Understanding Social and Spatial Relationships in the International Trade Network: A Geovisual Analytic Approach

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Introduction
Social network analysis methods have been applied in the literature to explore the architecture of the international trade network (ITN), but the role of geographical proximity in shaping the ITN has not been explored, especially at different spatial scales. It is a challenge to distinguish the roles of social and spatial relationships in the ITN, because both relationships always interact with each other. To address this challenge, this research develops a novel geovisual analytic tool: the GeoSocialApp, to understand the interaction of the social relationship and spatial relationship in terms of the ITN.

Results
Global trade is hierarchical with a core-periphery structure in terms of the international trade network.

The complex interaction between the social and spatial relationships coexists in the ITN, but the former is more influential to developed countries, and the latter is more influential to developing countries.

The interaction of spatial proximity and social closeness in terms of the ITN across different regions also indicates that the development of countries experiences a process of loosened spatial constraints.

Method & Data
The explicit social representation and geographical representation in GeoSocialApp (Luo et al. 2011) enable an insight gaining process in terms of different roles that social and spatial relationships have on ITN with varying scales.

Table 1. Partial Binary Matrix in 2005

Future Work
Next, we will use this tool to explore the ITN for multiple years to understand the change of the spatial-social interactions over time.

Future models of the international trade should be complex enough to consider both relationships across different geographical regions.

The method presented here are applicable to any other analysis contexts which include social and spatial relationships among geographical regions (e.g., human migrants among different states in the U.S., or war conflicts among different countries in the world).

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References: