



Book Review

Face Recognition: Cognitive and computational processes by Sam S. Rakover and Baruch Cahlon. John Benjamins Publishing Company. Amsterdam/Philadelphia. 2001.

Reviewed by Elizabeth McCardell

This book is a critical examination of current research in, and innovative proposals for, memory for faces, face recognition and face reconstruction for criminological purposes. This *raison d'être* makes the title somewhat misleading, for this is not a general book on face recognition at all.

The issues described in scrupulous detail in this book are those of a methodological and theoretical nature. They bear upon the problems of memory and face perception and draw upon cognitive, computational and neurophysiological models of face perception, and recognition. Also taken account of are the environmental and psychological factors that add to the complexity that is the process of recognizing another person's face. A man running through an alley at twilight, knocking a person to the ground and snatching their bag is not going to be perceived in the same way as chatting with the same man in a queue.

Building up a composite picture of an offender's face is wrought with difficulties. Rakover and Cahlon identify the following factors, classified into the following three categories (see p.173). First, there are general factors

linked to face recognition, e.g., the 'conditions under which the witness saw the offender's face (visibility, length of time of target face exposure, observer's mental state); suitable reconstruction conditions (similar to the condition in which the observer first saw the offender's face); kind of face (typical, unusual); relationship between the race and sex of the witness and that of the suspect; witness's age; individual differences in face recognition, and more.' Second, technical factors associated with the reconstruction methods and their operation. Faces are all different, yet the number of features that can be included in the methods for face reconstruction is finite and small. Thus composites can only bear a similarity to the type of the suspect's face. Computerization, unlike manual methods of facial reconstruction, has greatly improved the possibilities for more accurate reconstruction. The skill of the investigator also matters. Third, there are those factors that interfere with the accurate reconstruction of face: the method of reconstructing the target face is based on a verbal description of the target face that the witness given to the investigator. Many empirical findings, as

Rakover and Cahlon say, show that verbal description of a face does not aid face recognition and may, in fact, impair it. A second factor is that face perception is less about atomistic elements connected together to form a composite picture; rather that we perceive and encode the face in a configurational-holistic manner. Face reconstruction, whether manual or computerized, by contrast, operates by breaking down the whole into identifiable parts. The argument here is not that a 'cognitive system is incapable of breaking-up the recorded visual construct into its components, but rather, that this cognitive process is accompanied by mistakes, because it eliminates the very important configurational-holistic facial information' (p.173) Some features, 'such as face-shape and age, are not perceived as local and isolated components but as global features, involving spatial relations among several features.' The composing tools themselves: a large number of eyes, noses, and chins, weary and may confound the witness's memory for the offender's face.

The human face is an infinite source of information: age, sex, nationality, community, socio-economic status, state of health, mental condition, intensions (good or bad), familiarity, identity, and name. To which might be added: level of fatigue of observer and observed as well the effects on recognition of the initial reciprocal encounter itself, when observer meets offender (e.g., mutual surprise when a burglar is found inside a cupboard). The face is a 'multi-dimensional stimulus pattern, a structure containing substructures of stimuli and a great variety of cues' (p.21). The face is also object, offering, as the authors say, 'two layers of cues: the two dimensional cues derived from the surface of the face itself, e.g., shadows, contrasts, defining features, and colours; and three dimensional cues derived from our binocular vision.'

Face recognition also takes perceptual account of the 'face's motion in space, as it recedes, approaches, and turns in relation to the viewer.' 'Thus we perceive the face from various viewpoints, a fact that causes great alterations in the projection of the facial image on the retina of the eye; nevertheless, it is perceived as a whole and consistent entity whose dimensions do not change' (p.22). Thus the recognition of faces is easier when relating to a three dimensional face than to a two dimensional representation such as a photograph or drawing.

The memory for faces as much as face recognition is reliant upon holistic as well as particularist schema. Tools developed for identifying criminals need to incorporate both kinds of information: to take account of psychological tacits as much as reductive, measurable information (e.g., the distance between the eyes and the relation of the nose to the mouth). Rakover and Cahlon's theses, their Schema Theory and the Catch Model (explained in this book), provide an innovative way to incorporate both kinds of information, thus to make the task of criminal identification easier

This is a thorough book and well argued, if a little reticent about revealing its jewels in accessible language. Sometimes too dense with ideas and also lacking a clear overall account at its conclusion, the book will, nevertheless, prove very valuable for forensic psychology and those more generally interested in the perception, memory, and recognition of human faces. Recommended.

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