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THE PERCEPTUAL NATURE OF VISUAL IMAGERY

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A thesis submitted for the
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the Australian National University,
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This thesis describes original research carried out by the author during the tenure of an Australian Government Postgraduate Research Award in the Department of Psychology of the Australian National University from March, 1973 to March, 1976.

A handwritten signature in cursive script, appearing to read "J. A. Slee".

J. A. Slee.

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ABSTRACT

This study was concerned with visual imagery conceived - in general terms - as the mental event involved in the subjective experience of "seeing" absent objects. Most recent studies of visual imagery, in this sense, have been concerned with its usefulness, rather than with its nature. The present study departed from this purely functionalist standpoint and investigated a specific question concerning the nature of visual imagery - namely, the question of whether this subjectively perception-like experience, and the processes giving rise to it are, in fact, perceptual in nature. The reasons for this departure are outlined in Part I (Chapter 1) of the thesis.

Before this question could be investigated experimentally, it was necessary to select an index, or manipulation, of visual imagery. This needed to control the presence and absence of the particular mental process of interest (and not other modes of recalling, or representing, absent objects), so that the performance of subjects employing it could be compared with the performance of subjects not doing so. Only by such a comparison is it possible to determine whether visual imagery has a special relationship to visual perception, or whether it is no more closely allied to perception than are other methods of representation or recall.

Part II of the thesis, then, is concerned with studies oriented to this methodological problem. Experiments I and II (Chapter 2) showed that three common manipulations of visual imagery (varying noun concreteness, varying instructions, and selecting subjects on scores on the revised Betts' Questionnaire upon Mental Imagery) failed to meet the requirement outlined above. However, these experiments did indicate

that individual differences in imagery ability would be the most appropriate basis for manipulating imagery. Consequently, a new measure of such differences, the Visual Elaboration Scale, was constructed (Chapter 3). The final form of this scale was both internally consistent and capable of discriminating among subjects in a logical fashion. Its construct validity was established by the results of a picture memory experiment (Experiment III, Chapter 3).

Part III of the thesis deals with the questions first of whether, and subsequently of how, visual imagery is perceptual. Chapter 4 reviews and discusses the relevant literature. Chapter 5 reports a study (Experiment IV) in which subjects varying on visual imagery ability, as measured by the Visual Elaboration Scale, were found to be affected differentially by the introduction of visual interference into a task requiring the mental representation of previously seen letters (after Brooks, 1968). The pattern of the results suggested that visual imagery makes a specific use of the apparatus of visual perception.

Experiment V (Chapter 6) and Experiment VI (Chapter 7) report investigations of the implications of the use of the perceptual apparatus by visual imagery. In these studies strong differences were found between subjects classified as "non-imagers" and other subjects in the ability to recall distinctively visual information, and in performance on a perception-like task related to the availability of this type of information.

Chapter 8 reviews the results of Experiments IV-VI in terms of their implications for the perceptual nature of visual imagery. Chapter 9 outlines problems raised by the study and, where possible, offers some solutions.