health, with greater emotional appeal, will no doubt provide an even stronger bulwark. Meanwhile, Watson's decision to devote 3% of the NIH portion of the HGP (and perhaps even more) to studies on ethics is admirable and politically shrewd—though support on this scale may soon exhaust the number of philosophers with fresh ideas to add.

Where do we now stand? The main issue is one of scale, at a time when many promising young investigators cannot be funded to start independent careers—including those in studies of gene function that complement the sequencing program. And for the future, it may be an unfortunate precedent to have any group of scientists lobbying for such a rapid expansion on the basis of an arbitrary deadline. Surely there are ways to allocate funds that will better promote both the advancement of science and harmony in the scientific community.

On a minor note: the book is not as well edited, either for language or for accuracy, as one might have hoped. For example, Watson reports the cost of locating the cystic fibrosis gene at $10 to $50 million, whereas Hood uses the oft-quoted figure of $150 million—which I have found was the cost of *all* preceding research on the disease in this country. And one of the editors identifies "junk" DNA with introns, when the term refers in fact to tracts of DNA that cannot now be identified with genes or regulatory regions. On the whole, however, this book provides much valuable information on a program that has become international rather than provincial, but whose perceived urgency may exceed its justification.

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Vignettes: Tales of Invention

At MIT my salary in 1946 was $7000 a year and the house I bought cost $22,000, so I had to find a way of earning a living . . . .

So Jerry Wiesner and I—we joined forces for quite a while—we talked to Lawrence Marshall who was then president of Raytheon and he offered to pay us $5000 a year as consultants—each—which was pretty good. And one day we were out there, we had dragged Ed Purcell along, don't ask me why, and they were trying to make something called a microwave oven, at 12.5 cm wavelength. And they kept getting the chicken toasted too much in one place and not enough in another. The nodes and loops of the microwave oven, the "Q" of the oven was too high. So Purcell—it wasn't either Jerry or me but we were there—said, "Why don't you put in a little fan that just sort of rotates slowly?" So they did.

—*Jerrold R. Zacharias*, as quoted by Jack S. Goldstein in *A Different Sort of Time: The Life of Jerrold R. Zacharias, Scientist, Engineer, Educator* (MIT Press)

It must have amazed the National Inventors Council when it received a suggestion for an antijamming communications device from none other than Hollywood screen goddess Hedy Lamar and her partner, George Antheil, a film score composer. . . .

Lamar [had been] for three years the petted wife of a wealthy Austrian arms dealer whose company . . . supplied munitions for Italy's invasion of Ethiopia. As his wife, she learned about designs for military materials and even suggested a radio-contolled torpedo herself, but discovered that it was too easily jammed.

When the Nazis invaded Austria, the then Hedwig Keisler abandoned her husband ("I couldn't be an object; so I walked out") . . . . It was in 1940 that she confided to . . . Antheil her scheme for a remote controlled radio system that would allow signals to be transmitted without danger of detection, deciphering, or jamming, a device they hoped the War Department could use against the Nazis. Antheil grasped the basic concept and realized that he could as easily synchronize microsecond hops between radio frequencies as he synchronized player pianos. The slotted paper rolls and the eighty-eight frequencies he then proposed (identical to the number of piano keys) reflect his musical experience. Two years after being urged by the Inventors' Council to reduce their concepts to a patentable state, Lamar and Antheil did . . . .

The War Department, however, never adopted their method, until many years later when, long after their patent had expired, Sylvania independently developed a system based on a similar concept but substituting electronic operation for Antheil's paper rolls.

—*Anne L. Macdonald*, in *Feminine Ingenuity: Women and Invention in America* (Ballantine Books)

Cognition and Context

Everyday Cognition in Adulthood and Late Life. LEONARD W. POON, DAVID C. RUBIN, and BARBARA A. WILSON, Eds. Cambridge University Press, New York, 1992. xii, 708 pp., illus. $99.95; paper $29.95. Reprint, 1989 ed.

Most research in cognitive psychology has been based on the assumption that cognition can be meaningfully investigated in the laboratory by simulating critical aspects of the phenomenon in question. This assumption has been challenged in the last two decades or so by researchers working within a loosely defined area that has come to be known as "everyday cognition." A core belief of these researchers is that cognitive functioning in natural settings is likely to involve processes that differ, either quantitatively or qualitatively, from those that occur in artificial and contrived situations such as psychological laboratories. This book contains several chapters on the philosophical and theoretical rationale underlying research on everyday cognition (A. Baddeley, H. Bahrick, T. Landauer, D. Mook, L. Petrinovitch, D. Rubin), but it also summarizes research on everyday cognition in what is still widely considered in psychology a "special" population, namely, normal healthy adults ranging from about 18 to 80 years of age (as opposed to the more typical research subjects, who are 18- to 25-year-old college students).

The everyday cognition perspective has been enthusiastically embraced by a number of researchers interested in the relations between age and cognition. A primary motivation, stated most explicitly in the book by N. Denney, is the belief that age-related differences might be less pronounced in cognitive tasks more closely resembling the types of activities in which one naturally engages. Unfortunately, no evidence directly relevant to this intriguing hypothesis

is presented in the book. Furthermore, even if such comparisons had been presented, interpretation of the results would likely be complicated by variations in the type of cognition being evaluated (for example, fluid vs. crystallized) and in the amount of cumulative experience the individual has had with a given task or activity.

A related problem appears to exist with respect to the entire field of everyday cognition because its domain has been neither explicitly defined nor clearly delineated from cognition that is not everyday. This issue is discussed by several of the contributors (J. Hartley, R. West), but the classification of precisely what is, and what is not, everyday cognition remains highly subjective. There does appear to be some agreement that it is not simply the nature of the stimulus material that determines whether what one is studying warrants classification as natural, realistic, or everyday. Thus, the mere substitution of, for instance, meaningful prose for lists of unrelated words in research on memory does not by itself constitute study of everyday cognition. In their respective chapters, J. Sinnott and West also suggest that neither the method of stimulus presentation nor the method of assessment is sufficient to characterize a cognitive task as a realistic simulation of everyday cognitive activity because the motivation for engaging in the cognitive activity may be different when it is performed at the request of a researcher. Indeed, the assumption that cognition may vary as a function of the overall context, which is presumed to be determined not only by the materials and methods but also by the individual's level of motivation, prior experience, relevant knowledge, or personal goals has led some everyday cognition researchers to argue that it may be impossible to stimulate all aspects of the natural context in the restricted and unrepresentative context of a research laboratory. A key theme of the everyday cognition perspective, therefore, is that results from sterile and contrived situations may not generalize to less constrained and more natural environments.

An important unresolved issue concerning the everyday cognition perspective, which is alluded to by several authors in this volume, is how one might be able to evaluate whether a laboratory simulation is realistic with respect to everyday cognitive functioning. Several contributors (Denney, A. Hartley) note that existing psychometric tests of the type often criticized as artificial and unrealistic have been fairly successful in predicting outcomes such as success in school and occupational level. What is sorely missing are additional criteria that might have greater validity as reflections of competence in a wider range of everyday life (D. Kausler). Landauer's chapter suggests that what is needed is a complete inventory of the cognitive requirements of everyday activities accompanied by knowledge of how people actually use cognitive abilities in their natural environments. However, even vast quantities of this type of information may be inadequate if one believes that most cognitive activities can be decomposed into simpler processes or components. If this is the case, then an analysis of the activities of everyday life in terms of the hypothesized processes or components would also be needed to determine the frequency and distribution of these more elementary cognitive components.

Although research falling under the rubric of everyday cognition has been accumulating for nearly 20 years, a definitive conclusion about the contribution of such research to the understanding of human cognitive functioning will likely have to wait until complete and accurate information is available about the actual nature and frequency of everyday activities. Until that time, however, this volume should function as a useful interim report on a very active area of research in the broad field of cognitive psychology.

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Cordilleran Magmatism

Andean Magmatism and its Tectonic Setting. RUSSELL S. HARMON and CARLOS W. RAPELA, Eds. Geological Society of America, Boulder, CO, 1991. vi, 309 pp., illus. Paper, $62. GSA Special Paper 265.

The igneous rocks that underlie the Andean Cordillera from Colombia to southernmost Chile and Argentina contain the most long-lived and spectacular record of processes attending the subduction of an oceanic (Nazca) plate beneath a continental (South American) plate margin. The volcanism, plutonism, uplift, faulting, and translation of the crust that have occurred at similar plate margins have undoubtedly shaped the gross chemical and physical character of all continents throughout the past several hundred million, and perhaps several billion, years. Geologists have long been attracted to chains of recently active Andean volcanoes, and this is reflected in the sophistication of data that have been collected and the questions addressed. However, the understanding of older phases of volcanic and plutonic activity in the