Professor: Dr. Alex van Venrooij
Faculty of Social and Behavioural Sciences
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UNIVERSITEIT VAN AMSTERDAM

Measuring Meaning in Mixed Methods

Individual Assignment 1

Helge Moes
11348801

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1) In "Measuring Meaning Structures", John Mohr describes three basic steps as fundamental to the formal analysis of meaning: 1. identifying basic elements 2. identifying and measuring relations 3. finding structure. Identify and explain these three steps in the following articles.

a. Bearman and Stovel (2000) (293 words)

The article by Bearman & Stovel (2000) portrays a strategy for analyzing narrative sequences as networks. By representing complex event sequences as networks, the authors claim to measure 'the observable narrative structures of life histories' and 'the author's explicit connections between elements', where most narrative stories rely on the reader to fill in the gaps. The narratives Bearman & Stovel (2000) focussed on were autobiographical accounts of a Nazi.

Two one-mode matrices were run in this article. The basic elements consist of discrete story elements, such as: relations, persons and settings. The two one-matrices were based on different characteristics of narrative (Macro elements, Local elements and Cognitive elements) and mean centrality and relative centrality of groups of elements (chaos, exposure to Nazis, Anti-Semitism, order and elision). The content elements were transformed into nodes that were connected by clauses that can be considered as flows.

The measuring relations consist of the content elements (nodes) and the clausal relations between elements (narrative clauses, arcs) that are distracted from the original narrative, the network graphs result in a similar structure to the story of one becoming and being a Nazi (Bearman & Stovel, 2000). 'Relationary similarity' is realized, since similarity among items within a cultural system are assessed based on the presence or absence of types of social and cultural relationships between objects (Mohr, 1998).

The standard network techniques are applied to define the structure by a network analysis that implements 2 different structures: from 'becoming' and 'being' a Nazi. They use a beta/power-centrality of elements in the becoming story, which consists of elements referring to chaos (17), exposure to Nazis (13), anti-semitism (7), order (9), elision (12). The mean power-centrality of these nodes are calculated and compared to the overall mean of the power-centrality of all nodes.

b. Ghaziani and Baldassari (2011) (297 words)

Ghaziani and Baldassari (2011) examine assumptions of cultural coherence based on cultural elements, such as values, norms, beliefs, customs and attitudes that resist change in social groups. Moreover, the data consists of articles from the gay press one year before and after each LGBT march on Washington. In the article by Ghaziani & Baldassarri (2011), the basic elements are based on the codes that answer the question, "Why should we march on Washington?." This resulted in a coding scheme with the following units that are the 12 themes: coalitions, community building, cultural acceptance, diversity, education, equal rights, federal activity, HIV/AIDS, size/strength, state-level activity, unity and other.

The measuring of relations in this article is an 'attribute similarity' (Mohr, 1998) based on a two mode matrix (person-by-theme) that contains the 12 themes and the articles that are covered by the gay press. Furthermore, another one-mode matrix reflects theme-by-theme. This one-mode matrix reports the frequency where two ideas occur in the same article and compare the sets of selected attributes they share.

Furthermore, the structure can be depicted as a network analysis with an eigenvector centrality, since frequency of co-occurrence as a measure of connectivity between pairs of themes. As stated by Ghaziani and Baldassari: "We cannot take mere frequency of co-occurrence as a pure measure of connectivity between pairs of themes because it is partly a function of popularity: if two themes are popular in the public forum, then they are also likely to co-occur in the same article" (2011, p. 188). The graph plots the efficiency measure of structural holes that are present in each theme over time and emphasizes the trends for community building and equality themes, this can be understood as brokerage. A quadratic assignment procedure (QAP) shows regression between each pair of years that portrays network structures and correlation coefficients.

2) Answer the following questions in max 300 words per sub question:

a. Discuss, in your own words, the similarities and differences between these three centrality measures: degree centrality, eigenvector centrality and Bonacich power centrality. (277 words)

A similarity these centrality measures share is that they are implemented in order to identify the most important nodes in a network based on different definitions of importance. Centrality measures consist of measures of analysis in order to comprehend abstract networks through the use of nodes and displaying them into graphs. There are many different centrality

measures, but degree centrality, eigenvector centrality, and Bonacich power centrality are three commonly used measures.

Degree centrality is a measure of the number of connections a node has in a network. It is calculated as the number of edges that are directly connected to a node. Degree centrality is a simple measure that is easy to understand and interpret, and it is often used as a baseline measure of importance in a network.

Eigenvector centrality is a measure of the importance of a node based on the importance of the nodes it is connected to. Nodes that are connected to many important nodes are considered to be more important than nodes that are connected to less important nodes. Eigenvector centrality is based on the principle of 'rich-get-richer', where nodes that are already important tend to become even more important over time.

Bonacich power centrality is a measure of the importance of a node based on the number of connections it has, but it also takes into account the number of connections that the nodes it is connected to have. The Bonacich power centrality is a measure of the potential influence a node has in a network, as it takes into account both the number of connections a node has and the number of connections the nodes it is connected to have.

b. Discuss, in your own words, two common uses of matrix multiplication in social network analysis. (209 words)

Multiplication in social network analysis is a common practice. It allows for two matrices to be combined. For instance, a 2 by 3 and a 3 by 2 matrices that are multiplied, will result in a 2 by 2. This allows for merging matrices in order to grant new insights and observations. Moreover, another use is a scalar multiplication that multiplies everything in a matrix by an outer digit or unit. A matrix can also be multiplied to a transposed matrix through multiplication from a 2 by 3 to a 3 by 2. This switch allows for compound relations to be used for different sets of matrices.

Moreover, a common use of matrix multiplication is to calculate similarity or distance measures between nodes in a network. For example, the Jaccard similarity coefficient between two nodes can be calculated by taking the dot product of the corresponding row and column in the adjacency matrix of the network.

Another common use of matrix multiplication is in the calculation of centrality measures. For example, the eigenvector centrality of a node can be calculated by multiplying the adjacency matrix of the network by a vector representing the centrality of each node. This operation is often repeated several times until the centrality values converge.

Bibliography

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