

G. P. Brooks

**A Note on References by Robert Hooke to the  
Principle of Association in an Essay on Memory**

Robert Hooke (1653-1703) was for forty years a Fellow and the sometime secretary of the Royal Society of London. It was to this body that he presented on 21 June 1682 his only paper which is predominantly psychological in content, "An Hypothetical Explication of *Memory*; how the Organs made use of by the Mind in its Operations may be Mechanically understood."<sup>1</sup>

Memory, Hooke asserted, is "nothing else but a Repository of Ideas" (p. 140). Subscribing to the maxim *Nihil est in Intellectu, quod non fuit prius in Sensu*, he believed that these ideas are "formed partly by the Senses, but chiefly by the Soul it self." Allied to his mechanical theory of brain physiology, there is a strong materialistic tendency in Hooke's psychology. Soul, the "first Principle of Life," is alone incorporeal, although even it can only "effect what it wills" through the use of "Corporeal Organs." Sense impressions, he claimed, are conveyed "by the *Media* of the sensory Nerves" to the *Communis Sensus* (p. 139). Their stay there is momentary, however, and they are soon transported to another "Organ," memory, which has its "Situation somewhere near the Place where the Nerves from the other Senses concur and meet" (p. 140). The sense impressions are actual motions—a commonplace at the time—which "conveyed to this Repository become Powers sufficient to effect such Formations of Ideas as the Soul does guide and direct them in" (p. 140). This action of the soul is called attention.

My Notion of it is this, that the Soul in the Action of Attention does really form some material Part of the Repository into such a Shape, and gives it some such a Motion as is from the Senses conveyed thither; which being so formed and qualified, is inserted into and inclosed in the common Repository, and there for a certain time is preserved and retained, and so becomes an Organ, upon which the Soul working, finds the Ideas of past Actions, as if the Action were present (p. 140).

The brain is furnished with five types of matter, each adapted for the reception of impressions from one of the senses, and these form the "Elements out of which ideas are made" (p. 141). Each idea being "material and bulky" occupies its own space and possesses its own Motion.

Ideas are stored in a regular succession based on the order of their formation. There is a "continued Chain of ideas coyled up in the Repository of the Brain, the first end of which is farthest removed from the Center or Seat of the Soul where the Ideas are formed; and the other End is always at the Center, being the last Idea formed, which is always the Moment present when considered" (p. 140). The ability to recall ideas is affected adversely by the decay of the matter of which they are composed and also by the effect on the matter of more recently created ideas; the "Form may (by shifting and changing place in the Repository or Organ of Memory, and being protruded farther and farther from the Center or Seat of the Soul, and crouded into Orbs, though further off, yet closer and closer stuffed and crouded together) be in time alter'd, and sometimes quite lost" (p. 144).

As long as the idea remains in the memory, however, the soul may "apprehend," "feel" or "become sensible of" it. This occurs partly from the soul's own "Power of Radiation"—based on an analogy with the sun's rays, the sun being viewed as the soul of the universe—and partly from the "Re-action of the Ideas," a reflection back to the soul made possible by the distinctive continuing motion of each idea (p. 144). The soul, "according to the determination of its Will" can direct its power of radiation on any particular idea stored in memory. This "fixing or darting" of its radiation more strongly on first one and then another idea in the storehouse is what is meant by thinking (p. 145). Its effect is to renew or refresh former impressions.

But the radiation of the soul on an idea stored in the memory coil will produce not only an apprehension of that idea alone. "By this means it becomes sensible of many Ideas that accompanied that Idea, when made, many of them having kept the same Order in which they were made" (p. 144). In other words, the recollection of one idea is often accompanied by others that were initially contiguous with it during its creation. This is of course association by contiguity, the same idea as Aristotle had enunciated in his discussion of recollection. Hooke, like the Stagirite, was also aware of the impact of that other important influence upon the succession of ideas—similarity. Each idea, as we have seen, has its own motion which it retains from the original sense impression. Ideas can excite the attention of the soul by radiating this motion:

and by this means also whenever any Idea is created and impregnated with Motions or Qualifications similar to those of other Ideas placed at some distance in the Repository, the concurrent Impressions or Reactions of those similar Ideas upon the Soul at that time do make the fainter to be the more notable, and so excite the Soul to Attention or Radiation that way also; and by that means it has an Excitement to be more sensible of the other also at that moment: And this I take to be that Impression which we are sensible of, when we say, This brings to my Mind, or This puts me in mind, or this makes me remember, etc. (p. 145).

There was, of course, little that was original in Hooke's brief discussion of the associational concept aside from his description of its supposed physical basis; the principles of contiguity and similarity had long been recognized by a scattering of writers and the use of association to account for certain sequences of ideas had similarly been anticipated. Neither is there any indication that he advanced beyond earlier thinkers by grasping the potential importance of association as a general explanatory principle for psychological phenomena. Yet his references to that principle suggest the need for a reconsideration of the historical development of the concept of association.

The most durable of Thomas Reid's intellectual legacies has been the belief that the epistemological theories of Locke inevitably led to those of Berkeley which in turn culminated necessarily in the idealism of Hume. A step-child of this perceived ideational family tree is the equally persistent notion that psychology's most ubiquitous explanatory concept, that of association, developed over a fifty-year period in direct line from its modern discoverer Locke, through Berkeley and Hume, to the extreme associationism of Hartley.<sup>2</sup>

Such an argument is clearly untenable. It is, for example, by no means clear that Berkeley was aware that he was using, much less extending, Locke's principle of the association of ideas. It is equally uncertain just how familiar Hume was with Berkeley's writings,<sup>3</sup> and Hartley explicitly acknowledged the influence of John Gay rather than Hume, of whose work, indeed, he seems to have been unaware. A more satisfactory account of the development of the concept of association will require a detailing of its many applications between 1700—when it was first publicly discussed by Locke—and 1775—when Hartley's *Observations* finally reached popular consciousness following the publication of Priestley's edition of that work. An analysis of the actual sources of influence among these writers is also required. References to association had certainly been multiplying and one might reasonably argue that it was as a consequence of many individuals recognizing the applicability of the connective principle to their par-

ticular concerns that a thinker such as John Gay was eventually led to recognize its general significance.

But equally needed is a reconsideration of the earlier phase of the concept's development, the period just prior to Locke's early references to association. The knowledge that Robert Hooke used the idea as early as 1682 must throw doubt on any lingering belief that Locke had independently rediscovered it. Indeed, it is just possible that Hooke's essay was known to Locke, as one of the latter's friends, Justel, attended the lecture. Locke may also have been familiar with the writings of Claude Perrault, the French architect and anatomist. Perrault had written at length about the role of association in aesthetic judgement in a book published the year after Hooke's lecture.<sup>4</sup> With two such influential figures as Hooke and Perrault using the concept during the 1690s, what is obviously called for is an examination of other writings of the last decades of the seventeenth century to determine how widespread the recognition of the associational principle was, and what the possible sources of Locke's awareness of the idea may have been.

#### NOTES

1. Hooke, R. *The posthumous works of Robert Hooke*. (London: Richard Waller, 1705); subsequent references are to this edition. The paper was presented again on June 28 at the request of certain members who had not attended the previous week. It was not published, however, until 1705.
2. Aristotle, Vives, and Hobbes are also recognized to have been aware of some such principle, but even the most recent of them is regarded as historically discontinuous with eighteenth-century developments.
3. See, Philip Wiener, "Did Hume ever read Berkeley?," *Journal of Philosophy*, 56 (1959), pp. 533-35; 58 (1961), pp. 207-9, 327-8.
4. Auzout, a fellow member with Perrault of the French Academy of Sciences, had also attended Hooke's lecture in his capacity as correspondent to the Royal Society. It seems unlikely, however, that Perrault's ideas on association stemmed in any significant way from a knowledge of the views of the English scientist, for Perrault had written about the concept—albeit briefly—a decade earlier.