

Acquisition of Landmark Knowledge from Static and Dynamic Presentation of Route Maps

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Introduction

Route maps have recently gained much attention as effective tools to convey route information. Benefits of maps are attributed to their ubiquitous existence in culture and their analogous properties representing spatial knowledge. Route maps have become widely available through the internet and within on-board navigation systems. Despite their prevalence, optimal design criteria are still missing.

For example, route maps integrated in on-board navigation systems present routes dynamically with a moving dot that traverses a map. In contrast, internet maps present information statically with lines representing the route. At first glance, dynamic, animated presentation seems to be more effective than static one. (e.g. Nathan, Kintsch, & Young, 1992). However, advantages of animation may be due to other factors, such as interactivity or inclusion of information not present in static conditions. Furthermore, other studies fail to demonstrate superiority of animations at all (e.g. Morrison, 2000).

Extending research on effects of static vs. dynamic route presentation on conceptualization and memory (Klippel, Tappe, Habel, submitted), we examined the influence of presentation mode on memory for landmarks.

Dynamic vs. Static Presentation of Maps

Material and Procedure

Participants learned a route from a map of a fictitious town. The route was presented to them either as a solid line (i.e. static), a moving dot (dynamic), or a dot superimposed on a line (mixed).

The participants viewed the map three times, each for 1.5 minutes. Afterwards, they were given a blank map with only the streets and were asked to recall the landmarks.

Recall Memory of Landmarks

In the dynamic condition, landmarks at turning and non-turning intersections were recalled equally well (49.4% vs. 48.8%), but in the static condition landmarks at turning intersections were remembered more often (52.9%) than at

non-turning intersections (43.8%) (see Table 1). Since landmarks at turns are more critical to route directions, we conclude that static displays of route information is preferable over dynamic displays.

	Turns	Non-turns	Total
Dynamic	49.4	48.8	49.1
Static	52.9	43.8	48.4
Mixed	57.7	41.5	49.6

Table 1: Proportion of recalled landmarks (in %)

Surprisingly, in the mixed condition participants recalled even more landmarks at turns (57.7%) than at non-turns (41.5%). The combination of different presentation modes and the resulting memory improvement for vital route information support findings on the benefits of redundant information displays (Hirtle, 1999).

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