

Author Carolyn L. Kane
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Electric Now Indigo Blue: Synthetic Color and Video Synthesis, circa 1969

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Editor Jihoon Kim, Kyunghwa Ahn
Translation Yung Bin Kwak, Min-kyung Kim,
 Jawoon Kim, Jihoon Kim,
 Hannah Peck, Gyung Eun Oh,
 Im Sue Lee
Designer Gyeongtak Kang, Yoonjung Jang
 (a-g-k.kr)
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- 1 Ron Hays, "Music & Video Feedback/Video Light." Unpublished technical memo. WGBH Archives, Boston, 7.
- 2 Eric Siegel, *TV as a Creative Medium* (exhibition catalog). New York: Howard Wise Gallery, 1969; 8.
- 3 Gene Youngblood, *Expanded Cinema*. New York: Dutton, 1970, 285.
- 4 Dan Sandin, Jim Wiseman, and Phillip Lee Morton, "A Color Video Collaborative Process" January 26, 1973, WGBH Archives.

Electric 'Now Indigo Blue'

In 1970 Ron Hays explained that with "television...you're on the way to being a stargild...inner and outer space become one in unknown velocities of a cosmic zoom...the now indigo blue of life merge with the glowing beauty of man at his most human..."¹ Similarly, in 1969, electronics engineer Eric Siegel asked, "After a trying day, why can't the viewer...sit down at his TV set and listen to music while watching the screen burst with beautiful colorful displays?" These "visual phantasies," he explained, "would relax you better than any tranquilizer and at the same time give your spirit a wonderful lift...working through your audio-visual senses into your mind and soul."² Hays and Siegel were by no means alone. In 1970 countercultural art critic Gene Youngblood wrote, "Television will help us become more human. It will lead us closer to ourselves."³ And in 1973, a collective of artists—Dan Sandin, Dan, Jim Wiseman, and Philip Lee Morton—writing a statement about video color wrote: "central to our experience...is the use of high technology as an adjunct to personal and spiritual growth."⁴

A few decades later these attitudes seem less optimistic than they do deluded and even a bit insane. Contemporary television viewers—consumers rather—know full well that the medium is commercially driven; seeped in fear-based content dealing in war, crime, scandal, horror, voyeurism, and atrocity occurring on global and local scales, twenty-four hours a day, seven days a week, punctuated only by brief commercials attempting to sell you impossible fantasies. Television in the twenty-first century couldn't be further from the "soulful" embrace of the "glowing beauty of man at his most human."

But given the not so distant past of these radically different views on television, one wonders how such an overtly mystical view of the medium ever seemed logical, let alone normative? How did this group of technically minded artists, in collaboration with engineers, immerse themselves into sophisticated and challenging technological environments and manage to turn out an entire genre of work that disavowed the facticity of the machine itself, instead waxing heavy on spiritualism and a mystical, utopic beyond?

In this essay I provide four explanations rooted in: technological newness; cultural-historical context; the historicity of color and utopia, and material-transcendence. Working together, these factors demonstrate how, in the late 1960s, a few talented electrical engineers and pioneering video artists built video synthesizers, fashioned after audio synthesizers developed in the 1950s. These devices were capable of generating purely abstract psychedelic colors and, having never seen these colors before, many believed they were cosmic and revolutionary, and in many ways, they were. For the first time, electronic color in the moving image was freed from optical input or dependence on a camera source.

I first turn to Eric Siegel's "Electronic Video Synthesizer" (1968), the world's first open-system analog color synthesizer and then to Nam June Paik and engineer Shuya Abe's Paik-Abe colorizer, built at WGBH in 1969. The images produced with these devices were almost unanimously, as Siegel puts it, used as a "psychic healing medium" to create "mass cosmic consciousness, awakening higher levels of the mind, bringing awareness of the soul." Because these non-optical devices naturally lent themselves to notions of mysticism, the paper argues that, first, they help us to understand that color is *not* exclusive to optics or vision—rather, it a technology for controlling and managing the human senses—and second, precisely because color in the moving image was in this moment freed from optical and camera sources, it became a prime vehicle for utopic

- 5 Youngblood, *Expanded Cinema*, 257.
- 6 Marshall McLuhan, *Understanding Media: The Extensions of Man*. Cambridge: MIT Press, 1994 [1964], 54.
- 7 Paik, "Letter to Radical Software," 3-4 in "Paik-Abe Correspondence," 1-47, Vasulka Archives. Also quite accurately, in 1979 Paik wrote, "Through the introduction of CCD and 'chip' technology, we [will] soon punch out like doughnuts color cameras without the vidicon tube." Paik, "How to Keep," 4.

projections. The essay concludes that new color technologies, as experimented with by pioneers like Paik and Siegel, present an opening to free human experience from social and political realities, and yet, in the 1960s, this transcendental logic was inverted: mystical worlds were only achievable *through* these colors' markedly machine nature.

Electric Global Village, circa 1969

As the earthship embarked into a new age of networked global relations and cybernetic exchanges, the soft and luminous glow of the television became its universal mascot. On July 20, 1969, we all traveled to the moon through our television sets ("we" being Western culture, broadly speaking). We looked at our planet and ourselves for the first time from the point of view of the moon. The event signified nothing less than a reconfiguration of what it meant to be human. Through real-time televised feedback circuits, objectivity was eradicated and we ceased to know ourselves as autonomous individuals, linked only through an anonymous, spiritual, electro-cybernetic embrace. In the feedback circuit of the earth-moon ship, Youngblood wrote, humanity's "total brain-eye" extended out "around the moon and back."⁵ "One small step for man, one giant step for mankind." On this day, the logic of electronic computing and cybernetics merged with mainstream culture and with it an affirmation that, armed with the new electronic technology, humanity could transcend the limits of time, space, and culture.

Canadian media guru Marshall McLuhan's then popular dictum "the medium is the message" appealed to many as prophecy. This formalist-driven adage denotes the ways in which the material and technical *platform* of an image, such as a canvas, a screen, or a monitor, always takes precedence over the semiotic meaning or "content" of the image. Whether one watches screen static or news footage of the war in Vietnam is irrelevant. What counts is the medium and our physiological relation to it. What then is the message of television? When one watches television, in McLuhan's account, one is enveloped in a narcissistic trance; a cybernetic feedback loop where individual cognition is "amputated" in exchange for an audio-visual sensory experience of looped-belonging in a cool electronic glow.⁶ The message of television *is* its ongoing flow; its rapid scans and constant, nonstop movement of information, which, after the turn to color in the late 1960s, only intensifies.

Circa 1969, color television became so utterly of the moment – so much the essence of now-ness – that for many, it transcended even itself. Nam June Paik sensed this transformation in the cultural aesthetic early on and in 1972 forecasted the widespread acceptance of low-resolution video now pervasive on the Internet. He explains:

We are hearing so much about "Broadcast standard" in video. But the more important the content is, the technical standard tends to be less perfect... eg. CBS report on the dissenters in Soviet...and many satellite relays, which tend to lose color sync often...and finally MOON LANDING. Moon landing's picture was way below the FCC standard. Why did FCC not forbid the broadcasting of Moon landing?...it was a double standard. Moon landing killed so-said FCC standard in video-technology for good.⁷

Part of this aesthetic is also intimately bound up in the complex and highly technical history of color television.

- 8 Ketcham in Coleman, Howard W. (ed) *Color Television: The Business of Colorcasting*. New York: Hastings House Publishers, 1968, 22.
- 9 It is also fascinating to note that this claim was made in approximately the same historical moment as the emergence of color television.
- 10 McLuhan, *Understanding Media*, 22.
- 11 Youngblood, *Expanded Cinema*, 316.
- 12 Woody Vasulka, "EVS Electronic Video Synthesizer (Analog)." *Electronic Arts Intermix*, New York, 1970.

Color Television

Color is unruly and every new technology faces a unique set of challenges in the effort to standardize it. Color television was first developed as a phosphor-based technology that relied on earlier developments in vacuum tubes from the 1850s and cathode rays from the 1870s, which together allowed for a system where electrically charged phosphors could be organized and displayed visually, at first using a Braun tube, on the surface of screen. Skipping the vast majority of this black-and-white history, engineer Vladimir Zworykin, after having fled the Russian Revolution, first envisioned the idea of color television while working at Westinghouse and RCA laboratories in the United States in the 1920s. Throughout the 1930s and 1940s various techniques were developed to achieve greater precision and accuracy for color television, but no such luck. Still in the 1950s and 1960s, color information had to be standardized and compressed to meet broadcast television commands, and engineers for still struggling for control and consistency.

Howard Ketcham, color consultant for several large manufacturers and one of the men responsible for setting the standards for broadcast color in the 1960s, noted, "The electronic processes peculiar to color TV do some highly irregular things." These "danger areas," he continues, demand a great deal of consideration, for example, how to control the way "red bleeds into other colors especially whiter, neutral areas. White[s] often looks bluish or yellowish...pale pastels have a tendency to fade and appear almost colorless."⁸

When color television did become common circa 1965, seemingly lost in this process were the colors cast out of the newly compressed standard coupled with a lack of material appreciation for the colors themselves. In sum, part of the ongoing pursuit to radically clean up, control, and compress color information for broadcast quality televised signals resulted in this low-fi aesthetic, equally fortifying Paik's comment and McLuhan's prophetic claim that television is a "cool" medium. For McLuhan, the more one participated and was "drawn in" to the image, the more a viewer was hypnotized into a cool, auto-amputated, narcissistic trance.⁹ As he put it in 1964: "a hot medium is one that extends a single sense in 'high definition' [like radio, whereas with a cool medium] "so little is given and so much has to be filled in."¹⁰

Video Synthesis

From this environment experiments with video synthesis developed. Video synthesizers derived from earlier developments in audio synthesis, associated with the history of electronic music. Because I cannot go into detail about this entire history, I here focus only on two abstract color experiments developed by Eric Siegel and Nam June Paik and Shuya Abe.

Of Eric Siegel's 1968 *Psychedelevision*, produced with home-made color synthesizer, Youngblood remarked, its "colors...are glowing with an unearthly light, trembling in fierce brilliance, like the colors on the inside of the retina."¹¹ The second synthesizer Siegel built was the EVS in 1969 and it was capable not only of colorizing black and white and images, like this one, but also it could of generate synthetic colors and forms. The system was, in the word of Woody Vasulka, finally "free of film" which is to say, of optical media altogether. The difference, as I elaborate on in *Chromatic Algorithms*, is between images "taken Nature through a camera lens" versus those constructed inside the machine.¹² And herein lies the third reason why electronic colors

13 Graham Harman, *Tool-Being: Heidegger and the Metaphysics of Objects*. Chicago: Open Court, 2002, 30.

14 Martin Heidegger, *Being and Time*. Translated by John Macquarrie and Edward Robinson. New York: Harper and Row, 1962. 102-103.

in video synthesis became magical and otherworldly: they literally were.

But even beyond all this, there is something about *this* new color technology – electronic video synthesis – that catapults such mystical visions into an intensified pitch. To do this, I turn to Heidegger’s well-known 1927 tool-analysis. Heidegger distinguishes between the “present-at-hand” (*vorhanden*), where whatever is being examined is forced into visibility through a revealing process. When these properties are forced to “appear,” they are classified into categories and types that then become representative of that object and our epistemological relation to it. Second, in contrast to this is the “ready-to-hand” (*zuhanden*); a more contextualized position or “worlded” mode of engaging equipment and things, that is intuitive, concealed and invisible; present to experience – but inaccessible to representation (re-presentation is a violence exclusive to the tradition).

To put it differently, in the ready-to-hand, things and actions are so close, they recede from visibility and awareness to “conceal” and “withdraw” into themselves. Both modes are unavoidable in our relationships with technology.¹³ And yet, often left out of accounts of Heidegger’s tool-analysis is his more nuanced third term, the “unreadiness-to-hand.” In his well-cited hammer example, the ready-to-hand is activated when one is hammering away, but when one stops to reflect, the situation shifts, *not* – as one may expect – to the present-at-hand, but instead to what he terms “unreadiness-to-hand.” He writes:

When we concern ourselves with something, the entities which are most closely ready-to-hand may be met as something unusable, not properly adapted for the use we have decided upon...*equipment* is here, ready-to-hand. We discover its usability, however, not by looking at it and establishing its properties [the present-at-hand], but rather by the circumspection of the dealing in which we use it... This conspicuousness presents the ready-to-hand equipment as in a certain unreadiness-to-hand.¹⁴

So the unreadiness-to-hand allows a partially distanced way of using technology, one that allows things to appear as things, but in such a way that is not fully transparent or withdrawn, but rather a liminal zone or shift space where, I will argue, we may add something like learning *with* tools; a pedagogical relation to equipment that is both abstract and engaged. In this way, the unreadiness-to-hand is analogous to the video synthesis experiments circa 1969. In making work one had to first build it, then learn how to use it: to become familiar with the subtlety of every button, patch, cable, circuit board solder, etc. one needs to constantly step back to reflect and *analyze*, not to classify them, but to learn how to become more intuitive and immersive with them; to transcend them, in a way. And for Heidegger, recall that transcendence is, contrary to common sense, indicative of the way in which *Dasein* (ex-sists) in the openness of the actual, material, and historical world, the facticity of being – (in contrast to traditional philosophy’s use of the term to imply either an escape from the world, or, as in Husserlian phenomenology, a transcendental bracketing of subjective “intentionality”). At any rate, through the unreadiness-to-hand we can see how the synthesis technology in this work could (ontologically) disappear *while* one was fully immersed in, and thinking only of it!

In this way, transcendence could be said to mark the way in which new media transition into old media. Once new media become functional and controllable, they become what has been referred to as “dead media,” and recede into the background to

15 On the other hand, it may also be argued that media never die because they always remain in the world, albeit as waste or decay. Dead media are thus zombie media.

16 Chris Meigh-Andrews, "Video Colour Image Processors." Accessed May 2012. <http://www.meigh-andrews.com/writings/essays/video-colour-image-processors> Technically the Wobbulator refers only to the Paik scan modulator, which was distinct from the colorizer and keyer, however, because both were most often attached and used together, I refer to them as one system. Schier, "Name June Paik," 129.

17 Fred Barzyk and David Atwood, interview with the author, 2012.

become "transparent," or ready-to-hand.¹⁵ In this state the technology is functional but one fails to see it. (This is why I argue elsewhere that such "transparency" is actually an opacity and inscrutability.) Transcendence occurs here as technology becomes opaque: invisible and inaccessible to representation, but transparent and intuitive for use and habituation. This nuanced movement between immersion and reflection helps us understand yet another way in which the complexity of this technology circa 1969 could disappear while one was fully immersed in it!

In sum, being in a world conditioned by science and technology does not foreclose the mystical or other forms of transcendental thought and experience. In fact, ongoing developments and innovations in science and technology are preconditions for transcendental thought and desires; refueling the inextricable and ancient bond between *techné* and *physis*. In order to extend this argument to the cultural and political milieu at WGBH circa 1969, I now turn to the early video synthesis experiments conducted in WGBH's New Television Workshop.

The Paik-Abe Video Synthesizer

Since 1951, WGBH has been a nonprofit education-based public radio station based in Boston. In 1967 they transitioned to color and new video switchers arrived at the studio. Through Rockefeller funding, artists interested in the new but still expensive media were invited to their artist-in-residence program, the New Television Workshop where Paik arrived as one the first and most esteemed members.

The well-known Paik-Abe Video Synthesizer (PAVS) was built at WGBH in 1969 by Paik and his childhood friend and engineer, Shuya Abe, built as a low-cost alternative to expensive color TV, and from Paik's intolerance for paying for set-up and studio time to work in color. Initially dubbed the Wobbulator, the PAVS was a homegrown keyer, colorizer, and scan modular system engineered with limited financial resources by Paik and his childhood friend, the engineer Shuya Abe.¹⁶ In the haphazard and scavenger style that came to define him, Paik built the system using secondhand wires, television sets, and hardware parts (a method that stands in stark contrast with Siegel's systematic control and organization of every color and function). WGBH director Fred Barzyk recalls finding Paik setting up in the studio one day wearing tall rubber boots. Upon inquiry, Paik explained: if I don't wear them, "I get electrocuted."¹⁷

Before the PAVS made it to the studio, it lived in the front room of the apartment Paik was sharing with WGBH engineer David Atwood. During the summer of 1970, they made the move to WGBH, where they transformed an old studio into what looked like an "electronics junk shop combined with a cheap trinket store." In its new home, the PAVS consisted of multiple television monitors, surveillance cameras, and two color encoders – the first encoder was built into the second to allow for a broader range of image manipulation and colorization possibilities. The system could take between ten and twelve black-and-white inputs, an impressive number considering that at the time the studio's own mixers were limited to three.

For special effects Paik also sought low-cost, highly creative alternatives. He "bought all manner of crap," Atwood explains, "plastic dishes, cheap busts of famous composers, and anything plastic that cost nothing and would distort light." He even used a record turntable to construct and spin objects at either 33 or 78 rpm, upon which Barzyk once found "a mound of shaving cream...whirling around on top." Another roommate of Paik's recalls that he even made his bed out of old console TVs with a mattress placed on top. He ate off of disposable paper plates and used plastic

18 Fred Barzyk, "Paik and the Video Synthesizer." In *Fred Barzyk: The Search for a Personal Vision in Broadcast Television*, ed. Fred Barzyk and the Patrick and Beatrice Haggerty Museum of Art, Marquette University, January 2001. 74.

19 Atwood, personal correspondence.

20 Georg Fifield, "The WGBH New Television Workshop," in *Fred Barzyk: The Search for a Personal Vision in Broadcast Television*, 64.

21 The "Paik-Abe Video Synthesizer," Paik wrote in February 1978, when "officially premiered at WGBH...[was] well below the broadcast standard... It was finally welded into this broadcast standard at Binghamton." "Paik-Abe Correspondence," 40.

22 Atwood, personal correspondence.

23 Barzyk and Atwood, interview.

24 Nam June Paik, Letter to Michael Rice. March 21, 1970-72. WGBH Archives, Boston.

25 Ron Hays, "Image-Creating: The Paik Abe Video Synthesizer." Unpublished technical memo. WGBH Archives, Boston. 7-8.

utensils, which, he argued, were the "greatest American invention." Paik's style was fast, cheap, and messy but effective: under the studio lighting, the rotating shaving cream "transformed into a *mélange* of color and images."¹⁸

Using the PAVS, let alone controlling it, was another issue altogether. Even Paik admits the PAVS was a technical nightmare. It's a "sloppy machine," he said, "like me." Atwood concurs, it was "a miracle that it even made an image."¹⁹ The WGBH engineers, who sat at the mixers and switchboards in the control room, hated the PAVS even more, just as they hated the ways in which the artists "incorrectly" used the expensive studio equipment ("holding down three and four buttons at once," a [Cagean] method that had the engineers "in agony").²⁰ There was also a time when, during the PAVS's debut on channel 44, it burned up the studio's very expensive chromo filter transmitter. Paik simply ignored FCC color limits, which is also to say he neglected to run his colors through the vectorscope and compress them.²¹

These "artistic" techniques led to constant "back and forth" negotiations between the artists and the engineers regarding which colors would be allowed in that day. "Every time we record[ed]," Atwood explains, "we had to go through this little dance with the engineer...assigned to: 'synthesizer recording.'"²² The debates were exhausting and repetitive, and thus Atwood eventually found a way to get around them. He realized the overall chroma phase could be adjusted by adding or subtracting video cable at the point where the signal plugged into the wall. The formula was two degrees per foot of cable. He explains:

The synthesizer had moved to a little small room right across the hall from master control...and the engineer would say, "Well I don't know where the patches are."...I would say, "Well, I think they're there" (I'm not supposed to know this) and then they'd look at it and say, "No, that's too extreme, we can't do that." I'd say, "What's wrong?" They'd say, "It's out of phase...like 40 or 50 degrees, we can't correct for that."...I had this whole pile of video cable [which he hid "behind the racks in a plastic green frog kid's tub"] and I'd do the math in my head...plug in [the extra cable] and I'd go back and say, "Well, how is it now?" "Oh, it's close now." This was a dance that we went through almost every time.²³

Paik appears to have eventually found value in keeping his colors within the FCC range. In a letter written to WGBH executive Michael Rice in 1971, he reports having used the "Tektronix Vectorscope" with John Godfrey at WNET to monitor the "chronical chroma overlevel...to create brilliant and complex color images" that, he boasts, were "within the FCC limit."²⁴ He appeals to Rice for funds to purchase the Heathkit Vectorscope (costing \$145 in 1971) so that similar FCC-approved colors could be made at WGBH. While this shift may have helped control the overall color for broadcast, controlling *specific* colors within the PAVS was yet another issue.

After Paik left WGBH, video artist Ron Hays arrived at the studio in the mid 1970s where he devoted numerous hours attempting to catalog the PAVS's image and color parameters. His journal explains, "Describing the color control of The Paik-Abe Video Synthesizer is difficult...Since color is nominal to each channel, final color potential can only be discovered by trial and error during the image-growing processes...It is important to remember that different colors will produce different feedback images. For instance, a color base of green will produce a more explosive feedback image than a color base red. At the same time, the base will be varied every time a new channel input is faded up from another image..."²⁵ In short, with the

26 Personal archives of David Atwood;

27 Ibid.,

PAVS he concluded, “color constants do not exist...”

In sum, technics at WGBH circa 1969 to fill all of the above noted requirements for synthetic color and a psychedelic age; such colors could be made and displayed through the help of the open-minded directors, the at times supportive engineers, the NEH and Rockefeller funding, the workshop itself, their relative freedom to explore and experiment as they wished, the broader social and politically progressive context of the U.S. in the late 1960s, the unstandardized hardware, and the various collaborations between artists, directors, and engineers. Consider for example how this anecdote regarding the world debut of the PAVS offers a telling picture of the then open and playful atmosphere:

On August 1, 1970 the PAVS was set to embark on its maiden voyage on public television’s channel 44 in a four-hour debut called *Video Commune: The Beatles From Beginning to End*, a broadcast of “far out imagery never before seen by the world. But, on June 23, 1970, seven days before *Video Commune* aired, Barzyk received a memo from the then president of WGBH, David O. Ives. In the station’s program guide, Ives had seen the listing for August 1, 9:00 pm to 1:00 am. On blue WGBH stationery he wrote:

Barzyk

I have just seen the program guide piece on the Paik experimental broadcast for Aug 1. I strongly suggest that, if you have not already planned it, you prepare some videograph copy and run it onto the screen every...ten or 15 minutes, at least early in the show. Copy should indicate that it is an experiment, that it is better seen in color, that it has no formal start or finish. Just something to keep down the volume of complaints as to what the hell you communist, pinko, Maoist, bastards are doing. Also, be sure to supply the switchboard that night with all the necessary soothing talk for complaining callers.²⁶

“Of course he wasn’t serious about the ‘communist pinko Maoist bastards’ part,” Atwood promptly adds, that was just his humor.²⁷ But Striking about this story however is the freedom with which these jokes occur (in contrast to a vice president today, who would see the memo only in terms of lawsuits). Consider then this is also part of the world: the cultural and historical factors that make a “world” but are often seen as markedly non-technological. Consider for a moment they are inextricably bound with what Heidegger calls the “equipmental” context, or “enframing” (*Gestell*) (and I am intentionally de-stigmatizing the term, not only by neutralizing it but also by removing its negative spin). They are bound in the way of the unreadiness-to-hand; through a material transcendence to the extent that they create the conditions of possibility of what *can* be produced in this time and place, and yet they are also factors that are, to some extent invisible, too close; historically and thus existentially.

The End of the Liquid Rainbow

By the late 1970s, many of these wild and psychedelic effects had been harnessed into stable commercial applications, which occurred primarily through the Scanimate, a unique analog computer system used to optically scan and then animate text and color overlays for the television and film industries. Examples include a brief scene of the Death Star emerging from behind a planet in the first *Star Wars* film (1977); a live

28 A low-res version of the video may be seen here: [URL: <http://www.youtube.com/watch?v=XOY7IsBVpo>] (accessed November 27, 2011).

29 <http://www.buck.tv/library/white-gold/vortex>

broadcast of the Grammys in 1977; the entire series of “spaghetti” letters and oscillator effects for the Electric Company on *Sesame Street*; and Ron Hays’ Earth, Wind & Fire video, *Lets Groove* (1981).²⁸ But this system was equally bulky and unstable analog system was also phased out in the early 1980s with the newer and more efficient frame buffers (a rendering device that allows color information to be repeated or recalled as needed) and digital CGI technologies, such as the AMPEX ADO.

Also there was the rise of video cameras and editing systems in the 1980s, and the advent of personal computing, digital effects technologies, and the Internet in the 1990s, the need to travel to such centers as WGBH or WNET for artist residencies also became unnecessary.

Forty years later, in 2009, the Hollywood studio and ad agency Goodby Silverstein & Partners, approached Dave Sieg (who owns one of the few remaining Scanimates in the world) and requested to use it to shoot a “Vortex Scene” in their upcoming *Got Milk* production of a new rock opera about milk, *Battle for Milkquarious!*²⁹ They pleaded with him: even with all the effects and plug-ins out there they still could not get close to the look and feel of the Scanimate. They ended up using an HD Red Digital camera (at 4k resolution) to shoot the Scanimate output images off the surface of a CRT. They were pleased with the results, which, in their account, gave them the “look of the real thing.” But to my eyes, they are more nostalgic than precise in their simulations. The digital images are flaky, thin, and fail to capture the fluidity and richness of analog video synthesis-generated colors.

Similar to the “Flurry Rainbow” screensaver, standard on certain Macs, the animation attempts to simulate this liquid rainbow aesthetic, but again, it is statistical-looking; jolted and discrete – almost too clean – in its color blends and animations. In the end, what may have seemed to be weirdly disillusioned mystical-spiritual attitudes in the work produced circa 1969, should now be not only grounded in material fact but also quite logical, given the radically new and unstandardized technology, the utterly alien color palettes, the free and experimental approach to the work, the generally liberal and supportive political and cultural context, and the mystical visions that emerged in and around this work.

Circa 1969, the “now-indigo blue” of video synthesis renders the immediacy of not just Heidgger’s material transcendence but also, Benjamin’s “equipment-free aspect of reality” that he once identified as the “blue flower” in the land of technology. Pure and “unmediated” cathode ray blue becomes the world, but only after highly sophisticated technological processes and systems that are engineered to transform the strangeness of the unreadiness-to-hand into a (naturalized) element of the “lifeworld.”