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In memoriam

Seymour Aubrey Papert (1928–2016)

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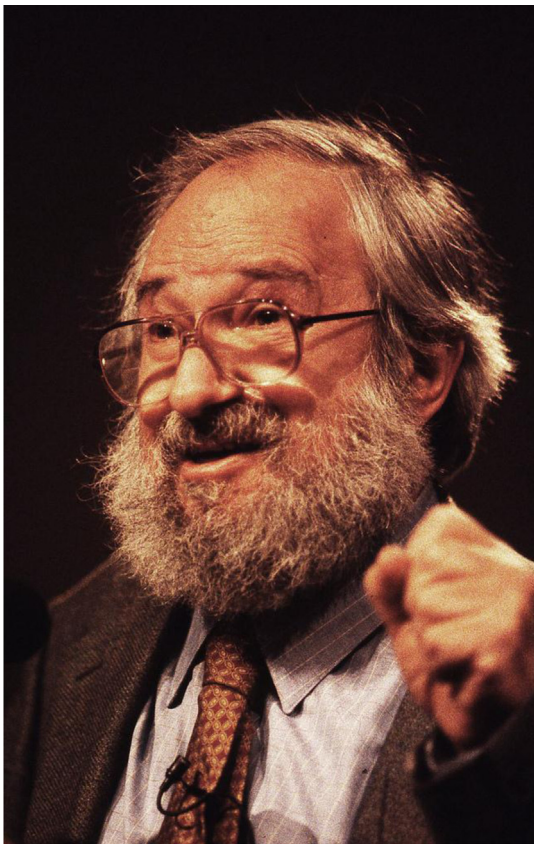


Fig. 1: Seymour A. Papert

photo credit: Credit: Barry Hetherington, courtesy of the MIT Media Lab

The parasitic disease known as sleeping sickness (Latin: *trypanosomiasis*) occurs solely in Africa, and it is caused by infected tsetse flies i.e., all the species in the genus *glossina*. No vaccine or medication protects humans or animals from this disease, and, before the first synthesis of DDT (*Dichlorodiphenyl-*

trichloroethane) in 1874 and the discovery of its insecticidal action by the Swiss chemist Paul Hermann Müller (1899–1965) in 1939, there was no means of controlling the invasions of these flies. The only possibility of averting danger was to predict the movements of tsetse flies, and this was what the entomologist Jack L. Papert did in the 1920s, by mapping the migration patterns of tsetse flies. Papert lived with his wife Betty, a painter, in South Africa. The Jewish couple had left their homeland Lithuania and came to the former South African Republic “Transvaal”.

As science journalist Bob Johnstone wrote, “Jack Papert’s method was to head off to some remote part of Swaziland, a region of Africa’s southeast coast and set up a camp for several months. There he would trap the flies, then mark and release them. Later, when marked flies were caught, he would record the location. On these trips he took with him his wife and their infant son ([1], 75).” Seymour Aubrey Papert was the infant mentioned in the quote. He was born in Pretoria, the first of three children, Alan, another son, and Joan, their only daughter.

Education writer Mark F. Goldberg quoted from his interview with Papert in April 1991, that when writing “young Seymour spent months each year in «various wild places on the southeast coast of Africa» with his parents, their white assistant and several black workers and their families.” ([2], 68). Papert’s (and Minsky’s) former MIT-student Daniel Crevier (born 1947) wrote that this “family’s way of life was straight out of a Hemingway story” ([3] 84) and moreover Goldberg thinks that “[i]t was in this «transparent little world» that Papert became interested in learning the mechanisms of things. He recalls how as a small boy he once drove a truck two miles an hour, hit a tree, and jumped wild with excitement to see how the gears worked. In this environment Papert’s lifelong desire flourished – he always wanted to figure out «how physical things worked—but also how minds work.» ([2], 68).”

When he was 10 years old, Seymour Papert had to attend school in Johannesburg. For the first time, he was confronted with the racial segregation that was not apparent in his childhood years in which he and his parents were the only white people in their neighborhood. He felt repelled by the apartheid in South Africa. In high school, he arranged evening classes for illiterate black domestic servants, which was forbidden, and as a young adult he was engaged

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in anti-apartheid activities. As a consequence of these activities, the government prohibited him from traveling outside South Africa.



Fig. 2: Seymour Papert – over 60 years ago.

Photo credit: Artemis Papert, courtesy of the Papert family.

First, Papert completed undergraduate studies with a BA at the University of the Witwatersrand in South Africa. Subsequently, he had aimed to study in the USA; however, because he was not permitted to leave the country, he stayed at his Alma Mater but changed to mathematics to earn his Ph. D. in 1952 [4]. Without a passport but awarded a British Commonwealth scholarship, he moved overseas to the UK. For his research in mathematics at St. John's College in Cambridge, he earned his second Ph.D. in 1958 for his thesis “The lattices of logic and topology” [5]. In these years of mathematical studies he met foreign scientists who shaped his future scientific career:

- In the UK, he met two Fulbright fellows at the *National Physical Laboratory* outside London, Edward Feigenbaum (born 1936), later director of the *Stanford Computation Center* and pioneer of “expert systems”, and Marvin Minsky (1927–2016), who was a co-organizer of the “Dartmouth summer research project on Artificial Intelligence” [6,7] and who later became the co-founder of the *Massachusetts Institute of Technology's AI Laboratory* [8]. In London, Papert was active for the journal *Socialist Review* and with Minsky and Feigenbaum, he discussed the subjects of cybernetics ([9] 1). They would meet again but before that Papert's research interests took him to another capital in Europe.
- In the academic year 1956–57, he visited the Henri Poincaré Institute at the University of Paris in order to complete his Ph.D. thesis. Later he recalled: “Although my mathematical research in Paris

earned me my Ph.D., the Parisian discovery that had the biggest impact on my life was Jean Piaget, who at the time was giving a course at the Sorbonne. I got to know him and was invited to work in his center in Geneva, where I spent the next four years and became passionately interested in children's thinking ([10] 33).”

The Swiss psychologist Jean Piaget (1896–1980), who was also the Director of the *International Bureau of Education* (1926–1967), was known for his theory of children's cognitive development, called “genetic epistemology”. Piaget emphasized the education of children as the only possibility “of saving our societies from possible collapse, whether violent, or gradual [11].” Along with many other people, Seymour was influenced by Piaget's theory and research. In 1958, three years after Piaget had founded and directed the *International Center for Genetic Epistemology* in Geneva while on the faculty of the University of Geneva, Papert studied with Piaget the processes involved in learning to think mathematically in children.



Fig. 3: Papert talking with psycholinguist Hermine (Mimi) Sinclair De-Zwart (1919–1997) while standing just behind Piaget, who is sitting at the table talking with Lise Girardin (1921–2010), the socialist mayor of Geneva at that time.

photo credit: Charles Brulhart, © Archives Jean Piaget.

Without going into detail, we can say that Piaget and also Papert agreed on how children actively construct their knowledge from the experiences they gain, and Papert expanded this learning theory to the so-called “Constructionism” [12,13]. He assumed that the learning child will construct something that it can share with others, this may be a poem, an idea—or a program, the latter became more important in the next years.

From August 29 to September 2 1960, the cognitive scientist Edward Colin Cherry (1914–1979) organized at the Royal Institution the *Third London Symposium on Information Theory*. At this

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