About the Digital Arts Lab

In September 1977, two new courses were approved and offered at the graduate level in the Center for Media Study: *Seminar in the Image: Theory* and *Workshop in the Image: Practice* (now called *Advanced Digital Arts Workshop*).[1] These courses were brought forward by Hollis Frampton and Bohuslav [Woody] Vasulka in response to a need, sensed by faculty and graduate students, for a re-integration, at both theoretical and practical levels, of contemporary thought surrounding the interfacial node of the several disciplines of film and video making and theory, film study, photography, and sound synthesis and processing as it interacted with and responded to pressures and suggestions from the fields of mass communications and the traditional fine arts.

Among the disciplines in question, there appeared to obtain an eclectic profusion of concept and terminology. It seemed reasonable to ask whether a virtual intellectual space exists, within which it might be possible not only to bring into congruence the apparent differences among them but to investigate a method and seek a terminology which could define a generalization that could describe their several states and historical predicaments in a satisfactory (and perhaps fertile) way, without losing sight of the scientific and humanistic discoveries that have always inseminated and complicated the development of the fine arts and the maturing media-related arts.

At the same time, both faculty experienced an increasingly urgent need to integrate into their teaching and research some accountability for the social presence of that supreme effort of technology, the digital computer. Coming from backgrounds in film and video, both were experienced in advanced image and sound technologies and accustomed to assimilating them into their own thought and teaching their use. At the same time, both were strongly oriented toward the use (and the consequences of that use) of existing media technologies as domesticated personal tools. By 1977, small computer systems were available for prices that made it feasible for small programs within institutions or committed individuals to undertake serious examination of the computer as a tool.

Computers had long occasioned massive revisions within the exact and social sciences. In some cases the reasons were socially important but intellectually trivial: the speed of operation and arithmetic power of computers is legendary everywhere. What is more important, however, is that the computer is a tool for manipulating symbols, and systems of symbols, in the most generalized sense. It seemed reasonable, since film or video or sound are symbolic

systems in precisely the same way that mathematics or the natural languages are, to pursue further the implications of a tool that must be perceived as totally generalized in fields where it had not been used or understood by experienced practitioners, teachers, and theoreticians.

What was most important, though, in attempting to use this new tool is that it rigorously enforces a precise understanding of the fundamental nature of the symbols and systems to be operated upon. To state very roughly a fundamental theorem in computer science, the generation of an algorithm that performs a process requires a rigorous and detailed understanding of that process. Thus if the operation of a symbolic system can be emulated by an algorithm expressed as a computer program, it is possible to establish a benchmark for a state of comprehension of the properties of that system and its constituent symbols. The attraction and power, then, of computers is that they afford means to test and exercise our understanding of what we are doing with any tool, what we mean when we say that we make something, what we mean when we say that we know what we are doing.

Teaching two graduate courses led to the growth of a very modest facility that has been called, by consensus, the Digital Arts Lab. At the practical level, our emphasis has been largely upon program (software) development, since it is labor-intensive rather than money-intensive. Since the state in which we at first found ourselves was relatively primitive, we concentrated on building tools that would help us to take on more complex tasks: programs to help write other programs. One of the first, which has been much modified and improved over the years, was called a text editor, which uses an electronic keyboard as a typewriter and a video screen as paper, emulating the cut-and-paste operations of the process of writing any text. The text you are reading was composed using this program. Another program emulated a print-shop typesetter, automatically performing such tasks as justification, centering, page numbering, paragraph indentation, footnote gathering, and so forth; the text you are reading was typed using a few of the commands in that program.

As the capabilities of the lab grew, a series of programs called languages were designed and developed. DAEMON, an acronym for DAta Editor and MONitor, facilitates recording and changing of sound information, and implements the operations of a sound recordist and editor using such simple instruments as a variable-speed tape recorder, microphone, razor blade, and tape splicer. MUSIC emulates a keyboard musician, who operates an instrument that can be made to resemble anything from a piano or organ to a string quartet, brass choir, or small party of New Year revelers using noisemakers.

OPOS, Optical Printer Operating System, emulates a film technician. A current project, IMAGO, is a computer language that includes functions to perform film or video animation, and implements many that are possible only to painting. The supporting hardware for IMAGO, an advanced device that executes more than one hundred keyboard commands, is being designed and built by students and faculty within the lab environment, as a cooperative project. Each of these projects, to name but a few, has been completed as part of the work of courses offered in the Center for Media Study, as a realization of a general problem stated and defined in lectures and discussions.

At present, students studying in the Digital Arts Lab come from Electrical Engineering, Computer Science, Mathematics, Psychology, English, Music, and Art as well as our own program. Increasing numbers appear from the undergraduate population, and we have applied for approval of new courses to meet this need.

Meanwhile, these courses and this research continue to offer valuable supplemental instruction to students within and without our program, and there seems to be appreciation of the "generalist" and synthesizing rubric under which we have functioned and whose definition we continue to pursue. It is reasonable to foresee considerable growth in student need in this area for the next several years, as the relevant technologies and their consequent problems grow ever more permeant. If these consequences are not responsibly examined at the level of university education, then the results must be socially catastrophic, so it is to be expected that support of course work and research associated with the Digital Arts Lab will achieve and maintain correspondence not only with momentary enrollment but also with the certainly privileged (and potentially bright) future we are obliged to expect for the impact of computer technology on our field.

Note

1. The Center for Media Study was established in 1972 at the State University of New York at Buffalo by Gerald O'Grady, offering undergraduate and graduate degrees in a range of media production (film, video, holography, digital arts), media history and theory, and the social impact of media. Early faculty included video artists Woody and Steina Vasulka; filmmakers Paul Sharits, Tony Conrad, James Blue, and Hollis Frampton; and theorist Brian Henderson. (B.J.)