

Using Unsupervised Machine Learning Methods in Social Science Research: Critical Observations on Topic Models

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Topic modelling is an unsupervised machine learning technique. Its potential applications for social science have increased during the recent years, both in Finland and internationally. Topic models, like many other unsupervised machine learning methods, require input from the researchers in the form of parameters used with these models. Through a user study, this article demonstrates that the commonly used interpretability-focused approaches can lead to different outcomes. Also differences emerging from parameter selection are discovered in the outcomes of the analysis. Based on the experimental and empirical study, the article recommends that (i) the choice of parameters should be done using statistical measures instead of interpretability, and (ii) the results are further elaborated using social science literature or extended analysis. Furthermore, it is recommended that (iii) there should be more transparency related to the application of unsupervised methods, and (iv) researchers applying computational methods must follow the developing research on critical algorithm studies.

Keywords: Topic modelling, machine learning, computational social science, party programme, catch all party.

**Generations in Theory:
Third Generation Constructivism and Securitization**

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Different theoretical orientations may be organized with the help of generations, but despite its benefits this practice is suspicious. In this article we present the third generation project in social constructivism and apply it to Finnish language securitization theory discussions during this millennium. Our research shows that any theoretical orientation might have a need for its own “third generation” if that is understood as a scientific reminder and as an insurance against neglecting the insights in that orientation’s early research. Yet, despite its benefits, the use of generations entails generalizations, the use of power, and disciplining. It is not self-evident that the use of generations will advance science or scientific discussion. Instead of such generalizing concepts, it would be more beneficial to avoid them and instead to focus on particular studies and their merits and problems.

Keywords: Social constructivism, third generation, securitization, reflectivity, power.