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SOCIAL NETWORK THEORY ZHIXUAN WANG 16 DECEMBER 2024

WHAT INSPIRES FANS TO CREATE HARRY POTTER FANFICTION PAIRING WORKS?

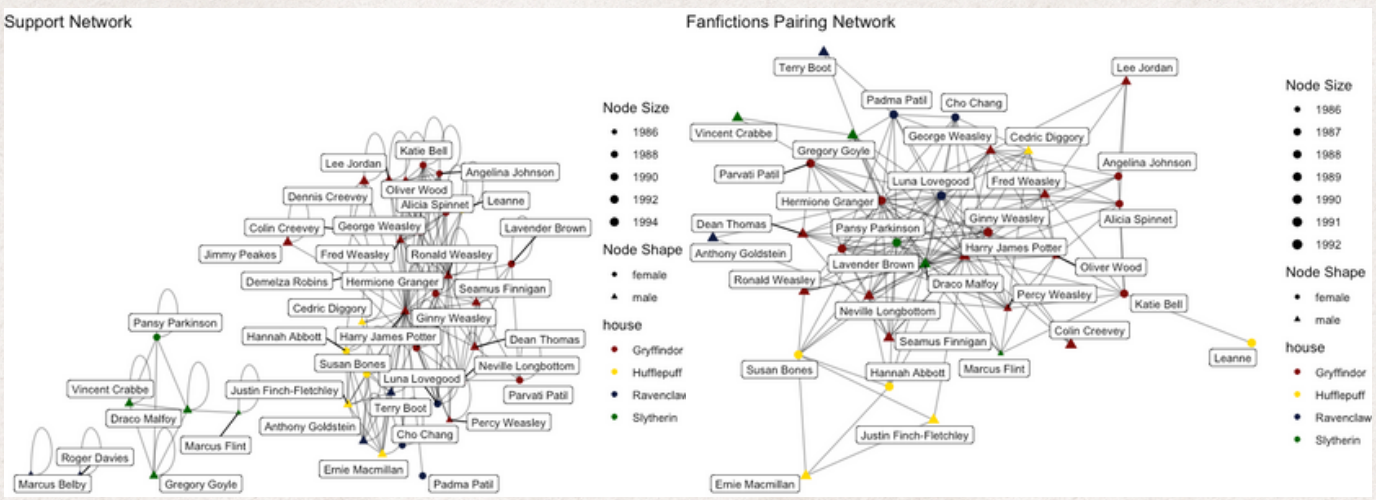
Introduction

Fanfiction refers to fiction written by fans through creative expansion of original stories (Brottrager et al., 2023). It often centers on character pairings. Harry Potter, one of the world's most popular novels, has inspired a vast fanfiction community and diverse pairings. This study examines the factors inspiring the creation of pairings through an analysis of the Harry Potter fanfictionpairing network.

Data and Visualization

This analysis uses two networks: the fanfiction pairing network we constructed and the support network from Bossaert and Meidert (2013). The support network aggregates support ties across six books, excluding isolated nodes. It consists of 39 nodes (characters)and 154 undirected and unweighted ties (support relationships in the original book). Node color indicates house affiliation, shape represents gender, and size reflects the year the character entered school.

The fanfiction pairing network is derived from the support network nodes. Pairing relations were extracted from Archive of Our Own which is a popular website for fanfiction, consisting of 34 nodes (characters) and 157 undirected, unweighted ties (pairings in fanfictions). Nodes are removed if no pairings exist. Gender, house, and school year are added as node attributes, reflected in color, shape, and size.



Theoretical Framework and Hypotheses

Fans create fiction within a space that balances imaginative creativity with the constraints of the original work (Stein and Busse, 2009). Building on this perspective, this study hypothesizes that the attributes of characters and the support ties in the original narrative influence the formation of pairing ties in the fanfiction network.

H1: Characters with similar attributes (e.g., gender, house, and school year) are more likely to form pairing ties in the pairing network.

H2: Characters with support ties in the support network are more likely to form pairing ties in the pairing network.

Beyond the influence of the original work, fan interactions within the fanfiction community also shape creation processes (Yin et al., 2017). Consequently, this study further hypothesizes that existing pairing ties in fanfiction can inspire new ones.

H3: Characters with common partners in the existing pairing network are more likely to form pairing ties.

H4: Characters frequently paired with others in the network (high degree) are more likely to form additional pairing ties.

Model Building

To test the hypotheses on homophily, support ties, and network structure, this analysis will use the exponential family random graph model (ERGM) on the pairing network. For H1, nodematch() will assess homophily, with diff = FALSE to aggregate attribute effects. H2 will be tested using dyadcov() to evaluate the influence of the support network. Finally, gwdegree() and gwesp() will test H3 and H4, examining tie concentration and clustering effects in the network.

Results

	ERGM Model
Edges	-7.06 (1.07)***
Support Dyadic Covariate	1.17 (0.22)***
Gender Node Match	0.11 (0.20)
House Node Match	0.67 (0.19)***
School Year Node Match	0.31 (0.17)
GWdegree (0.5, fixed)	1.05 (0.95)
GWESP (0.5, fixed)	2.88 (0.61)***
AIC	542.39
BIC	572.70
Log Likelihood	-264.20

***p < 0.001; **p < 0.01; *p < 0.05

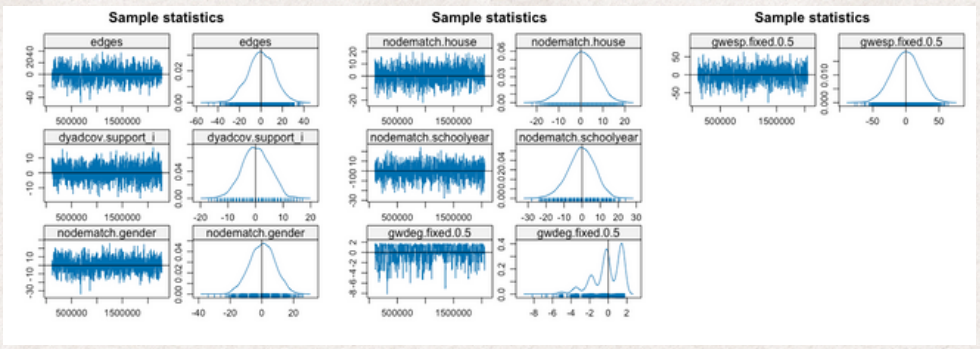
Statistical models

The ERGM results show that house homophily, support ties, and clustering effects significantly influence pairing formation in fanfiction.

- H1 is partially supported: House affiliation strongly predicts pairing ties, while gender and school year have weaker effects.
- H2 is strongly supported: Support ties from the original work positively influence pairing ties in fanfiction.
- H3 is supported: Clustering effects are significant, indicating that characters with common partners are more likely to form new pairings.
- H4 is not supported: High-degree characters do not necessarily form more pairings, as indicated by the non-significant result for degree centrality.

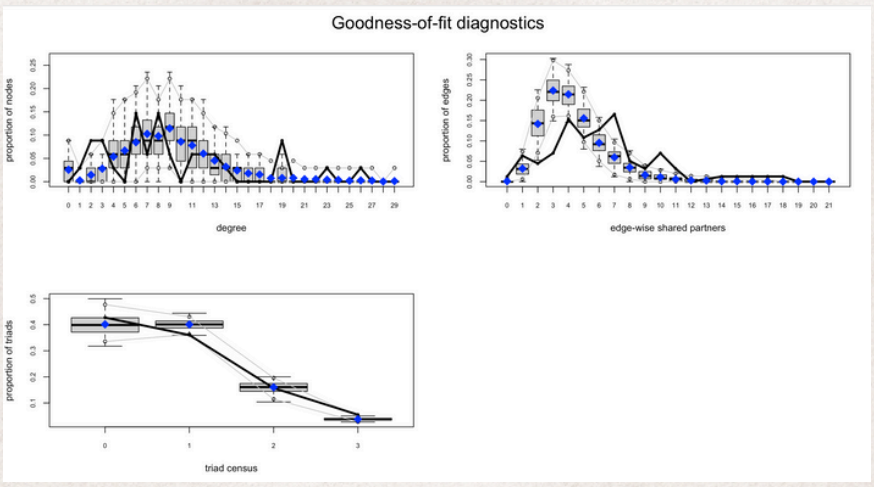
MCMC Diagnosis

The MCMC diagnostics indicate that the ERGM converged successfully, with stationary trace plots and smooth, unimodal density plots for most parameters. However, the gwdegree() density plot shows multiple peaks, suggesting challenges in capturing highly connected nodes. Further evaluation through Goodness-of-Fit (GOF) tests is recommended to assess model performance and identify potential refinements.



Goodness-of-Fit Diagnosis

The Goodness-of-Fit (GOF) test assesses how well the ERGM replicates key structural features of the observed pairing network. Results indicate a generally good fit, particularly for triadic structures. However, for the degree and edge-wised shared partners, some values are underestimated (eg., degree 19) or overestimated (eg. Edge-shared partner 3). These discrepancies suggest areas for refinement. Adjusting the decay parameters for gwdegree() and gwesp() could enhance model fit.



Conclusion

This study reveals the factors influencing Harry Potter fanfiction pairings through ERGM analysis. Certain attributes, notably house affiliation, along with support ties in the original book, are significant in pairing formation shaped by fanfictions. Clustering patterns further reveal structural tendencies influencing tie creation. Although the model captures key network features, its reliance on limited character attributes and unweighted ties constrains its explanatory scope. And it focuses solely on support ties and fanfiction pairings, neglecting other relationships such as enmity and friendship. Future research could incorporate additional attributes, such as blood status, and include different types of weighted ties to enhance precision and depth.

Reference List

Bossaert, G. and Meidert, N. (2013). 'We Are Only as Strong as We Are United, as Weak as We Are Divided' a Dynamic Analysis of the Peer Support Networks in the Harry Potter Books. Open Journal of Applied Sciences, 03(02), pp.174–185. doi:https://doi.org/10.4236/ojapps.2013.32024.

Brottrager, J., Joël Doat, Häußler, J. and Weitin, T. (2023). Character Shifts in Harry Potter Fanfiction. Zeitschrift für Literaturwissenschaft und Linguistik, 53(3), pp.623–654. doi:https://doi.org/10.1007/s41244-023-00310-5.

Stein, L. and Busse, K. (2009). Limit Play: Fan Authorship between Source Text, Intertext, and Context. Popular Communication, 7(4), pp.192–207. doi:https://doi.org/10.1080/15405700903177545.

Yin, K., Aragon, C., Evans, S. and Davis, K. (2017). Where No One Has Gone Before. Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems. doi:https://doi.org/10.1145/3025453.3025720.