Review of: "Modeling the structure and evolution of cultural information as Quasispecies"

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Potential competing interests: No potential competing interests to declare.

The paper presents a novel model that directly relates biological evolution with modern aspects of cultural evolution. It presents a series of models that illustrate the kinds of processes that lead to diversification of information in certain social contexts. It also shows that variation in populations of cultural information can be modeled in the same manner as biological information, in the form of genetic material. The paper presents significant new information that justifies its publication.

The paper demonstrates an adequate understanding of the relevant literature in the field and cites an appropriate range of literature sources. The authors also acknowledge some of the limitations of previous studies, such as ignoring the high rate of error in communication. Overall, the paper relates well to the existing literature and builds on it.

The methodology section of the article explains the key variables that need to be considered in the social evolution of text. The article justifies the use of the quasispecies model by citing a high rate of mutation in cultural information. The mutation rate is obtained from a variety of different sources like Tweets, Facebook, Texting, and second language learning. The article presents a table that summarizes the error frequency and type reproduced from Smith [33]. The article argues that if the mutation rate is significant, then the frequency of errors should be proportional to the lexicon size. The size of an organism's genome may be no greater than the reciprocal of the mutation rate of information contained in it. The article also considers the replication rates of information, which occur through internal duplication of information during thought processes and external duplication in media as diverse as speech, printed written works, and on various social media platforms. The article notes that external replication is more readily quantifiable, and the rates of reproduction (per year) fall in the range 101-107/annum.

The article discusses how sentences' modularity is related to biomolecules and their effect on mutation viability. The article employs the term cultural alleles to discuss the idea of units of cultural information. It also explains how clauses can be exchanged between sentences and retain their meaning, as long as they do not disrupt the grammatical structure of that sentence. Each clause will be subject to its selection pressures, determining how likely that variant will be retained. Finally, the article discusses sentence length and the Hamming Distance. The article explains that sentences may have any length, as long as they follow certain grammatical structures: typically, one noun and one verb and some connectives and descriptives. Sentences that are less than 10 words in length sound very clunky, and sentences longer than 35 words are demanding of memory and interpretation.

Overall, the methodology section of the article seems well-researched and appropriately designed. The article uses a

variety of sources to justify the key variables that need to be considered in the social evolution of text. The article also discusses the challenges associated with quantifying these variables, particularly in terms of internal replication of information. However, the article proposes a model that considers both internal and external replication rates to understand the evolution of cultural information.

The results are presented clearly and analyzed appropriately. The authors use a range of measures, such as the Shannon Diversity Index and heterozygosity, to show how the mutation rate is the primary determinant of diversification in cultural information. The authors also illustrate how different modes of communication affect the rise in diversity. The conclusions adequately tie together the other elements of the paper.

The paper identifies clear implications for research, practice, and society. It proposes a new model of culture that unifies the mode in which information is stored culturally and biologically, and opens up new avenues of comparative analysis. The paper has the potential to bridge the gap between theory and practice by providing a new perspective on how cultural information evolves. The authors suggest that their model could be used to influence public policy and contribute to the body of knowledge in this field. The implications are consistent with the findings and conclusions of the paper.

Overall, the article presents a significant contribution to the field and is well-written and well-argued. The authors demonstrate an adequate understanding of the relevant literature, use appropriate methodology, and present clear results and conclusions. The implications of the paper are also well-identified and have the potential to influence research, practice, and society.