

## Revealing Tourism Space Territoriality Using GIS from Perspectives on Critical Cartography

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### Introduction

Researchers came to realize that maps are not only a tool to convey geographical information, but are a social construct that deliver the meaning, context & historical background of the contents hereinafter referred to as critical cartography to describe the approach.

To decipher the prejudices & preconceptions, critical cartographers have owed a lot to qualitative methods rather than quantitative ones. In the present study, the author intends to quantitatively visualize & analyze tourist maps by using GIS to reveal tourism space territoriality, in order to pave a way for quantitative methods.

### Target area

Tomonoura, a small port town being at the center of a nationwide controversy over the enforcement of a construction of the cross-linked road bridge project by the local governments. Tomonoura was caught in a dilemma between the national voice of opposition & local residents hope of its opening.

Because this town was once ruled by samurai, the road network contains many cranks for security reason. As the road width is also too narrow for cars, it has caused delays in fire ambulance service delays as well as traffic jams. On the other hand, many old houses still remain, which attracts tourists. Consequently, Tomonoura sways over whether to conserve scenery with respect to its historical value or to cross-link the roads to secure the safety & convenience of local residents' daily lives.

Tomonoura roughly consists of three districts. "Tomo" located in the midst shore of the harbor, "Hira" in the southwest, and "Hara" in the north. The cross-linking bridge is located in Tomo, just around the corner from its aesthetic townscape zone. Due to the disparity of such geographic conditions, residents of these areas possess different values toward the same location, & therefore have deepened the conflict.

### Purpose and methods

When mapmakers intend to represent a place as a tourist area they likely to neglect the living environment. Therefore, by investigating the degree of coincidence in the drawn tourist map areas, we can clarify whether there is a certain inter-subjective agreement among the mapmakers over tourism space in Tomonoura or not.

The analyzing process is as follows. First, 11 tourist maps and 4 erect billboards/plates and web maps were collected and captured into electronic image for the analysis. Then, by using geo-referencing that is mounted on the GIS, all digitalized maps & billboards/plates were matched respectively to the prepared base map. Almost all tourist maps were distortion-free & successfully matched without strict geometric corrections.

### Results and discussion

The layered tourism space is displayed Fig.1. The shading value shows representation density, therefore the darker colors demonstrate more tourist maps include the area in the scope of tourism space. It is apparent that there is an overwhelmingly high density area surrounding Tomo. In contrast, Hira is neglected by all from their depictions.

Then, by using directional distribution implemented in GIS, a standard deviational ellipse was calculated through the use of gravity centers of each digital image. Again, the gravity centers are concentrated in around about 300m from Tomo castle ruin, the center of Tomo district. The ellipse revealed the sphere of tourism space in Tomonoura is almost exclusively in the range of only 800 square meters centered in Tomo. Although the remaining places also belong to the same unit of local administration, they were omitted and neglected from Tomonoura when the mapmakers put out the tourism information on the maps for visitors.

Results demonstrate that it is crucial to consider the disparity of geographical conditions as well as the value-based variance among the residents. Any policy on tourism-oriented regional development cannot be supported by residents without considering the view of neglected people who reside in erased areas in the tourist maps drawn by tourist oriented industries.

Keywords: Critical cartography, Geographic information system, Tourism space territoriality, GEO-Body, Georeference, Standard deviational ellipse

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