

# MIT Media Laboratory: A View After Ten Years

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## INTRODUCTION

As the MIT Media Laboratory celebrates its 10th anniversary in 1995, this makes a fitting time to describe it for the CHI audience. A number of current Media Lab faculty and students are active in user interface techniques and technologies, and our work is well represented in the CHI proceedings. Although well known now, the Lab's roots go back much further, to the early 70s.

The Laboratory's charter is to invent and creatively exploit new media for human well-being and individual satisfaction, without regard to present-day constraints. We employ supercomputers and extraordinary input/output devices to experiment with today, with the notion that these will be commonplace tomorrow. The not-so-hidden agenda is to drive technological inventions and break engineering deadlocks with new perspectives and demanding applications. The Lab explores issues in a broad range of new information technologies including: advanced digital television, electronic publishing, portable computing and communication, artificial intelligence, voice interfaces, user interface design, and education-related technologies.

## HISTORY AND OVERVIEW

A major thread of pre-Media Lab work was the Architecture Machine Group, started by Nicholas Negroponte, the Media Lab's Director. From "Arch Mach" as it was called came multimedia and multimodal systems such as the Spatial Data Management System (an early precursor of windows), the Aspen movie-map project (early use of motion video for computer display, from videodiscs) and Put That There, a speech and gesture dialogue system. At the Lab's founding, the majority of faculty and research staff joined from Arch Mach.

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Another major early thread came from the Visible Language Workshop (VLW) with, at the time, a particular interest in print media. The VLW's founder, Muriel Cooper, recently passed away, and is sorely missed by the Lab. Also joining from elsewhere at MIT were Seymour Papert, Marvin Minsky, Barry Vercoe's Experimental Music Studio, a Film/Video section under Ricky Leacock, and a nascent computer holography group under Stephen Benton, rising from the ashes of the former Creative Photography Lab. Mention of the pioneers of the Media Lab would not be complete without including the name of Jerome Wiesner. After a long history of serving MIT as well as the country, and well known for a leading role in the scientific side of arms control, Dr. Wiesner took on fund raising for the creation of the Media Lab as a pet project and enjoyed his final years watching the dream become reality.

Currently the Lab includes 26 faculty members and research scientists, 93 graduate students, and somewhat over 100 undergraduates involved in research projects. As the Lab has grown, in terms of faculty, students, staff, and funding, it has more recently been loosely organized into three sections: Learning and Epistemology, Perceptual Computing, and Information and Entertainment. But a more rational organization structure would revolve around major research initiatives around three research consortia: Television of Tomorrow (interactive digital television), News in the Future (on-demand, personalized, multimedia news), and Things That Think (computation in a myriad of everyday devices). Although students cluster into work groups around individual faculty members, increasingly these groups in turn contribute different facets to the broader thrusts of each research consortium.

## FUNDING AND RESEARCH

The Media Lab is a more than \$23 million / year research and teaching organization. Approximately 85% of our contract research funding is provided by more than 100 corporate sponsors; the balance is by various agencies of the US Government. This is a unique formula at MIT, where many labs are more heavily government supported. Sponsor companies represent industries ranging from telecommunications to advertising, from publishing to finance, from computers to broadcasters and the entertainment industry.

A number of research themes are relevant to the CHI community. Media Lab work focuses on user interface

technologies and interaction techniques, with more of an emphasis on innovation than usability evaluation. Speech user interfaces, including applications of recognition, text-to-speech synthesis, and digital audio manipulation, as well as multimodal interfaces also including gesture and eye-tracking, have been presented at many past CHI conferences. Visual user interfaces and interaction paradigms, including motion video, dynamic displays, and information visualization have also been well represented. Interface technology, including haptic interfaces and non contact sensing, provide a low level basis for interaction technique development. The Lab has a very active program in user interface agents and collaborative information filtering which has recently become more widely known.

#### ACADEMIC PROGRAM

Although a part of the School of Architecture, the Media Lab administers its own academic program in Media Arts and Sciences. About half of the graduate students are enrolled in two year masters of science degree programs, and the remainder are doing doctoral work. The graduate program is centered around research; graduate students are generally supported as research assistants and participate in all of the Lab's sponsored research projects. Research time and thesis projects take up significantly more time than class-related work for most Media Lab grad students. This relationship is also evidenced by the fact that grad students are admitted to work with a particular advisor, with the expectation that they will contribute to research projects undertaken or in progress by that advisor.

Undergraduates are also heavily involved in research activities, mostly programming, through MIT's Undergraduate Research Opportunities Program, which encourages participation for pay or credit. Although the Lab offers a small number of undergraduate courses and aspires to create an undergraduate program, the normal undergraduate experience is as an apprenticeship possibly leading to a thesis or final undergraduate project; of course some undergraduates are eventually admitted to the graduate program.

#### WORK ENVIRONMENT

The Media Lab is relatively well endowed with workstations and other resources, but is also a very visible

and demanding work environment. Both students and faculty come from a wide range of backgrounds, leading to a rich interplay of ideas, perspectives, and personalities. Because of the large number of current (and potential) industrial sponsors, the Lab enjoys many visitors and students as well as faculty spend a significant amount of time hosting visitors. To would-be visitors who are neither sponsors nor friends, the Lab appears unfriendly, as Lab members are often saturated with visits and demos, and cherish a bit of "work time".

The Media Lab has never been a "traditional" research or academic program. It has steered clear of mainstream research agendas, choosing rather to mine the promising extremes to look for work radically different from what is being done elsewhere. This has resulted in some famous pioneering projects, but also leads to criticism for being "charlatans" and not engaged in "hard science". This doesn't seem to bother us though; most of us in the Lab have chosen to push the boundaries of conventional research careers.

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