

Preservation of Web-Animation in a Post-Flash Era

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ABSTRACT

At the beginning of 2021, Adobe ended support for Flash Player. The software had been a popular mode of accessing and displaying web-based multimedia content for decades, and its discontinuation has led to a shift in the way amateur and short-form animation can be hosted online.

Flash allowed amateur creatives to share animated videos, playable video games, and other multimedia content with audiences over the web. After the announcement that Adobe would no longer be supporting the software, websites and creatives alike who relied on Flash turned to alternative means of disseminating animated works. In the absence of this software, creators and publishers alike have turned to alternative solutions, such as integrating new third-party software, or converting the media to embedded video— without support for interactive elements. Some Flash animations have been taken offline altogether, or have become lost media.

The impact of this discontinuation is wide and varied. This paper aims to focus on the impact it has had on the largest web-based visual narrative to date: Andrew Hussie’s cult-classic, multimedia comic Homestuck. During the webcomic’s seven year run, Homestuck amassed over 8000 pages, with a sizable percentage containing Flash animation. The purpose of this case study therefore is to discuss the solutions brought forward by VIZ Media, who had acquired the publishing rights to the comic in 2018, and by volunteer archivists to preserve the original medium of the comic. In using Homestuck as a case study, where multiple forms of preservation and archiving have been attempted, preliminary hypotheses about the effect that Flash Player’s discontinuation has had on amateur web animation can be drawn.

CCS CONCEPTS

- Applied computing → Arts and humanities → Media Arts;
- Computer systems organization → Real-time operating systems;
- Human-centered computing → Interactive systems and tools;
- Computing methodologies → Computer graphics → Animation.

1 Introduction

Adobe Flash Player was a computer program that was typically run on web browsers as a plug-in component. It allowed users to view a variety of multimedia content through their web browsers, including but not limited to animation, click-and-point games, Rich Internet Applications, and audio streaming. The program switched hands a lot, ultimately becoming part of Adobe’s arsenal after their acquiring of Macromedia in 2005, an acquisition that also allowed them to obtain Adobe Animate, formerly known as Adobe Flash.

These digital advances allowed a culture of web-animation to develop on the early internet, with Spümcø debuting the first animated series made solely for the internet in 1997.[1] YouTube, launched in 2005, took the lead as the principal video hosting and sharing website from there on out. But prior to the mass availability of video streaming and high speed internet, Flash animation persevered. As Flash could compress video and audio files to a fraction of their size and could preload this data over even a dial-up modem, it was a convenient and almost universally accessible way of sharing and hosting video files.

Digital technologies had been increasingly used in mainstream animation since developments in the 1980s[2], but wider access to technologies for amateurs helped a culture of web-animation to develop. The popularity of free and widely used platforms on which to display video content was also key. Newgrounds, and other similar platforms, were built to host Flash-based animation and games from amateur creators which could then be easily accessed and shared by others online. Digital tools for animation made the creation and distribution of web-animation easier— with no formal training, an artist could access professional tools and a large audience.

2 EOL of Flash

In 2010, then-Apple CEO Steve Jobs penned an open letter criticising Adobe.[3] As Flash was not available on iOS, Adobe claimed that Apple products such as the iPhone could not view 75% of video material on the internet at the time. In Jobs’s rebuttal, he claimed there were security risks associated with Flash and that the majority of video content was available in formats that negate the need for Flash; at this point, he claimed approximately 40% of the internet’s video material was hosted on YouTube alone. Despite pushback from Adobe, this was

considered the turning point for Flash Player. Adobe began pushing HTML5 as an alternative for web-animation, rebranding Adobe Flash Professional as Adobe Animate and ending future developments for Flash Player. In 2017, Adobe officially announced the EOL plans for Flash Player, declaring the software would cease to be supported from the end of 2020.

Despite this, by January 2021 there were a number of facilities worldwide that still relied on Flash Player, including many international government bodies.[4] Many news websites in the United States had hosted their coverage of events such as 9/11 in Flash and the graphics became defunct.[5] There was a fallout for those relying on old flash animation content too, specifically schools who had been using the wide array of educational animation videos and games available online as part of their core curriculum. While many creatives themselves had made the switch to either video hosting platforms or HTML-5 in the years leading up to Flash's EOL, many users and audiences had not and were left stuck or lacking.

Websites that utilised Flash animation, or were used to host Flash animation, had to either cease operation or come up with innovative ways to continue. Many old, often unmonitored, websites became defunct. However, websites such as Newgrounds, one of the primary sites for hosting Flash based media from amateur creatives, have turned to Flash emulators. Ruffle, an open-source Flash Player emulator, is currently used by Newgrounds and various Flash-based online gaming sites, such as Neopets and Armor Games. Developer Mike Welsh, who has previously worked for Newgrounds, developed Ruffle as the last of a series of software developments to preserve Flash content. As it's developed in Rust, Ruffle's developers claim it is protected from many of the security issues concerning Adobe Flash Player. From websites dedicated to Flash content, such as Newgrounds, to the archives of organisations such as The New York Times, the utilisation of Ruffle has saved a sizable portion of Flash works from becoming lost media.[6]

However, this preservation is an ongoing effort. Large amounts of Flash animation is still inaccessible. Many smaller or personal websites have gone dark, and some creatives have opted to removing or abandoning their work. While multiple news websites recreated or republished their coverage of 9/11, for example, that had become defunct, many others chose not to—causing their coverage of the event to become lost media.[7]

Ongoing initiatives are vital for ensuring the preservation of Flash media hosted elsewhere. Sites such as The Internet Archive, responsible for The Wayback Machine and other archival initiatives online, have utilised Ruffle in their archives of Flash media.[8] Perhaps the most sizable archive of Flash material is Flashpoint; an archive run by approximately 200 volunteers that has a library of approximately 79,000 Flash games, totalling 500 GB. Flashpoint founder Ben Latimore began the archive in 2017 when Adobe announced EOL plans for Flash. Without Ruffle or similar emulator software at the time, Latimore created Flashpoint as what he referred to as a “fake internet,” where the programme tricks the computer into believing it is on the internet.[9] This allows the games to be played unedited in their original format.

3 Case Study: Homestuck

One can use Andrew Hussie's webcomic Homestuck as a case study of the ways in which flash animation has been preserved. Homestuck was a cult classic, multimedia web-narrative, updated in its initial form over the time period 2009 to 2016, before continuing in official and semi-official capacities. During the webcomic's seven year run, Homestuck amassed over 8000 pages, with a sizable percentage containing Flash animation.

It makes use of the internet as both a medium and a host, utilising Flash technology to incorporate animation, sound, and mini-games into its sprawling narrative where necessary. These Flashes are called [S] pages; where [S] stands for “sound,” and signals to the reader that the following page will autoplay with sound. The idea of the webpage as a medium is an important framing device in Homestuck. Frequently animation and characters “break out” of the visual frame of the comic, emphasising the use of the narrative and website itself as a liminal space the characters are metaphorically trapped in. The utilisation of Flash allowed the visuals of Homestuck to break out of the standard resolution, at times switching the visual appearance of the website mid-animation; such as with [S] Game Over.

3.1 Official Approaches to Preservation

In 2018, publishing company VIZ Media acquired the rights to publish Homestuck in physical form; a difficult feat due to the vast amounts of animated and gameplay content that remains incomplete today. The complexity of converting Homestuck from its digital format with interactivity to print—a format with little to none in this case—has been documented and referred to as a form of remediation.[10] VIZ Media's physical publication attempts came with the additional responsibility of navigating compatibility issues in advance of Flash Player's discontinuation for the original digital publication. Solutions were brainstormed behind the scenes on solutions to file hosting on Homestuck's parent website mspaintadventures.com, later rebranded to Homestuck.com. VIZ Media and Hussie worked on a solution to convert Flash files to HTML-based files, or convert them into video files, as announced in a news post by Hussie in April 2018.[11]

Although video files were supposed to be largely a temporary solution they became the primary solution for longform Flash animation on the site. At the time of writing, major [S] pages such as [S] Cascade and [S] Game Over still direct the viewer to an embedded YouTube video file. Much of the interactivity is lost by this approach. Homestuck utilised Flash animation as a means to break the physical boundaries of the comic, allowing objects and characters to break out of the perceived visual confinements of the comic's canvas and move across the side panels, and allowing the animation to bluff 3D and perspective by moving objects towards the viewer. At times, the website interface itself would change mid animation as a visual effect. These effects have limited influence on the audience when presented in the form of a video file that acts as a screen-recording of the initial material. Installing Ruffle on a desktop browser briefly reverts these longer animations to their original Flash form. They are, however, unable to direct the reader to the next page, something that has to be manually edited in the address bar.

One of the primary concerns in 2018 was making the comic accessible to mobile devices. Both Apple and Android had limited support for Flash animation anyway, and Homestuck was unable to be read by those accessing from a mobile device due to the heavy Flash content. Initial solutions were lacking. Previously interactive games were unplayable. In some shorter cases, visual comics were made out of the original Flash.[12] Longer games, such as the Openbound games which have several hours of gameplay, were prioritised for conversion into HTML using the Sburd game engine, which was later released publicly to allow fans to create their own HTML games. Openbound games now play on web browsers, but are still inaccessible on mobile. Users are prompted instead to view on a supported browser and are linked to a walkthrough and map of the game; solutions that are insufficient for the audience to gain narrative-pertinent information that exists in the gameplay.

3.2 Unofficial Approaches to Preservation

After Adobe's EOL announcement, there was initially confusion and fear among fans of the comic as to its future. Archival work among the fanbase started almost immediately, with YouTube channels dedicated to converting the Flash files into video files popping up. While some fears were quashed by the announcement that VIZ Media and Hussie were looking for solutions, some fans found the application of these measures to be unsatisfactory or unsuccessful. This encouraged projects such as the The Unofficial Homestuck Collection to form.

The Unofficial Homestuck Collection is a fan initiative started by a fan under the name "Bambosh" and maintained currently by "GiovanH" to restore Homestuck to its original user experience. It allows the audience to emulate the experience of reading the comic in real time, undoing retcons until the appropriate milestones are reached and blocking off potential spoilers for new readers. The initiative however is largely credited with preserving the original Flash format of various pages and for preserving other elements of Homestuck, such as bonus content and externally hosted media such as Paradox Space. Their mission statement claims that "with Flash finally being phased out at the end of 2020, Homestuck is in a precarious state. While there have been official attempts to preserve aspects of the original experience...the results have been mixed." [13]

The Collection works similarly to Flashpoint. The user installs the application and its assets on their desktop, and the application functions somewhat like a browser where the user can then read Homestuck. The application runs Flash natively, but as it is self-contained it does not need to connect to the internet and does not pose a security risk. The vast majority of Flash animation from the original comic has been preserved, with the exception of the lengthy [S] Collide and [S] Act 7, which were both hosted externally through a YouTube mirror originally in 2016 due to fears that the website would crash, as it had in 2011 with the release of [S] Cascade. Interaction with these animations within the app directly simulates the original audience experience reading or watching Homestuck when it was originally published. However, much like its Flash-based origins, the collection does not function on mobile either so the increasing number of mobile-dependent users remain locked out from the authentic experience.

Moving forward in an official, or semi-official capacity, Homestuck's officially sanctioned, yet non-canon, sequel Homestuck 2: Beyond Canon has continued publishing media reminiscent of its namesake without the defunct technology. Thus far, [S] pages in the sequel have been limited, largely due to a multi-year hiatus that stalled the comic's development. These [S] pages are however embedded into the website using HTML-5 and, more recently, using the visual novel engine Ren'Py for gameplay content. Both these options emulate the original Flash style of the comic, without the reliance on the technology.

4 Conclusion

An often colloquially quoted sentiment about the digital age is that *once it's online, it's online forever*. Increasingly, it can be observed that this is not the case. As websites fail, crash, and fall victim to corporate monopolies on digital spheres, nowhere is the delicacy of online media preservation more visible than in places that were once filled with animation now instead reading that Flash Player is no longer supported.

While efforts have been made, nearly entirely by volunteers, to archive Flash media, it is not possible to say how many of these archives can persevere on volunteer enthusiasm alone, and how much is already lost or inaccessible. The influence of niche online creative media on popular and youth culture makes amateur Flash animation a legacy worth continuous research and preservation, like any artform. It can be concluded, perhaps belatedly, that the monopoly Adobe exerted over the entire production of online animated media for an entire era of creative output allowed a unilateral destruction of that media when they made the decision to cease supporting it. Similarly, the preservation of this material now relies on mostly volunteers, small applications like Ruffle, and entities like The Internet Archive that face the potential of being shut down. Reliance on amateur or singular archives may result in access to more material being lost in the future without further research and investment into the area.

It is also worth noting that while discourse around the eventual obsolescence of formats and technologies and the long-term cultural effects that might have been brewing for decades [14], the cessation of Flash Player was not necessarily so easily envisioned by early creatives. The vast loss of video and animated material experienced here could, and likely will, occur again on unknown scales in ways we cannot necessarily imagine within the scope of this paper. Recently, the deterioration of many previously assumed stable online platforms and mass abandonment of them by creatives and audiences alike could result in more material being lost in the future. There are lessons for the future to be taken from the loss of Flash Player in the need to preserve work even in the seemingly permanent digital sphere.

To conclude, the impact Flash Player had on the ability to create and disseminate animation online, and the prevalence and perseverance of the medium in online amateur spaces cannot be understated. Animation is facing unique challenges and developments in this current cultural sphere, not limited to production queries, software developments, and the increasing utilisation of AI in creative spheres. As Henry Jenkins noted in 2006, the assumption of the digital age has been that new media will always replace old media, which becomes defunct and

irrelevant; an assumption that has never been that simple in a digital sphere where old and new media form a reflexive relationship. [15] While we navigate future challenges and pursue continuous development within the industry and practice, it is not possible to do so without an awareness of what came before and a willingness to take it with us.

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CONFLICT OF INTEREST

The author declares no applicable conflict of interest.

REFERENCES

- [1] Dan Baldwin, John Ludwick, and Michael Daubs. 2006. Flashimation: The Context and Culture of Web Animation. SIGGRAPH (2006).
- [2] Maureen Furniss. 2016. A New History of Animation. Thames and Hudson. p. 373 (2016)
- [3] Steve Jobs. 2010. Thoughts on Flash. (April 2010). Retrieved August 2024 from <https://archive.is/pxSTb>
- [4] Elena Debré. 2021. These Places Were Not Ready for Flash to Die. (February 2021). Retrieved August 2024 from <https://slate.com/technology/2021/02/flash-adobe-end-missed-memo.html>
- [5] Clare Duffy and Kerry Flynn. 2021. Some of the most iconic 9/11 news coverage is lost. Blame Adobe Flash. (September 2021). Retrieved August 2024 from <https://edition.cnn.com/2021/09/10/tech/digital-news-coverage-9-11/index.html>
- [6] Shan Wang. 2018. Here's how The New York Times is trying to preserve millions of old pages the way they were originally published. (April 2018). Retrieved August 2024 from <https://www.niemanlab.org/2018/04/heres-how-the-new-york-times-is-trying-to-preserve-millions-of-old-pages-the-way-they-were-originally-published/>
- [7] Clare Duffy and Kerry Flynn. 2021. Some of the most iconic 9/11 news coverage is lost. Blame Adobe Flash. (September 2021). Retrieved August 2024 from <https://edition.cnn.com/2021/09/10/tech/digital-news-coverage-9-11/index.html>
- [8] Jason Scott. 2020. Flash Back! Further Thoughts on Flash at the Internet Archive. (November 2020). Retrieved August 2024 from <https://blog.archive.org/2020/11/22/flash-back-further-thoughts-on-flash-at-the-internet-archive/>
- [9] Elise Favis and Shannon Liao. 2021. Flash is dead. These games from the early 2000s hope to live on. (April 2021). Retrieved August 2024 from <https://www.washingtonpost.com/video-games/2021/04/08/flash-habbo-newgrounds-2020/>
- [10] FS Nakhaie. 2022. Reproduce and adapt: Homestuck in print and digital (Re)Incarnations. Convergence: The International Journal of Research into New Media Technologies 29, 5 (November 2022), 1168–1182. DOI:<http://dx.doi.org/10.1177/13548565221141961>
- [11] Andrew Hussie. 2018. News. (03 April 2018). Retrieved August 2024 from <https://www.homestuck.com/news>
- [12] Andrew Hussie. 2009. [S] YOU THERE. BOY. (14 June 2009). Retrieved August 2024 from <https://www.homestuck.com/story/253/1>
- [13] GiovanH. 2024. The Unoffical Homestuck Collection: ReadMe. (July 2024). Retrieved August 2024 from <https://github.com/GiovanH/unofficial-homestuck-collection/blob/main/README.md>
- [14] Marilyn Deegan and Simon Tanner. 2005. Digital Preservation. Facet Publishing. P. 4 (2005)
- [15] Henry Jenkins. 2006. Convergence Culture: Where Old and New Media Collide. New York University Press. p. 6. (2006)