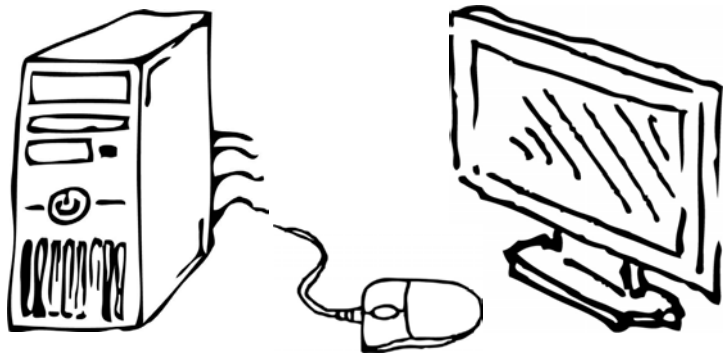
IPN Ayer y Hoy



HAROLD V. MCINTOSH: PIONEER OF COMPUTING IN MEXICO

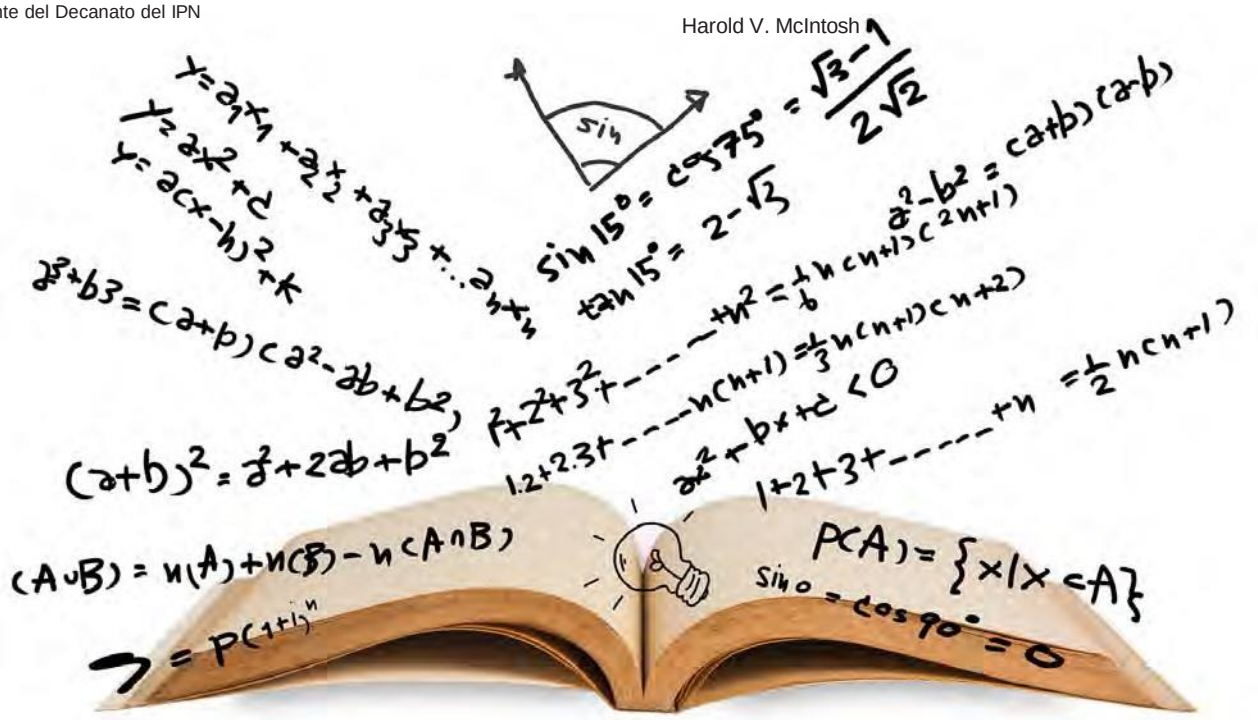
*Modesto Cárdenas García**

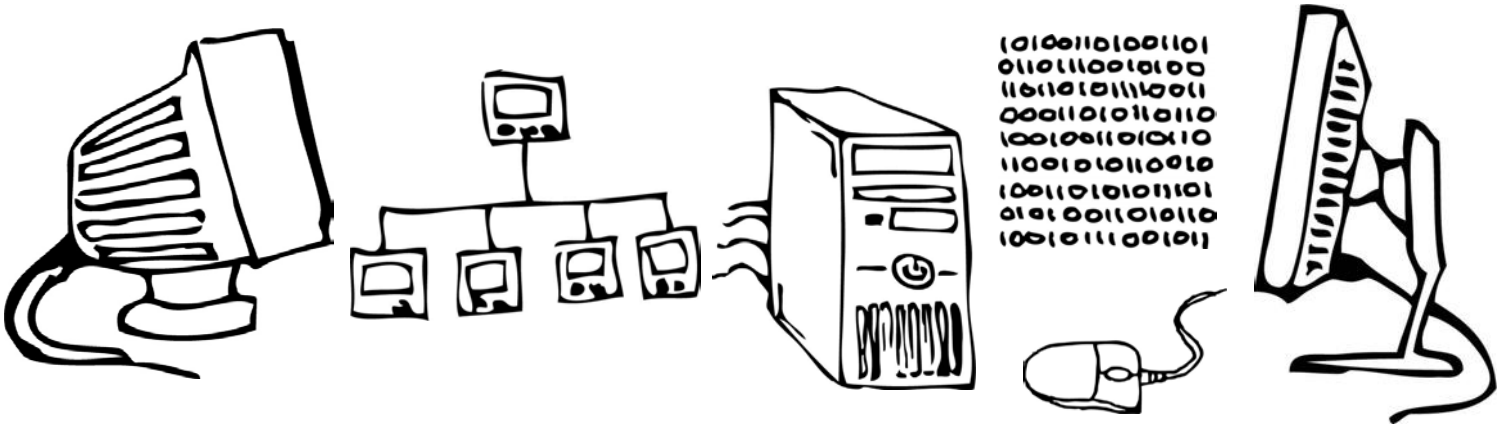
Harold V. McIntosh was a professor who played a fundamental role in building the teaching and research system in computer science at the National Polytechnic Institute (IPN). His first contact with the Mexican scientific community was with Dr. Marcos Moshinsky Borodiansky in 1963. He joined the Cinvestav of the IPN as a professor in 1964. As part of his teaching work, he supervised the bachelor's theses of Adolfo Guzmán Arenas and Blanco Chapa, interns from the la Escuela Superior de Ingeniería Mecánica y Eléctrica (ESIME). The topics were in the field of computing, particularly in programming language, and it was with the development of these topics that research on computing at the Instituto Politécnico Nacional began.

Harold V. McIntosh

Guzmán Arenas' thesis, titled "CONVERT: Design of a language for symbol manipulation and its corresponding interpretation," was published in the Communications of

*Presidente del Decanato del IPN





the ACM journal, by the Association for Computing Machinery (ACM), making it the first article on computing published in a foreign journal with credit to a Mexican institution.

In 1966, Harold V. McIntosh joined the School of Physics and Mathematics (ESFM) of the IPN as the coordinator of the Academy of Applied Mathematics and proposed changes to the school's curriculum. This led to the introduction of courses in Mathematical Logic and Programming, initially starting with one course and later expanding to four. With these changes, the ESFM became recognized for preparing its graduates with a solid foundation in physics, mathematics, and computer science, becoming the first school in the country with this characteristic.

During this period, the Centro Nacional de Cálculo (Cenac), founded in 1963, was also extensively developed. This established a mechanism of intense cooperation between Cenac and the School of Mathematics, allowing Professor McIntosh and his disciples to have ample access to the computing infrastructure of Cenac. The support of Professor McIntosh was instrumental in promoting the Master's program in Computer Science offered by the IPN.

From 1963 to 1966, Professor McIntosh supervised the bachelor's theses of eleven interns from (ESFM). Several of these students continued in the field of computing and obtained their doctoral degrees in this specialization. Among the mentioned thesis students are Arturo Cisneros Stoianowsky, Gilberto Calvillo Vives, Carlos García Jurado Martínez, Gerardo Cisneros Stoianowsky, and Isidro Romero Medina.

In some of the theses, the topic was specifically the application of computing techniques taught by Professor McIntosh. For instance, Carlos García Jurado Martínez's thesis was titled "A visual REC for the PDP-15 in communication with the PDP-10." Isidro Romero Medina's thesis was titled "Vibrations in one-dimensional networks with nearest-neighbor interactions."

During these years, the Massachusetts Institute of Technology (MIT) was developing a programming language called LISP, which was presented at an international conference in May 1959. Professor McIntosh was one of the early promoters of LISP knowledge beyond MIT. He used it in his calculations and ensured that his disciples at ESFM fully assimilated it.

Roberts A. Yates and Lowell Hawkinson built another LISP processor, a compiler for Cenac, which supposedly continued to be developed over time. On the 60th anniversary of the founding of Cenac, we remember Harold V. McIntosh and his extraordinary work as a pioneer in computing in our country.

In the book "Interactions: A Worldview from the 'Charm' of Atoms," Sheldon Lee Glashow (Nobel Laureate in Physics) wrote about the excellence of the mathematics department at Cornell University, as well as the extracurricular complement in Group Theory provided by his friend Harold V. McIntosh. Glashow referred to McIntosh as follows: "He was a Physics graduate from Colorado A&M [College], who now teaches in Puebla. He had a great passion for Group Theory. Since this discipline is particulary relevant to modern physics, I was truly fortunate to have Harold V.McIntosh at Cornell to help mw understand it so clearly and beautifully. This event once again illustrates my belief that one can learn as much, if not more, from a peer as from officially appointed professors.".