Computer for architects funded

By Laey Everett

The expert designing your dream house may someday be a computer, if work funded by a recent $600,000 National Science Foundation grant to Professor Nicholas Negroponte '66 and the "Architecture Machine" group succeeds.

The goals of the project, as proposed by Negroponte, are "to augment design abilities, to generate design solutions in a creative and possible way."

Staff members, including graduate students and participants in the Undergraduate Research Opportunities Program and the Government Work Study Program, as well as students in Negroponte's "Geometry and Computation in Architecture," are working toward the expansion of channels of communication between computer and human.

Present devices used in the "Architecture Machine" laboratory allow the computer to accept and react to sketches done on a special tablet. The computer reads the drawing by observing the position of the pen at fixed time intervals, and uses, among other parameters, speed and pressure to determine special features such as corners.

Research in graphical input may also allow the machine to interpret a person's intentions in drawing. Future programs may consider the user's hand and eye movements, as well as his approach to the sketch, as indicative of his attitude toward certain features of the drawing.

A longstanding project of the project is the application of these techniques to the development of "Architecture by Yourself." Programs in this area allow the user to input information regarding size and proximity requirements for various rooms and have the computer generate possible floor plans. The computer may ask questions concerning desired features as guidelines for the user.

While the idea of computer-designed homes "demands that the computer behave in a presently untried manner," Negroponte is optimistic about the feasibility of such schemes. In his book, *Limits to the Embodiment of Architecture*, he expresses the hope that machines can be made "sensitive to and understanding of the individual needs of a person designing his own home, presumably in a high density, conceivably in a low income, physical, and cultural level." Negroponte's work in computer applications to architecture dates to the URBANS project, funded in 1966 by IBM. His publication of *The Architecture Machine and the development of the human* in 1971 by MIT was a reaction to the more "vulnerable" aspects of the early system.

Unlike the URBANS project, which utilized an extremely large computer system, the present "Architecture Machine" consists of small machines which share a large number of interesting peripheral devices. The computer system is more efficient as it features increased flexibility at lower equipment cost. Negroponte estimates that about 25% of the group's effort is geared toward system growth and development. The remaining time is divided between instruction on both undergraduate and graduate levels, and research.

The National Science Foundation grant is important to Negroponte, because "this is the first time in the history of our Ph.D. program" over a three-year period. He noted that the grant will basically be used to develop machines that can eliminate "incompleteness, contradiction and vagueness" in computer-generated design.

News Analysis

"Cuts" describe budget for last several years

By Mike McNamee

If any one word were to be chosen to characterize the MIT budget over the last several years, that word would have to be "cuts."

Inflation, rising costs, a decrease in the amount of money that can be expected from the federal government, and some large-scale changes in the institution's financial picture -- such as the divestment last year of the Doppler Laboratories, formerly a wholly-owned Institute subsidiary -- have given MIT operating deficits in the last several years.

Even as the deficits have provoked some useful innovations around MIT -- such as the thorough reexamination of the Nature of the School of Science and Technology -- the need for "cuts" has been constant.

"It's been a chore," said several MIT students through tuition, and Provost John P. McFarlane, who noted that the grant will basically be used to develop machines that can eliminate "incompleteness, contradiction and vagueness" in computer-generated design. The situation, the Chancellor discussed the Institute's finances from Fiscal Year 1963 until FY 1974, Bruce said. He added that the opportunity to form 19 task forces, each assigned to a particular area of the school's operations, to re-examine budgets in each area. These forces, chaired by engineering faculty and students, have been working toward a thorough reexamination of the Nature of the School of Science and Technology. (Please turn to page 2)

Weisskopf honored at symposium

By Stephen Blanc

Six Nobel Laureates and many friends of Institute Professor Victor Weisskopf gathered at MIT last Thursday and Friday to honor his retirement from the Physics Department.

The two-day symposium featured eleven speakers and a preview of a new film on Albert Einstein's early education. The speeches ranged from reminiscences of graduate studies with Weisskopf to personal anecdotes about his retirement. Weisskopf is generally known, to lectures addressing public policy problems such as the energy crisis and the possible reinstatement of the President's Science Advisory Council, to technical lectures on nuclear theory.

The symposium was opened by James Killian, Honorary Chairman of the MIT Corporation, who called for the establishment of a Council of Science and Technology in the White House, as proposed by a National Academy of Sciences committee he headed last year. Killian stated that it is essential that the best scientific and technological talent of today be used to address the problems facing our nation.

According to Killian, the proposal to institute a Council of Science and Technology received "a cordial response in Congress and an extraordinary response from the press." He noted that (Please turn to page 3)