

Motion Displays for Travel Itineraries

1 Introduction

Itineraries are organized listings of destinations which allow the traveller to easily track sequences of locations during travel. Although a simple text listing of transport exchanges is one way of presenting an itinerary, map-based graphics, such as the “directions” option on Google Maps, can be a more informative and aesthetically pleasing alternative to depict movement. In particular, by using principles from vision science, map-based visual displays can allow users to efficiently glean information about their location at any point during travel. In this essay, I will discuss three visual principles which can enhance the tourist’s perception of time and location information from map-based itineraries.

2.1 Using motion to trace the travel path

One obvious way to ensure the map user travels in the right direction is to have a moving icon trace out the intended path of travel. Since motion is processed preattentively (Ware, pp 156, 159), this icon can be rapidly identified independent of the number of non-target (or distracting) elements in the display.

2.2 Recognizable objects can act as avatars and landmarks

Research from the field of object perception can help craft designs which are effective in orienting the user to his surroundings by ensuring that icons are quickly identified. For instance, the aforementioned icon used to represent the user’s location can be a face- perhaps even the user’s own face- since humans seem to be able to readily perceive faces. In fact, there is evidence that the fusiform gyrus in the brain is selectively activated while viewing faces, and not other stimuli such as houses (O’ Craven and Kanwisher, 2000). Such studies suggest that the human visual system is predisposed to recognize faces, which is corroborated by findings that infants more quickly learn about faces than other objects (Ware, p 237). Objects can also be used in the present context to orient the user towards popular attractions or landmarks. For instance, an icon of the Eiffel tower can mark its spot on an itinerary which includes Paris. Irving Biederman’s work on geon theory suggests that characteristic viewpoints of well known objects facilitate their perception. For instance, the canonical view of a teapot is instantly recognizable (Ware, pp 235-236), compared to other, non-canonical viewpoints.

2.3 Using brightness contrast to highlight global location on a minimap

When travelling great distances, it helps to be able to know not only the local position, but also the more coarse-grained global position. Minimaps, or smaller maps embedded within the larger map can be used to show position at a broader spatial resolution. Often, the close-up

34 view of the main map is highlighted within the minimap so one has a sense of how the locally
35 depicted environment fits in with the global position, and luminance can be used to highlight this
36 local area on the minimap. For instance, the local area currently on view can be shown on the
37 minimap as an area of high luminance, with large luminance differences to depict salient features
38 such as large rivers. In contrast, other areas can be shown as dimmed, with little luminance
39 differences creating a perception of undifferentiated areas which are not currently important.
40 This works because big luminance differences are accentuated by the human visual system
41 compared to small luminance differences, primarily due to lateral inhibitory neuronal
42 connections (Ware, pp 70-74).

43 3 Conclusion

44 In conclusion, change in position over time, or movement, is exemplified by graphically-
45 based itineraries, and perception of this can be enhanced using motion, recognizable objects, and
46 brightness contrast.

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48 References

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50 corresponding stimulus-specific brain regions. *Journal of Cognitive Neuroscience*, 12(6),
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