Revisiting the Mercator influence on global-scale cognitive maps: Studies from a Web Mercator world

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It has frequently been suggested that familiarity with distorted map projections influences the shape and structure of our global-scale cognitive maps. The Mercator projection has been noted specifically for introducing significant distortion in perceptions of global-scale space. However, research from the mid-2000s (Battersby & Montello, 2009) to examine for Mercator-like distortions in global-scale cognitive maps found little evidence of such patterns. In retrospect, though, it seems likely that the population evaluated in this study had limited interaction with the Mercator projection, as the projection became less common for global-scale mapping in the 1990s (e.g., classroom wall maps shifted towards more equal area or compromise projections).   Though the Mercator projection has virtually disappeared from classroom walls and textbooks (other than as an example of distortion in projections), the Web Mercator projection has taken hold in the more visible and widely used online mapping medium. With this shift, we return to the question of whether or not the projection *is* influencing global-scale cognitive maps. Using a population of University students that have grown up in a mostly Web Mercator world (i.e., after the introduction of Google Maps in 2005), we re-examined the potential influence of Web Mercator on global-scale cognitive maps. In this paper, we report results from studies examining perceptions of global-scale areal and angular relationships to identify potential Web Mercator distortions. The perceptual measures are paired with self-reported frequencies of use of web- and paper-based global-scale maps, and participants' feelings about the appropriateness of web maps for assessing global-scale data to adjust for frequency of map exposure.

Keywords: map projections, Mercator, Web Mercator, cognitive maps