plication of information theory to visual patterns tend to be glossed over, and we are left with such statements as that "in a polygon, information measurement thus reduces to counting the number of its turns. . . . it would be convenient to measure the information content of a form in terms of bits, i.e. the binary logarithm of the number of turns." Even if there were ways of measuring the information in a form that corresponded to judged figural goodness, this would not answer the fundamental question of how the brain processes pictures in such a way that we can recognize them and describe them in the ways that we do.

Zusne has perhaps been slightly unlucky in the timing of his book in that the approach to form perception has been transformed over the last few years partly as the result of work in artificial intelligence, which psychologists ignore at their peril. The key problem is surely how we are able to map the input picture into its elements and make explicit the relations between these elements. We see a piece of a jigsaw puzzle as a number of blobs related in highly specific ways: how such segmentation is achieved is not known. Although no existing computer program can produce the sort of description of this simple type of pictorial material that we do, work in artificial intelligence has called attention to the importance of problems of this kind and is beginning to suggest how they may be solved. How is it that we see the first four figures shown in the illustration (above) all as L's made up of a vertical and a horizontal bar despite the great difference in the ways a bar is depicted in them, while we see the fifth figure as a square with a nick in it although topologically it is very similar to the first? Zusne makes no mention of such problems, nor does he refer to the set of problems that arise from the fact that the image on our retina is usually extremely "noisy": for example, in looking at the real world the boundaries of surfaces are often not represented by any brightness differential in the retinal image, yet we are still able correctly to map the input picture onto structures that represent the surfaces actually present in the real world and the relations between them. This sort of problem does not arise with the nonrepresentational, two-dimensional patterns drawn in high-contrast India ink with which Zusne's book largely deals.

Moreover, the experimental approach to form perception has also undergone marked changes recently. There is no description in the text of work on visual search and visual matching or of research on visual short-term memory. The names of Neisser, Sternberg, Posner, and Sperling are conspicuous largely by their absence.

In his introduction Zusne shows himself aware of the changes that are coming about, and he may indeed have been fortunate not to have had to cope with them. He writes:

> It therefore seems likely that because the concept of visual form will crumble of its own weight, it will not be possible to write a volume quite like the present one in the future. . . . At a time when the field of visual perception of form appears to be approaching a crossroads, this reference volume is offered to those students and researchers who have a need for a systematic source of information on all aspects of perception of static, two-dimensional visual form as it has been conceptualized historically and until the recent past.

This is an excellent statement of the book's provenance, and it is worth adding that, although nothing like it may be written again, nothing like it has been written before; we should be grateful for Zusne's industry and scholarship which have enabled him to provide such a comprehensive and useful guide to the literature.

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On Hooke

Robert Hooke's Contributions to Mechanics. A Study in Seventeenth Century Natural Philosophy. F. F. CENTORE. Nijhoff, The Hague, 1970. xvi, 136 pp., illus. Paper.

In his preface, Centore states that "there is no scholarly study available of Hooke's actual place in the history of science and philosophy with respect to his doctrines and accomplishments within the area of mechanics." It is my unhappy duty to state that in my opinion Centore's book has not altered this situation. The opening sentence, an assertion that the history of science has ignored Hooke, aroused my apprehension that the author belonged to the Hooke cult. In this I was certainly mistaken. While Centore obviously admires Hooke, the book does not argue intemperately or unreasonably for Hooke's contribution to 17th-century science. Its faults lie not in partisanship but in simplification and in imprecision. As to the first, Centore devotes passages of tedious length to the detailed exposition of elementary issues such as uniformly accelerated motion and Hooke's argument for the indefinite extension upward of the earth's atmosphere. As to imprecision, he does not seem wholly to comprehend the questions in mechanics with which he is basically concerned. He wants to see Hooke's intuitive (and commonplace) idea of the "force" or "strength" of a body in motion as a step toward Newton's second law, which replaced this intuitive view of the force *of* a body with a precise quantitative measure of the force acting *on* a body to change its inertial state. In a passage that wholly bewilders me (pp. 84–85), he argues that Hooke developed Galileo's work on falling bodies by showing that the velocity or momentum of a body falling a constant height increases in proportion to the square root of its weight. He cumbersomely derives the inverse square relation from Huygens's formula for centrifugal force and Kepler's third law in order to illustrate the difference between Newton and Hooke. It is apparently true that Hooke never understood this relation, but one can hardly cite so elementary a substitution of one formula in another as a measure of Newton's mathematical capacity. What counted was the ability to demonstrate that an elliptical orbit entails an inverse square force to one focus.

Centore compounds the shortcomings of his book by failing even to mention Hooke's most important effort in rational mechanics, his investigation of simple harmonic motion. Mechanics was already a sophisticated mathematical science by the age of Hooke. Centore's interpretative framework, which seeks to contrast Newton's mathematical abstractions with Hooke's Baconian experimentalism, is incapable of shedding serious light on his book's announced topic, Hooke's contribution to mechanics.

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