

A Study on the Emotional Measurements of Literary Geography from a Digital Humanities Perspective

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Geography and emotion are inherently linked. The characteristics of a geographical landscape can trigger emotional responses in the viewer, which accumulate over time and through spatial transmission to form a unique "local" and "cultural image" that influences social perceptions of the landscape (Reid, 2008). Since the 1990s, a "spatial turn" has emerged in Chinese literary geography, prompting scholars in the humanities to explore the spatial aspects of texts and innovative connections between literary studies and geography. These specific spatial and geographical landscapes enter the vision of their creators and become the "geographical imagery" of literary geography, an important form of connection between geography and emotion (Miao, 2020).

With the rapid development of digital humanities research methods, it is now possible to achieve more precise descriptions of emotions in existing emotional geographies. This study proposes a method for calculating the emotional diversity of literary geography using graph theory and diversity theory. By constructing a correlation network of geographical and emotional interactions in a large number of literary texts through text mining techniques, it is possible to calculate the emotional diversity of literary geography in a more holistic and precise manner than traditional humanities research allows. The specific methodological framework is shown in Figure 1.

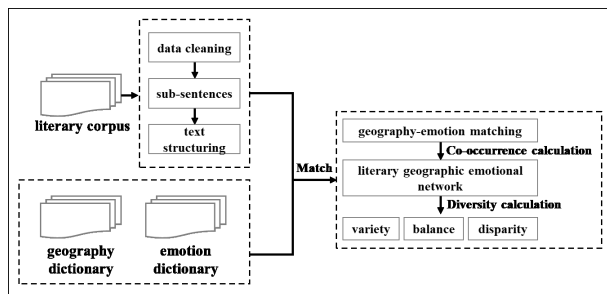


Figure 1. Methodological framework

Based on diversity theory, this study measures the three dimensions of variety, balance and disparity (Stirling, 2007). The variety of emotion represents the degree of diversity of emotional types at a geographical location, expressed in terms of the number of different emotional types directly associated with the geographical location. n_i is the number of different emotional types co-occurring at geographical point i .

$$\text{Emotional Variety}_i = n_i$$

The balance of emotion is measured using the information entropy of the emotion distribution at the geographical point location. C as the set of emotional types co-occurring at geographic point i , n_j is the frequency of emotional type j co-occurring at geographic point i , and N is the total frequency of all emotional types co-occurring at geographic point i .

$$\text{Emotional Balance}_i = - \sum_{j \in C} \frac{n_j}{N} \log \frac{n_j}{N}$$

The disparity of emotion indicates the degree of differentiation in the emotional types associated with a geographic point location and is measured in this study using the Jaccard coefficient as follows:

$$\text{Emotional Disparity}_i = \frac{\sum_{j,k \in C} d_{jk}}{n_i}$$

$$d_{jk} = 1 - \frac{\text{Count}_{jk}}{\text{Count}_j + \text{Count}_k - \text{Count}_{jk}}$$

where d_{jk} represents the distance between emotional types j and k , n_i is the number of different emotional types co-occurring at geographical point i , Count_j represents the total frequency of emotional type j in all co-occurrence relationships, and Count_{jk} represents the total frequency of emotional types j and k co-occurring with the same geographical point in all co-occurrence relationships.

