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The Marvel Universe's Character Partnerships-Reflecting on Cultural Diversity and Marketing Strategy

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Abstract: *Studies in recent years have pointed out that the Marvel Universe is almost like a real social network. As ideological divisions increase in interaction in the realm of popular culture, Marvel, as an iconic cultural industry, creates content that to some extent reflects controversial cultural issues. However, as a profit-driven business, its actions serve marketing purposes as well. This article performs a social network analysis on a dataset of character partnership networks in the Marvel Comics universe collected by Aslak [1] using Ucinet, focusing on selected characters and their relationships among the network, and try to reveal how cultural diversity is being considered in the Marvel Universe contents. By examining the subgroup and centrality of the dataset, the article believes that the Marvel Universe's narrative framework, which is constructed based on the real world, contains multiple individual and organisational nodes with complex individual-to-individual relationships and individual-to-organisation subordination relationships, reflecting real-world political and cultural tensions. Meanwhile, Marvel strategically shapes its new storylines around popular characters, but the cultural meanings of them is quite superficial and more of a marketing strategy.*

Keywords: *Social Network, Marvel, Cultural Diversity, Marketing*

1. Introduction

As a nation full of diversity and division, modern America's ideological divisions have manifested themselves through popular culture and have drawn the characters of the Marvel Universe into a cultural civil war [2]. Culture and politics being represented and disseminated through comic books are not new. Marvel's worldview consciously uses the real world as background, reflecting the cultural shifts in the United States during the cold war and the time after in the fifty years it dominated the comics industry, and its comics are widely considered relevant to politics and culture [3]. Marvel has created an artificial universe where technology and mythology co-exist, and where instead of the traditional story of a single hero-villain relationship, characters develop diverse alliances, rivalries and betrayal interactions. Alberich, Miro-Julia and Rossello [4] present the idea that the Marvel Universe is almost like a real social network, which they argue mimics real-life networks.

One thing that matters is how Marvel builds and continues to develop social relationships in its universe not only in relation to the characters' stories but also in relation to their socio-political and cultural contexts. By creating different characters and having them join or confront others, Marvel packs feminism, racial conflict and political metaphors into its characters' interactions, and thus reflects the contentious cultural issues within modern America. Moreover, we should also be aware that Marvel is a profit-seeking company rather than a cultural leader. We, therefore, need to reflect on whether Marvel's character collaborations and the cultural and political implications they respond to are a marketing strategy, reflecting the cultural identity and intentions of their creators while appealing to a market of readers hungry for cultural diversity.

Therefore, this article will analyse a dataset of character partnership networks in the Marvel Comics universe collected by Aslak [5] for a subgroup and centrality analysis. The dataset contains 350 characters and classifies them as either heroes, villains or grey characters. This paper will also look at and analyse the partnership of characters in different camps and show how Marvel has built its universe with empirical material. Also, due to the large number of characters, this paper will focus on selected characters in the network, and focus the analysis in the context of their character stories to demonstrate how Marvel's social networks reflect its response to cultural and political issues, particularly in the

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context of racial and gender conflict.

2. Research Review

Marvel Comic Universe (MCU) spilled over from the comics into its anime and film series. This section will look back to previous research to review how the construction of a near-realistic social network in the Marvel Universe reflects a reflection on multiple identity narratives in modernity, the ways in which readers with multiple cultural backgrounds find identity in the MCU, and how Marvel uses the MCU as a successful marketing strategy.

Many studies look at the MCU's unique narrative structure. MCU consists of a number of separate yet interconnected sub-series that are in a vast continuum of shared narratives and are collectively influenced by major events or characters on an ongoing basis, and are easily transferred between sub-series through shared events, which correlate with the commercial success of its cinematic universe [6]. Silvio [7] suggests that the Marvel Universe perfectly embodies the ontological narrative, changing the position of the reader and giving them more creative autonomy. She points out that the uniqueness of the MCU lies in the way its plots are linked, with major characters in one sub-series appearing as secondary characters in others and readers gradually expanding their reading by following character titles and gaining more autonomy as a result [7]. Yockey [8] points out that Marvel's transmedia narratives, continuity and accessibility opened the franchise to fans, making information from the MCU's complex narrative network easily accessible to viewers.

Marvel's construction of characters reflects how it is influenced by culture, and many studies have questioned the depth of cultural diversity that Marvel characters attempt to reflect. Despite the trend towards increased racial diversity of characters in American comic books [9], many minority characters are visually coded with purely racial markers, such as the 'Black Panther', and these minority heroes are absorbed into the generic narratives of Western civilization's superheroes, a superficial form of cultural diversity [10]. Facciani, Warren and Vendemia [11] used content analysis and found that the overall cast of characters in the Marvel Universe remains predominantly white males who also have the most agency.

The analysis of the MCU social network focuses on its similarity to real social networks. Kumar and Verma [12] analyze the topology of character networks in MCU to find the bridge characters that connect the network and which characters are most closely connected. Alberich, Miro-Julia and Rossello [13] investigated the Marvel Universe Social Network as an artificial collaborative network to identify the principles used to construct real networks. Shi, Yu and Ren [14] used the same dataset (The Marvel Universe Social Network) to demonstrate that the Marvel social network is a scale-free network with small-world characteristics. Gleiser's [15] study further found that clubs exist in the Marvel social network and act as hubs to connect different communities.

Through literature review, we found that studies of character partnership in the Marvel Universe examined how Marvel's unique narratives contribute to its commercial success. The stories and plots undertaken by characters in MCU reflect its response to cultural issues but appear superficial. Social network analysis of MCU has focused on network characteristics and comparisons with real social networks. Therefore, it is necessary to integrate MCU social network analysis with MCU narratives. This helps us to discover which characters occupy a higher proportion, what identities they have, and the cultural conflicts and cultural distinctions reflected in the intersection of the different subgroups of characters. Furthermore, combined with the popularity of the characters, the results of this analysis can help to corroborate Marvel's artificial traces and marketing directions.

3. Description of the Data

The data is a direct and unweighted network and contains 348 nodes and 348 edges, where each node represents a character in MCU and each edge represents the existence of a partnership between two characters in the Wikipedia page. The dataset also contains the attributes of the characters, dividing them into heroes (0), villains (1), and grey characters (2).

In addition, the number of partnerships each character has was counted and named “size”, with the character with the highest value (i.e. the most number of characters in a partnership) being Spider-Man (hero) at 12, followed by Captain America (hero) at 10 and Red Skull (villain) at 9. The villains Unicorn and Attuma’s size are 8, Iron Fist (hero) is 7, followed by five villains with a value of 6. Additionally, the dataset of role attributes has three roles that cannot be fully matched with the partnership network,

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and there are three nodes of error.

I would also like to point out that the number of villains in the nodes, 194, is larger than that of heroes, 120. The villainous characters also make up the majority of the top ten characters with the highest size, and their partnerships were also mostly with other villains. Figure 1 shows the villain-character relationships using Red Skull as an example:

Red Skull	Viper (Madame Hydra)
Red Skull	Arnim Zola
Venom (Marvel Comics character)	Red Skull
Baron Strucker	Red Skull
Crossbones (comics)	Red Skull
Sin (Marvel Comics)	Red Skull
Power Broker	Red Skull
Doctor Faustus (comics)	Red Skull
Chameleon (comics)	Red Skull

Figure 1 RedSkullPartnership

This phenomenon is also present in the overall data and seems to reveal more character partnership exists between villains than heroes. A further factor to put into thinking is, that as it is not clear in what context this dataset was collected, we cannot be sure to what extent this observation is influenced by the data inclusion when the villains might be included more than the heroes.

4. Methods and Analysis of Data Results

I will perform centrality and subgroup analysis. For centrality analysis, degree, closeness, betweenness, and eigenvector centrality analyses were conducted to examine the influence, status, and socialization of characters in the network. For subgroup analysis, the Girvan-Newman method was used to calculate the subgroups in this network to identify the storyline. Based on the results, I will further explore whether they reflect the influence of cultural and political trends on comics creation in relation to character stories, identities, and sub-series.

4.1. Centrality Analysis

Centrality is a property of a node's position in a network [16]. Centrality has implications for organisational design and can reflect how a social structure is coordinated together by network centres through different cues [17]. Therefore, examining the centrality of the MCU partnership network can identify the key characters which become the centre of the social network and the bridge that connects sub-series. The original network is directed, however, because the data (as described by the authors) comes from whether partnerships exist on a character's Wikipedia page with another one's Wikipedia page, I think this partnership can be better recognised as bidirectional. Therefore, I analysed the network as undirected when conducting the centrality analysis. And, due to the large number of nodes, for better visualisation purposes, I have selected only the nodes with high scores in the network to display their labels, and have attached figures with full labels at the end of the article. The villain's node colour is blue, the hero's colour is red and the grey character's colour is green.

I first performed a degree centrality analysis (Figure 2).

Degree centrality represents the number of given relationships at a node [18], which means that characters with higher degree centrality have more partnerships. In the graph, we can distinguish some of Marvel's most famous characters with a high degree centrality, with Spider-Man having the highest value of 12. These characters with larger 'social circles' are relatively well-known characters in the MCU. Also, when looking at the networks around high-degree characters, those with whom they have relationships also tend to have high values. These characters work with each other to form networks. Combined with the character's attributes to observe, famous characters tend to cooperate with characters who share their attributes (Hero or villain). This reflects that in Marvel's character partnerships, famous characters are placed in partnerships with more characters, and they also tend to work with other popular characters. This shows Marvel's marketing strategy of bringing popular characters together to attract a large and combined readership in pursuit of a "stronger together" effect and higher profits.

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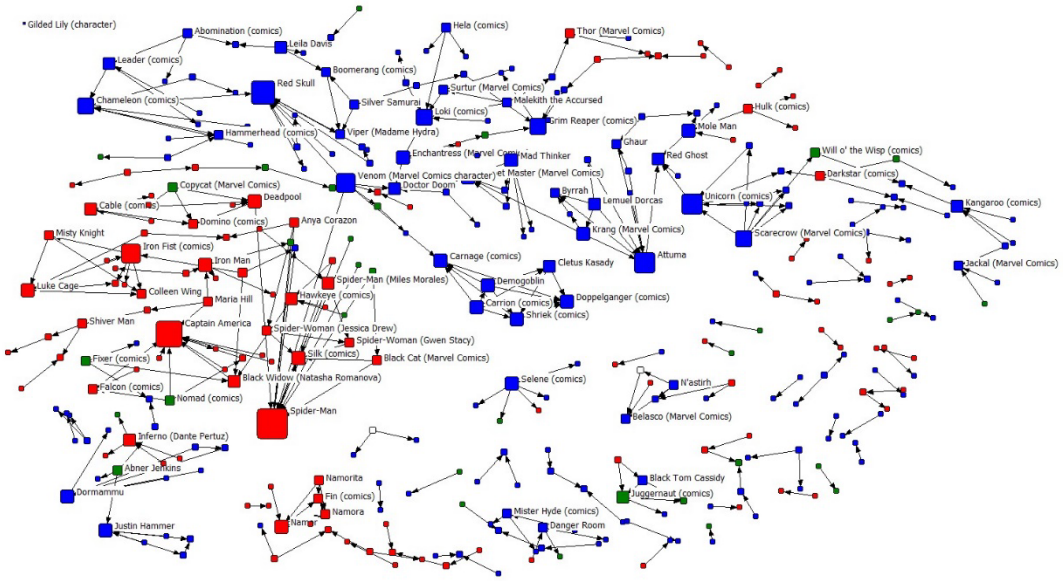

Figure 2 Degree

The closeness centrality's result is present in Figure 3.

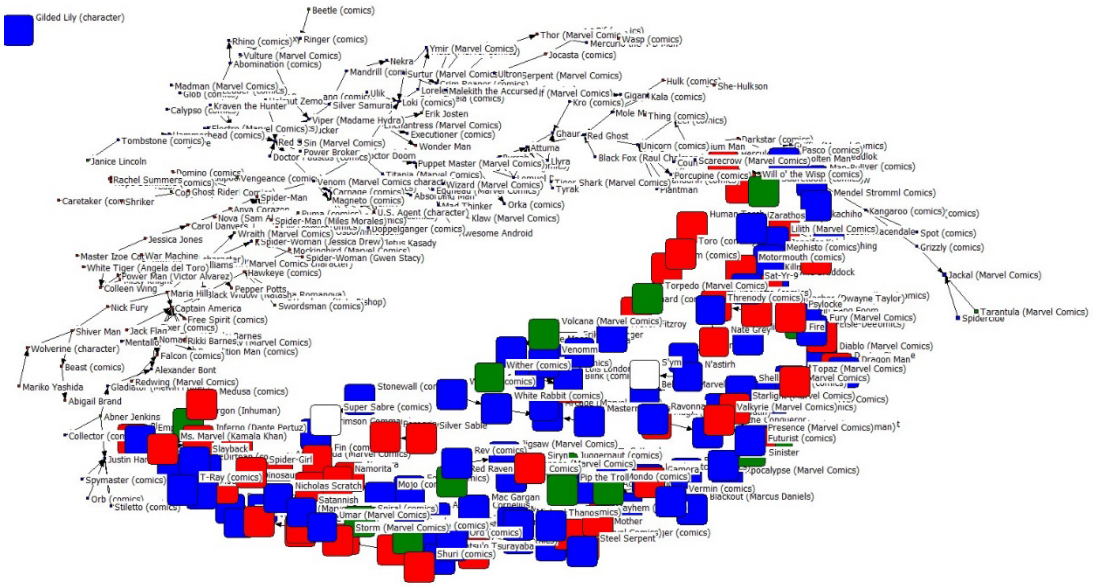

Figure 3 Closeness

Closeness is " the sum of geodesic distances from a node to all others [19]". The closeness results for this network do not have a clearly prominent role, but rather a cluster of nodes that appear relatively evenly split between both sets of results. This means that there is no one character that is closer to the others, meaning that the characters in the MCU are relatively independent by their nature.

The betweenness centrality's result is present in Figure 4.

Betweenness centrality reveals the potential for a node to control the flow in a network [20] and therefore shows which characters play a mediating role in the MCU partnership network. In the figure, we can see that the character with the highest value is Venom, who is connected to other high-value villains while also collaborating with the high-value hero Spider-Man, in the middle of the path connecting the hero cluster to the villain cluster. Plot-wise, Venom was born out of the Spider-Man series and developed his own sub-series independently from the Spider-man comics. Due to its alien and parasite characteristic, this character becomes an excellent choice for connecting other stories, which simultaneously connects the Earth story with the alien story. When we look at characters with high betweenness centrality, we find that they are often associated with an institution or group in a particular Marvel story. For example, among the heroes, Captain America, Black Widow, Hawkeye, Maria Hill,

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Iron Man, mockingbird, Nick Fury, Nightcrawler and Spider-Man all either belong to S.H.I.E.L.D. or to the S.H.I.E.L.D.-led Avengers. The most typical of the villains is Red Skull, whose Nazi organisation is pitted against S.H.I.E.L.D. These organisational rivalries occur alongside the characters' personal stories, integrating the characters' stories into the MCU worldview and connecting the characters through organisational cooperation and confrontation. Also, according to the network, there are more agents than heroes as villains. The villains with high betweenness centrality have many backgrounds related to politics: some of them (Red Skull's Nazi organisation) are connected to World War II and others (Red Ghost, unicorn, etc. belonging to the former Soviet Union) are connected to the Cold War. The importance of these characters in the connection of the network reflects the importance of the organisations they belong to in the main Universe, and further reflects that the confrontational stories in the Marvel worldview are highly relevant to real-life politics.

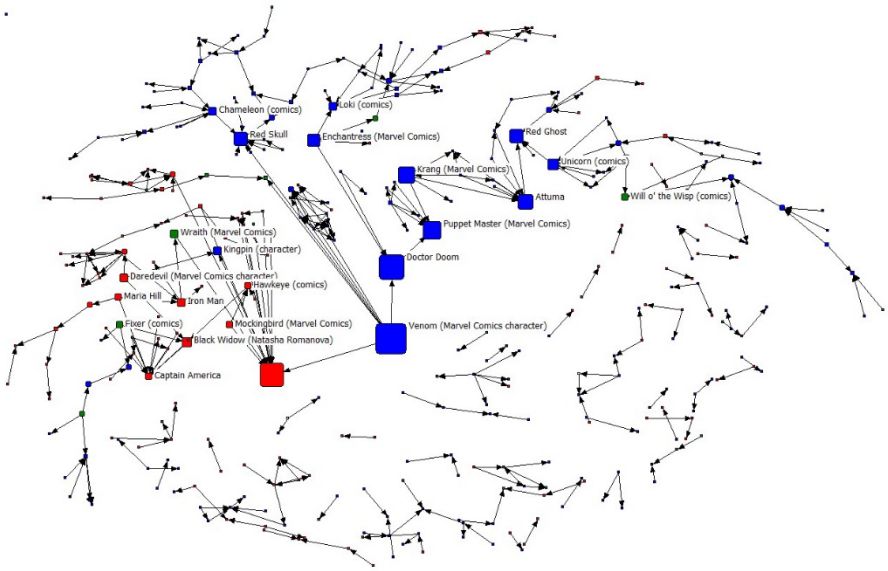

Figure 4 Betweenness

The eigenvector centrality's result is present in Figure 5.

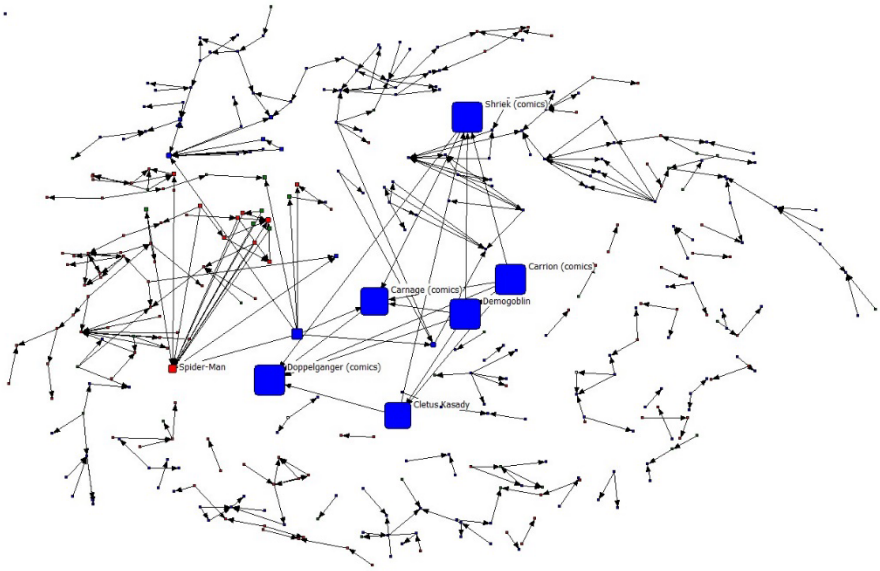

Figure 5 Eigenvector

A node with high Eigenvector centrality means that it is connected to other well-connected nodes [21]. This means that this metric can show the popularity of a character, i.e. that these characters are connected to important characters. This result is rather surprising, as the characters that stand out in it are not prominent in the results of other indicators, except for Spider-Man. We can see from the graph that the

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six characters with high eigenvector values are all villains. Interestingly, all six characters have a close relationship with Spider-Man. They all have their origins in the Spider-Man comics and most of them are either important villains in the story or alter egos of Spider-Man. This may explain why they have high eigenvector values, as they are extremely closely related to one of the most popular characters in the MCU. With this data, we see that Marvel's narrative extends from one major character to many minor characters, and that these characters are further created and developed, thus extending the scale of the universe, and connecting the stories through threads.

4.2. Subgroup Analysis

For subgroups, I used the Girvan-Newman method, as I did not get relatively meaningful results when using other methods. The results are shown in Figure 6. In this figure, the circles represent the heroes, the squares represent the villains and the triangles represent the grey characters; nodes with the same colour belong to the same subgroup.

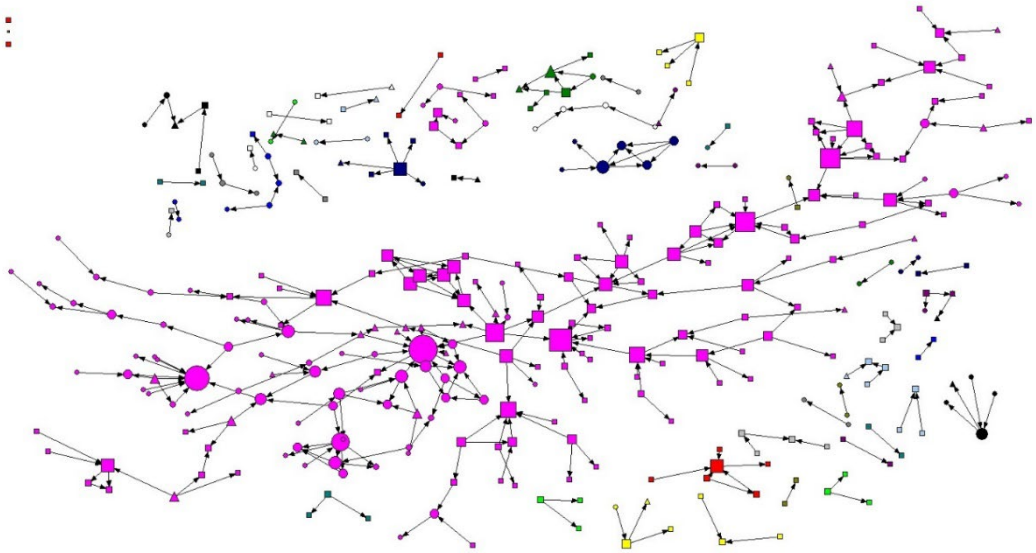

Figure 6 SubgroupGN

The analysis calculated 55 subgroups, which can be interpreted as each representing a set of characters that generate connections with each other. The pink one is the significantly largest subgroup, and it is surrounded by numerous smaller subgroups in which the heroes, villains, and grey characters are relatively evenly distributed. The size of the nodes is based on the degree centrality, and we see that characters with more partnerships are mostly distributed in this largest subgroup. This large subgroup can be thought of as the characters and their relationships in the main storyline of the Marvel Universe, with the surrounding subgroups being other relatively independent sub-stories.

4.3. Reflecting on character identities

Examining the central characters in the above data results, we find that these characters are still predominantly white males. Although white females such as Maria Hills and Black Widow appear among them, they are fewer in number and do not occupy a key position in the network. Marvel developed fictional kingdoms such as Atlantis and Asgard, and members of these governments occupy an important place in the network. Although they are described as a completely different race to humans, there are still strong Aryan overtones revealed in them, such as the appearance of the Asgardians being consistent with the Aryan race. This reflects the fact that despite the increased racial diversity and female characters in the Marvel Universe, however, they are not prominent in the main Marvel narrative. For example, when we look at the egonet (Figure 7) of Black Panther, the iconic black hero of recent years, he is only related to two other black female heroes who belong to an ethnic group outside of the main organisation.

This reveals to us the superficiality of diversity in Marvel's creations. In general, these minority and female heroes appear only as a created character, while remaining relatively isolated from the main conflict and without a deep connection to it. As a result, they appear more like marketing responses to reader requests or preferences, and their characters exist in dependence on the main line rather than as a

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significant part of it.

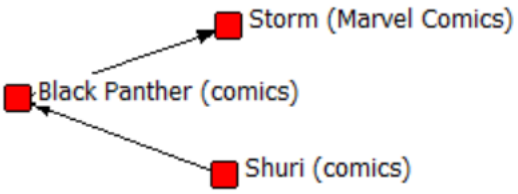

Figure 7 BlackPantherEgonet

The identity of the villains, especially those highly relevant to the main story with those famous heroes, is often strongly politically suggestive. The recurrence of villains from former Soviet/Russian and Nazi backgrounds reflects the cultural and political leanings of the United States during and after World War II and the Cold War, with ideological divisions and expressions running through the main storyline.

5. Conclusion

Through a centrality and subgroup analysis of Marvel's partnership network of characters, we find that Marvel's narrative framework builds multiple organisations that originate from real-world politics as a backdrop, and that the characters are affiliated with the organisations and connected through these threads, reflecting real-world political and ideological confrontations. At the same time, Marvel relies on key characters to develop new ones, expanding the size of its universe and maintaining as much balance as possible between the scale of the universe and the unity of the story. However, the new characters are relatively isolated from the main network, and their development of cultural diversity of characters is superficial and more akin to a marketing strategy. At the same time, it cannot be ignored that the data used in this article is limited in its collection and timing, and only partially reveals the character partnerships of the Marvel Universe.

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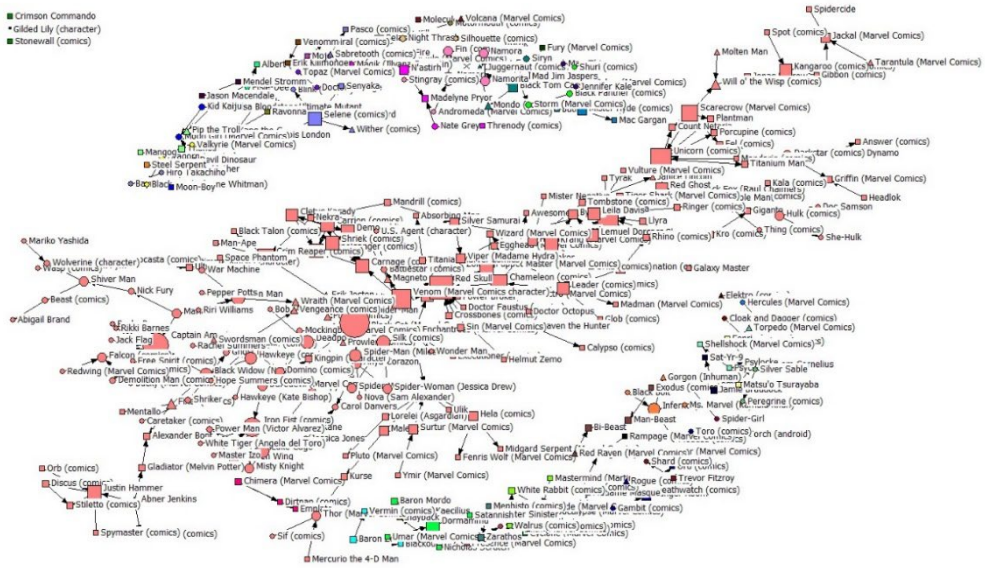
Appendix



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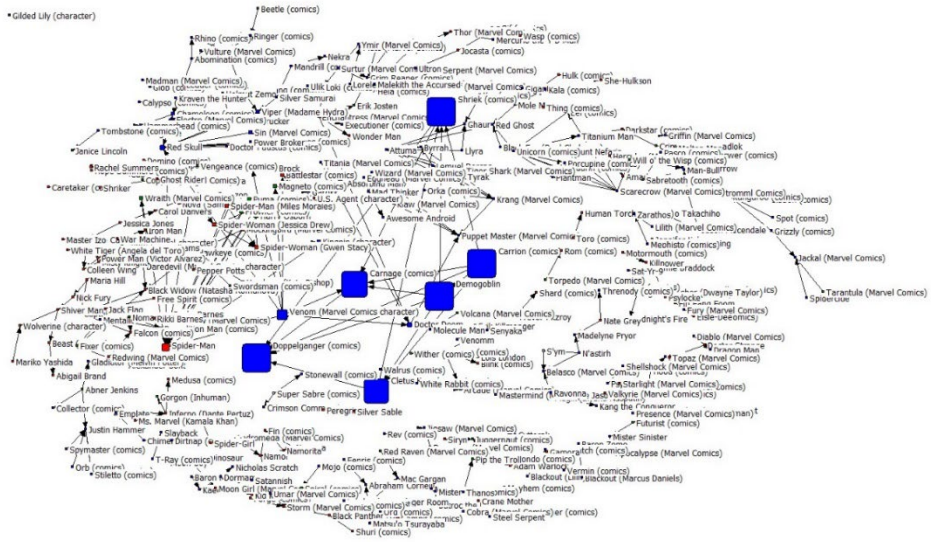

Supplement Figure 2 Eigenvector

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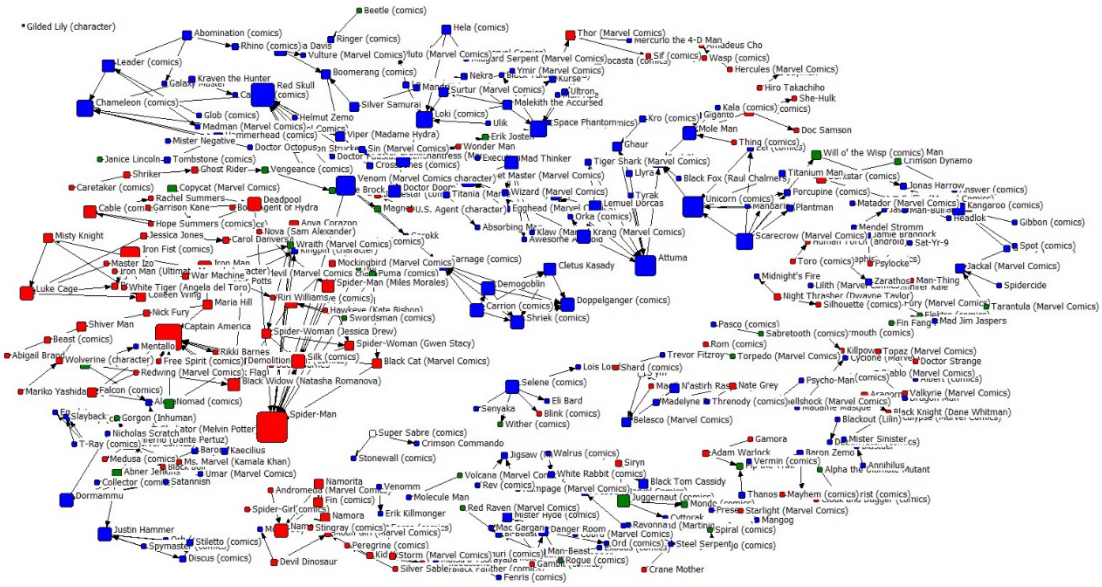
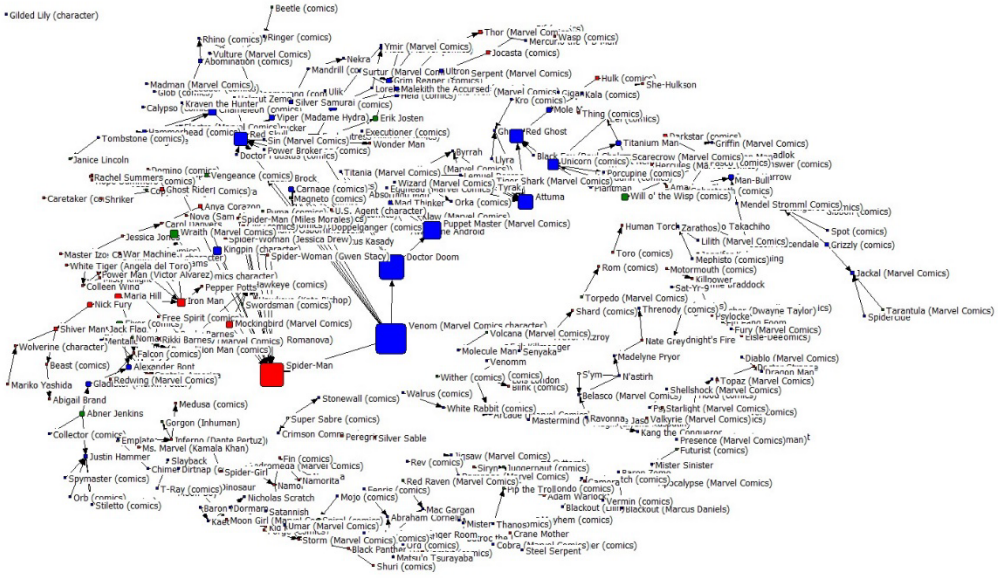


Supplement Figure 3 Degree



Supplement Figure 4 Betweenness