

Media X: The New Liberal Arts?*

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The digital revolution has led to major changes in the way those of us in the Western democracies organize our societies and live our lives. Nicholas Negroponte, the director of MIT's Media Lab, dubbed the key technological development "Being Digital", with his publication in 1995 of a book with that title.

A consequence of Being Digital is that the word, both spoken and written, is no longer the sole primary glue of society or its culture. Given modern digital technologies and communications networks, the word becomes just one medium among several for expression and communication.

For creatures (humans) that learned to interact long before language came onto the scene, arguably the most significant aspect of today's digital information technologies is their interactive nature. Being Digital, a revolutionary technological concept, has given rise to an even more significant social development: Being Interactive.

The shift to interactivity has been so recent, so rapid, and (surprisingly) so little discussed, that most readers will almost certainly accuse me of hyperbole when I suggest that the interactive aspect of digital technologies will bring a major revolution in human artistic and cultural activities. In a world where interactivity, through interactive experience, plays a role at least as important as the word, activities such as writing, literature, and the spoken-word art forms will no longer occupy a privileged place in human culture. Those old media surely won't go away, of course, or cease to be important. What will change is that they will no longer be the sole occupants of the center stage.

At Stanford University, surrounded as we are by the world's greatest concentration of cutting edge digital technology companies and the related communication/entertainment industries, many of which we collaborate with in both research and teaching, some of us have been thinking about what this change means in terms of scholarship

and education. What will it mean to be an "educated person" in the Being Interactive world? What will constitute the Core Curriculum in the new liberal arts of the twenty first century and beyond?

Time alone will yield the answer, as social and cultural evolution leads to the emergence of an accompanying shared consensus. The Being Interactive world is so different from the World of the Word that there are as yet no agreed upon norms and metrics as to what is "good". Still, those of us engaged in educating tomorrow's citizens should try to see what the future will bring and help prepare our students to live in that world.

One result of our reflections is Media X. Media X is a new research initiative, and a novel administrative infrastructure to support it, that we launched recently to try to address some aspects of Being Interactive. Despite the name, Media X is not a west coast version of the Media Lab. It's not a lab or a center, but an intellectual network. A network to facilitate the study, design and use of interactive technologies — interactive media — using whatever methods and paradigms seem appropriate. The "X" in the title is meant to be read as a variable that can refer to any of the disciplines involved.

By being topic centered but discipline grounded, Media X both looks to the future and at the same time remains rooted to the past — to the tried and trusted disciplines that have served us well for so long and therefore provide established methodologies and reliable metrics for quality, and without which the enterprise could easily become a grab bag of superficial "interdisciplinary" approaches. Let me elaborate on this reasoning.

Media X is a network linking faculty in existing departments at Stanford. A far more common mechanism that universities use to promote interdisciplinary research is to establish interdisciplinary centers. But the creation of such centers leads inevitably to a paradox. Any

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successful interdisciplinary center will draw faculty away from their departments. For a while, the system can work well. But over time, faculty whose main research activities are carried out in an interdisciplinary center gradually morph into full-time “interdisciplinary researchers”, whose main activity is interdisciplinary research. And then, bit by bit, the influence of the disciplines is weakened. Eventually it may be lost altogether. At that point, the center is no longer doing genuinely “interdisciplinary” research. It may, of course, continue to do valuable and important work. That is quite another matter. But our goal in creating Media X was to structure it to maintain the maximum benefits that we believe come from truly interdisciplinary research.

Eager to avoid the ever present danger of creating over optimistic expectations, Media X was not launched with a great fanfare — we did not arrange any media (!) coverage. Instead, we simply talked privately with various key industry leaders for a couple of years and then, a few months ago, quietly started operations.

Although some elements of Media X draw upon Stanford’s unique geographic location and history, and thus could probably not be duplicated elsewhere, it seems likely that other features could point a way forward that other institutions may be able to adapt and emulate.

Designed to operate in a rapidly changing world, Media X is a highly flexible, virtual enterprise, a dynamic network stretching across the entire Stanford campus and beyond to outside ICT industries. The Media X structure cuts orthogonally across the existing university structure at Stanford — departments, schools, and research centers — and brings together central information themes: language technologies (e.g. natural language processing, semantics, dialogue systems), human-computer interaction (e.g. information organization, conversational agents, collaborative work environments), engineering (e.g. product design, information sensing, robotics), cognitive science (e.g. artificial intelligence, logic, neuroscience, rationality and philosophical foundations), and the artistic execution of mediated interactions (e.g. theater, narrative, computer music, character development, gestures, and the digital art of lighting).

By drawing on intellectual resources from computer science and engineering, through the human sciences to the humanities and the arts, Media X does not fit any of the neat academic boxes universities are familiar with. A natural question for academics is, then: What is the intellectual theme that binds Media X?

One way to answer is to think of the traditional liberal arts as the collection of intellectual topics that should be studied in order to be reasonably well equipped to play a full role in a culture dominated by the written word (including the written symbolic “words” of mathematics). In this vein, Media X is the collection of topics that should be studied in order to be reasonably well equipped to play a full role in a culture dominated by interactive media.

Despite this attempt at a definition, I believe it may well be inappropriate to look for a common intellectual theme for Media X, given the nature of the Being Interactive world we are entering. It is possible that an appropriate theme may emerge in the future. My personal view, however, is that it may well not. The common theme of Media X is a collection of application *technologies*. I think the domain we are looking at is more akin to industry or engineering than science, requiring a combination of different approaches, loosely tied together by modes of operation and codes of practices, rather than the development of a distinctive conceptual framework or a clear research paradigm that defines a discipline.

The similarity with industry and engineering is also apparent when it comes to funding. The traditional academic funding organizations rarely, if ever, support activities as widely distributed as those in Media X. Even when federal or private foundations establish “interdisciplinary programs,” research proposals are evaluated by the criteria of the participating disciplines, a benchmark which truly barrier-breaking research can never attain.

On the other hand, the kinds of problems that fall under the Media X umbrella lie at the very heart of the information and communications technology (ICT) industry. There the aim is not to develop new scientific understanding, but to design and build better IC technologies. And that goal provides adequate scope for funding the kind of academic activities we are talking about.

Media X is entirely funded from external sources. Much of it comes from industry, who see the kind of research being done as key to their future prosperity, and we make no apologies for engaging in commercially exploitable research. Perhaps because of our location in Silicon Valley, we are as much concerned (as an enterprise) with changing the world as with examining the nature of those changes.

It would be a mistake, however, to conclude that the principal role played by industry is to fund the Media X program. The design and manufacture

of interactive technologies raises deep and fundamental questions that would not be out of place if discussed in a university department of psychology, sociology, philosophy, linguistics, art, music, theater, mathematics, computer science, or engineering. Few companies are able to support intellectual activities of such a broad spread. But they do not need to. Universities are society's centers for that kind of expertise. The Digital Revolution has, then, prepared the field for a genuine industry–university collaboration of genuine benefit to both parties.

By providing industry with a portal to the Stanford campus, Media X puts faculty into contact with companies, research labs, and other groups working on the development and use of interactive technology, providing research funding, research projects, and educational projects for use in the classroom.

Of course, the decision whether to become involved in any particular project is up to each individual faculty member. Each year, Media X issues campus wide requests for research or educational proposals in the general area of the program. Different faculty and researchers are likely to be involved from one year to the next.

To preempt the oft-repeated statement that universities should not become the pliant tool of commercial activity, I should stress that Media X is not a research and development contract agency for industry. Media X does not, as a general rule, engage in contract research (although many faculty and research groups associated with Media X do just that). Rather, we form partnerships with ICT firms, carrying out university-type research, albeit research that is in large part of relevance to — and in some cases comes from — those industry partners. *Our* goal as a university enterprise is to carry out research and publish the results openly in the academic literature; product development is left to the industry partners themselves. Our intention in planning Media X was that the program be sufficiently large, and generate enough funding from industrial member fees, that much of the research carried out is of the traditional “curiosity driven” variety, originating with the investigators.

A meta-goal in creating Media X is to find a structure that supports cross-disciplinary scientific research into the human and technological aspects of Interactivity, using the technological goals of the design, manufacture, and use of interactive technologies to provide the glue that binds the intellectual effort together. The massively cross-disciplinary nature of Interactivity almost certainly precludes real progress within the existing university administrative framework.

But that does not necessarily mean we need to dismantle that framework and erect a new one. We must, however, find a way to modify the current framework — essentially the framework of the nineteenth century, although it served us well throughout the twentieth — to meet the new challenges of the twenty-first for which it clearly seems inadequate. I believe that the Media X program (or perhaps a modification thereof) has a good chance of providing the appropriate academic structure to fill this need.

For the most part, the intellectual resource for Media X is supplied by the existing academic disciplines, housed in standard university departments. In due course, I suspect that we will need a small number of cross-disciplinarians — “Third Culture” scholars to use the term coined by commentator John Brockman (1996) — to provide connections to better facilitate the various cross-disciplinary collaborations. Those individuals would be university faculty, occupying truly “integrative chairs”, located not within any department. Such is the inertia of the traditional departmental structure in today's universities, that establishing such positions is likely to be the one place where enterprises such as Media X might run into faculty opposition. But such opposition is likely to be short lived. The train has already left the station. Being Interactive is not just our future. It's here now.

Reference

Brockman, J. *The Third Culture : Beyond the Scientific Revolution*, Touchstone Books (1996).