

University, the Julius M. Nolty Award by the University Extension Association, designation by the American Society of Engineering Education as "pioneer in engineering technology education," and the Distinguished Contributions Award by the Society for Industrial and Organizational Psychology. In 1981 the Board of Trustees of Purdue University named a classroom and office building on the Calumet campus C. H. Lawshe Hall.

Lawshe and his wife of 64 years reside in a retirement community in West Lafayette. They spend their summers in Bay View, Michigan.

### **Selected Bibliography**

- Lawshe, C. H. (1940). Studies in automobile speed on the highway: I. The relationship of certain factors to speed on the open highway. *Journal of Applied Psychology, 24*, 1–11.
- Lawshe, C. H. (1940). Studies in automobile speed on the highway: II. Approach speeds and changes in sign size and location on the highway. *Journal of Applied Psychology, 24*, 12–21.
- Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology, 28*, 563–575.
- Lawshe, C. H. (1983). A simplified approach to evaluation of fairness in employee selection procedures. *Personnel Psychology, 36*, 601–608.
- Lawshe, C. H. (1985). Inferences from personnel tests and their validity. *Journal of Applied Psychology, 70*, 237–238.
- Lawshe, C. H. (1987). Adverse impact: Is it a viable concept? *Professional Psychology: Research and Practice, 18*, 492–497.
- Lawshe, C. H., Balma, M. J., & Maloney, J. C. (1958). The role of the foreman in modern industry: I. The development of a measure of management identification. *Personnel Psychology, 11*, 195–205.
- Lawshe, C. H., Balma, M. J., & Maloney, J. C. (1958). The role of the foreman in modern industry: II. Foreman identification with management, work group productivity and employee attitude toward the foreman. *Personnel Psychology, 11*, 367–378.
- Lawshe, C. H., & Bolda, R. A. (1958). Expectancy charts: I. Their use and empirical development. *Personnel Psychology, 11*, 353–366.
- Lawshe, C. H., & Bolda, R. A. (1959). The use of training case responses in management training evaluation. *Educational and Psychological Measurement, 19*, 549–556.
- Lawshe, C. H., Bolda, R. A., & Brune, R. L. (1958). Studies in management training evaluation: I. Scaling responses to human relations training cases. *Journal of Applied Psychology, 47*, 396–398.
- Lawshe, C. H., Bolda, R. A., Brune, R. L., & Auclair, G. (1958). Expectancy charts: II. Their theoretical development. *Personnel Psychology, 11*, 545–560.
- Lawshe, C. H., & Forster, M. H. (1947). Studies in projective techniques: I. The reliability of a multiple choice group Rorschach test. *Journal of Applied Psychology, 31*, 199–211.
- Lawshe, C. H., & McGinley, A. D., Jr. (1951). Job performance criteria studies: I. The job performance of proofreaders. *Journal of Applied Psychology, 35*, 316–320.
- Lawshe, C. H., & Nagle, B. (1953). Productivity and attitude toward supervisors. *Journal of Applied Psychology, 37*, 159–162.
- Lawshe, C. H., & Satter, G. A. (1944). Studies in job evaluation: I. Factor analyses of point ratings for hourly-paid jobs in three industrial plants. *Journal of Applied Psychology, 28*, 189–198.
- Lawshe, C. H., & Steinberg, M. D. (1955). Studies in synthetic validity: I. An exploratory investigation of clerical jobs. *Personnel Psychology, 8*, 291–302.
- Lawshe, C. H., & Tiffin, J. (1945). The accuracy of precision instrument measurement. *Journal of Applied Psychology, 29*, 413–419.
- Lawshe, C. H., & Wilson, R. F. (1947). Studies in job evaluation: 6. The reliability of two point rating systems. *Journal of Applied Psychology, 31*, 355–365.
- Naylor, J. C., & Lawshe, C. H. (1958). An analytical review of the experimental basis of subception. *Journal of Psychology, 46*, 75–96.

---

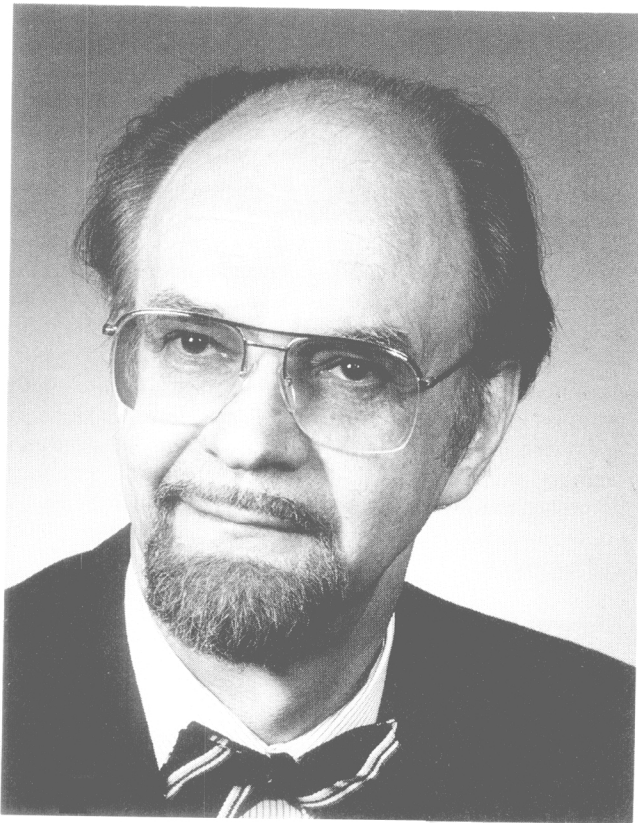
## **Endel Tulving**

### **Citation**

"A true scholar and scientist for a third of a century, Endel Tulving has combined elegant experiments with deep conceptual insights to advance knowledge on human memory. From his early studies in cognitive psychology on subjective organization, through his experimental and theoretical analyses of retrieval processes and encoding–retrieval interactions and delineation of the elements of episodic memory, to his current pursuit of memory systems and their neuro-anatomical substrates, he has remained at the forefront of progress in the field. His empirical discoveries have helped to lay the foundation on which our current knowledge of memory stands firm. His theoretical insights continue to dominate the development of the science of memory, in cognitive psychology, neuropsychology, cognitive science, and neuroscience."

### **Biography**

Because of time, place, and innumerable chance happenings, Endel Tulving has had a checkered career. He spent his first 9 years as a growing boy in Estonia. He remembers being a fireman, a policeman, and a poacher, in that order. From ages 9 to 16 he was an aspiring professional athlete—track and field in the summer and cross-country skiing, speed skating, and basketball in the winter. In his spare time he attended an old private boys' school—Hugo Treffner's Gymnasium in Tartu. At age 17, he was a soldier in the big war, lost contact with his parents, left Estonia, and ended up in Germany. At age 18, he was a prisoner of war in Mecklenburg and a graduating student at the Estonian Gymnasium in Geislingen an der Steige, Württemberg; at age 19, a teacher in Bavaria; at 20, an interpreter for the U.S. Army in Stuttgart and Mannheim; at 21, a medical student at the University of Heidelberg; and at 22, a farm hand near London, Ontario, Canada, and construction worker in Toronto. From the age of 23 to 27, he was a construction worker, husband, truck driver, delivery man, father, errand runner, mailman, surveyor, salesman, foreman, lobbyist, manager, vice president of a condo co-op, and undergraduate psychology student at the University of Toronto. From 28 to 29, he was a graduate student, research assistant, and teaching fellow at Harvard University. From 30 to 65, he served as a faculty member in the University of Toronto Department of Psychology, interrupted for four years when he was a professor at Yale University. From age 65 on, he has been a scientist at Rotman Research Institute of Baycrest Centre, North York, Ontario, occupying the Tanenbaum Chair in Cognitive Neuroscience. There have also been sojourns in other academic oases, such as Berkeley, Stanford, Oxford, University of Umea and the University of Lund (both in Sweden), Rice University, and the University of California at Davis. Tulving has found all of this to be wonderfully exciting.



**Endel Tulving**

Note. Photo by Ashley and Crippen, Toronto, Ontario, Canada.

Tulving's scientific life began in earnest in 1956 when he became a lecturer at the University of Toronto. At Harvard he had learned that there are three important principles that govern great academic institutions: research, research, and research. He applied for and received a grant of \$950 from the National Research Council of Canada. The sum was enough to hire a part-time research assistant. The Department of Psychology at the University of Toronto lacked any kind of equipment, however, so his choice for a field of research had to be something that required none. It was thus by default that he began his studies in verbal learning.

Because he knew little about the prevailing customs and practices of verbal learning, he did everything "wrong" in his research. Instead of using the paired-associate method, like everyone else did, he used free recall. Instead of using two lists to study interference, like everyone else did, he used five lists. Instead of using only the number of words recalled as the dependent measure, he used two measures—number of words recalled and a measure of sequential constraint in the order in which subjects recalled them. He did not know that these were all unacceptable practices.

Tulving even had problems doing his experiments properly. When he sent his paper on subjective organization

(sequential constraints) for publication in *Psychological Review* in 1960, it was soundly trounced by two expert referees. One referee's major complaint was that there was no independent variable in the experiment reported. That was an unheard-of breach of protocol. The other referee was troubled about total lack of experimental control over organization of the material. Subjects were left free to do as they chose! That was simply not done in experimental psychology! Both recommended outright rejection of the manuscript. It was only the good will and compassion of the editor, Richard Solomon, that left the door ajar for an attempted revision.

Ignoring accepted practice has been Tulving's major problem as he has struggled to live up to what he preaches to his students, namely that science by its very nature is a collaborative enterprise. Yet time after time he found that he was unable to please his fellow scientists. One example of this shortcoming had to do with his adoption of the method of successive tests: After the subjects were tested once for what they had learned, he tested them again. Everyone knew that this represented a gross violation of the accepted practice, because the first test necessarily "contaminates" the outcome of the other, with the consequence that the outcome is uninterpretable. Tulving first used successive tests in 1966, but even now, in 1994, he must fend off critics who keep telling him the method is unsound.

Another example of Tulving's ignoring the precepts of his field—which, incidentally, was transmuted from verbal learning into cognitive psychology of memory and then metamorphosed into cognitive neuroscience of memory—was his opinion, adopted from the writings of the great sages of the past, that memory is not a unitary entity. It instead comprises a number of different, albeit related, forms or systems. Despite the fact that he is no longer alone in his belief and that the classification of memories is rapidly becoming more sophisticated, many psychologists still have serious doubts about the heresy of nonparsimonious multiple memory systems.

Perhaps Tulving's early personal experiences with the authoritarian regimes of communism and fascism were the source of his unwillingness to toe the line and his inability to appreciate the accepted rules. But one never quite knows these things—it may all be a matter of a giant Nth-order interaction in the heavenly computer.

Tulving likes people with positive attitudes toward life and has little use for censors, nay-sayers, and Doubting Thomases. Ever since arriving on the North American shores, he has lived in a world in which everything is possible—if not now, then later—and in which there are no obstacles other than those that people impose on themselves. In all, he says that he rates his life 10.5 on a 10-point scale. A more reliable forehand ground stroke in tennis would make it 11! He attributes his highly satisfying life to his clever choice of parents and early environment and the subsequent long, long streak of luck in meeting the right people at the right time—from his wife, Ruth, and daughters, Elo Ann and Linda, to his many students and colleagues, without whom, he says, he could not have accomplished anything.

## Selected Bibliography

- Craik, F. I. M., & Tulving, E. (1975). Depth of processing and the retention of words in episodic memory. *Journal of Experimental Psychology: General*, 104, 268–294.
- Flexser, A. J., & Tulving, E. (1978). Retrieval independence in recognition and recall. *Psychological Review*, 85, 153–171.
- Hayman, G. A. C., & Tulving, E. (1989). Is priming in fragment completion based on a “traceless” memory system? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 15, 941–956.
- Thomson, D. M., & Tulving, E. (1970). Associative encoding and retrieval: Weak and strong cues. *Journal of Experimental Psychology*, 86, 255–262.
- Tulving, E. (1958). The relation of visual acuity to convergence and accommodation. *Journal of Experimental Psychology*, 55, 530–534.
- Tulving, E. (1962). Subjective organization in free recall of “unrelated” words. *Psychological Review*, 69, 344–354.
- Tulving, E. (1972). Episodic and semantic memory. In E. Tulving & W. Donaldson (Eds.), *Organization of memory* (pp. 381–403). New York: Academic Press.
- Tulving, E. (1981). Similarity relations in recognition. *Journal of Verbal Learning and Verbal Behavior*, 20, 479–496.
- Tulving, E. (1983). *Elements of episodic memory*. Oxford, England: Clarendon Press.
- Tulving, E. (1985). How many memory systems are there? *American Psychologist*, 40, 385–398.
- Tulving, E. (1985). Memory and consciousness. *Canadian Psychology*, 26, 1–12.
- Tulving, E., & Gold, C. (1963). Stimulus information and contextual information as determinants of tachistoscopic recognition of words. *Journal of Experimental Psychology*, 66, 319–327.
- Tulving, E., Hayman, C. A. G., & Macdonald, C. A. (1991). Long-lasting perceptual priming and semantic learning in amnesia: A case experiment. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 17, 595–617.
- Tulving, E., Kapur, S., Craik, F. I. M., Moscovitch, M., & Houle, S. (1994). Hemispheric encoding/retrieval asymmetry in episodic memory: Positron emission tomography findings. *Proceedings of National Academy of Sciences U.S.A.*, 91, 2016–2020.
- Tulving, E., & Pearlstone, Z. (1966). Availability versus accessibility of information in memory for words. *Journal of Verbal Learning and Verbal Behavior*, 5, 381–391.
- Tulving, E., Risberg, J., & Ingvar, D. H. (1988). Regional cerebral blood flow and episodic memory retrieval. *Bulletin of the Psychonomic Society*, 26, 522.
- Tulving, E., & Schacter, D. L. (1990). Priming and human memory systems. *Science*, 247, 301–306.
- Tulving, E., Schacter, D. L., & Stark, H. A. (1982). Priming effects in word-fragment completion are independent of recognition memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 8, 336–342.
- Tulving, E., & Thompson, D. M. (1973). Encoding specificity and retrieval processes in episodic memory. *Psychological Review*, 80, 352–373.
- Tulving, E., & Watkins, M. J. (1975). Structure of memory traces. *Psychological Review*, 82, 261–275.

---

## Bernice L. Neugarten

### Citation

“Developmental psychologist of the life-course, Bernice L. Neugarten has pioneered the study of age, the social clock, and social timing. Her studies of personality, aging, the competencies of middle-aged and older people, and generational relations have changed previous negative stereotypes regarding aging. In the arena of public policy, her forward-

looking approach to the provision of benefits and services based on need rather than on age have had wide influence. Her generativity as a teacher and her concern with the careers of both academic women and men are reflected in the achievements of her students, many of whom have attained international recognition for their studies of adult lives.”

### Biography

Bernice L. Neugarten is often said to have created the academic field of Adult Development and Aging.

Born in the small town of Norfolk, Nebraska, in 1916, Neugarten entered the University of Chicago as an undergraduate in 1933. She vividly recalls the intellectual excitement and the sometimes buzzing confusion that marked the “Hutchins’ College” of the 1930s. The atmosphere was apparently to her liking. Except for an eight-year period during the 1980s, she has been at the University of Chicago ever since. She took an undergraduate degree in English and French literatures in 1936, a master’s degree in educational psychology in 1937, and one of the first PhDs given by the interdisciplinary Committee in Human Development in 1943.

Human Development, a newly created academic unit in the Division of Social Sciences, was to become Neugarten’s academic home. The program is based primarily on anthropology, psychology, and sociology, concentrated on the course of human lives and on change and continuity from infancy to old age.

After completing her PhD, Neugarten spent eight years raising two children, working part-time at writing and research jobs, and volunteering with her husband in local independent politics and in efforts aimed at building a racially integrated community.

She returned to the university in 1951 and joined the Human Development faculty. It was an accident that led her to concentrate on the study of adult development and aging. She was invited to teach the course, apparently the first of its kind, called Maturity and Old Age. She renamed the course Adult Development and Aging and offered ever-changing versions of that course for some 35 years.

In 1956, Neugarten published her first paper on the psychology of aging and a year later her first paper on social change and the aging population. Her research has been concentrated in these general areas ever since.

In her 40s, Neugarten published mostly reports and analyses of empirical studies, often carried out with colleagues and graduate students. In her 50s, she more often published conceptual works that took the form of essays and review chapters. During this period, she spent much of her time in administrative roles and in one-to-one teaching and dissertation supervision. She recalls two occurrences of special significance from this decade: First, in a single year four of her students authored textbooks on middle age and aging, and, second, she received the Distinguished Teaching Award of the American Psychological Foundation in 1975.

By her 60s, Neugarten was involved in the policy field. In 1978, the president appointed her to the Federal