

New Media in an Adhocracy*

Michael Century
Rensselaer Polytechnic Institute

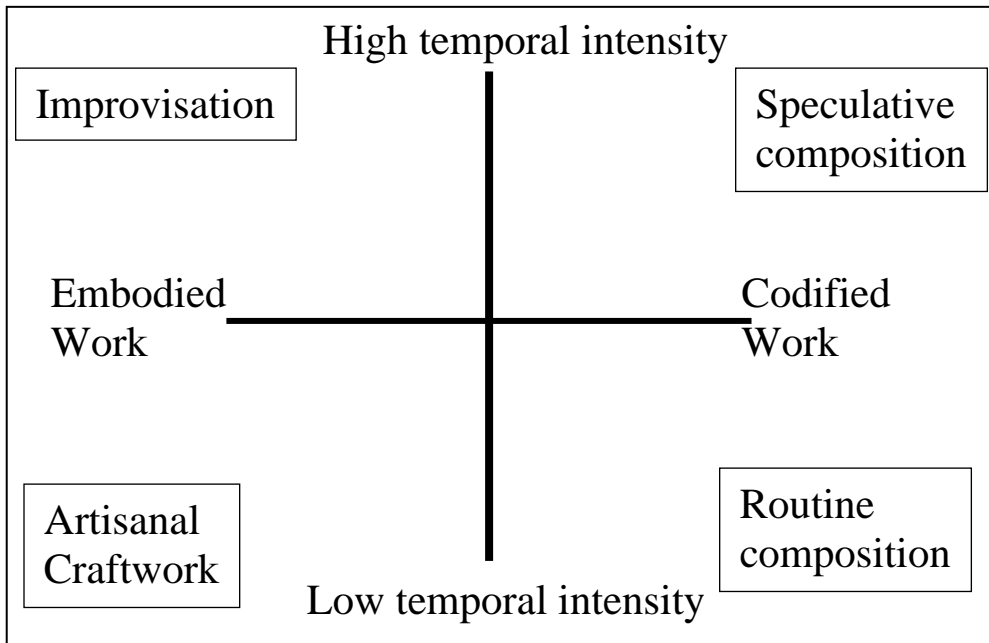
Keywords: studio-laboratory, adhocracy, National Film Board of Canada, computer animation

This paper is a case study of the introduction of software as a creative medium for animation production at the National Film Board of Canada during the 1980s. I wish to interrogate the idea of software as an organizational resource, by organizational creative resource, I mean a set of tools and skills that accrue knowledge and capabilities over time through use by multiple creators in their own idiosyncratic way.

Before turning to the organizational aspect of the case, I will outline a theoretical framework in which to interpret what was at stake in the transition from analogue to digital techniques in animation more broadly. This framework comes from a study of all the artist-animators who were the first adopters of computers from 1965-1980. First, conceive the range of options available to an artist whose object is the ordering of events in time. The task is always to determine “what happens next” from a greater or lesser range of possible alternatives. At the upper end of a continuum, is a large number of choices, or “degrees of freedom” open for choice; at the lower end few or ultimately only a single option is available. Let us call this dimension, which is about the presence of multiplicity at the moment of artistic choice, the dimension of temporal intensity. Crossing this dimension is that of the kind of knowledge at work in the choice, whether it be tacit, embodied knowledge, or it be codified and inscribed in textual forms. The former, embodied action, operates through instrumental intermediaries, and the latter may be of any cultural type – scores, scripts, story or representational convention, software language. Only in the top left quadrant do we find the potential for improvisation (show diagram); in the top right, speculative composition; routine composition, bottom right; and in the bottom left, artisanal craft work. See Figure 1.

* This paper was presented at the REFRESH conference, First International Conference on the Media Arts, Sciences and Technologies held at the Banff Center sept 29-oct 4 2005 and co sponsored by the Banff New Media Institute, the Database of Virtual Art and Leonardo/ISAST.

FIGURE 1.



When considering software as an actual, as opposed to potential artistic medium, note that it is in the upper left where opportunity is available for improvisational real time feedback in the definition and selection of significant problems. In the other quadrants: the “speculative composer” formulates a codified potentiality in advance of embodied performance [the “artwork of the future”, creator of speculative “new media” in advance of any existent works]; and the routine composer in this schema uses software to solve already formulated problems – in the case of computer graphics, for instance, such problems as the emulation of physical laws or the replication of photographic realistic images.

I will now apply this model to the case of computer/software introduced as a creative platform in an institution that was highly favorable, historically, to work of the kind theorized in the upper left – improvisational, high-intensity, embodied. The National Film Board of Canada was characterized by decentralized emergent strategy formation, rather than integrated hierarchical bureaucracy. Adhocracies, as this approach to strategy is termed by organizational theorists, oscillate between periods of relative focus centered around a guiding vision, and periods of divergence comprised of disjunct projects. Rather than rule-based routine that govern bureaucracy, the adhocracy forms strategy emergently, improvisationally, in response to the ever changing conditions. And just as improvisation, musical or social, can be more or less based on a guiding template, so strategy in an adhocracy is shaped by the presence or absence of an overarching vision.

Within this fluid organizational context, the animators were inheritors of the instrumental bricoleur filmmaking ethos of the NFB’s resident genius, Norman McLaren. McLaren insisted in his creative manifesto that each film have what one of his followers called its own, specific “pensée technologique”. By this was meant that the artist should seek to minimize “the technical mechanism standing between [her] conception and the finished work”; to handle personally the mechanisms that remain “in as intimate way as a painter her painting, or a violinist his violin”, and turn the limitations of the mechanisms, “when brought into touch with the theme, into the growing point for visual ideas”, and finally, to make sure there is a chance for improvisation at the time of shooting and drawing.”

From 1970 – 1973 by the NFB collaborated with the National Research Council of Canada on character animation, using some of the first computers fitted with artistically specified interactive techniques. The system was created by the engineers of the NRC, and it was demonstrated convincingly in the first critically regarded character animation interpolated by computer (*Metadata, Hunger*) The success of this film was a result of of the fact that its concept, transformation of handdrawn shapes, was uniquely suited to a the particular mechanistic kind of interpolation then possible with early computers. *Hunger* was about global hunger and greed and the wages of food-inequality. After this initial success, the NFB itself had been deeply uncertain about what it had done.

Controversy then arose, from 1976 to 1979 over how to incorporate computers at all – into the NFB. One position saw them as administrative purely; another saw them as supporting image databases, leading ultimately to non-linear editors; and a third wanted the successful NRC system to be transferred to Montreal for use in everyday production.

In this vacuum, a clear case of an adhococracy without vision, the technology transfer languished for 3 full years. When the system was finally delivered, it was unusable by artists, or by anyone for that matter, although a system for non-technical animators had been the whole point of the contract to re-engineer and rebuild it. Installed at the NFB in 1980, it was tweaked, documented, and put to use by ancillary technical staff – including the young Daniel Langlois, who used to cut his teeth in the making of pseudo-3D images calculated on a 2D system.

During those years the organization was suffering regular challenges to its budget and even its existence. A 1982 report had urged the NFB to withdraw from production altogether. In 1984 a new film and video policy introduced budget cuts, but also opened the area of new technologies for growth. This was a high level but unspecified vision in favor “new technology”, yet in a context when regular activities were suppressed budgetarily. By then, the initial NRC system was on an old unmaintainable computer, deemed obsolete; it was difficult to even get it to print images to film.

Hoping to be “relevant” both to the Film Board as well as to the burgeoning field of computer graphics at large, management and computer systems specialists made a proposal to invest relatively large sums (\$1,000,000) in a state of the art 3D computer graphic facility, called the Centre Animatique. Approval of financing was guaranteed by the need for very high-end, (expensive) special effects shots for a stereo IMAX 3D film for the Worlds Fair in 1986. The NFB now possessed a platform comparable to only a few others in the world, and unique in Canada, using the newest generation workstations and framebuffers, and what were then primitive software for modeling, animating and rendering. This technical choice aligned the NFB with a research agenda that was set primarily in U.S. In terms of the theoretical model previously presented, it was committed to systems and tools that were located in the lower right hand quadrant -- routine composition: tool controlled by textual commands, minimizing or ignoring the use of embodied expression, and driven creatively by the CG research community’s “holy grail” challenge to generate photorealistic images and models using naturalistic physics and settings. Progress, in this research agenda, was readily measured by the accrual of publishable textual outcomes, and especially of algorithms developed to solve particular representational problems.

Using the Centre Animatique, the team of six computer graphics specialists produced several big special effects shots, including initial IMAX instigating project. They worked in near total isolation from the rest of the animators of the section. The state of the software was a big impediment to use by artists: modules were separate from each other, and animation for instance needed to be specified in scripts, compiled then integrated with the models being animated, and again from the module in which their surfaces were rendered. Thus creative work was separated between people and across technical resources.

To the artists in the unit, 3D was a clumsy alternative, which did not permit them to use their existing skills much at all. Further controversies broke out, after acquiring a 3D

system, about whether to switch to a 2D scan-and-paint. The controversies simmered for about 5 years, with leading creative animators feeling unlooked after – simplest requests ignored – while the keeper of the Centre animatique did whatever they could to create “business” for their prized technology. Most telling in this controversy was the clash over an externally defined research agenda, brought in from the mainstream CG world: None of this was of much interest to the instrumental bricoleur, improvisational artists of the NFB French Animation unit.

To these artist-animators, this new software resource was perceived more as a threat than an opportunity, and the computer assumed to be driven by imperatives outside their own drive to work experimentally. What was lost, according to one, was the “intimate link between the technique and the thought of a film”. Internal staffers objected to the ideology of technological progress through improvements to computers, which masks completely what it means to represent objects and in particular synthetic characters in a virtual simulation.

It was at the beginning of this period context of confusion, 1986, that the animator with the greatest experience of both the initial 2D and the 3D system, Langlois, left to establish Softimage. SI was one of the first 3 animation software companies, and it was immediately heralded for producing software as “creative environment”, intended for single-user artists animators requiring direct, improvisational immediacy of feedback. As his supervisor at the NFB noted, the very creative diversity at the NFB, where artists worked with pinscreen, sand, clay, puppets – set the baseline for Langlois to match in his “integrated work flow” at Softimage. The company that was started in 1986 became industry standard for usability in a few short years.

The Centre Animatique closed in 1993, after it had, somewhat belatedly, shifted its software development effort to a conventional 2D scan and paint system that was never commercialized.

Conclusions - New media in an adhocracy --

- A high level strategy favoring new tech was enough to get the ball rolling but far from enough to enroll the artists committed to highly improvisational, temporally intense relationships with their technologies.
- Confusion and controversy resulted when SW entered this adhocracy, which lacked the overarching vision to settle internal disputes about its use as a transformative and improvisational medium rather than ready-at-hand problem solving device
- Yet those inside the adhocracy were offered an opportunity for intensive learning – DL profited uniquely from this diverse & chaotic environment
- The key insight achieved by DL in founding SI was to “integrate work flow”, the formerly separate components of 3D modeling, animating, rendering software, in a unified and seamless interface. The GUI in wide use dated only from 1984, so this counts as an early achievement in the creative arts of broad functional integration achieved through interface design.

- Ironically, this case also demonstrates a case of experimental-arts research culture accidentally informing a successful process of applied research – resulting in innovative products for the market place, even if the crucible from which it emerged was rife in dissension and disappointment.