Joseph C. R. Licklider

Born March 11, 1915, St. Louis, Mo.; died June 26, 1990, Arlington, Mass.; a principal contributor to the advent of interactive computing and computer networks.

Education: BA, Washington University, 1937; MA, Washington University, 1938; PhD, University of Rochester, 1942.

Professional Experience: Harvard University: faculty member, Psycho-Acoustics Laboratory, 1941-1946, lecturer, Psychology Laboratories, 1946-1949; MIT: faculty member, 1949-1957, professor, Electrical Engineering (later Computer Science), 1964-1985, professor emeritus, 1985-1990, director, Project MAC, 1968-1970; vice president, Psycho-acoustics, Engineering Psychology, and Information Systems, Bolt Beranek and Newman, 1957-1962; director, Behavioral Sciences and Information Processing Research, Advanced Research Projects Agency (ARPA), US Department of Defense, 1962-1964; consultant, IBM, 1964-1967.

Honors and Awards: Franklin V. Taylor Award, Society of Engineering Psychologists, 1957; member, National Academy of Sciences; fellow, Acoustic Society of America; fellow, Academy of Arts and Sciences.

Joseph C.R. Licklider, a principal contributor to the advent of interactive computing and computer networks, studied psychology, earning bachelor's and master's degrees from Washington University (1937 and 1938 respectively) and a doctorate at the University of Rochester in 1942.[1] He was a member of the Harvard University faculty and a researcher in its Psycho-Acoustics Laboratory beginning in 1941 until 1946, and lecturer at the Psychology Laboratories until 1949, when he joined the MIT faculty. In 1957 he was named vice president in the area of psycho-acoustics, engineering psychology, and information systems at Bolt Beranek and Newman (BBN), and in 1962 he was appointed director of behavioral sciences and information processing research at the Advanced Research Projects Agency (ARPA) of the US Department of Defense.

After a three-year stint as a research consultant for IBM commencing in 1964, Licklider returned to MIT as professor of electrical engineering (later computer science) and was named professor emeritus in 1985. He served concurrently as director of MIT's Project MAC from 1968 to 1970.

He was honored with the Franklin V. Taylor Award of the Society of Engineering Psychologists in 1957; member, National Academy of Sciences; fellow, Acoustic Society of America; fellow, Academy of Arts and Sciences; and member, Association for Computing Machinery.

Licklider is widely recognized for his fundamental impact on three aspects of computing:

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[1] Based on the New York Times Obituary by Glenn Fowler July 3, 1990, p. B6; and Licklider, 1960.

- His paper "Man-Computer Symbiosis,[1] was seminal in bringing to the attention of large numbers of researchers in many fields the essential differences between traditional "batch" computing and interactive computing in terms of human perception and effectiveness.

- As an ARPA director, he formulated and put into place the program that funded Project MAC and led ultimately to computer networking.

- As teacher, researcher, and manager he identified, nurtured, and supported literally dozens of people who have become leaders in computing research and practice.

Remembrances of "Lick"

Licklider was universally called "Lick" by his friends, colleagues, and students. He was described as follows by former colleague Robert W. Taylor: "He was the most unlikely 'great man' you could ever encounter. His favorite kind of joke was at his own expense. He was gentle, curious, and outgoing."[2]

His widow, Louise, says that Licklider was totally dedicated to his work, spending evenings and weekends at his desk. "For recreation, he would be on the computer." She reports that he was "wonderfully happy" in his work. Had he been independently wealthy, "he would have paid to have worked in the field."

His enthusiasm and dedication are evident in comments he made during the Project MAC interview.[3] His statements abound with phrases such as, "The next summer projects were so wonderful ... fantastically exciting .... that gave me access to the most marvelous electronics there was .... we'd all gotten really excited about interactive computing."

He used similar language when he expressed his attitudes about people. "The people who could turn me on and off easily were very bright people." ". . . along side each door [in an MIT hallway] is the name of whose office that was.... It was for me a very religious experience to walk slowly down those halls and look at the names."

Given that his training was in psychology, Licklider got along surprisingly well with electrical engineers and (emerging) computer scientists. Perhaps this stems from the fact that his early work on the perception of speech complemented contemporaneous work in speech transmission.

Licklider's approach to technical problems was different from that of his engineering colleagues, and his point of view often provided the raison d'etre behind a technical project. For example, in an era when time-sharing research concerned scheduling algorithms, file system design, and new I/O devices, Lick was focusing on other issues. To quote again from the interview: "From my point of view, a lot hinged on a little study I had made on how I would spend my time. It showed that almost all my time was spent on algorithmic things that were no fun, but they were all necessary for the few heuristic things that seemed so important. I had this little picture in my mind about how we were going to get people and computers really thinking together."

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[1] Licklider 1960.

[2] Taylor 1990.

[3] Lee, ed., 1992.

A Personal Note[1]

In the fall of 1956, my senior year at MIT, I was a student in Lick's course in experimental psychology. Although I went in with no prior knowledge of the subject, he made those of us taking the course feel at home (almost like junior colleagues) in his pursuit of understanding about behavior in a laboratory setting. I also worked for a semester in his psycho-acoustics lab, as an assistant/technician, adjusting the phases of distinct signals at various frequencies and measuring the apparent audible level of the combined signal. The experience in Lick's laboratory made good use of my three previous years of interdisciplinary study at MIT, particularly in psychology and electrical engineering.

The fall of 1956 was also the semester in which I took my first two courses in computers. No computer equipment was present in Lick's laboratory, nor was there any evidence that a computer was used for data reduction or any other aspect of his research.

Although I did not see him again for many years, Lick still had an influence over me. In 1962, a graduate school colleague at the University of Michigan left to work on time-sharing system development at MIT Project MAC. I visited him in January 1963, and, after spending half an hour at a CTSS "console" (actually a model 33 teletypewriter), I came away convinced that interactive computing was going to replace "batch," and that to compute any other way was a waste of human time and effort. I didn't know it at the time, but of course it was Lick who funded Project MAC through ARPA.

Just about that same time, I read "Man-Computer Symbiosis." For the life of me, I could not imagine how a psychologist who, in 1956, had no apparent knowledge of computers, could have written such a profound and insightful paper about "my field" in 1960. Lick's paper made a deep impression on me and refined my own realization that a new age of computing was upon us.

The next contact I had with Lick was as a moderator at the interview recorded in the *Annals*.[2] Of course, Lick didn't recall who I was, but I recognized him instantly, both by sight and from his spirit, which seemed not to have changed at all. I enjoyed that afternoon immensely.

J.C.R. Licklider's work affected many people, most of whom will never be aware of him. But his spirit endures in the people who knew him and who were affected by him. Few people who knew Lick will forget him.

BIBLIOGRAPHY

Biographical

Lee, John A.N., ed., "MIT Time-Sharing and Interactive Computing," Special Issue, *Ann. Hist. Comp.,* Vol. 14, No. 1, 1992.

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[1] Robert E Rosin.

[2] Lee, ed., 1992.

Additional details about his life and work can be found in *The Boston Herald* (6/30/90), *The New York Times* (7/3/90), *The Boston Globe* (7/3/90), and *MIT' Tech Talk* (7/18/90).

Significant Publications

Licklider, J.C.R., "Man-Computer Symbiosis," *IRE Trans. Human Factors in Electronics, Vol.* HFE-1 Mar. 1960, pages *4-11;* reprinted in Pylyshyn, Z. W., ed., *Perspectives on the Computer Revolution,* Prentice Hall, Englewood Cliffs, NJ., 1970, pp. 306-318; reprinted in *Conversational Computers,* Orr, W. D., ed., John Wiley & Sons, New York, 1968, pp. 3-5; and Taylor, Robert W., "In Memoriam: J.C.R. Licklider 1915-1990," Research Report 61, System Research Center, Digital Equipment Corporation, Palo Alto, Calif., August 7, 1990.

UPDATES

Portrait added (MRW, 2013)