Preserving Jeremy Blake's Archives

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Abstract

Jeremy Blake (1971-2007) was an American digital artist most well known for his animated video installations, "time-based paintings" and large-scale digital C-prints. Blake's evocative work combined 8mm film, vector graphics, and hand-painted imagery to create a distinctive aesthetic: color-drenched, atmospheric and even hallucinatory. His acclaimed work was a defining example of new media art.

The artist worked primarily with Adobe's Photoshop software, saving his work in its native PSD format. Working from an archival perspective in collaboration with technologists, curators, and individuals familiar with Blake's artistic process, this paper highlights the challenges, as well as the opportunities, for preserving and creating access to complex born-digital formats like PSD.

Overview

Born in 1971, Jeremy Blake came to prominence in the late 1990s through the exhibition of his large format digital C-prints. These prints combined elements of both photography and painting, but were generated through digital means. During the course of the subsequent decade, Blake worked on numerous high profile projects: he created the cover art for Beck's album *Sea Change* (2002), produced the animation sequences for Paul Thomas Anderson's film *Punch Drunk Love* (2002), participated in three consecutive Whitney Biennials (2000, 2002, 2004) and exhibited his work internationally in over a dozen major museums. Shortly after Jeremy's Blake's tragic passing in 2007, New York University's Fales Library and Special Collections acquired the pioneering digital artist's archives. Blake's archive consist of a variety of physical formats: over three hundred optical discs, three external hard drives, six Zip disks, ten Digital Linear Tapes and thousands of additional files transferred from a fourth hard drive and Blake's laptop.

By far, the predominant file format contained in Blake's archive is Adobe's native format, the PSD file, for its photo editing software Photoshop. Blake worked extensively in Photoshop during all years covered in his archives, circa 1999 to 2007, during which he generated upwards of three thousand unique Photoshop files generated on several different versions of the software. These files encompass the various projects Blake was involved in, e.g., video installations, gallery prints, commercial work, etc.

Blake is best known for his "time-based paintings," which were the result of his complex working methodology that involved the dense layering of myriad source material: hand-rendered images, photographic elements, 8mm film and various scanned objects. Blake would collaborate with animators and sound artists, providing them with Photoshop files containing his source material that they would further modify to generate the finalized moving image. The discrete layers in Blake's Photoshop files could be used as independent elements in a production and were often animated to evolve from one to another. This resulted in Blake's unique, vivid and often hallucinatory aesthetic. For example, a single file from his work on *Punch Drunk Love* was found to contain all elements used to generate the animation seen in the movie's opening sequence. Additionally, Blake would produce "briefs" of works in separate Photoshop files, which documented key transitions points with overlaid textual notes. These files, and supplementary Microsoft Word files communicated the overall desired look and feel of a work to his collaborators.

Blake's PSD files presented numerous preservation problems that test the boundaries of current digital preservation methodologies. Adobe's Photoshop format is proprietary, under documented and not well understood, all of which contribute to it being undesirable for digital preservation. To address these problems, NYU Libraries developed a multi-pronged test of potential strategies, which included maintaining original hardware, emulating the original environment, and migration of file formats to support long-term preservation of Blake's archive. Initial work was done to create forensic disk images of all media carriers. This was done to stabilize, refresh and provide a baseline level of preservation for all of Blake's works. Files from these disk images would be used in all subsequent preservation work.

To test potential file migration workflows, a sample of Blake's Photoshop files were migrated to the current version of the PSD file format using an up-to-date version of Photoshop (Creative Cloud 2014.) Through the course of our testing we found that virtually all of Blake's Photoshop files, regardless of the version of Photoshop they were created in, could be opened, viewed, manipulated and saved in the current PSD format using the current version of Photoshop. Post migration, a number of analysis tools: FFmpeg, FFProbe, ImageMagick and ExifTool, were all tested to determine to what degree they supported the PSD format and what functionality could be expected of them. With ImageMagick's *identify* command we were able to count and compare technical characteristics for each layer present in both the original and migrated Photoshop files. Using this procedure, we were able to determine, with some certitude, that all encapsulated layers within the file persisted through the migration process.

Secondly, we also tested migration from PSD to multi-layered TIFF files, a relatively recent feature supported by Photoshop. Our research has indicated that neither the core TIFF specification [2] nor its official extensions include support for layered images. No TIFF-viewing packages tested were capable of displaying the multi-layered files generated using Photoshop. As such, conversion to TIFF format through Photoshop will likely only ensure rendering in Photoshop itself. At present, we are unable to find standardized practices to encode layered images in TIFF files [3].

Ensuring the authenticity of the files and his art-making process has been a key concern. Given that the majority of Blake's work was created in now-legacy environments, i.e. pre OS X

versions of the Mac operating system and Photoshop, emulation was explored to provide more authentic access to the files in Blake's archive. SheepShaver [4], an open-source PowerPC emulator, was installed on numerous Mac, Windows and Linux platforms to test if it was capable of running the correct versions of the Mac OS (7.0-9.0) and Photoshop (versions 3.5 through Creative Suite 2.) While we were successful in demonstrating that now obsolete versions of Photoshop could be run and Blake's files could be accessed using SheepShaver, only Ubuntu 10.04 worked consistently. Other versions of Windows, Macintosh and Linux operating systems were able to run various versions of Photoshop, but Blake's Photoshop files would often be rendered with major glitches, visual artifacts and distortions that made the images unrecognizable. Even simple, non-layered PSD files would render as crude blocks of color in many emulated environments. However, we also discovered that the same PSD file across all platforms could open correctly in older versions of Photoshop (3.5), latter versions (such as 6.0) would not, indicating compatibility issues across platforms as well as software versions.

Ultimately, while it was promising to see Blake's files run on the correct version of the software in which they were created, the emulator itself proved to be highly unstable; SheepShaver frequently froze or crashed. The platform that we found to be the most stable, Ubuntu 10.04, itself was released in in 2010 and has already reached its end-of-life date from its parent company[5]. We expect further complications with host-emulator interaction, as the difference between hardware and software dependencies needed to run the emulator will only increase. Additionally, SheepShaver was initially released in 1998 and was last in active development more than 5 years ago. While there is an active user community and new builds are released regularly, development of the core codebase has essentially ceased. Documentation on the dependencies and performance of SheepShaver, especially with complex and proprietary software like Photoshop, is similarly lacking.

Based on ongoing research, NYU Libraries has created and is currently executing preservation workflows for layered PSD files based on migration to the current version of Photoshop for all legacy materials in addition to retaining the originals. We advocate for comprehensive study of the effects of migration of legacy PSD to up-to-date versions of the format using Photoshop, the effect of migrating from PSD to multi-layered TIFF and for further study and support for emulation as a long-term preservation and access solution.

References

[1] "Adobe Photoshop." Adobe Photoshop File Formats Specification. Accessed December 7, 2014. http://www.adobe.com/devnet-apps/photoshop/fileformatashtml/

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[4] "The Official SheepShaver Homepage" Accessed April 17, 2015. http://SheepShaver.cebix.net/

[5] "Releases - Ubuntu Wiki" Accessed April 17, 2015. https://wiki.ubuntu.com/Releases

Author Biography

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