A Replication of "Social Characters: The Hierarchy of Gender in Contemporary English-Language Fiction" by Authors Eve Kraicer and Andrew Piper, Published in the Journal of Cultural Analytics on January 30, 2019

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ABSTRACT
UPDATED—12 May 2019. This paper engages with the work of authors Eve Kraicer and Andrew Piper in their research on gender-biased decisions in character structure in contemporary fiction as an extension of a broader topic on the underrepresentation and decentralization of women across various cultural fields.

> Fiction, speaking very generally, is about the individual in society, about the expectations and conflicts that color a life when an obdurate reality stands in the way of one's self-image or desires...The invisible centerpiece of every great novel is the protagonist's rebellion or coming to terms with his or her place in the scheme of things.

While we would not want to take Krystal's ideas as representative of public or critical opinion on the novel, it does give us pause to wonder whether these kinds of definitions of literary greatness privilege a certain type of social gender dynamic that works against the interests of women, as both writers and fictional characters."[1]

Author Keywords
Fiction, contemporary; gender bias; heteronormativity; visibility; social balance theory; character prominence; character interactions; gender pairs.

INTRODUCTION

I show herein how authors Kraicer and Piper can improve upon their impressive and extensive research on gender hierarchy as found in the analysis of language in contemporary novels. I begin briefly by contextualizing the replicated paper in the current cultural climate of problems with gender-normative standards in American society. Then, with the goal of simplifying their graphics, I analyze the first four figures and improve upon the author's visualizations.[2] This improves the strength of their claim that gender bias is visible in contemporary literature through their quantitative analysis as the more simplified graphics are more appropriate for their intended audience within the digital humanities field and beyond. In a field with both statisticians and literary scholars, it is imperative to have graphics that are easy to read and intriguing to consider.

Additionally, I mention the benefits of having scholars like Kraicer and Piper conducting research that asks readers to consider an important convergence between the humanities and the social sciences fields. Not only was Kraicer and Piper's research difficult to find in the Harvard Dataverse, but also theirs was one of very few papers related to the literary arts and impacts of societal behaviors on cultural material (rather than political science). This topic interests me as I continue to learn the many structures that academic research can take, be it a study on the political leanings of persons related to their exposure of racial threat or a computational study of culture. It interests me to consider literature and the arts as a topic worthy of quantitative analysis. An expansion of this intersection of two unique fields could lead to studies such as the analysis of the perceived value of artworks in relation to the artist's race, for example. The digital humanities is emerging as somewhat new and its limitations are yet to be discussed….This work has been in part pioneered by the Department of Languages, Literatures, and Cultures at McGill University, a group that publishes the Journal of Cultural Analytics.[3] Their team "explores the use of

[1] Kraicer and Piper, http://culturalanalytics.org/2019/01/social-characters-the-hierarchy-of-gender-in-contemporary-english-language-fiction/#identifier_24_2092

[2] Note that this is not an analysis of every graphic in Kraicer and Piper's report.

[3] More information on the Journal of Cultural Analytics can be found on their website, here: https://culturalanalytics.org/about/about-ca/ and here: https://txtlab.org/2019/02/social-characters-new-lab-collaboration-by-eve-kraicer/.

computational and quantitative approaches towards understanding literature and culture in both the past and present." They use data science to "promote a more inclusive understanding of culture and creativity." They hope to improve the found gender bias in the publishing industry and promote more gender fluidity among writers.

FINDINGS

- the ratio of women to men characters in novels is estimated to be 40:60;
- this number doesn't significantly change based on genre or readership;
- the exception to this rule is main characters who come in at 50.2/49.8
- while women authors write more women characters than men do, they never create more women than men overall;
- only 19% of novels sampled from seven different genres showed women in the top two leading character positions;
- authors favor pairing men and women characters together way above what we would expect to see by chance, i.e. novels really favor mixed-gender interactions;

CONTEXT AND PREVIOUS RESEARCH

Kraicer and Piper's work solidifies research that has confirmed the marginalization of women in various facets within culture, including book reviewing, filmmaking, acting, and journalism.[4]
gendered words (*chairman*, *manpower*,

METHODS

BookNLP, an analytical tool created by David Bramman.[5] The package is a natural language processing tool, or NLP, strives to understand how verbal and non-verbal communication affect the human brain.[6] These connections refer to the language of human behavior.

Bootstrapping, chi-square test, assortativity, and prevalence.

VISUALIZATIONS AND GRAPHICS

For the first set of figures, the authors simply display how their character rankings method correlates to the number of times a character is mentioned within 100,000 words of a selected text in any of their novels. The figures are replicated below, however it would be much simpler for whoever is reading the original paper just to get a clearer visual of something more interesting other than a black line that simply shows the nature of a ranked list. The correlation between a ranked list and the number of times a character is mentioned in a novel would be easy to understand with a short explanation included in the paper. Therefore, if this paper were to be revised, I would include simple bar graphs to show the imbalance of gender in characters who are mentioned more often within text. It becomes clear that male characters are more prominent. This would be a great addition to contextualizing the type of gender bias that the authors begin to work with in their later tests to find more detailed conclusions about the effect of gender in contemporary fiction.

The authors describe their "manual" process of assigning gender ID's to each character once they acquired the data. This process included an error based on how their methods failed to assign some (about fifteen) characters either male or female. Below is a table and another graphic to visualize this error. It is easier to understand that, by this bar graph, should the number of unassigned (marked with a "?" in the data) gendered characters be female, the number of female character mentions would be greater. Additionally, visualizing this error also calls more attention to the question of using a gender binary in contemporary fiction. What if there were other categories besides male and female?

LIMITATIONS

Kraicer and Piper address some of the constraints their research confronted, but not all. First, though a small limitation, they noted the fact that they estimated predicted-gender assignments rather than asserting confidence of gender identities across all novels in their dataset. They manually assigned each character (of which there are over 26,000 total), which inevitably produces errors.

QUESTIONS / PROBLEMS

What causes a 50:50 ratio in protagonists, but not in major characters overall? And what is the definition of a character "interaction?" Can it be defined as a definitive relationship in the novel, or is it merely the proximity of a character name to another's in the text of the novel itself? In other words, are "interactions" equivalent to or alluding to a level of intimacy between characters? If not, the data and natural language processing method feels less substantial to claim that certain relationships exist more often than others, e.g.

[4] Kraicer and Piper, 1-2.

[5] See Bramman's Github on BookNLP program: https://github.com/dbamman/book-nlp.

[6] https://www.neurolinguisticprogramming.com/

heteronormative "pairs." And, what about pronouns, do they count as identifiers of gendered characters?

I am equally curious in the authors' decision to build on a 60-year-old theory about social balances.

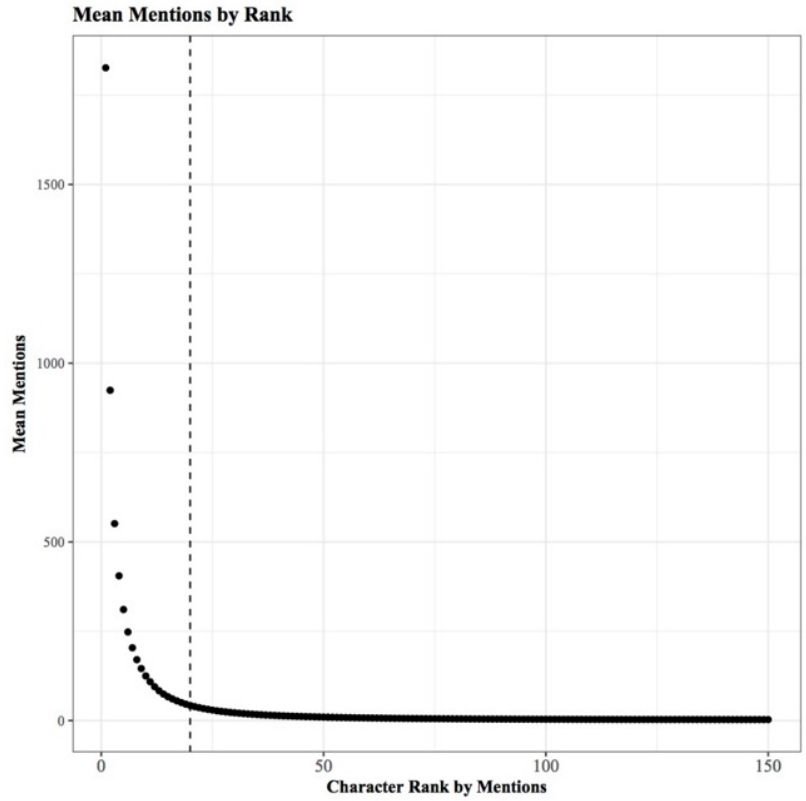
CONCLUSION

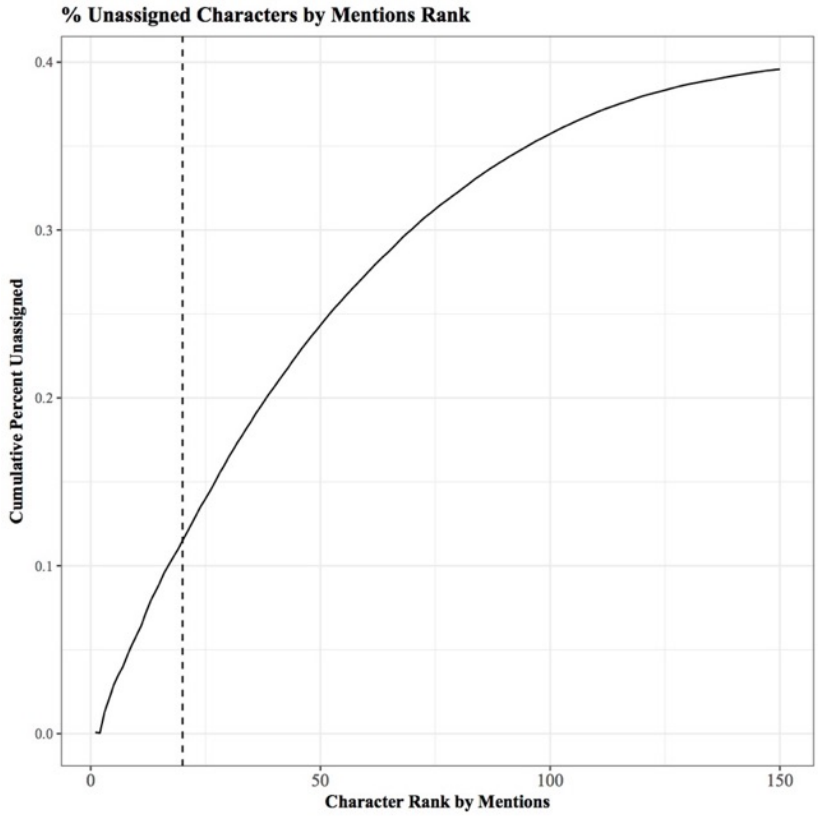
The first thing someone does when skimming a published paper is look at the images. The graphics therefore serve a huge purpose in allowing the reader to quickly understand what initially the research will entail. When I first read Kraicer and Piper's publication, it simply took too much time to understand their graphics, especially the first two, which are simply trying to represent that the more often a character was mentioned in a novel, the higher of a ranking that character received in their dataset.

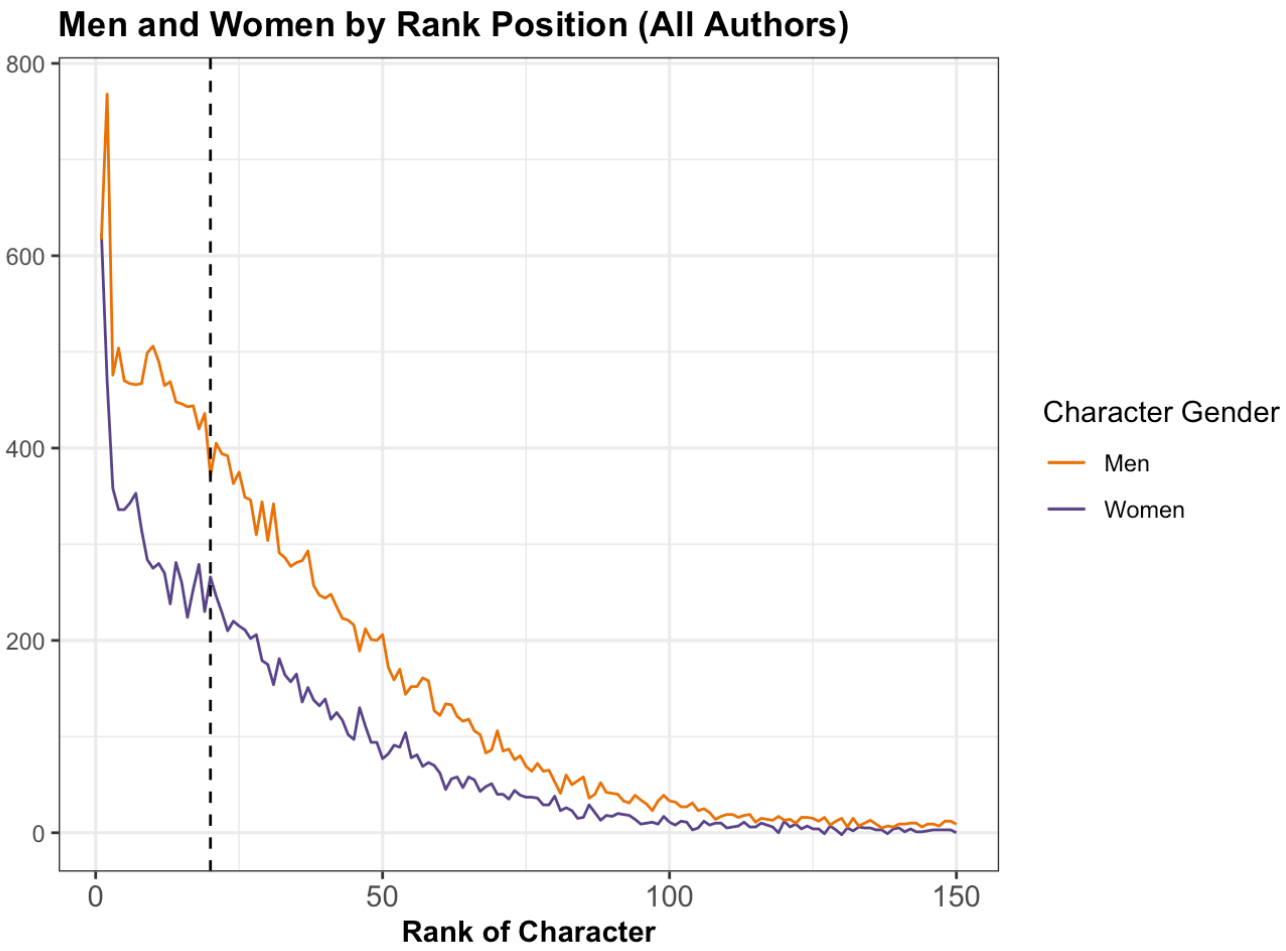
REFERENCES

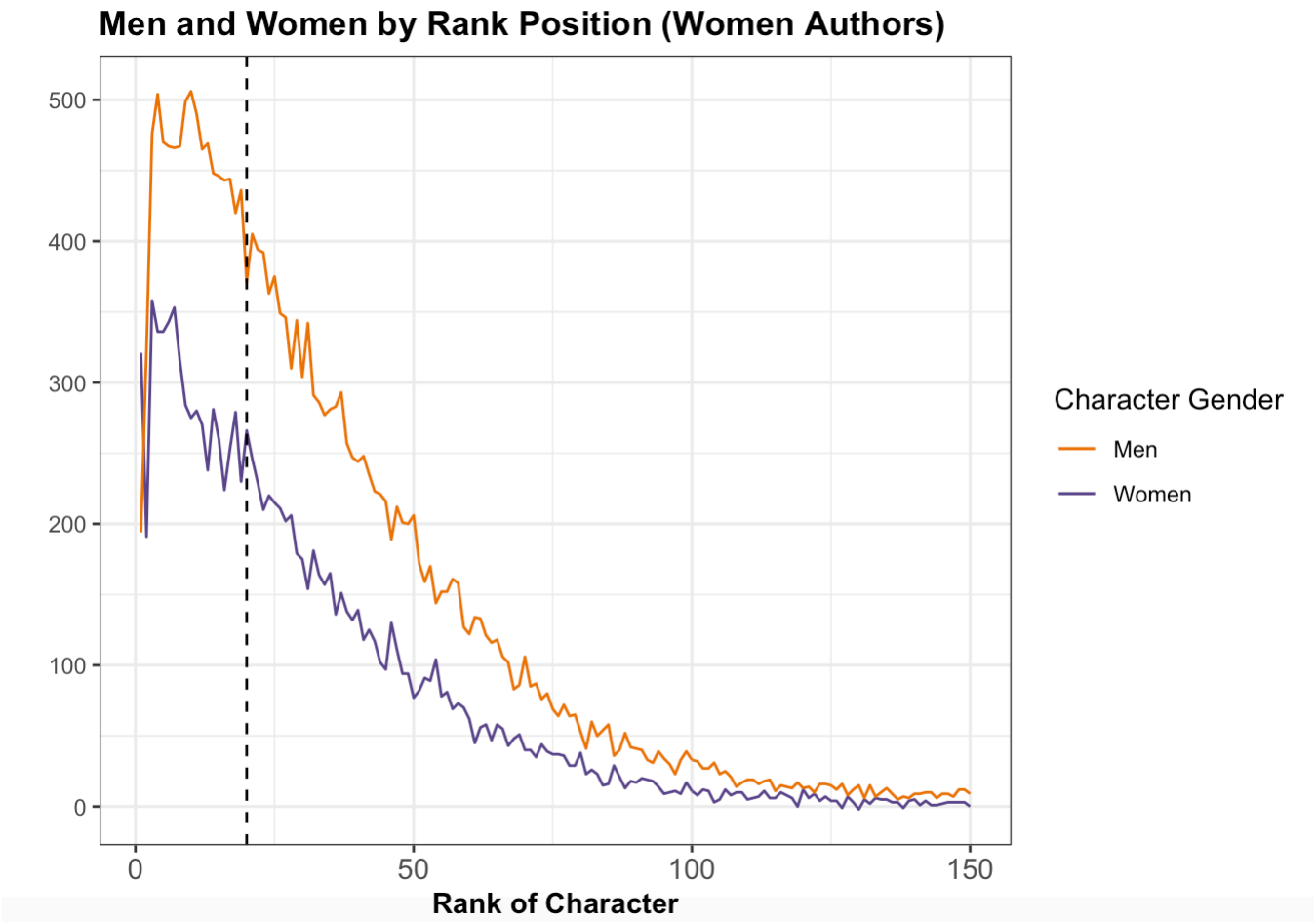
1. David Bamman, Ted Underwood and Noah Smith, "A Bayesian Mixed Effects Model of Literary Character," ACL 2014.

2. Eve Kraicer and Andrew Piper, "Social Characters: The Hierarchy of Gender in Contemporary English-Language Fiction," Journal of Cultural Analytics. January 30, 2019.


Mean Mentions by Rank
Mean Mentions
1500
1000
500
0
0
50
100
150
Character Rank by Mentions


% Unassigned Characters by Mentions Rank
Cumulative Percent Unassigned
0.4
0.3
0.2
0.1
0.0
0
50
100
150
Character Rank by Mentions


Men and Women by Rank Position (All Authors)
800
600
400
200
0
0
50
100
150
Rank of Character
Character Gender
Men
Women


Men and Women by Rank Position (Women Authors)
500
400
300
200
100
0
0
50
100
150
Rank of Character
Character Gender
Men
Women