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## Project 42: Mathematical Analyses of Fictional Realities

### Abstract

This project will reveal the quantifiable patterns and relations inherent to certain literary texts. Specifically, it will feature three analyses using an alternative method, namely mathematical logic as opposed to standard literary consideration, to deconstruct and scrutinize the plots, settings, or objects in *Dune*, *The Man in the High Castle*, and “The Library of Babel.” Literary critics have attempted to itemize and categorize elements as they occur in a given text using models that resemble mathematical formulas; however, they rarely utilize mathematics’ numerous tools to consider interactions, changes, and structures. Definitions and well-proven theorems from topology, graph theory, combinatorics, and abstract algebra form the basis for these analyses. For each text under consideration, the analysis will involve isolating explicit objects, such as characters, places, and actions. Additionally, careful scrutiny of these literary texts will unveil elements such as formulaic or reoccurring plot structures. After briefly describing the literary implications of these textual elements, each of the three analyses will assimilate the general features of the literary texts with concepts from mathematics. Once the literary elements are incorporated, quantifiable results or properties will follow naturally. This research will offer an innovative approach to examining literature by relying on proof rather than interpretation. Furthermore, the project will add a new perspective to the fictional worlds, including the fantastic or unimaginable elements of these realms. Finally, it will provide an engaging application of axiomatically generated mathematical concepts.

pts, rendering them useful in fictional literature, an environment less structured yet more comprehensible than a mathematics text.