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Hyperbolic Representation of Global Structure of Visual Space

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Most studies on visual perception assume a limited region in visual space to be Euclidean. It was found in the alley experiment, in which extensive configurations of stimulus points in a frameless space are dealt with, that a horizontal or slanted plane extending from the subject is best described by hyperbolic geometry, whereas a frontoparallel plane in front of the subject is best described by Euclidean geometry. theoretical discussion was made around these findings and two properties of visual space (VS); VS is closed in the sense that no percepts can appear at an infinite distance, and VS is dynamic in the sense that its global structure critically depends upon the configuration of objects in the physical space. The following problems were also discussed under the assumption that entire VS is structured according to hyperbolic geometry: (1) how far is VS extended beyond the far-most percept under various conditions, and (2) how the sky as the boundary if VS, in daytime as well as at night, changes its shape in accordance with what we see in VS.