

## TOWARD AUTONOMOUS REALITY COMMUNITIES

### A Future For Computer Graphics

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It may live in a vacuum tube (for a few more years at least), but to hear the Mercantile Masters talk you'd think computer graphics lives in a political vacuum as well. For electronics, however, the last quarter-century has been equivalent to pulling back the string on a bow — the storing of enormous technological potential. Now the string is about to be released in the universal application of that technology: the next 25 years will be the flight of the arrow, propelling us into the Electronic Age and precipitating an historically unprecedented revolution in communications. And in the shadow of the Communications Revolution we begin to understand the awesome cultural and political implications of that protean force we refer to so feebly today as computer graphics.

### Autonomy and Heteronomy

The practice of the moving-image arts can be divided into five technical categories: (1) *production* or acquisition of image and sound; (2) recording this information in some *storage* medium, (3) *processing* or post-production, (4) *distribution* of the material to its target address or marketplace, and (5) the *display* or presentation of it in one or more formats. Today autonomous individuals have access to tools for the recording, storage and display of audiovisual information but very few of us have processing technology and only the Mercantile Masters control national distribution. The result is cultural heteronomy ("other-law"), a hierarchical structure of authority and reality.

However, I suggest that within ten years the Communications Revolution will give every household the technical capability to engage in all five fields of moving-image practice. That's because the computer is a universal machine that can contain and become all media, and because VLSI technology will increase computing power by a factor of a thousand in a decade. Thus the computer, on line to user-controlled networks, will *become* the tools we need to practice the construction of social reality. The result will be cultural autonomy ("self-law"), a nonhierarchical structure of authority and reality, characterized by the proliferation of "autonomous reality-communities." I shall speak more of this momentarily; meanwhile, consider the following:

### The Moving-Image Arts

In ten years the video camera will be a tubeless 100-percent solid-state handheld computer with image resolution greater than 35mm film. It will contain no internal optics, will focus automatically by sonar or Fourier analysis, and microprocessors for image deconvolution or image enhancement will obviate the need for expensive lenses. Lensless zooming will be accomplished by computer operations on the signal rather than mechanical manipulation of the lens. Recording will be digital, on metal tape (later in semiconductor or bubble memory), and

the entire camera/recorder unit, resembling a super-8 system, will sell for less than \$1000.

That's the computer as camera; what about the computer as *source* of the image? We know all about that, don't we? Taking seriously the predictions about VLSI, and remembering that software trails hardware by about five years, we can safely assume that the personal computer of a decade hence will be a 32-bit "geometry engine" pipeline processor capable of addressing at least a gigabyte of virtual memory, with throughput rates adequate for real time shaded 3-D graphics with a resolution of at least 1000 x 1000 pixels. It will also function as an image processor which, with add-on cards, will perform all the post-production "effects" today requiring \$200,000 industrial tools or custom user-built devices like Dan Sandin's Digital Image Processor or Woody Vasulka's Digital Image Articulator. And it'll control a read-write optical disc for video editing.

Of course the personal geometry engine with its flight-simulator capability will be on line to broadband cable and switched optical fibre networks providing custom distribution and access to "telegraphics" and "network reality synthesis." At the amateur level thousands of young warriors will live in labyrinthine networked adventure games and computer clubs will operate dedicated cable-TV channels, showing their simulations and sharing their programs in video as the non-member cable audience looks on and learns. At the venture-capital level, commercial Image Utilities with pictorial data bases will offer real-time interactive simulation: just punch up the right cable channel, turn on your Apple IX and shake hands with the animated output of Cray-5 or the latest Josephson-junction superbrain. The data bases, like visual hypertexts, will consist of morphological, anatomical and physiological algorithms for the synthesis of environments, figures and behaviors specified and controlled by the subscribers who could, of course, download the results in their own local memory for future metaconstructions.

### Amateurs and Professionals

One consequence of all this will be a loss of distinction between who's a professional and who's an amateur insofar as that's determined by the tools to which we have access. No motivation is as pure, no achievement more dignified than that of the amateur who does it for love. Yet in our professionalized society this most noble aspiration has been reduced to a sneering joke — the amateur as some kind of bozo — as though doing it for love were synonymous with ineptitude, an absence of quality and value. As a matter of fact, by far the most interesting computer graphics I've seen have been produced by skilled amateurs in their living rooms using tools they designed and built. They aren't "hobbyists," they are artists; but please excuse them, they can't afford a Cray-1 — yet. But just give us quality tools and see what happens.

By the end of this decade millions of amateurs will be evolving new computer graphics routines, constructing private visual languages over conversational networks like some thousand-headed Hydra, dwarfing the "contribution" of military-industrial professionals and reducing them to a rather embarrassing historical footnote. As a matter of fact, military-industrial domination of computer graphics signifies its immaturity as a medium. A tool is "mature" insofar as it's easy to use, accessible to everyone, offering high quality at low cost, and characterized by a pluralistic rather than singular practice, serving a multitude of values. Professionalism is an archaic model that's fading in the twilight of the Industrial Age; the Simulators of the Apocalypse should be honored to share the SIGGRAPH spotlight with noble amateurs — heroic warriors of the Electronic Age — who

shall inherit the world of simulation by living in the worlds they simulate.

### Communication and Conversation

The migration to alternative reality communities will not be achieved through communication. Communication (from the Latin "a shared space") is interaction in a common context ("to weave together") which makes communication possible and determines the meaning of all that's said: the control of context is the control of language is the control of reality. To create new realities, therefore, we must create new contexts, new domains of consensus. That can't be done through communication. You can't step out of the context that defines communication by communicating: it will lead only to trivial permutations within the same consensus, repeatedly validating the same reality. Rather, we need a *creative conversation* (from the Latin, "to turn around together") that might lead to new consensus and hence new realities, but which is not itself a process of communication. "Do you mean this or this?" "No, I mean thus and such . . ." During this non-trivial process we gradually approximate the possibility of communication, which will follow as a trivial necessary consequence once we've constructed a new consensus and woven together in a new context. Communication, as a domain of stabilized non-creative relations, can occur only after the creative (but non-communicative) conversation that makes it possible: communication is always non-creative and creativity is always non-communicative. Conversation, the prerequisite for all creativity, requires a two-way channel of interaction. That doesn't *guarantee* creativity, but without it there'll be no conversation and no creativity at all. That's why the worst thing we can say about the mass media is that they can only communicate — at a time when creative conversations on a massive scale are essential for human dignity and perhaps even our very survival.

### Simulation and Desire

What's important to realize is that in our conversations we create the realities we will talk about by talking about them: we become an autonomous reality-community. To be conscious observers we need language (verbal or visual), and to have language we need each other: the individual observer, standing alone, is an impossibility; there is only the observer-community or reality-community that can talk about things (like religion, art, science) because it creates the things it talks about by talking about them.

The Electronics Revolution, bringing conversational machines and networks, will give rise to autonomous reality-communities of politically significant magnitude, defined not by geography but by consciousness, ideology and desire. As constituents of these communities we shall hold continuously before ourselves alternative models of possible realities. We shall learn to desire the realities we simulate by simulating the realities we desire, specifying, through our control of context, what's real and what's not, what's right and wrong, good and bad, what's related to what, and how. This is the profound significance of simulation: it is not fiction, it is the future of politics, reality and desire. The purpose of fiction is to mirror the world and amuse the observer; the purpose of simulation is to create a world and transform the observer. Behold: armies of amateurs gather even now, preparing for the Image Wars, conspiring to abolish once and for all the ancient dichotomies between art and life, destiny and desire.