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THE VISUAL STRUCTURE OF A

PLANE SURFACE

A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

by

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This thesis describes original research carried out by the author in the Department of Psychology of the Australian National University from October 1965 to September 1968.
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This study is concerned with the capacity to make judgments of distance on an horizontal plane surface. In particular, it provides a descriptive account of the patterns of interval-ordering judgment along certain rectilinear paths on such a surface. A scaling technique has been employed which enables a metrical representation of judgment to be made for each selected path. The foundations of this technique are examined in Chapters 2 and 3, and an experimental validation is provided in Chapter 5. Chapter 4 employs the technique to examine the pattern of judgment on the median path of the plane, and Chapter 6 provides a corresponding account of judgment on fronto-parallel paths at various distances from the observer. In Chapter 7 consideration is given to the possibility of providing a general representation of judgment on the plane, and an examination is made of intra-path interval comparisons which involve the median path and the family of fronto-parallel paths. Finally, Chapter 8 examines the visual input which results from viewing a plane surface, and a reinterpretation of the earlier findings is made in terms of this input.