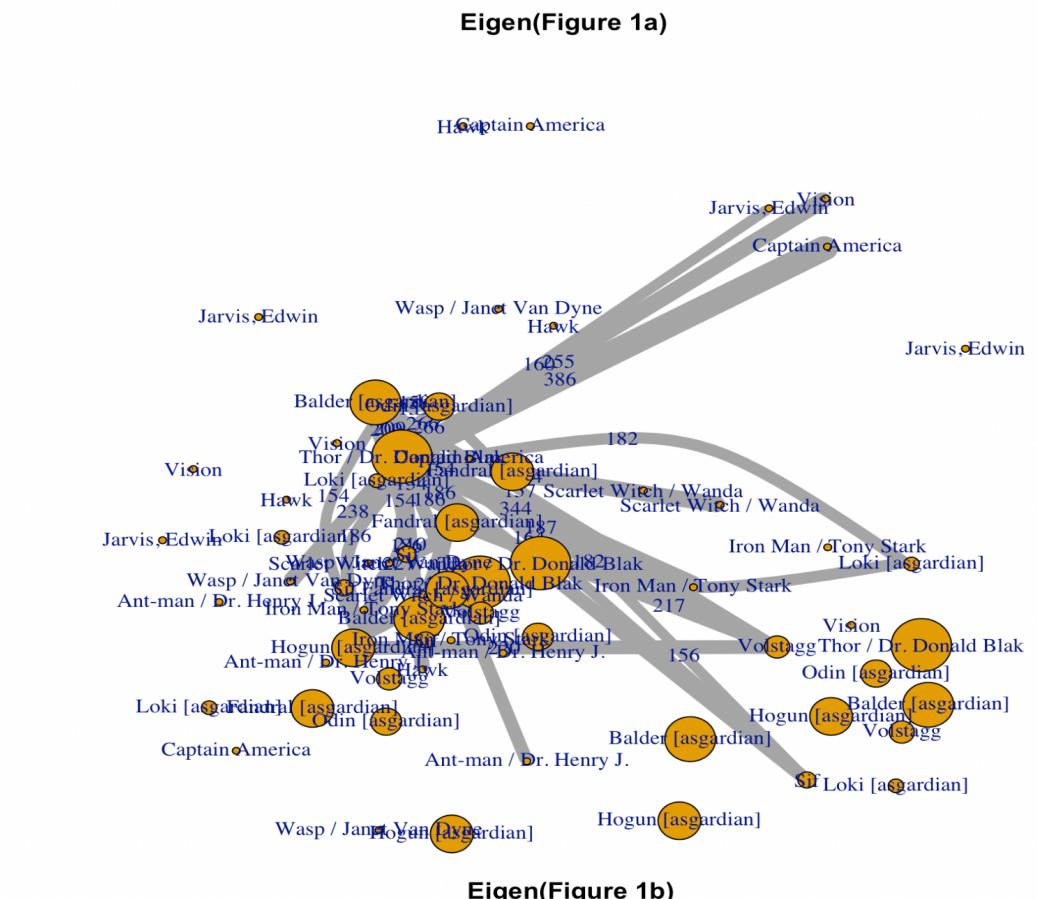


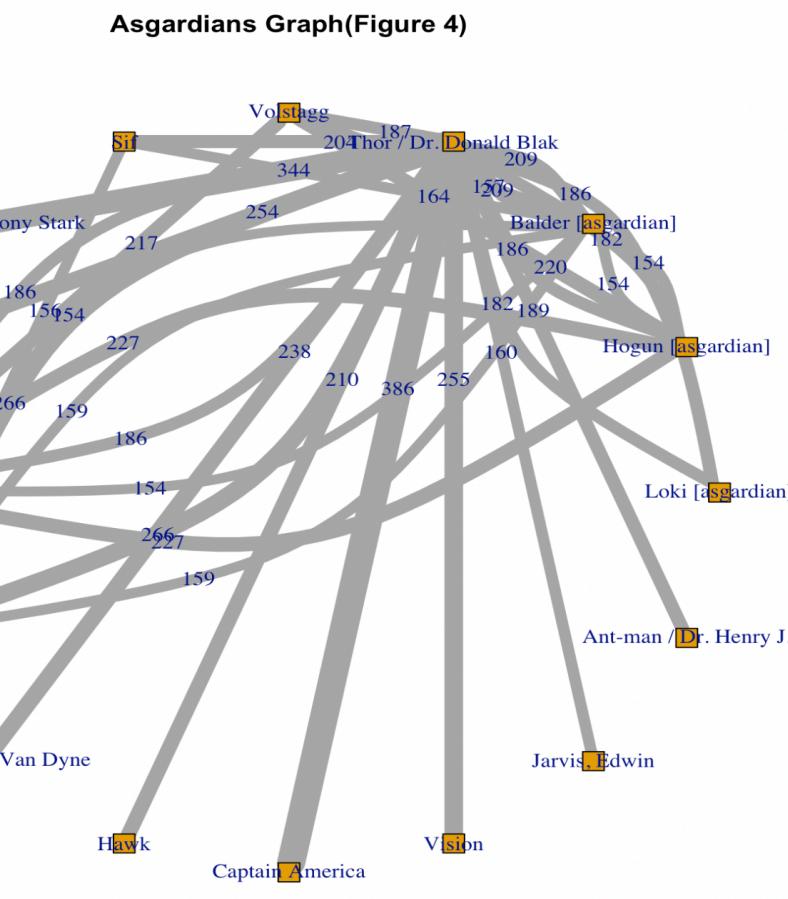
Figure 3B



Figure 3A

1. For those who have an Asgardians component in the Asgardian dataset they tend to be more well connected to Asgardians than that of the regular dataset(Figure 1a) in which the other individuals in the regular dataset is mostly well connected to is the Avengers not Asgardians with the only prominent Asgardian being Thor who is also an Avenger(Figure 1b).
2. For the edge betweenness community for the Asgardians dataset(Figure 2a) it is more centralized with a short arm branching out of the large cluster in the middle that is centered around 50 which means that it has influence over the network as a whole. The regular edge betweenness in the non subsetted dataset(Figure 2b) shows at least 4 clusters with 322 and 323 being isolated from the larger clustering.
3. There is more links and interactions going on with the bipartite graph with not just solely Asgard types(Figure 3B). The area inside representing the links for the dataset with solely Asgardian types is less filled in(Figure 3A) than the not solely Asgardian types which is pure gray in the middle(Figure 3B)

Conclusion



The implications of this project is that the Asgardians had more connections when grouped together than if they were not grouped together. This shows in the analyses done in RQ1 and RQ2. In RQ3 there are more interactions between comic book and character appearances in the dataset that doesn't have solely Asgardian types. One interesting thing I noticed across the figures is that Thor even in the regular dataset was very important which shows in this graph with Asgardian types above as the other characters are centered around him. Future directions could be to look more into Thor and how his importance has changed over time in a temporal network.

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References

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