

Two Views of Remembering

Frederic C. Bartlett

Remembering: A Study in Experimental and Social Psychology
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Reviews by

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Sir Frederic C. Bartlett (deceased) was a dominant figure in British experimental psychology during the first half of the 20th century, making fundamental contributions to the study of memory. Director of the psychology laboratory and the first professor of experimental psychology at Cambridge University (Cambridge, England), Bartlett was instrumental in founding the Medical Research Council Applied Psychology Research Unit at that institution, an outgrowth of his interest in human performance research. Bartlett was knighted in 1948, was the recipient of numerous academic honors, and is credited with having liberated cognitive psychology from a narrow academic focus without abandoning rigorous scientific discipline. ■ Henry L. Roediger III, professor and chair of psychology at Washington University (St. Louis, Missouri), is past president of the Midwestern Psychological Association (1992–1993) and former chair of the governing board of the Psychonomic Society (1989–1990). Roediger has served as editor of the *Journal of Experimental Psychology: Learning, Memory, and Cognition* (1985–1989) and currently edits *Psychonomic Bulletin and Review*. Roediger is coauthor, with K. B. McDermott and L. M. Goff, of "Recovery of True and False Memories: Paradoxical Effects of Repeated Testing" in M. A. Conway (Ed.) *Recovered Memories and False Memories* and coeditor, with F. I. M. Craik, of *Varieties of Memory and Consciousness: Essays in Honour of Endel Tulving*. ■ Charles P. Thompson, professor of psychology at Kansas State University (Manhattan), serves as Chair of the Fellows Committee of the Society for Applied Research in Memory and Cognition (1996–1997) and formerly served as Chair of that society's Board of Governors (1995–1996). Thompson is coauthor, with T. M. Cowan and J. Frieman, of *Memory Search by a Memorist and*, with J. J. Skowronski, S. F. Larsen, and A. L. Betz, of *Autobiographical Memory: Remembering What and Remembering When*. Thompson is coeditor, with D. J. Herrmann, D. Bruce, J. D. Read, D. G. Payne, and M. P. Toggia, of the forthcoming *Autobiographical Memory: Theoretical and Applied Perspectives* and the forthcoming *Eyewitness Memory: Theoretical and Applied Perspectives*.

Remembering

Review by Henry L. Roediger III

Frederic C. Bartlett of Cambridge University published *Remembering: A Study in Experimental and Social Psychology* when he was 46 years old. His

birth (in 1886) almost coincided with publication of the first remarkable treatise on memory, Ebbinghaus's monumental *Memory: A Contribution to Experimental Psychology* (published in 1885, translated in 1913). If we confine our attention to books in English, Bartlett's *Remembering* probably constitutes the next great book about memory, after Ebbinghaus's *Memory For Remembering*, among his many other contributions, Bartlett was knighted in 1948 and henceforward known as Sir Frederic Bartlett. This great work was reissued in 1995 by Cambridge University Press, prefaced with a brief biography of Bartlett and a fine introduction to the work by Walter Kintsch.

Remembering is a remarkable book in many ways. In his Preface, Bartlett traces the beginning of the book to some observations he made in 1913 concerning the influence of attitudes and values on perceiving objects. The book was therefore 19 years in the making, but Bartlett published many other papers and books before producing the one that firmly secured his place in the history of psychology.

Bartlett clearly states his approach in the first chapter of *Remembering*. He intended to follow the lead of many earlier

psychologists by performing experiments to gain insights into the topic at hand, but he would eschew the methods that Ebbinghaus had used. He wanted to avoid simple stimuli such as nonsense syllables and use richer prose materials. He argues that Ebbinghaus's nonsense syllables did not



Henry L. Roediger III
Photo by Nash Baker



Charles P. Thompson

really avoid the problem of creating varying reactions among the people exposed to them; it was impossible to create materials that would accomplish this end. One passage is worth quoting here:

The psychologist, of all people, must not stand in awe of the stimulus. Uniformity and simplicity of structure of stimuli are no guarantee whatever of uniformity and simplicity of structure in organic response, particularly at the human level. We may consider the old and familiar illustration of the landscape artist, the naturalist, and the geologist who walk in the country together. The one is said to notice and recall the beauty of scenery, the other details of flora and fauna, and the third the formation of soils and rock. In this case, no doubt, the stimuli, being selected in each instance from what is present, are different for each observer, and obviously the records made in recall are different also. (p. 4; page numbers of all quotes are taken from the 1995 reissued volume)

The preceding passage summarizes reasonably well the main thesis of the book: The interests, preferences, and proclivities of the perceiver and the rememberer often determine the contents of perception and memory as much as (or even more than) the events in the external world that are ostensibly being perceived or remembered. This emphasis on the active participation of the person in cognitive acts ran against the assumptions of the time, in psychophysics and in most of the rest of experimental psychology, that control of the stimulus was critically important. The drumbeat of the cognitive revolution, still decades off, would resonate to the attitudes Bartlett endorses in *Remembering*, with his emphasis on the active role of the perceiver and rememberer in shaping percepts and memories. Neisser (1967) warmly endorsed Bartlett's ideas and influences in his seminal book, *Cognitive Psychology*.

The use of experimental method for Bartlett was not like that of Ebbinghaus or that of today. Bartlett really used controlled demonstrations, rather than true experiments, much as did the Gestalt psychologists. Not one true experiment appears in the book; he never systematically manipulated an independent variable to determine the behavior of a dependent variable, with extraneous sources of variation held constant or randomized. Bartlett attempts a defense of his methods in Chapter 1, noting that in passing "In this book there will be no statistics whatever" (p. 9), but to modern eyes the defense falls flat.

For this review I will summarize some of the main contributions of *Remembering*

and then turn to a critical evaluation, with the 20/20 wisdom of hindsight. The book is divided into two parts. Part I, called Experimental Studies, comprises 12 chapters, and these form the part that is best known today. After his introductory chapter, the first two content chapters of the book (Chapters II and III) report demonstration experiments on perceiving and imaging, respectively. Bartlett's chapter on perceiving is often forgotten, given the title and main thrust of the book, but it is quite interesting and antedates work from decades later on the role of expectancies in determining perception. Bartlett points out the intimate relation between perceiving and remembering: "in order to understand how and what we remember, we must set in relation to this, how and what we perceive" (p. 15). The main studies of perception were ones Bartlett had reported in 1916 in the *British Journal of Psychology*. Subjects were shown material for a brief interval, always under a quarter of a second. Some of the figures were ambiguous and could be named with various terms. Bartlett notes "how the name, as soon as it is assigned, immediately shapes both what is seen and what is recalled" (p. 20), reflecting the influence of language on perceiving and remembering. In addition, his 30 subjects typically strove to make sense of the rapidly presented array, and Bartlett refers to the "fundamental process of connecting a given pattern with some setting or scheme: *effort after meaning*" (p. 20).

One of the most interesting experiments, in Bartlett's sense of the term, involved repeated trials in trying to report the contents of a painting, with the painting shown quite briefly on each trial. Subjects would glimpse it, report what they saw, glimpse it again, and so on. "Every person who was given this picture to describe made of it something different from everyone else" (p. 29). In addition, once a person had arrived at an interpretation of the scene, his or her basic description would not change with even up to 38 more exposures (although details would be added). One primary conclusion, foreshadowing much modern work from the "new look" school on down to the present time, is that "the experiments repeatedly demonstrate that temperament, interests, and attitudes often direct the course and determine the content of perceiving" (p. 33). Bartlett further notes that "a great amount of what is said to be perceived is actually inferred" (p. 33), and he raises the possibility that if perceiving were so full of inference, with the stimulus present before the person, would not the role of in-

ference be even greater in remembering, because the events in question were long past? Most experiments in the remainder of the book are interpreted as supporting this hypothesis.

The heart of Bartlett's book, and what is passed along in textbooks today, is contained in Chapters IV–X, which run for some 180 pages (out of 314). These chapters report the experiments on remembering (Chapters IV–VIII) and provide Bartlett's theory to explain his results (Chapter X). Again, as in the perception "experiments," the methods are rather casual. In one set of experiments (Chapter IV), he showed people cards and then asked questions about what they had seen, but he says that "it is not necessary to give the questions in detail, particularly as I did not hesitate to adapt them or to supplement them in accordance with what I judged to be the psychological needs of the moment" (p. 49). In his research, Ebbinghaus worried about demand characteristics and experimenter bias and took elaborate precautions to guard against them, a tricky business when one is both the experimenter and sole subject (Roediger, 1985). However, Bartlett never worries about these possibilities in *Remembering*.

Bartlett's first experiments involved the *method of description*, in which he gave people pictures of faces on cards and had them describe these pictures later, sometimes more than once. He argues that his results show that "remembering is affected by unwitting transformations: accurate recall is the exception and not the rule" (p. 61). He is quite interested in invention or importation in the memories of his subjects, which today we would broach in the context of false memories. He concludes that importations are rather common and that "so far as the present evidence goes, it seems probable that the tendency to invent, or to import material from a different setting, may increase considerably with the lapse of time" (p. 58), a conclusion that still rings true today.

Chapter V contains one of the two sets of his most famous experiments, those using the method of repeated reproduction. As recounted in numerous textbooks, Bartlett had subjects study a Native American story, "The War of the Ghosts," and then tested them repeatedly by asking them to reproduce the story at various intervals. The only results presented are in the form of actual reproductions of the story by various subjects. Typically, the first reproduction occurred 15 minutes after the story had been read twice by the subject and then at some point later in time. "The War of the Ghosts" represents

an unusual type of story for English students, being rather disjointed and filled with supernatural elements. One of Bartlett's main findings was the tendency of students to *rationalize* the story, by which he meant that "whenever anything appeared incomprehensible . . . it was either omitted or explained" by adding material (p. 68). Such rationalization occurred "in practically every reproduction or series of reproductions" (p. 71).¹ The effort to impose structure causes rememberers to tie together unrelated material and "the process of fitting is an active process, depending directly upon the preformed tendencies and bias which the subject brings to his task" (p. 85). Indeed, "the most general characteristic of the whole of this group of experiments was the persistence, for any single subject, of the 'form' of his first reproduction," and the use of "a general form, order and arrangement of material seems to be dominant, both in initial reception and in subsequent remembering" (p. 83). This is an early statement of Bartlett's famous notion of schema and implies retention of the general meaning or idea of a passage or event without recollection of the specific details. English students would often convert the story into a more familiar form, such as a fairy tale, and sometimes even tack a moral onto it as if it were a fable. Rationalization that occurred over repeated retellings gradually caused the tale "to be robbed of all its surprising, jerky and inconsequential form, and reduced to an orderly narration" (p. 86). When subjects repeatedly reconstructed the story with short gaps of time between reproductions, the story quickly took on a stereotyped form—the schema was set—but when long intervals occurred between reproductions, the story continued to change.

The results of Chapter V on repeated reproduction are perhaps the most famous of the book. However, Chapter VI contains analogous experiments on "picture signs," a kind of hieroglyphics in which Bartlett placed pictures to signify missing objects in prose passages and repeatedly tested subjects' memories for these pictures. These studies also showed transformations over repeated reproductions. Bartlett noted that if a sign received a particular verbal label, then the subject would later reproduce the picture more in line with a depiction of the prototypic form of the label, a result similar to that of the famous experiments of Carmichael, Hogan, and Walters, also published, by coincidence, in 1932.

Curiously, Bartlett's famous experi-

ments on repeated reproduction, in which subjects showed rationalization and other forms of distortion, have never been precisely replicated, although many have used his materials and conducted similar experiments (e.g., Johnson, 1962). This lack seems odd, because the repeated reproduction experiments are celebrated in virtually all textbooks of introductory psychology, cognitive psychology, and the psychology of memory. Because Bartlett's methods were almost anecdotal in the first place and the results are so widely cited, the dearth of attempts to replicate the experiments seems even more surprising.

The other famous experiments in Bartlett's book used the method of serial reproduction (Chapters VII and VIII). In this method, like the child's game of rumor or telephone, Bartlett had one person read a passage twice, wait 15 minutes, then recall it by writing as much as could be remembered. Then a second person would study the first person's written recall twice, wait 15 minutes and recall it, and so on. The passage was then transmitted from one person to another in this manner through many iterations. Bartlett used "The War of the Ghosts" and a number of other passages. Altogether, Chapter VII provides some 123 verbatim subjects' reports about eight different passages. Bartlett reported 10 to 20 reproductions of each passage and noted that he obtained many other reports, aside from those given in the chapter, that generally confirmed his findings.

The serial reproduction results resembled those he obtained with repeated reproduction, but the distortions were even more dramatic. The tendencies for omission, importation, and rationalization are all magnified, and some of the distortions in the stories are spectacular. In the method of repeated reproduction, having the same rememberer guarantees a certain continuity of the narrative from occasion to occasion. However, in the serial reproduction method, the many individuals form a chain with independent links. If one weak link exists—one person who is wildly inaccurate in recollecting the narrative—all the remaining individuals are irreversibly thrown off course. Bartlett provides some startling examples of narratives being transformed. He notes that

the experiment at least shows clearly the enormous and unexpected changes which can be unwittingly introduced into material even when subjects know beforehand that they will be required to report it as accurately as possible. It is not surprising, therefore, that occurrences which are given no more consideration than we commonly bestow upon events and incidents of

everyday life undergo a great amount of alteration as they are reported from person to person. In fact the cumulative recall of a very few people can result in the production of a totally new event, story or representation. (p. 165)

Most of the specific distorting tendencies Bartlett observed from the repeated reproduction technique were also obtained in exaggerated form in the serial reproduction studies. Titles or headlines dropped out quickly; the narrative became more concrete; general, abstract language was omitted; the literary style was quickly flattened; although unusual features were sometimes elaborated in an attempt to explain (or rationalize) their existence in the story, the general tendency was for the narrative to become abbreviated; finally, the overall changes from the first reproduction to the last were often radical in nature, completely distorting the overall message. The results of Chapter VII are the most compelling in the book, and it is probably no accident that later researchers did take up the method of serial reproduction and put it to good use (e.g., Paul, 1959). The experiments in Chapter VII, using picture signs, confirmed the results with prose passages.

In the next three chapters, Bartlett turns from experimental results to theory. In Chapter IX he argues that memory processes—recalling and recognizing—cannot be divorced from perceiving, but all must be studied together. He argues that whether recognition and recall succeed depends on reinstating the general conditions of perceiving the event and he hints at the set of ideas that were later called the encoding specificity principle (Tulving & Thomson, 1973). However, Bartlett seems to be using the term recognition (which he does not define) in the sense of perceptual recognition or identification. That is, by recognition he refers to recognizing what an object is, rather than recognition in the sense of explicit or episodic recognition—recognizing an event as originating at some particular point and place in the past.

Chapter X provides his statement of "a theory of remembering," encapsulating many ideas that arise in previous chapters. He makes three essential points: First, he dashes the most common theory of remembering then (and perhaps still today, too): that memories should be thought of in terms of traces laid down individually in the nervous system and that remembering constitutes the calling up these stored traces to the footlights of consciousness, to be replayed. "Remembering is not the re-excitation of innumerable fixed, lifeless

and fragmentary traces" (p. 213). How could error then be introduced? How could one remember an event that had never happened? The second critical point is that remembering should be conceived as a constructive or reconstructive process. "In fact, if we consider evidence rather than presupposition, remembering appears to be far more decisively an affair of construction rather than mere reproduction" (p. 205). "It is an imaginative reconstruction, or construction, built out of the relation of our attitude towards a whole active mass of organized past reactions or experiences" (p. 213). Third, this constructive process is guided by schema or schemata, a term he borrowed from Henry Head (1920). Head, a neurologist, used schema to refer to one's body image, how we know our posture and how our limbs are positioned. Bartlett criticizes part of Head's usage, and in his own hands the term came to mean something like a general organizing tendency. Bartlett professes to "strongly dislike the term 'schema'. It is at once too definite and too vague" (pp. 200–201). Nonetheless, the term has been inextricably linked to his name. He says that a better phrase would be an "active, developing pattern," although he then immediately admitted that the term *pattern* had its own difficulties. He left us with *schema*, which were organizing tendencies or patterns distilled from past experience and used to guide recollection. A person recollecting an event would be guided by the schema, but might unwittingly introduce considerable error in filling out the story.

Bartlett worries that it might be said that his "theory after all does very little. It merely jumbles together innumerable traces and calls them 'schemata,' and then it picks out a few and calls them 'images'" (p. 214). But he goes on to say that this would not be a fair criticism because his theory provided an alternative to the dominant trace theory; it envisioned an active, constructive rememberer; it brought remembering in line with imagining; and it provided a critical role for consciousness. One might add that his theory could explain errors and illusions of remembering, whereas traditional trace theories had difficulties in doing so.

To this point I have briefly described the content of the first chapters in Bartlett's remarkable book, and it is this part that has earned him his rightful place in the pantheon of great psychologists. But nine chapters remain, little remarked on today. I will skim the surface here, but he makes many interesting points. The final two chapters in Part I of the book are

on images and on meaning, respectively. I found the former more interesting than the latter, but the study of imagery was still in its preexperimental phase and so the content is mostly based on introspection. However, images played a larger role in Bartlett's theory than I am indicating in this review.

Part II of the book is titled Remembering as a Study in Social Psychology, but much of the content of this part is an elaboration of what had gone before, with serial reproduction a model for how new practices are changed when they are introduced into a group. Bartlett defines social psychology "as the systematic study of the modification of individual experience and response due directly to membership of a group" (p. 239) and he notes that "although a very great amount has been written about social psychology, the subject remains in a relatively unsatisfactory and undeveloped state" (p. 238). (The stirrings of an experimental social psychology were just beginning in the 1930s, with Sherif's work on the development of social norms.) Bartlett notes that so much of behavior is affected by social conditions that perhaps "everything in psychology belongs to social psychology, except idiosyncracies and such forms of reaction as are immediately and dominantly determined by physical stimuli" (p. 243).

These later chapters raise many interesting problems that have not been thoroughly studied, even today. One is the attitude toward remembering displayed by different groups; Bartlett recounts difficulties European magistrates had in colonial Africa when trying to interrogate African people according to Western notions of testimony and recall (pp. 204–205). Bartlett also argues that social schemata—patterns of interest and custom within a social group—greatly determine processes of memory within that group. He writes about processes of acculturation, or how a practice alien to a culture is adopted and changed as it penetrates the new culture. Bartlett likens the process to that in his serial reproduction technique for remembering, with the practice often assuming quite a different form or function in the new culture from its purpose in the old culture.

Bartlett devotes one chapter (Chapter XVII) to examining Carl Jung's notion of the collective unconscious, which he took to be a set of memories handed down genetically from generation to generation. He subjects the ideas to a withering analysis and finds the notion wanting and the arguments "exceedingly obscure" (p. 255). He quotes Jung at a critical point and then

notes that "apart from the extraordinary vagueness of this statement, it is very seriously beside the point" (p. 285). He also takes to task those who found memories containing symbols expressed in dreams, stories, and the like: "Just because anything whatever may be a sexual symbol, we should be exceedingly cautious in asserting that any particular thing is a sexual symbol" (p. 289). He concludes that "the hypothesis of a collective unconscious is completely lacking in proof, and it is at present not demonstrable" (p. 292).

Perhaps one of the chief values in Bartlett's book today lies in the emphasis on social aspects of remembering, which still have not penetrated the field. The tradition in experimental and even contemporary social psychology is to study remembering as a solitary process within the individual. But complex events may be witnessed by groups who try to reconstruct them together, as a group. The leading questions of police or attorneys on the recollections of eyewitnesses to crimes have been studied, but larger issues of collective memory—the memory of families for salient events, or for the people of nations about their historical markers—are only beginning to be studied. Bartlett helped pave the way for this sort of study, but the road is not yet heavily travelled.

Bartlett's great book can be criticized; in fact, criticism is almost too easy to make. Comparing Bartlett's work with Ebbinghaus's research (1885/1964) that appeared 47 years previously, one could easily gain the impression that the study of memory had taken a giant leap backward. Ebbinghaus performed sophisticated experiments, using statistical techniques, double-blind designs (with himself as experimenter and subject!), and tested subtle hypotheses that were precisely formulated (Roediger, 1985). Bartlett did none of these things; in some cases, his "experiments" were hardly more than controlled anecdotes. In his Foreword, Walter Kintsch concludes that the informal conduct and reporting of the experiments "is the weakest aspect of the book and something that has limited its historical influence" (p. xiv). Indeed, although the book was well known for years, the experimental study of remembering did not seem greatly influenced by Bartlett's constructive approach until the 1970s, when researchers such as John Bransford, Charles Cofer, Jeffery Franks, Marcia Johnson, Walter Kintsch, and many others began mining the ideas Bartlett proposed through careful experimentation.

Bartlett can also be faulted for his scholarship. The book is too insulated from the

work of others. The psychology of memory was a going concern in the 1920s and 1930s. Bartlett rarely refers to the literature, except to dismiss it. For example, famous experiments by Ballard (1913) were formally similar to Bartlett's. Ballard had subjects study material, such as lines of poetry, and then tested them repeatedly, similarly to Bartlett's method of repeated reproduction. However, Ballard's main result was reminiscence: Subjects would frequently report lines of poetry on later tests that had not been recalled on earlier tests. Therefore, memory often improved over repeated tests, the opposite of Bartlett's finding. How does Bartlett account for the discrepancy between his own results and those derived from similar methods by Ballard (who also was English and who published in the *British Journal of Psychology*)? Bartlett does not ever cite Ballard's results, so there is no need to reconcile them! (See Wheeler & Roediger, 1992, for the solution.)

Bartlett criticizes the Ebbinghaus tradition for using methods that were unlike those of everyday remembering. But Bartlett's own methods seem guilty of the same weakness. "The War of the Ghosts" bears about as much resemblance to normal prose as nonsense syllables do to words. In fact, much of Bartlett's analysis of recall of this passage is about the mental gymnastics his English college students had to use in comprehending and remembering such a bizarre and disjointed tale.

Despite these possible criticisms, Bartlett's great book stands as one of the permanent milestones in the psychology of memory. His achievements outweigh any faults; 'tis better to be right than precise, he might retort. Bartlett mounted the first great assault on one of the simplest and most intuitive ideas about remembering: "If there be one thing upon which I have insisted more than another throughout all

the discussions of this book, it is that the description of memories as 'fixed and lifeless' is merely an unpleasant fiction" (p. 311). He proposed a provocative alternative, that remembering should be considered a constructive process, an achievement filled with invention. "Alike with the individual and with the group, the past is being continually re-made, reconstructed in the interests of the present, and in both cases certain outstanding events or details may play a leading role in setting the course of reaction" (p. 309). Finally, his studies showed how people could easily be misled into believing their memories to be more accurate than, in fact, they are:

the one overwhelming impression produced by this more 'realistic' type of memory experiment is that human remembering is normally exceedingly subject to error. It looks as if what is said to be reproduced is, far more generally than is commonly admitted, really a construction, serving to justify whatever impression may have been left by the original. It is this 'impression', rarely defined as with much exactitude, which most readily persists. So long as the details which can be built up around it are such that they would give it a 'reasonable' setting, most of us are fairly content, and we are apt to think that what we have built we have literally retained" (pp. 175-176)

It is for these insights and many others, the implications of which are still being worked out, that we rightly celebrate Bartlett's great work on remembering.

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Footnote

¹ As I have pointed out elsewhere (Roediger, 1996), the rationalization of "The War of the Ghosts" did not start with Bartlett's subjects, but with Bartlett himself. One of the most salient parts of the story is the end, when an Indian falls down, something black comes from his mouth, and he dies. Bartlett's version put it this way: "Something black came out of his mouth" (p. 65). However, Bartlett revised this part of the original story as reported by the anthropologist Franz Boas (1901). In the original version, the sentence read "Something black came out of his mouth and blood came out of his anus." Bartlett apparently felt this detail would be too offensive for his subjects so omitted it. In fairness, because Boas's translation was a literal one, Bartlett apparently rewrote much of it to smooth it out. However, in this case a salient detail was omitted from the version of the story he used.

Schematic and Social Influences on Memory

Review by Charles P. Thompson

This book has had a powerful impact on the study of memory. Now that it is available at a reasonable cost, it will be of interest to psychologists in many different areas for a number of reasons. Researchers in memory will enjoy examining the volume that, to the best of my knowledge, is cited in every memory and every cognitive psychology textbook. The textbooks focus on the changes and errors

people make in recalling the "War of the Ghosts" story, and the strong support those changes and errors provide for a theory of schema-based reconstructive memory. But, of course, Bartlett reports on a much wider range of experiments than that, and his theoretical speculations range much further as well.

Bartlett's theoretical speculations about cultural influences on memory should be of interest to many psychologists because those influences, in principle, can easily be generalized to any of the psychological processes involved in decision making or

thinking. Social psychologists should be particularly interested in these theoretical speculations. Although there has been some very good work on social influences on memory, that work still is scattered, not very intensive, and sorely needs theoretical integration. In short, it seems to me that the promise of this part of his book has still to be realized. It is interesting that one of the most recent and promising accounts of the development of autobiographical memory emphasizes the social aspects of that development (Nelson, 1993). As part of the description of the

development of memory, Nelson gives an account of childhood amnesia (the inability to remember events from early childhood) that is completely social in nature.

Two characteristics emerge as particularly interesting in Bartlett's book. The first is that the common theme of reconstructive memory emerges in a wide range of testing procedures including, but not restricted to, memory for simple designs, complex pictures, inkblots, and faces. Bartlett uses the concept of "effort after meaning" as a central explanation for this common theme. The concept of schema built from general world knowledge is the other major explanatory concept. As a side note, it is somewhat amusing that, when he introduces the term schema (for which he gives credit to Sir Henry Head, 1926), he spends some time grumbling that he rather dislikes the term but cannot find anything better. Modern psychologists seem to have somewhat the same reaction!

Modern readers also will be somewhat bemused with the loose connection between data and theoretical speculation. There is no attempt to build a testable theory or to test the constructs of the theory with experiments. Rather, Bartlett describes in general theoretical terms some of the fairly salient results of his experiments. As an ironic footnote to a classical volume that has had an enormous impact on the field of memory, one cannot help but speculate that a standard review by any of our current leading journals would find this volume wanting in theoretical development and the use of standard statistics. In sharp contrast to the standard in current psychological research, Bartlett does not use statistics. In fact, in his intro-

ductory chapter, he argues that the use of statistics is a substantial mistake. His view is that the very nature of statistics (that of summarizing the data) tends to obscure the individual reactions to the experimental situation. After a brief and cogent discussion of the problems with the use of statistics, Bartlett states, "in this book there will be no statistics whatever" (p. 9).

The second intriguing point about the book is the frequency with which Bartlett anticipated now-classic studies. For example, Chapters VII and VIII use the method of serial reproduction. The method, and some of the content, of these chapters clearly anticipate the classical Allport and Postman (1947) study of rumor. Similarly, Bartlett reports data showing that assigning a name to the objects to be remembered strongly influenced the way that they were reproduced. The study by Carmichael, Hogan, and Walter (1932), published in the same year as Bartlett's book, became the classic study illustrating that point. To the best of my knowledge, textbooks do not give Bartlett credit for independently (and simultaneously) reporting the effect of naming ambiguous objects. By contrast, Allport and Postman (1947) discussed Bartlett's data in great detail and related their results to his findings. They also pointed out his prior use of the method of serial reproduction.

Bartlett also anticipates some more recent well-known research. As one example, consider his comment on recognition failure (Tulving & Thomson, 1973): "It is also true, though much less frequently noticed, that not all of the material which is remembered can always be recognized (p. 195). As another example, it seemed to me that his comment that "recognizing is possible if the orientation or attitude

which marked an original perception is carried over to re-presentation" (p. 193) clearly anticipates the phenomenon of transfer-appropriate processing (e.g., Morris, Bransford, & Franks, 1977).

This classic volume is well worth the trouble to read (or reread). It always is interesting and rewarding to review those books and articles that have had a substantial impact in the field of psychology. There are several levels at which one can read a book written more than 60 years ago. In addition to the substantive and important content, the methodology of the time, the style of writing, and those (sometimes controversial) comments that seem quite relevant for the moment all add to the enjoyment of revisiting the book. Just as is the case when listening to a favorite symphony or opera, one always finds something new to enjoy.

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