Impact of Trope-based Novelty on Cinematic Success

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Overview: This study investigates the impact of *novelty* of artistic ideas on the critical and commercial success of films. We find that while novelty positively impacts critical success, it has insiginficant effects on the audience ratings of films.

Introduction

Novelty, defined as the *recombination of existing ideas in new ways* [1], has been discovered to have a stronag impact on the success of scientific and cultural products. Here we investigate the impact of *novelty* and specifically on the success of films. We measure the *novelty* of a film based on unique combinations of *tropes* that it makes. We apply this analysis to a dataset of **~6800 American films**, released from 1913-2018, with **225 unique tropes** across them. We use this dataset to create a an undirected trope network for each year, where an edge between two tropes implies that they co-occur in a movie that year or before (Fig 1).

RQ: How does combinatorial novelty from trope usage impact:

1) **the commercial success of a film, i.e. its IMDb ratings?**
2) **the critical success of a film, i.e. ratings of film critics?**
3) **the cultural significance of a film, i.e. its presence in the National Film Registry (NFR)?**

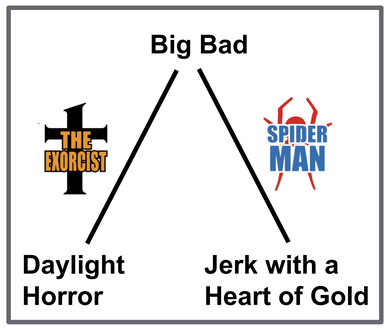

Fig 1. An example of three tropes with shared edges in the network.

Methods

To define *novelty* for a film, we first calculate the **number of tropes that it combines** in its script and cinematography, that have never co-occurred in the trope network before. We then weigh this count by the ***ease* of combining** each novel pair i.e. the number of shared "friends" they have in the trope network [2].

Figure 2 represents the distributions of this score across all films.

We next bin these films into three categories using these scores: **non-novel, moderately novel, highly novel.** We then regress on these categories to understand how *novelty* impacts success.

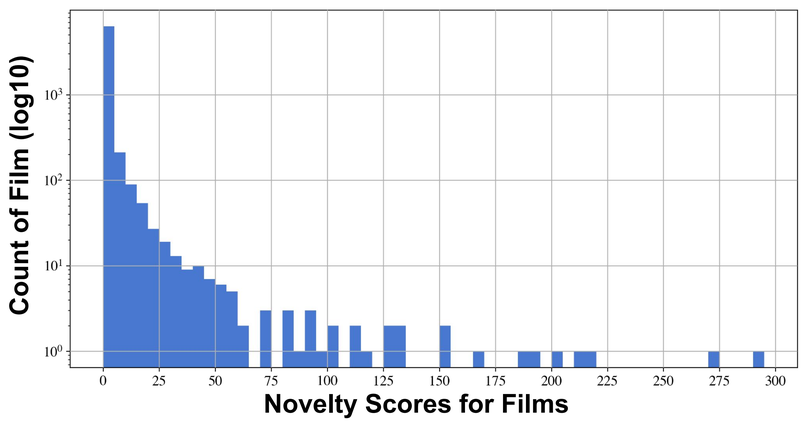

Fig 2. Distribution of Novelty Scores of American Films (1913-2018)

Results

We compute OLS regressions based on the computed *novelty* scores, and using a set of control variables such as a film's year of release, its total number of tropes, number of IMDb votes, and its genre. We run three regressions, and the dependent variables in each case are: IMDb ratings, the Rotten Tomatoes ratings, and a binary variable representing the presence/absence of a film in the NFR. We find that:

- **High novelty is unlikely to deliver returns for popular preference and success**. Novelty has a significant ($p < 0.05$), but small positive effect on popular success (RQ1)
- **Film critics tend to value combinatorial novelty** more than traditional film audiences: Films with their novelty score in the top 1% of the distribution were rated ~0.87 points higher on average ($p < 0.05$), than films without a single novel combination of tropes. on a 10-point scale (RQ2)
- **Novelty reaps rewards when the NFR assess cultural significance**: a high-novelty film was ~14 times as likely to be in the NFR compared to a film that made no novel trope combinations ($p < 0.05$). Even a low-novelty film was ~2.3 times as likely to be included in the NFR, as compared to a film with no novel trope combinations (RQ3)

Discussion

In this study, we measured how the **artistic content of a film** relates to various definitions of its **success**. We argue that scholarship on the matter of success in film has stressed on logistical elements external to the craft of film-making, than the content of films themselves. We bridged this research gap by utilizing **diverse kinds of tropes** to access the artistic content of a film, and measuring their **atypical combinations** to obtain a **novelty score**. Following this, we conducted **regression analyses**, and we found that while **high combinatorial novelty in films** increases their likelihood of garnering **higher critical ratings**, and of being nominated to the National Film Registry, it has a **minor impact on audience perceptions** of a film. Literature concerning the dynamic between novelty and familiarity has revealed that audiences do not especially tend to prefer extremely novel material, and our findings align with this insight, while contributing to our understanding of how critics evaluate films.

References & Acknowledgements

[1] Uzzi, Brian, et al. "Atypical combinations and scientific impact." *Science* 342.6157 (2013): 468-472.
[2] Wang, Jian, Reinhilde Veugelers, and Paula Stephan. "Bias against novelty in science: A cautionary tale for users of bibliometric indicators." *Research Policy* 46.8 (2017): 1416-1436.