Who owns our software?—a first-person case study

Miller Puckette *

Abstract

The invention and realization of a new technique, software paradigm, or other large piece of work may take place over a period of one or even several decades. It frequently happens that the IP model under which the work was started changes before it is finished—sometimes more than once. This paper explores the development of the Max/MSP/jMax/Pd paradigm, along with some other related developments, in the period from 1980 to the present. Starting from these examples, some generalizations are attempted about how the question of ownership and IP control should be addressed in the arts world.

1 Introduction

Just after the artist Christo Javacheff finished wrapping the Pont Neuf in Paris with cloth, we learned that we did not have the right to photograph it. All images of the wrapped work were reproductions of a work of art and the rights were thus controlled by the owner of the work. So thoroughly had the concept of "droit d'auteur" been shoveled into the French cultural consumer that this claim was not even questioned—despite the fact that the object we were forbidden to photograph was the oldest standing bridge in Paris (1606).

The very idea that a notion could be original, and that it could therefore reflect glory on its originator, may be more recent than the Pont Neuf. Even more new—and more original—is the idea that, once you've had an idea, it then should (or even could) belong to you. This is reified in the phrase, "Intellectual Property" (IP).

For example, here is an idea: GHQWJD. It didn't show up on Google, so perhaps I can claim it as an invention. However, it consists of nothing but the letters G, etc, which themselves weren't new at all—all that is new is the particular juxtaposition of the six of them. We could pause here to pose the obvious and dark ontological questions this raises. But there is also a more materialistic question: what, precisely, are you protecting if you forbid some competitor of mine to arrange his or her own letters G,

*CRCA, Cal(it)^2, UCSD. Reprinted from *Proceedings*, ISEA 2004, pp. 200-202.

H, Q, W, J, and D, in the same order? And yet this is exactly what the inventors and protectors of IP seek to control.

I could walk into a grocery store, rearrange their bananas, and be accused of: (1) destroying their IP (the previous arrangement); (2) stealing someone else's IP by accidentally or purposely recreating some aspect of THEIR way of arranging bananas (or even non-bananas); (3) communicating a subversive message, whether or not I know what the message meant or what it might subvert, or perhaps revealing a trade or governmental secret. I claim that all I really did was move some bananas, and shouldn't I be free to do so?

2 Software

Software has long been treated as IP, protected under copyright law. (The notion of software patents—a new mode of IP protection for software—has sneaked into the picture, gradually, over the past three decades or so.) The use of IP protections on software has created all manner of distortions in the way software is produced and consumed. Rather than rehash the big story, I'll use my own experience with software IP as an example. My own journey into the open source movement came about because I got burned by the old model.

When I first wrote the program now known as Max, in 1988, my paycheck came from IRCAM. But many of the ideas behind Max had been developed at MIT, and many more were adapted from the work of other researchers. The code, at least, almost certainly belonged to IRCAM. IRCAM has energetically tried to capitalize on this, with some positive results early on, and with mostly negative results later.

The negative effects of IRCAM's over-protectiveness were threefold. The most evident was a drop in IRCAM's reputation among researchers (whereas as a production facility, IRCAM still enjoys a very high standing worldwide). Second, researchers within IRCAM become disaffected because of the difficulty of making their work known to people outside IRCAM. Since professional respect is the most important currency to a researcher, this can be a decisive factor in an employee's decision to stay or leave. Finally, and most subtly, IRCAM cuts itself off from the most exciting new developments in the electronic arts by building a virtual wall between itself and the rest of the digital world. This is evidenced by the differing fortunes of jMax, IRCAM's "new Max", and Pd. Pd was instantly embraced by a huge, and extremely hip, community of users who have taken it far beyond my wildest dreams of it; see for instance convention.puredata.org for recent developments as of 2004. The jMax community by contrast was small and anemic.

All this need not imply IRCAM's imminent demise as a research entity. With resources still unparalleled by any institution in the world, IRCAM's situation would be quickly turned around if its IP policies were adjusted to be more in line with those of today's international research community.

Getting back to my own story, I left IRCAM, and when it became clear that they would not permit my own further work on Max to be disseminated, I gave up and started a new project, Pd. (One meaning of Pd was "Public Domain".) This was only possible for me to do because I was working for a U.S. university which does not place claims on my work in the same way IRCAM did. However, I got a job at a U.S. university partly because of the reputation I had earned from writing Max at IRCAM! Clearly, some of the IP of Max stayed with the source code, some of it was public (as a result of research papers I wrote) and some of

it was stuck somehow in my physical body. How do we decide which part resides where?

3 Art

Artifacts of art may be owned, but 'digital art' itself is not intrinsically ownable by anybody. This is bad news to composers, for instance, who obviously would like to own their scores. They do indeed own the paper and the ink on top of it, but the work exists only as a way of arranging things, not in the things themselves, and therefore can't be owned. Composers and other digital artists must survive by the mechanism of attribution. This is indeed how J. S. Bach operated; the intervening years, dominated by physical printing presses and their output, can be seen as an aberration, now coming to an end.

This ending will bring great advantages to musicians. Returning to IRCAM, consider the fate of a composer having realized a work there in, say, the 1990s. For many years the works of Boulez and Manoury were locked into IRCAM's proprietary hardware and software. The ownership of the materials themselves (for instance the ISPW patch that realizes Manoury's Pluton) went to the composer, but the computer files were useless without the infrastructure of IRCAM—both hardware and human expertise—to turn them into music.

As this situation now changes (with PCs more powerful than IRCAM's once-mighty ISPW now costing much less than the microphones and speakers needed in a performance), the stage is set for wider distribution of IRCAM's realizations. Whether this is to be done freely or under some kind of copying restriction may now be decided by the composer (although the composer's publisher may place restrictions). One possible approach to spreading the work of composers is explored in my own Pd Repertory Project (`http://www.crca.ucsd.edu/~msp/pdrp/latest/`) which includes, among other materials, two realizations that come from IRCAM. (The actual patches have been taken down however, at IRCAM's insistence; I hope to clear this up in the future.)

Does this threaten IRCAM? I think not at all. Indeed, composers in the old days were often unwilling to realize music at IRCAM knowing that IRCAM would then control any possibility of performing the music. Many pieces commissioned at IRCAM saw only very few performances for this reason. Moreover, IRCAM possesses another form of knowledge vastly more valuable than the mere ability to perform the composers' music. This lies in the collective experience of IRCAM's personnel—a treasure unlikely to be recreated anywhere else in the world, entirely non-digital and non-duplicable. They need to figure out how to use their true capital. The answer is unlikely to be hoarding their IP.

I think one of the most interesting things we'll find out in the next decade is to what extent digitally connected communities can rival the physical ones, and to what extent they will, instead, enhance them. Conferences (such as ISEA!) still seem essential, and perhaps become even more valuable as the possibilities of connection between physical meetings amplifies their significance and potency.

4 Price fixing

IP is at bottom an attempt to peg two currencies together: that of material and that of ideas and information. Physical goods can only be in the

posession of one person at a time; if I have a loaf of bread, I would still have to work to produce a second, identical loaf. If two people want the same loaf, they can't both have it. Material obeys conservation laws.

Information and ideas don't obey any such conservation law; more ideas can come out of a system than went in. Information, in the form of a bit stream for instance, can be copied as many times as you wish, at almost no cost. If we think in terms of supply and demand, the supply of copies of Madonna's newest CD is infinite, so the natural, unregulated price is zero.

IP effectively makes a zero-value commodity cost money by making copies artificially scarce. All the billions of dollars worth of "software" are intrinsically worth nothing at all, and IP law's only purpose is to make them cost money instead of being free.

Although it is the big distributors who pocket almost all the money, the artists are at fault for inventing the idea that their work should be sold in this way. SACEM, after all, was set up by composers, although now it (and ASCAP, BMI, etc) mostly work for the distributors. Christo is vigorously defending his right to be the only purveyor of postcard pictures of Pont Neuf clothed, but he is in fact, perhaps unknowingly, contributing to the commercialization of an already highly commercialized art world.

The current legal approach to IP confuses two kinds of ownership: property and configuration. Property must be physical—we can't own things which are the mere fact that physical objects are juxtaposed, although we can own the physical objects themselves and have the right to complain when someone changes their physical arrangement without our consent. We certainly shouldn't be allowed legal redress if someone else chooses to arrange *their* physical objects—their bananas or the bits on their disk drives—in a way similar to the way we have arranged ours.

It is a ironic that researchers and artists now find themselves trapped by their own efforts to make their creations have monetary value in the form of IP. Researchers (such as myself) are too easily seduced by the promise of material gains to be reaped from our work. Artists (such as Christo in my example above) fall into the same trap. Both eventually lose control over their own work.

To fix this situation will require a careful re-evaluation of how we use IP and attribution today. We need a new set of mores that protect the actual creators of "content" without attaching monetary value directly to the bits use to transmit their output. Artists and researchers are the ones who need it the most, and we should be active in making and keeping information space safe for us to work in.