Copy-It-Right
The Distribution Religion:
The Media Archaeology of the Sandin Image Processor

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Abstract

How do artists store and organize hardware and software? I investigate the analog Sandin Image Processor hardware using "zombie media" archaeology, examining the concept of "obsolete" or "dead" media to find sustainable, socially equitable art and design solutions by remaking hardware modules as software. Because Sandin shared the *Copy-It-Right: The Distribution Religion* manual, more than 20 copies of the IP were made. As a testament to the success of the IP community's engagement and maintenance, the machines continue to operate through the care of artists who actively engage the tool for new projects. Sandin's IP proposes preservation through replication, re-implementation, open-access archives/storage, DIY activities, and community Build-It/Fix-it parties. It represents an artist self-archiving and organizing resources to copy-it-right.

Keywords

zombie media archaeology; open-source history; video synthesizer; archive; digital cultural heritage; new media art; global archiving network; ISEA, Summit on New Media Archiving

Introduction

Pioneering computer models such as Dan Sandin's Image Processor (IP) (1969–73) (figures 1 and 2) give users agency and expose the invisible labor behind the mysterious inner workings—the black box—of image processing and new media art archiving. Bruce Latour uses the term "black box" to describe the obfuscation of time, labor, and materials:

> Look around the room. . . . Consider how many black boxes there are in the room. Open the black boxes; examine the assemblies inside. Each of the parts inside the black box is itself a black box full of parts. If any part were to break, how many humans would immediately materialize around each? How far back in time, away in space, should we retrace our steps to follow all those silent entities that contribute peacefully to your reading this chapter at your desk?[1]

In 2021, I began to research the Sandin IP and set out to explore the possibilities of carrying on the spirit and ethos of this earlier era by reconstructing the analog hardware as digital software—to open the black box of image processing by tracing the genealogy of the analog image-processing techniques. Multiple Sandin IPs are still active in private and public collections; artist Amy Karle, the School of the Art Institute of Chicago and Alfred University maintain their own living IPs. To create my own living IP requires a further step: a transformation to an open-source zombie media vessel.

Figure 1. Dan Sandin, *5 Minute Romp thru the IP* (1973). This DIY video introduced his Sandin IP and its capabilities to process a live video in real time. Video still 5:58 min. ©Dan Sandin

From the point of view of new media art archiving methodology, the Sandin IP offers a case study to find solutions for new media art archiving. This case study may be one of the strategies to overcome the existing archival challenge. Multiple video synthesizers survive and thrive because of the *Distribution Religion* vision Sandin employed centered on human interconnection and low- or no-cost activities: community as a "resource," open-source sharing of intellectual property, artists' self-archive, and DIY activities. Terry Wong's article "Global Archiving

Network: A Case Study at the Second Summit on New Media Art Archiving at ISEA 2022," states:

> New media art is a contemporary-art category in which the media itself is very technology-dependent. Artists often incorporate emerging technologies in their artworks and constantly redefine the category. Unlike many other more static traditional art media, this evolving genre of art faces a severe problem: many recently created artworks can no longer be exhibited and may disappear without a trace due to technology obsolescence, lack of data, and insufficient documentation.[2]

Defying obsolescence, Sandin's IP remains active after 50 years. Researching and replicating Sandin's HIGH TEK synthesizer led me to the black box keys of zombie media archaeology. *How do artists store and organize hardware and software?* Or how can a culture build lifespan into a model with a vision wider than that of profit? To envision the infrastructure for a new media art archive requires looking at sustainable designs and art. The example of the analog IP provides a confusing challenge: how to preserve a video instrument, a high-technology invention with intricate parts and purposes. In attempting to remake the analog hardware as digital software, I learned that Sandin's IP synthesizer lives on its users. Sandin emphasized community as the main energy "resource." The relationships formed foster a culture of support for high-technology, nonhuman machines that require the delicate human hand and creative mind to survive.

What is old or new? What is original or a copy? Who or what is the average type or deviant? Foucault in *The Archeology of Knowledge* (1969) states that these dualisms, old–new, original–copy, average–deviant, become a value judgment. In listening to Foucault's appeal to reevaluate binary differences, *Zombie Media* conceptually stems from media archaeology, a new materialist approach for investigating technology. Hertz and Parikka state that zombie media "is concerned with media that is not only out of use, but resurrected to new uses, contexts and adaptations."[3] My methodology investigates the analog Sandin IP (IP) using "zombie media" archaeology to examine the concept of "obsolete" or "dead" media to find sustainable, socially equitable art and design solutions. As an artist remaking the hardware modules as software 50 years later, I believe the process could open artistic possibilities and bend history. Hertz and Parikka describe how "assembled into new constructions, such materials and ideas become zombies that carry with them histories but are also reminders of the nonhuman temporalities involved in technical media."[4] Media and memory are interchangeable in that the ideas need a vessel for storage and transfer. Silicon Valley corporate software companies now start by building a community of users, gaining the user's contact information, and beginning a relationship of communication. They set up a system in which the user is relevant and central, but in contrast to the Sandin IP, with its community Build-It and Fix-it parties and the subsequent open-source model, they do not give the user agency with the product they have purchased. The open-source model of sharing and building community can become the common model for challenging the communication systems that now dominate. New media artists and archivists can benefit from the advice Sandin gave me in a Zoom interview titled "Property Rites"; held to discuss the IP.

> In that community-building adventure, [we] have this "copy-it-right" idea that rather than trying to prevent people from copying your stuff the best strategy was to let them copy it and distribute it…expand its reach.[5]

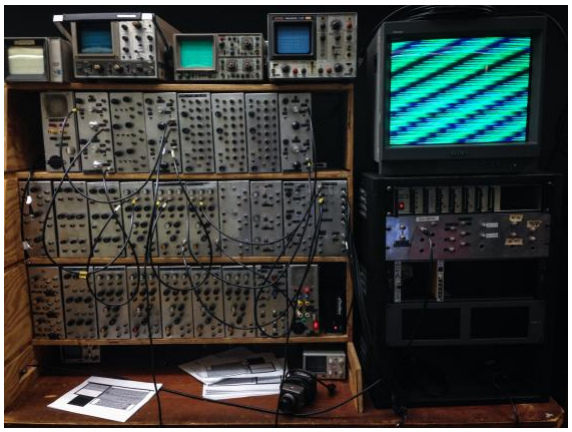

Figure 2. Dan Sandin's IP (1971–73). Note that the cables act as "patches" between the modular analog computers that process the video signal. Photo by Rosa Menkman, taken April 3, 2015, at the School of the Art Institute of Chicago, where the IP operates to this day. ©Wikipedia.

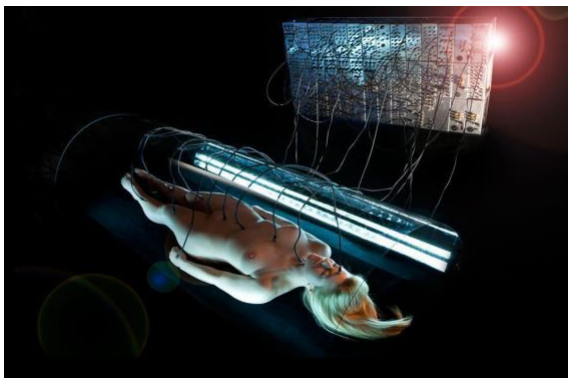

Figure 3. Amy Karle, *BioFeedback* (2011) performance, video art. Installation view at Detroit Institute of the Arts. A zombie resurrection for the Sandin IP with the artist Amy Karle performing and repurposing the Sandin IP. She maintains and operates her own IP which was formerly artist Bob Synder's from Chicago. Photo by Andre LaRoche. ©Amy Karle.

Do-It-Yourself

The IP, as Sandin explains in the live-recorded 1973 analog video *5 Minute Romp thru the IP*, "is a general-purpose analog computer, a general-purpose patch programmable [computer], meaning [a] program [made] by patch cables."[6] Sandin demonstrates the IP modules in real time to the viewers, embodying a DIY spirit of how they, too, can build a computer to process their moving images. The IP manual, with the title and manifesto of the *Distribution Religion*, details how Sandin's project was simultaneously an artistic, an engineering, a philosophical and a political project designed to broaden access to, interest in, and understanding of image processing. Currently, the implications are reaching out more broadly to new media art archiving. When this DIY approach is applied now, it challenges the obfuscation about artworks for replication and archival purposes.

Open-Source—The Distribution Religion

When video emerged as a medium in the late 1960s, Sandin created the IP, a video synthesizer with analog computer modules known as "open-source hardware." He designed its modules to be replicated by other artists as a way of building community and disrupting the network of communications under corporate control. As he explains, "I wanted people to copy [the IP] because I figured that was a better distribution mechanism than me trying to create a company, which I was not interested in doing."[7] The IP, despite the name, was not intended to process still images; Sandin's concept was always for the IP to be a video instrument in real time. With the arrival of the Portapak video camera in the late 1960s, image processing opened the floodgates of utopian thought and potential for analog video technology.

An activist against the Vietnam War, Sandin was in graduate school studying nuclear physics in 1968 when he saw Scott Bartlett's experimental film *OffOn*, of the same year, which uses video processing. Deeply inspired, Sandin built the IP in the subsequent five years. As the manager of a particle accelerator, he operated wall-size general-purpose analog computers. Applying the physics of the particle accelerator technology to video required a prophetic conceptual leap, collaboration, and commitment. Sandin explained to me, in our interview, that he discussed wanting a very powerful device for manipulating images with fellow physicist Russ Dobson, asking, "What would it mean to build the visual equivalent of a Moog Model Two analog synthesizer?"[8] Dobson answered that first, you needed to increase its bandwidth. The Moog had a 20–50 kilohertz bandwidth, whereas the IP went up to 5 megahertz because that was the bandwidth of a video channel.

The philosophy of reciprocity and generosity as it related to sharing intellectual property espoused a belief in the coevolution of humans and machines, because independent media relies on its hardware or software being robust, accessible, and affordable. In Sandin's model, the creator(s) share as much information as can be provided to the users transparently. The Sandin IP hardware manual begins with the heading "Distribution Religion." The open-source movement's conceptual origins can be traced partly to the capitalized text at the beginning of the IP's 117-page DIY manual on how to make the IP, a video art performance instrument:

DISTRIBUTION RELIGION
THE IMAGE PROCESSOR MAY BE COPIED BY INDIVIDUALS AND NOT-FOR-PROFIT INSTITUTIONS WITHOUT CHARGE. FOR-PROFIT INSTITUTIONS WILL HAVE TO NEGOTIATE FOR PERMISSION TO COPY. I THINK CULTURE HAS TO LEARN TO USE HIGH TEK MACHINES FOR PERSONAL AESTHETIC, RELIGIOUS, INTUITIVE, COMPREHENSIVE, EXPLORATORY GROWTH. THE DEVELOPMENT OF MACHINES LIKE THE IMAGE PROCESSOR IS A PART OF THE EVOLUTION. I AM PAID BY THE STATE, AT LEAST IN PART, TO DO AND DISSEMINATE THIS INFORMATION; SO I DO.[9]

The introductory words attempt to facilitate cooperation, collaboration, and exploration without exploitation. As he stated, as a faculty member at a state university, Sandin was paid by the state. He pointed to a strong connection between scholars' obligations to share their research and open-access scholarly publishing made available by universities. The manifesto evokes a transcendentalist hope in the spirit of self-learning and a belief in the symbiotic relationship between humans and machines. It serves as an ideology for teaching others to copy the designs for subverting capitalist cultural production using independent media. The model challenges the ideology of planned obsolescence that is built into the economy. By opening the IP's black box, the "Distribution Religion" manual acts as a force to expand proprietary hardware, software, and corporate control of video technology to include a world of tinkerers and activists. It saw, in the early 1970s, the ability to make, edit, and produce videos as essential to being heard. As Sandin noted, "If you challenge capitalism, you are going to lose . . .[It's important] to be able to hack out a methodology for yourself so you can do what you want."[10] Community was one of the most important things about these ideas. The phrase "Copy-It-Right" evolved to express the intention that people should copy the software or hardware, because, says Sandin, "if you don't have anybody using it, your software is irrelevant."[11] The goal was to increase exposure and build a community. Asking people to "copy-it-right" and giving them permission create a relationship between the creator of the IP and the users. This could be true of any software platform and its users if the creator(s) collect(s) the names and contact information of users. However, as Sandin emphasizes, he also believes that intellectual property is essential for artists because it allows them to support themselves and not "pump gas." He is part of a

posthuman movement to shift the labor of the means of production to the user's hands to enhance creativity and community interconnection.

Community Building Adventures

Sandin describes the IP as "interactive installation art on video signals."[12] It was designed for use in a classroom or lab to open up the space behind the screen for accessible computer science and engineering education presented through a hands-on STEAM project. At the heart of the IP's concept is the notion of intellectual property shared cooperatively for the benefit of humanity, a philosophy that also applies to the open-source movement. Thus, the serves as a pioneering model of open-source activism. If an artist who built the IP wrote to him with questions about the complex circuit-building project, Sandin often answered, and he continues to do so. In return, he wanted these users to share the video art they made using the by mailing him a recording of it. Building and operating the IP hardware inevitably came with wear-and-tear tech issues, resulting in repair or "Fix-it" sessions. Fix-it sessions could be called parties, too, as Sandin describes them—gatherings with pizza, beer, and friends—opportunities for artists in the image-processing community to share tools and expertise.

> When you build a high-tech device, there has to be an infrastructure to maintain it. . . . [It] all grew very naturally out of community . . . the community itself was the resource that made all of the [gear we created and disseminated] work.[13]

Herein lies the difference he emphasized between isolating corporate service maintenance contracts and what he and his compatriots were doing: IP maintenance operated as a *group community activity*, and, Sandin explained, "it was very effective at keeping high technology alive."[14]

Testament to the success of the IP community's engagement and maintenance, the IP continues to operate through the care of university labs such as Alfred, SAIC and artists such as Amy Karle. The IP, unlike technology, remains friendly to what Hertz and Parrika call a "black box . . . a system that is not technically understood or accessed, and as a result these technologies are often completely unusable when they become obsolete or broken."[15] Often, Fix-it parties were called "Build-it" parties or "Inauguration" parties. Building IP requires about a hundred cables for patching because the process could be challenging technically and the equipment pricey. Therefore, another type of "Fix-it" party would become a "Build-it" session when Sandin borrowed the tools from the television station at the University of Illinois at Chicago to work with a "production line" of IP users: artists gathered to fabricate several hundred cables for each other to patch the programmable modular computers together.[16]

The Original—Copy IP

The analog-computer-module logic has evolved into a digital data-flow software program called MaxMSPJitter.[1] Whereas Sandin made computer hardware to process video, I am using the IP's hardware technology as the inspiration for developing open-source software (figure 4). In the spirit of Sandin's *Distribution Religion*, the Sandin IP patch I have created is available to download and learn from in GitHub; note that MaxMSPJitter programs are nicknamed "patches" by the developers and users to continue the tradition. Zombie media archaeology professes that "we need to develop similar circuit bending, art, and activist practices as an analytical and creative methodology: hence the turn to archives in a wider sense that also encompasses circuits, switches, chips, and other high-tech processes."[17] The digital Sandin IP project attempts to "open the black box" at the heart of image processing and modern data. What I aim to challenge is the binary logic of capitalist thinking, which excludes the user while hiding the invisible labor and environmental destruction behind the circuits. The open-source sharing model offers an alternative vision of a symbiotic and posthuman world in which the machines are us. Let's tinker with new media archiving. To build your own IP for your archive, visit https://github.com/amandalong/Sandin-Image-Processor.

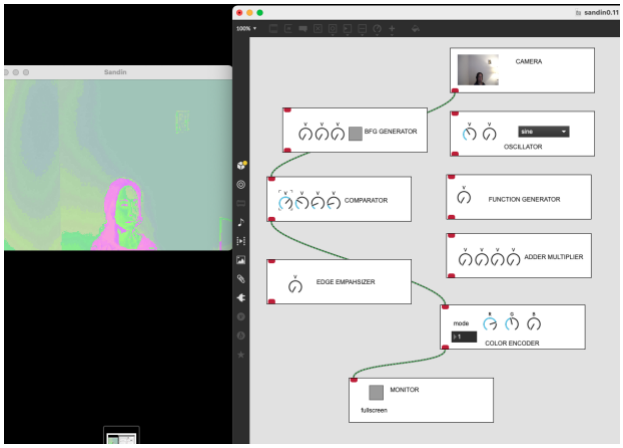

Figure 4. Amanda Long, screenshot of the Sandin software patch draft with modules to match the physical analog modules and cables. Note the digital symbolic representations of the analog patch cable and modules. The graphic user interface GUI cannot replicate the tactile, tangible interface joy of turning the dials and plugging in the cables, but it does provide satisfying real-time image processing aesthetics to mimic the analog Sandin IP. ©Amanda Long.

[1]An open-source version, Pure Data, exists, too.

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Author Biography

Amanda Long is a video sculptor, animator, mirror maker, lover of the Earth and Sun and the animals, and a dreamer of fairy-tale visions. She fantasizes about giving technology a soul and making peace between humans and nature. Long's artworks enable their viewers to share the role of being an artist by being active participants. She wants the artwork to be a type of "reclamation," to offer people a sense of power over how they are represented on camera and over the space in which the artwork is shown. Her installations include *Silly Faces aka Strike a Pose*, National Portrait Gallery, Smithsonian, Washington, D.C. (2016); *Wishing Well*, Dyckman Farmhouse Museum, New York City (2016); and *Portal* at Socrates Sculpture Park, New York City (2014). A second installation of *Silly Faces* and an *Animation Station* opened at the Katara Children's Mall, Doha, Qatar, in fall 2022.