The use of interference paradigms as a criterion for separating memory stores

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Probably no one would want to account for the numerous patterns of interference in memory experiments by postulating a separate store for every demonstration of mutual interference among memories of similar events. Certainly Broadbent keeps his proposal down to only four stores, presumably the fundamental ones. But by what logic do we draw the line? Why are some patterns of interference said to reflect the operation of various stores, while other patterns are accounted for in different ways? What are the rules by which theorists arrive at these decisions? I am afraid that no explicit, generally accepted rules have been formulated, and neither are they offered by Broadbent — hence our proliferation of stores as explanatory devices. If interference is to be the criterion for proposing memory stores, the Maltese cross metaphor should be supplanted by some more appropriate form, perhaps a hydra.

The problem of determining mental structures or contents has a long history, but despite intensive inquiry no commonly agreed upon system of representation exists. Interference fails as a criterion for postulating memory stores, but other criteria are little better. Tulving and Bower (1974) reviewed ten other methods that have been used in attempts to determine mental structure (e.g. false positive recognition errors, clustering, release from proactive interference), but none is without problems. Thus postulation of mental structures remains largely a matter of the personal preference of the theorist, depending on the criteria chosen. Theories change, but it is difficult to note steady theoretical advance.

Since continued efforts to divine cognitive structure by many methods have apparently failed, it may be time to reexamine the assumptions on which such attempts are based, namely, that cognitive structure and process can and should be separated. Perhaps this assumption of a sharp separation between the two is a false one and a proper account of mental functioning ought to use different starting assumptions. One such assumption, one Broadbent expressly rejects, is to cast theories more purely in terms of mental processes rather than processes that act on static structures. Surely experience does leave a lasting representation in the nervous system — no one would contest that fact — but inventing numerous mental structures or stores may not be the best way to capture the essence of these lasting effects. It may be preferable to make as few assumptions as possible about mental structures and to account for cognitive phenomena in terms of mental procedures and the functions they serve.

The levels of processing framework of Craik and Lockhart (1972) was one proposal that emphasized mental processing to the relative neglect of mental structures. The failings of that approach are now well known (e.g. Cermak & Craik 1979), but they did not include a need to introduce mental structures.

Kolers (e.g. 1975; 1979a) has recently led the way in arguing for a procedural account of many memory phenomena. Although his proposal is still rather vague, a good deal of evidence can be interpreted within it (Kolers & Roediger, in press). Although rejection of static structures as a theoretical device in accounting for remembering runs against the grain of contemporary theorizing, this tactic seems worthy of pursuit as a means of detouring the seemingly intractable problem of determining the structure of memories. In addition, a good deal of evidence favors such an approach over competitors that assume static representations (see Kolers & Roediger, in press).