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Cognitive Features of Map Signboards for City Communications

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1. Background

As public facilities that indicate spatial relative information, map signboards play important role in city communication. Map signboards have advantages that can be shared by the public and can get in time update. However, some map signboards are not well designed and are easy to mislead people. This paper analyzed cognitive features of map signboards for evaluating and designing map signboards.

2. Cognitive Features of Signboard Maps

Map cognition is the essential process that connects map with real world when people reading a map. Four important cognition features of map signboards are as follows.

You Are Here (YAH) point. According to whether YAH point can indicate user's location, we divides YAH point into two categories. One is positional point, which is usually a round or square spot and only indicates the position of the map signboard. The other is position-directional point, which contains a short segment or an arrow that indicates both position and direction of a map signboard.

Alignment. Map signboards are fixed and cannot be rotated. To make it easy to read, map signboards should be well aligned to avoid people from rotating map images in their minds. Egocentric, exocentric, and allocentric are used for map signboards. Egocentric map signboards are drawn based on the direction of the map signboard. The up direction of the map corresponds to the facing direction when people reading the map. Egocentric map signboards are good at instructing the spatial relations between the map-reader and surrounding objects. Exocentric map signboards are north-upped, and are good at showing the spatial relations among different objects. Allocentric map signboards use main spatial objects, like main road, to build mapping coordinates. Allocentric map signboards are good at indicating the spatial relations between the main object and other objects.

Distortion. Based on map distortions, we classify map signboards into two categories: maps with regular distortions and maps with irregular distortions. Map signboards with regular distortions keep accurate topological, distance, and direction relations with mathematical formulas. The accuracy ensures the correctness in micro way navigating. Map signboards with irregular distortions just ensure topological relations among objects. Overall impressions of an area can be left by using irregular distortions.

Symbol. We classify two kinds of symbols for map signboards: abstract symbols and representational symbols. Abstract symbols use regular shaped symbols to refer to certain spatial objects. An abstract symbol can represent a kind of objects and usually map legends are needed to translate the abstract symbols. Representational symbols use vivid pictures to represent spatial objects. One representational symbol stands for one spatial object. Meanings of representational symbols are usually noted beside the symbols. The map signboards that use abstract symbols look more formal and reliable while those map signboards that use presentational symbols are more artistic and attractive.

3. Evaluating Map Signboards

Cognition features are used to evaluate map signboards with different functions.

Instructing maps are used when users have a clear destination, and the maps navigate people to the destination. Good instructing map signboards should be egocentric with regular distortions.

Showing maps are used when users' destination is not clear or unique. Showing maps show the distributions of facilities around and give candidates of answers. Good showing map signboards should use position-directional YAH point and regular distortions.

Evolving maps do not only show the spatial distribution of objects, but also arouse users emotions. Good evolving map signboards should use representational symbols.

Keywords: Map Signboard, Map Cognition, City Communication