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Does follower of majority accelerate polarization or diversity of culture?

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Social media has enabled the posting and reception of free individual information and influences the opinions and interests of individuals. However, there are concerns about issues like overconcentration or fragmentation of opinions due to selective contacts, where information conforming to the majority in a group or information that is similar to one's own is actively selected.

Axelrod proposed a model to study if the localized interactions bring about global polarization and showed that while localized convergence leads to homogenization of society as a whole, there also remains a group with few different characteristics [1]. Many secondary studies are being carried out taking this as a basic model that suggests the possibility of the coexistence of cultural diffusion and maintenance of cultural diversity [2].

We propose an agent model to analyze the impact on the diversity of opinion distribution of the society caused by the diverse social media developments in recent years and the information type provided on social media. The users of social media receive information from the neighboring users or from the topics that trend on the website. We extend the Axelrod simulation model to introduce a model where individuals interact with aggregated information of the group. Then, we carry out a simulation based on the proposed model and study the impact of the aggregated information on the cultural diversity of the society.

In this study, aggregated information is defined as a characteristic of the majority, possessed by the Agent within the W Hop in the vicinity of the agent. Then, we carry out simulation to observe the difference in cultural diversity when the range of aggregated information W and its utilization rate B are changed.

From the results of the simulation, we understood that the aggregated information is effective in maintaining the cultural diversity, and difference in that effect can be seen from the range of aggregated information. To be specific, we analyzed the effect of aggregated information in different ranges of local, intermediate, and global, and understood that the aggregated information in the intermediate range is useful in the maintenance of cultural diversity. This paper made it possible to operationally handle the effect on global cultural convergence caused by the development of information society in recent years, with interactions based on similar principles.

Our future work is introduction of a network structure. It is necessary to verify the impact on diversity of society due to the interaction with other users or community through a network.

[1] Axelrod, R.: The Dissemination of Culture: A Model with Local Convergence and Global Polarization, Journal of Conflict Resolution, Vol. 41, No. 2, pp. 203–226 (1997)
[2] Gonz´alez-avella, J. C., Cosenza, M. G., Klemm, K., V´ıctor, M., and San Miguel, M.: Information Feedback and Mass Media Effects in Cultural Dynamics, Journal of Artificial Societies and Social Simulation, Vol. 10, No. 3, p. 9 (2007)