

23. [Introduction]

From *Soft Architecture Machines*

The design of *structures for human activity* is the basis of both architecture and human-computer interaction—at least, if two senses of the word “structures” are considered. Conceptualizing a networked or software system as spatial makes connection between the two fields even more evident. This relationship is in fact borne out by the great contributions architects have made to new media. One of the most immediately obvious applications of virtual reality was in architecture, where technology allowed for the first-person visualization of a planned physical building. The great cost of advanced graphics technology was justified by the much greater cost of construction and the need to get things right beforehand. This was one of the first advanced applications of the computer to design, and it lay outside the most typical fields in which early computing found application: accounting, the hard sciences, and engineering.

Many new media insights offered by architects have come as innovative applications of architectural knowledge about space, or about design. The most influential architects working with computers—including Michael Benedikt, Marcos Novak, William Mitchell, and Nicholas Negroponte—have developed new principles and theories for the digital realm, both specifically with regard to the cyberspace concept and across new media in other ways. The idea that the user should be empowered by computers, rather than browbeaten into complying with a machine expert, is one particularly important idea that has been furthered by Negroponte.

In 1967 Negroponte founded the Architecture Machine Group at MIT. It was in the context of working in this group that *Soft Architecture Machines* and his earlier *The Architecture Machine* were written. In this group, Negroponte and his collaborators developed methods of managing data spatially, rather than in the form of numeric or textual lists. The ideas laid out in the following two selections were, and remain, of great importance to the design of software. In “Intentionalities,” Negroponte describes three levels of awareness that a computer system should attempt, so as to be as responsive as possible. Even the most basic of these, having a model of the user, is absent from many ill-designed pieces of software today. (Consider how Microsoft Windows turns on the screen saver five minutes into showing a movie on DVD; even a primitive model of the user that knows about an activity such as “viewing movie” is absent.) In the following selection, Negroponte argues against the classical concept of the computer as an expert with special knowledge. Yet users carrying out tasks with computers today still often find themselves following along as software “wizards” direct user activity into one of a few pre-defined channels, in what is considered as a recent advance to improve productivity. Despite the power of Negroponte’s ideas, many that have proved themselves useful remain overlooked by software creators.

With the support of MIT President Jerome Weisner, Negroponte continued and expanded his work by opening the MIT Media Lab in 1985, founding a unique institution. Sponsored by companies who get in-person access to students and faculty members, the Media Lab conducts research into future applications of technologies across many different academic disciplines, artistic media, and slices of life. Neither a corporate research lab nor a typical academic department, the Media Lab carries on the work of the Architecture Machine Group—especially the approach of working with technologies more advanced than businesses will consider, and more unusual and yet more relevant to everyday life than the typical academic lab will. Negroponte’s influence has also been furthered through the magazine he co-founded, *Wired*, which sought to chronicle the digital revolution and promote it as a concept. His back-page essays from that magazine are collected in *Being Digital*.

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As Negroponte indicates, similar ideas were used in an educational context by Seymour Papert, whose ideas became an important influence in Negroponte’s Media Lab, where Papert led a research group. See the selection from Papert’s book (028).

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Richard Bolt’s paper (029) discusses a project of the Architecture Machine Group 0 and deals with spatial data management, a concept later employed by Ben Shneiderman in his essay (033). The AMG contributed an exhibit to Software (017).

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A Random Walk Through the 20th Century 0, by Glorianna Davenport and Michael Murtaugh, is an interactive video documentary of Weisner and an example of some of the innovative work done at the Media Lab.