

# PERFORMATIVELY ARCHIVING THE EARLY WEB

## ONE TERABYTE OF KILOBYTE AGE

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**Abstract:** The abrupt closing of the web hosting service GeoCities – one of the most popular websites inhabited by users in the 90s – is a well-known example of the importance of web archiving for saving digital cultural heritage. GeoCities' shutdown is a warning for today's social media user-generated content that might suffer the same fate. Various web archiving organisations archived and nowadays present GeoCities pages. Olia Lialina and Dragan Espenschied engage with GeoCities' legacy in their project *One Terabyte of Kilobyte Age* (2010–ongoing). This paper expands on the archival strategies of the artists and places their practice in the context of web archiving organisations – specifically Archive Team, the Internet Archive, and Restorativland – to understand how an artistic position may open up other ways of engaging with digital cultural heritage. This paper considers the archival practices of the organisations, artists, and users as a network of care, enabling different forms of remembrance. Whereas the archiving organisations preserve and present GeoCities statically, Lialina and Espenschied take a performative archival approach, in which they re-perform the dataset with old and new users. Through circulation and narration, *One Terabyte of Kilobyte Age* builds on the memories of the artists and users and aims to give the GeoCities heritage back to users. The project invites users to interpret and make meaning of GeoCities and embraces the fluidity of digital culture, whilst embodying the future archival insecurity of commercial platforms.

**Keywords:** GeoCities, digital folklore, vernacular web, early internet culture, web archiving, network of care

## 1 Introduction

Whether the internet is or is not forever, online content that is not archived will disappear as soon as the sites go offline. The abrupt closing of GeoCities, a web hosting service that allowed its users to be in charge of web design, is a well-known example of the need for web archiving to save digital cultural heritage. GeoCities' "model of catastrophe"<sup>1</sup> is a warning for today's social media platforms, who similarly might delete user data as soon as they deem it no longer valuable or profitable. Various organisations have scraped user-generated websites before GeoCities went offline and managed to save a fragment of what used to be 38 million pages.<sup>2</sup>

In their project *One Terabyte of Kilobyte Age* (further referred to as *1TB*), Olia Lialina and Dragan Espenschied engage with the GeoCities dataset as artists, opening up other sorts of interaction than regular web archiving. At first sight, it is unclear where the work of archiving organisations Archive Team, the Internet Archive, and Restorativland ends, and that of Lialina and Espenschied begins. This case study expands on the archival strategies of the *1TB* project and places the artists' practice in the context of web archiving, to understand how an artistic position makes meaning of digital cultural heritage data and might expand web archival practices. This paper poses the research question: how are the cultures of GeoCities archived and presented by web archiving organisations Archive Team, the Internet Archive, and Restorativland, and subsequently, how is the dataset performatively archived by artists Olia Lialina and Dragan Espenschied in their project *One Terabyte Of Kilobyte Age* (2010-ongoing)?

In section 2, this paper introduces GeoCities and the archiving practices of Archive Team, the Internet Archive, and Restorativland. Section 3 analyses Lialina and Espenschied's *1TB*, particularly the Tumblr, research blog, and gallery presentations. These strategies are compared and contrasted in the discussion in section 4, before the conclusion in section 5.

## 2 Archiving GeoCities

### 2.1 A Brief Introduction to GeoCities and its Fall

In *The Web as History*, Milligan details the history of GeoCities, a web hosting service started in 1994 by David Bohnett and John Rezner. When a new user signed up, they chose a 'city' to situate their website and received 15MB of free storage to create and publish their own website, created with GeoCities page builder and further customised in HTML. This organisation of cities was characteristic of GeoCities. In an age before search engines, the spatial metaphor of the city helped to conceptualise the organisation of internet pages. Cities were organised by theme or interest; Athens and Acropolis for education and philosophy; Hollywood for entertainment; Vienna for classical music and ballet. In 1999, at the end of the Dotcom bubble, GeoCities was the third most visited website on the internet. Yahoo bought the web hosting service for 3.6 billion dollars. After its purchase, Yahoo made unpopular changes to GeoCities, such as ending the city structure, trying out paid plans, and more advertising – leading to user revolt. Eventually, Yahoo decided to close the site, as GeoCities' aesthetics started to be considered bad taste with the advent of professional web design, people were moving to social media, and the platform was not financially profitable. On April 23 2009, Yahoo announced the closing of GeoCities, followed by its actual closing in October later that year.<sup>3</sup>

### 2.2 Saving GeoCities: Archive Team, Internet Archive, and Restorativland

Various web archiving organisations archived and today present GeoCities data: **Archive Team** scraped all the data they could get and seeded it as a torrent; **Internet Archive** captured selected websites and gives access through the **Wayback Machine**; and the mirror **Restorativland** currently presents a visual gallery.

Upon the announcement of GeoCities' closing, Archive Team started downloading as many GeoCities pages as possible before its shutdown. Archive Team describes itself as "a loose collective of rogue architects, programmers, writers, and loudmouths dedicated to saving our digital heritage."<sup>4</sup> The archivist and activist Jason Scott formed the group. He initiated the GeoCities Project almost as an activist gesture, stating "Yahoo! succeeded in destroying the most amount of history in the shortest amount of time."<sup>5</sup> From April to October 2009,

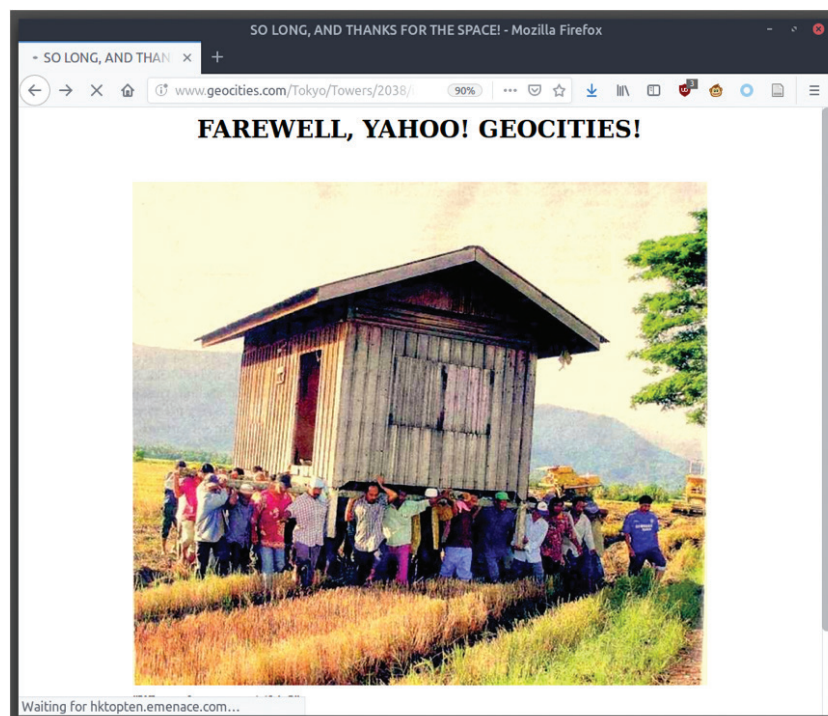
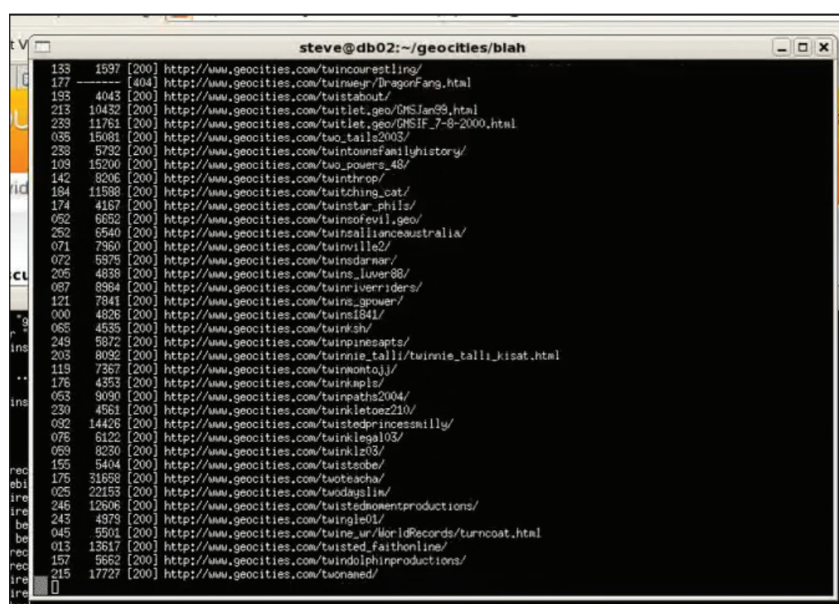


Figure 1. A GeoCities page which last updated on the day its shutdown was announced.

Source: <https://blog.geocities.institute/page/2>

dozens of people and hundreds of machines were involved in downloading the user-generated content of GeoCities, leading to a dataset of nearly 1 terabyte. This dataset was made publicly available as a [torrent](#) and later technically improved by Dragan Espenschied. Archive Team believes all culture is worth saving, working on an “archive first, ask questions later”-basis and scraping all the data they can get. This allows them to proceed where bureaucratic protocols and strict regulations restrain other organisations.<sup>6</sup>



Video 1. “Crawling GeoCities. Not mine, probably one of the guys who archived GeoCities.”

Internet Archive already started capturing snapshots of GeoCities even before the announcement of its closing and intensified its crawl when receiving the notice. People could nominate sites dear to them so that Internet Archive would capture them. One can dig up a snapshot of an old site via Wayback Machine by entering the original URL, allowing for focused searching. If lucky, multiple captures have been made of the webpage, and it is possible to see how the content of the site has developed over time. In the snapshots, sometimes the GIFs and hyperlinks within the original site function, painting a lively picture of the archived website. At other times, links and images are missing. The sites are framed by Wayback Machine's banner, which includes information about the time and date of the capture and sits within the frame of the user's browser (see Figure 2). GeoCities forms a special collection within the Internet Archive, whose mission is to preserve a record of the internet for generations to come.<sup>7</sup> Whereas Archive Team openly started to hate Yahoo for its treatment of GeoCities,<sup>8</sup> Internet Archive has a friendly approach towards Yahoo, even thanking Yahoo for guiding their practices.

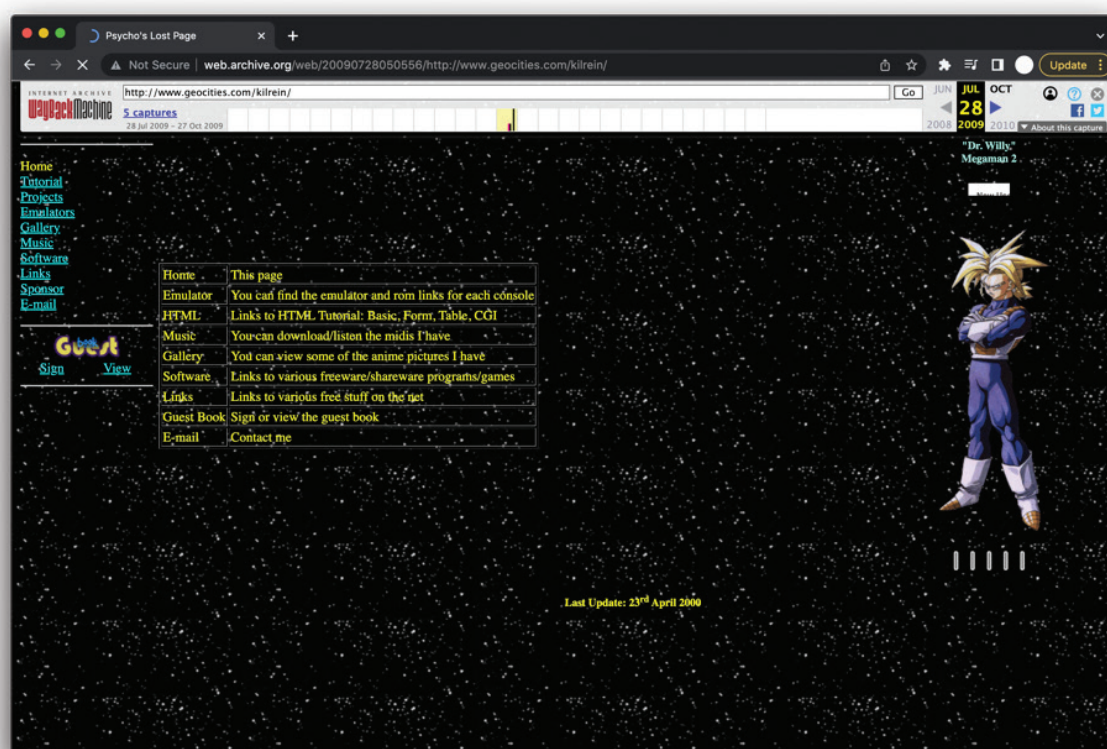


Figure 2. Screenshot of 'offline' GeoCities page accessed through Internet Archive's Wayback Machine.

Source: <https://web.archive.org/web/20090728050556/http://geocities.com/kilrein/>

One of the ways to interact with the torrent without having to download the entire terabyte is by exploring a mirror of GeoCities. Different mirrors are mentioned on the web, many of which are currently offline. At present, the project **Restorativland** (neither affiliated with Archive Team nor Internet Archive) hosts "a restored visual gallery of the archived GeoCities sites, sorted by neighbourhood." Restorativland states, "somewhere between a library and a living museum, we're working on experimental new ways to close the gap between archival and visibility of the web that was lost." The home page presents a list of suburbs within various cities, which link to an overview of GeoCities website thumbnails in that city (see Figure 3). Restorativland shows these webpages without any indication of their archived status, except the URL which includes their name – such as <https://GeoCities.restorativland.org/Area51/Atlantis/1000/>. Some images are missing, but other sites show fully running GIFs. The homepage also contains a content note warning that some sites may contain objectionable content. The mirror allows for exploratory engagement and understanding of the city structure of GeoCities.



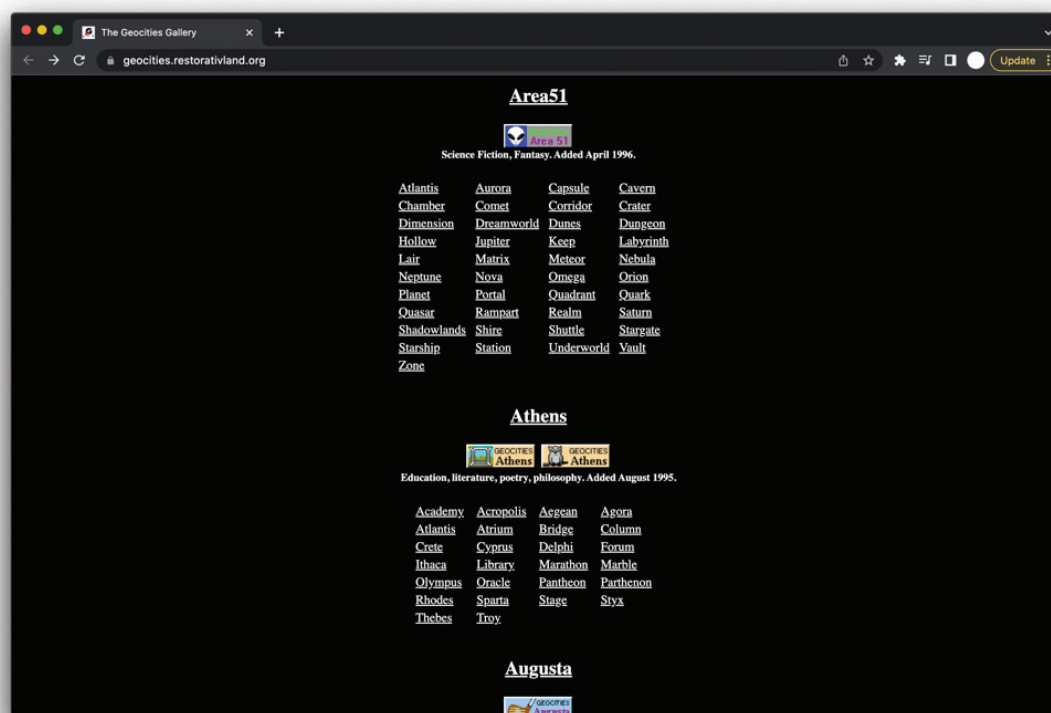


Figure 3. Screenshot of Restorativland's neighbourhood organisation, captured on January 19, 2022.

The archiving efforts by Archive Team and others enable researchers today to use this torrent as a primary source for researching early internet culture. The availability of the dataset might be the reason extensive research into GeoCities has been undertaken, such as into the concept of communities,<sup>9</sup> nostalgia,<sup>10</sup> diaries,<sup>11</sup> ethical considerations for access,<sup>12</sup> and platform policies and user protest.<sup>13</sup>

### 3 *One Terabyte of Kilobyte Age*

Starting in 2010, the ongoing project *One Terabyte of Kilobyte Age* is a body of work focusing on restoring, preserving and circulating Geocities' early vernacular web culture. The project is a collaboration between **Olia Lialina**, esteemed internet artist, theorist, curator, and gif model, and **Dragan Espenschied**, 8-bit musician, media artist and, since 2014, the preservation director of Rhizome, an organisation for born-digital art in New York City. Before *1TB*, they already worked together on various projects about the early internet, and initially, GeoCities was only part of that exploration before it 'swallowed' everything else and became a project on its own.<sup>14</sup> *1TB* foregrounds users as important agents, as their aesthetic and social practices (not only software and hardware developments) are at the core of the history of the internet. The artists put the cultural practices of the internet forward through the term digital folklore, which **in its namesake publication** they define as "encompassing the customs, traditions and elements of visual, textual and audio culture that emerged from users' engagement with personal computer applications during the last decade of the 20th and the first decade of the 21st century."<sup>15</sup>

Lialina and Espenschied manifest their engagement with the GeoCities dataset in interrelated projects, which I will expand and reflect upon below; the **Tumblr website** in which they share screenshots of the dataset (section 3.1), **the research blog** where they reflect upon this dataset (section 3.2), and gallery presentations ***One Terabyte of Kilobyte Age Video Show*** and ***Give Me Time/This Page is No More*** (section 3.3).

### 3.1 Performative Distribution on Tumblr

The Tumblr *One Terabyte of Kilobyte Age Photo Op* is a system that automatically shares screenshots of GeoCities pages in their original browser in chronological order (based on the date of the last edit), posting a total of 381,934 pages. Since 2014, every 20 minutes a new image is published, 72 a day. This particular pace is dictated by Tumblr itself, as the platform restricts to 3 posts per hour. The artists aim to give users their culture back and use time as a main narrative strategy, to avoid overwhelming them with the large dataset at once. In February 2023, Tumblr is sharing screenshots of websites that were last updated in February 2006. This creates “temporal dissonance,”<sup>16</sup> in which historical time unfolds in the present. Re-animating the pages by releasing them over time, rather than presenting it as a ‘static’ dataset, becomes a performative gesture. Currently, nine years after the start of the project, the dataset still appears to be ‘alive’, as it is continuously being distributed by the artists, users, and bots.

In [an article on Rhizome](#),<sup>17</sup> Espenschied explains how the dataset is curated as a trade-off between authenticity and ease of access (see Figure 4). Authenticity refers to how the web pages were viewed by users, which differs per browser and operating system. The most authentic experience would involve historic hardware, software, and a proxy server, yet this would heavily restrict audience engagement.<sup>18</sup> Instead, Espenschied built a system that loads the pages in a virtualised, period-appropriate hardware and software environment and captures screenshots at the original 800x600 pixels. Going through the dataset of screenshots reveals how the look and functionality of the browser – which forms the window onto the internet – changed over time. As such, the screenshots become a record of time in and of itself and can be recognised as part of the *1TB* project due to details such as the cursor’s location.<sup>19</sup> The screenshots show the original URLs with their city structure, as these were important for understanding the organisation of webpages. Presenting the sites as small-sized screenshots on a public website – no need to download an entire terabyte – allows easy access and encourages sharing the screenshots across the internet.

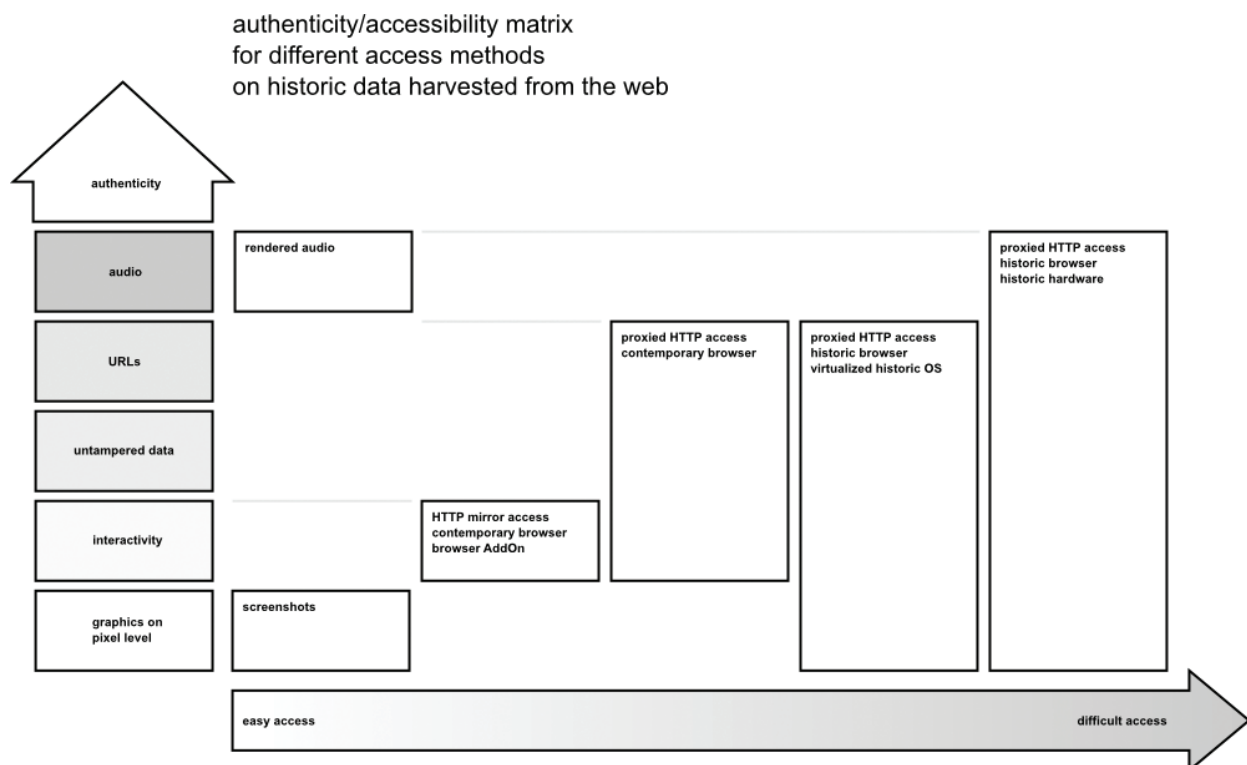
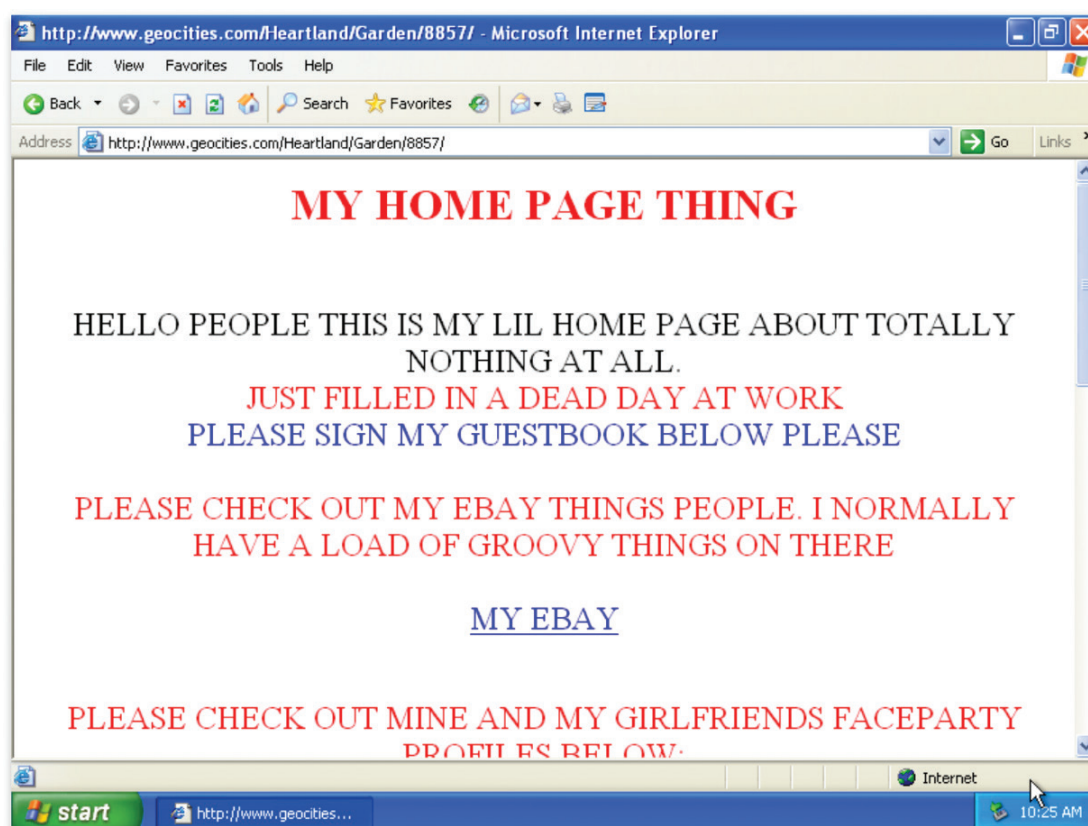


Figure 4. Matrix of authenticity and ease of access by Dragan Espenschied.

Source: <https://blog.geocities.institute/archives/3214>

Each screenshot that's posted on Tumblr is accompanied by contextual information: the date and time of the last modification, the original URL and hashtags that indicate the city, the year, the original browser and computer operating system, and the webpage's dimensions (see Figure 5). The posts can be viewed in regular blog mode, scrolling down and going through the now 23.038 (and counting!) pages. Another option is to see the Tumblr in archive mode, which presents a thumbnail overview and allows filtering by month, post type, and tag. This presentation of screenshots on Tumblr is a clear step away from GeoCities' characteristic organisation based on cities and neighbourhoods. Although one can explore the neighbourhoods separately with the hashtags, the main narrative structure the artists have chosen is time rather than (metaphorical) space.



32 MINUTES AGO      original url <http://www.geocities.com/Heartland/Garden/8857/>  
 8 NOTES  
 #HEARTLAND      last modified 2006-02-16 15:28:12  
 #2006  
 #EXPLORER6  
 #WINDOWSXP  
 #800X600

Figure 5. Screenshot of post on the *One Terabyte of Kilobyte Age Photo Op* Tumblr, posted on February 2, 2023.


Clearly, the screenshots are limited in how they can represent the original fully functioning websites. They do not portray the movement of the GIFs that became GeoCities' visual signature, nor do they allow scrolling or clicking links. The Tumblr creates merely quick impressions rather than an index close to the original GeoCities. Aware of the limitations of screenshots to represent websites and in line with his preservation work, Espenschied restored three websites that were deemed most popular in terms of user engagement on the Tumblr page: 1. *Divorced Dads Page*, 2. *Cuteboy Site*, and 3. *I have a website*. These restored sites became nearly fully functional, with blinking GIFs, and

enabled scrolling and clicking – only external links do not function. The various preservation efforts of Espenschied portray how *1TB* is not merely interested in presenting GeoCities' dataset as archived by others but also actively contributes to the restoration process.

As Tumblr is a microblogging and social networking site, a central aspect of the project is (re-)circulation of the screenshots. The artists follow social media logic by presenting GeoCities as content and inviting users to engage. Recent posts on the *1TB* Tumblr page show that the Tumblr page is still 'alive' as people like, comment and reblog content (see Figure 6). In addition, Olia Lialina also frequently shared screenshots on [her Twitter account](#), and nowadays on [Mastodon](#). Users circulate GeoCities content across platforms, including Tumblr, Twitter, Mastodon, and even [Discord](#). One could argue that the participation of other Tumblr users with *1TB* is predominantly through today's eyes, liking and reblogging aesthetically attractive screenshots, reverberating an aesthetic nostalgia without grasping its original social context.<sup>20</sup> Recirculating old web culture gives it a new life in contemporary platforms, and the content becomes subject to a contemporary interpretation. According to the artists, this interpretation is not per se nostalgic. New audiences – people too young to have owned a GeoCities site themselves – critically evaluate the political nature of old webpages, and would for example call for pages with racist content to be removed. In addition, Lialina expressed that amateur web design was never respected and that there is no such thing as the golden past of the vernacular web.<sup>21</sup>

JUNE 1, 2022 (4:20 PM) 17 NOTES #COLLEGE PARK #2005 #EXPLORER6 #WINDOWSXP #800X600

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 [glycyrrhizin](#) liked this

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Figure 6. Captured GeoCities pages are further distributed by other Tumblr users.



Interestingly, Yahoo bought Tumblr in 2013, before they were both acquired by Verizon Communications in 2017.<sup>22</sup> Similar to GeoCities, Tumblr has had problems with content management decisions. For example, in 2018, they banned nudity and sexual content, leading to users' outrage and an Archive Team 'Not Safe For Work'-project.<sup>23</sup> According to a [Wired article](#), one of the reasons for this ban might have been that this type of content made the platform unattractive for advertisers.<sup>24</sup> This shows that on every platform (certain) content has a limited lifespan and underlines the need for web archiving of data that one day might no longer be supported. The artists hosted 1TB on a possibly temporal social media platform rather than a more controlled personal server. At odds with web archiving logic that aims for longevity, this artistic choice is possibly consciously contradictory. Participating with users in their native environment of Tumblr is favoured by the artists over controlled preservation – underlining the importance of accessible presentation of digital heritage.

### 3.2 Sharing Memories on the Research Blog

In posts on [the research blog](#), Lialina and Espenschied analyse GeoCities' trends and vernacular, interviews with users, and share discoveries from the archive. For example, posts discuss [the most popular screenshots from Tumblr](#), [the restoration of digital 'snow'](#) (broken images), and [blingee](#) (an online GIF creator). The blog started two years before the Tumblr was launched and allowed the artists to immediately react to what they found in the dataset.<sup>25</sup>

The blog entries are indexed with tags (see Figure 7). According to Lialina, these tags work well due to their flexible nature: they can be invented on the go without setting up standards beforehand, creating new tags during the research.<sup>26</sup> The first tag used was ['alive'](#), referring to how some parts of GeoCities, such as the Japanese GeoCities and an online folder with clip art designed by Yahoo's own designers, were still online, possibly accidentally so. Currently, these links are no longer active and only link to the Yahoo home page. The tag ['ruins'](#) refers to all sites with missing links, dead images, and placeholders. ['Meta'](#) collects all posts reflecting on the process of archiving, restoring, and researching GeoCities, including technical insights and considerations. For instance, the artists uncover the age of a page through the hardware of that time: JPEG have smaller dimensions since monitors were smaller before the 2000s. Contrary to what one might expect, the tag ['torture'](#) refers to how it is torture not to see pages fully animated and is used to discuss GeoCities websites with a lot of GIFs. Practically, the tags enable navigating the blog posts and make the information searchable, yet the tone of the tags portrays the artist's poetic interpretation of GeoCities and underlines her personal and subjective approach. The tags may be misinterpreted by other researchers and needs elaboration by the artists, which so far only exists in oral form. As such, the subjective tagging system of the research blog forms a stark contrast with regular metadata practices that aim to optimise the searchability of information.

Filter by tags: [alive](#) [anime](#) [AOL](#) [awards](#) [background](#) [banner](#) [best viewed](#) [blingee](#) [cat](#) [chowder](#) [clipart](#) [cn](#) [comic sans](#) [copyright](#) [counter](#) [cyber](#) [DDD](#) [design](#) [dog](#) [exhibition](#) [fans](#) [felix](#) [flash](#) [frames](#) [free collection](#) [ftp](#) [geocities art](#) [GIF](#) [glitter](#) [halloween](#) [HTML](#) [hulagirl](#) [identity](#) [interview](#) [last updated 1996](#) [last updated 1997](#) [last updated 1998](#) [last updated 1999](#) [last updated 2000](#) [last updated 2001](#) [last updated 2002](#) [last updated 2003](#) [last updated 2004](#) [last updated 2005](#) [last updated 2006](#) [last updated 2007](#) [last updated 2008](#) [last updated 2009](#) [last updated 2010](#) [links](#) [meta](#) [metaphor](#) [midi](#) [myknet](#) [navigation](#) [neighborhoods](#) [ontology](#) [pagebuilder](#) [pentagon](#) [photos](#) [privacy](#) [psp](#) [related](#) [restoration](#) [ruins](#) [software](#) [spiritual](#) [starbg](#) [table](#) [template](#) [tripod](#) [under construction](#) [user](#) [video](#) [webmaster](#) [WebTV](#) [welcome](#) [yahoo](#)

Figure 7. Screenshot of tags on the One Terabyte of Kilobyte Age research blog, captured on January 19, 2022.

With a firm belief that the only way to make sense of user culture is through subjectivity, the artists aim to move beyond an algorithmic understanding of indexed webpages as they are presented on Google today.<sup>27</sup> Creating their own tags is one way to add this personal interpretation. Another is the research into hyperlinks between GeoCities' pages (which would not be found by Google's algorithm) and the focus on human stories and memories. The blog is collaborative – people can respond, like, and re-post – and these contributions are part of new research posts. As such, their research institute foregrounds human memory, leveraging their own memories and that of other former GeoCities users.

### 3.3 Moving Out of the Internet into the Gallery

The artists present the dataset outside of the internet in physical exhibitions. One example is the *One Terabyte of Kilobyte Age Video Show*, which consists of screen videos of GeoCities pages presented on the media wall at Photographer's Gallery in April 2013 and February 2022 (see Figure 8). GeoCities pages are shown 'in full performance' as screen videos within the original browser window, with blinking GIFs, changing every five minutes. The videos are presented offline, as the artists underlined that there was no meaningful way to present the work on the internet.<sup>28</sup> Olia Lialina has repeatedly stated not to favour presenting net art on computers in galleries, as it does not invite audiences to engage with the net art – they may end up just checking their mails.<sup>29</sup> The work takes advantage of the particular context of a gallery by giving exposure to GeoCities in a different modality than the internet. The large media wall could be seen from the street and was running 24/7, so it would even be visible to a passer-by after closing hours.<sup>30</sup> In a way, the media wall presentation resembles the Tumblr: it shares snapshots and creates first impressions, hopefully drawing people in to see more in other parts of the *1TB* project. Similarly, one could see here a trade-off between authenticity and ease of access: the moving pages are presented in the original browser yet form a stark contrast with the modern media wall.

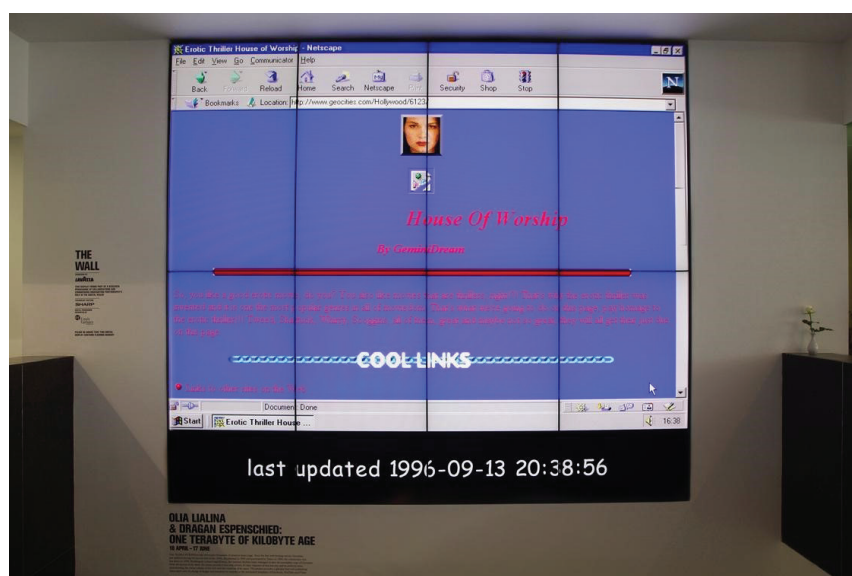


Figure 8. Installation view of *One Terabyte of Kilobyte Age* at the media wall at Photographer's Gallery.

Source: <https://thephotographersgallery.org.uk/whats-on/one-terabyte-kilobyte-age>

Another manifestation of *1TB* is the diptych *Give Me Time/This Page is No More* (2015–ongoing), an installation that documents two phases in the life cycle of GeoCities websites (further referred to as *Time/No More*). In this work the hand of the artist is the clearest: a selection of the database tells a particular narrative of time, juxtaposing promises of development with definitive endings. The installation has been presented at a.o. *The New Museum*, *Aksioma*, *ArtProjects*, *Bethanien*, *HMKV*, and *The Kitchen*. Two slide projectors projected one hundred and sixty 35mm slides on a wall, presenting two phases in the life cycle of GeoCities websites (see Figures 9a and 9b). On the left side, projections show screenshots of GeoCities' websites that promise future development, and on the right side, announce their shutdown. 'Under Construction' pages consist of unfulfilled promises, "they remind you of the times when eternal construction was the core of all online activity".<sup>31</sup> Part of the second 'This page has moved'-category came out of protest against Yahoo's new rules and regulations.

*Time/No More* further underlines the temporal dissonance of the Tumblr by collapsing seemingly endless development and abrupt closing of GeoCities' pages and by its choice of medium. The materiality of the slides and the projector are in stark contrast with the ephemeral nature of digital data. Lialina mentioned that the work comes from a personal vision

that screenshots are very close to dia slides.<sup>32</sup> These screenshots-turned-slides, similar to the Tumblr, do not convey the movement and interactivity of the original websites. The inactivity of the once dynamic web pages emphasises their archived status, only accessible as memory, no longer 'alive' on the internet. The choice for analogue photography refers to its function as a memory device, sharing the existential angst of former GeoCities users.<sup>33</sup> Possibly, the material nature of the slides is easier to preserve than the digital websites. The medium choice can be understood as an inside joke on the importance yet difficulty of web archiving.

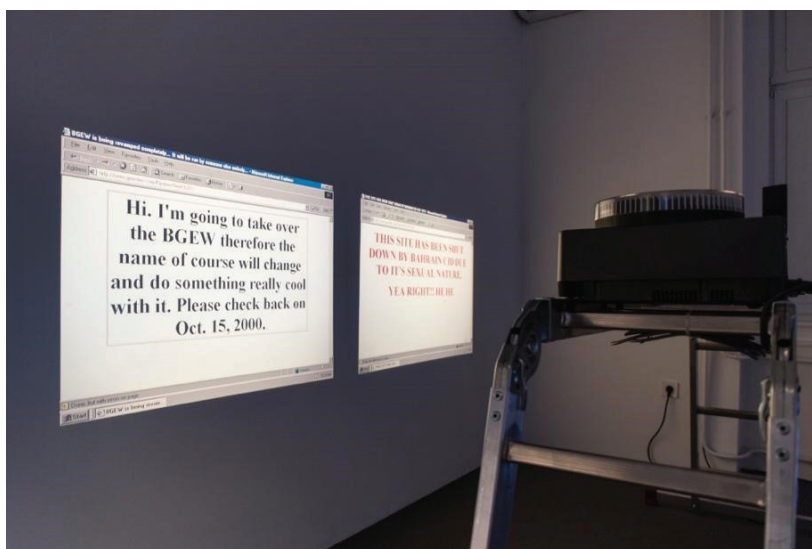


Figure 9a. Installation view of *Give Me Time/This Page is No More* at Aksioma (2018)

Source: [http://art.teleportacia.org/exhibition/give\\_me\\_time\\_this\\_page\\_is\\_no\\_more/](http://art.teleportacia.org/exhibition/give_me_time_this_page_is_no_more/)

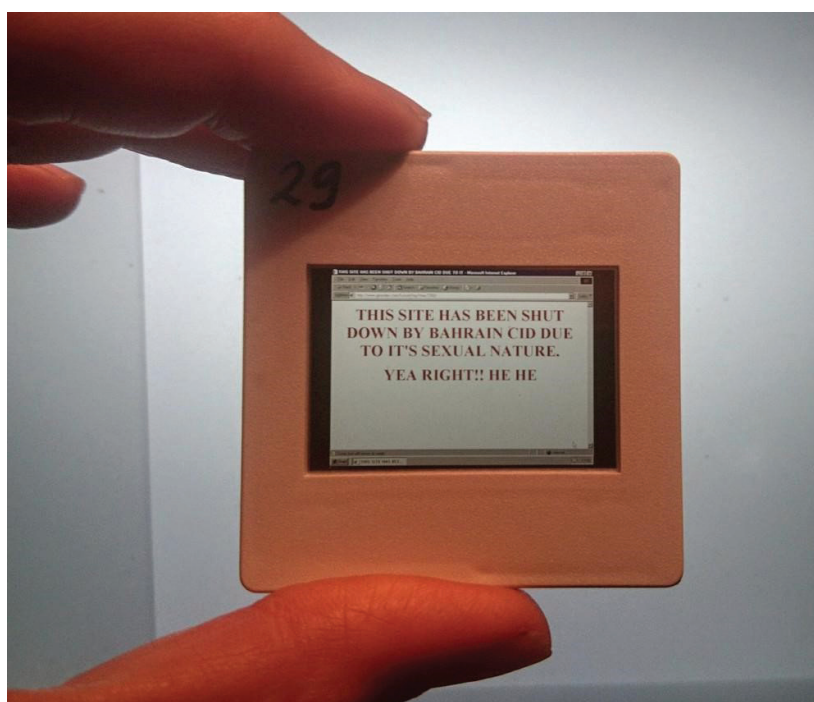


Figure 9b. Projector slide of *Give Me Time/This Page is No More*.

Source: [http://art.teleportacia.org/exhibition/give\\_me\\_time\\_this\\_page\\_is\\_no\\_more/](http://art.teleportacia.org/exhibition/give_me_time_this_page_is_no_more/)

## 4 Discussion

Following, in 4.1, I will compare and contrast the practices of the web archiving organisations Archive Team, the Internet Archive, and Restorativland on the one hand, and the artists Lialina and Espenschied on the other hand, summarising the practices and arguing how they form a ‘network of care.’ By further zooming in on *1TB* in 4.2, I will elaborate on the role of subjectivity in the artists’ work, expand on their performative archival strategies, and explore what the tension between dissemination and security entails for future remembrance of GeoCities heritage.

### 4.1 GeoCities’ Network of Care

The archiving work done by the various parties considered in this paper is complementary. The buzz that followed GeoCities, closing and archiving effort enables today’s meaningful remembrance.<sup>34</sup> Archive Team’s archiving is almost an activist gesture, saving everything there is to save before the “barbaric”<sup>35</sup> shutdown by Yahoo. The work by Internet Archive seems more forgiving of Yahoo, and their archive efforts align with their overall purpose to preserve a record of the internet. Restorativland is one of many efforts on re-creating the original city structure. All three organisations preserve and present GeoCities data, although with various levels of accessibility: the torrent of Archive Team is only accessible to committed researchers and not a general audience, Wayback Machine allows for quick impressions only if one is looking for a specific URL, and Restorativland may be the most accessible way of browsing. Lialina and Espenschied’s body of work builds on the efforts of the web archiving organisations, allowing for performative distribution (Tumblr), thorough visual and social research (research blog), quick impressions (media wall), and narrative presentation (*Time/No More*).

The efforts to preserve the digital cultural heritage of GeoCities by the organisations, artists, and old and new users together can be best understood by Annet Dekker’s term ‘network of care.’ She suggested the term to describe networks of experts and non-specialists formed to protect and safeguard net art outside of institutional contexts.<sup>36</sup> There is no institutional collaboration between the artists and Archive Team, the Internet Archive, and Restorativland, yet the parties are personally connected and collaborate on the level of the interface, building on each other’s resources. They reference each other (as ‘friends’) and share a collective goal of enabling remembrance. In addition, in their project *1TB* the artists invite large numbers of old and new users next to bots and other computational agents to aid the remembrance of GeoCities by contributing their stories and experiences and continuously circulating relics of GeoCities across social media platforms. Dekker’s approach understands conservation beyond technical aspects alone and emphasises the importance of preserving social information and relations. Although this concept is born in the context of net art, it applies to the network of organisations, artists, and users engaging with the preservation of GeoCities as a collection of cultural internet practices and human relationships. The availability of a dataset is not enough for its remembrance, and the organic process of forming a network of care is hard to replicate. Archive Team has also seeded torrents of other past social media which have not been picked up in the same way, such as the Dutch social network *Hyves* of which 25TB was saved. The continuous memory and re-interpretation of GeoCities is only possible because so many people took an interest in and are passionate about it – preserving, restoring, presenting, discussing, and circulating GeoCities’ heritage.

### 4.2 One Terabyte of Kilobyte Age’s Performative Archival Practice

Lialina’s and Espenschied’s role as artists allows for more subjective interpretations and narrative presentations of GeoCities. The work of the other organisations closely follows the original dataset; Archive Team crawls without filters,



Internet Archive gives access to pages, and Restorativland presents according to the city structure. In contrast, next to their technical preservation work, the artists interpret the dataset by focussing on subjectivities and memories and present fragments of GeoCities in a narrative manner. The artists are very close to the users, creating the body of work of *1TB* as a dedication to them. Lialina's net art closely resembles the aesthetics of GeoCities, as net artists and early internet users are "doing the same strange thing" with the internet.<sup>37</sup> The body of work of *1TB* can be understood as reflecting various levels of ambiguity: the Tumblr has the biggest interpretation surface, *Time/No More* has a clearer narration due to the material properties and juxtaposition of development and shutdown, and the research blog specifically articulates the artists' position. With time as its central narrative, the Tumblr and *Time/No More* create chronological dissidence, defying the idea that the internet is always in the present. This strategy invites the audience to reflect on notions of time and create their own interpretations. Building on their own memories and those of others, Lialina posts findings and insights on the research blog. The various projects that comprise the body of work of *1TB* underline that these are just a few amongst many ways of dealing with GeoCities heritage. The subjective approach of the artists reflects their specific position in the field: that the only way to say something meaningful about content on the internet – a space that is so extensive, varied, and impossible to capture entirely – is through the experiences of the people involved in its creation.

In the body of work of *1TB*, circulation is central. Due to their transient nature, digital archives are made for reproduction and circulation between levels, people, networks, and locations.<sup>38</sup> Indeed, *1TB* circulates between modalities (online, offline), media, and users/visitors. Folklore can only reach immortality through permanent dissemination: preservation without presentation can't ensure the remembrance of digital heritage.<sup>39</sup> The other archiving organisations emulate the data as a technical preservation strategy, but users perceive this data to be in one place. Even if their work can be understood as performative in a normative reading of the term – electronic data is always 'performed' – these organisations approach the dataset as a largely fixed entity. In contrast, *1TB* re-performs the dataset 'in the now' together with users. As such, the artists open GeoCities up for re-interpretation and embrace that digital culture is in a state of constant flux. The various manifestations of *1TB* might reach different people who can remember GeoCities' heydays whilst forming new memories.

Especially the *Tumblr Photo Op* is a clear example of what Annet Dekker has referred to as a strategy that's defined by "presentation over preservation."<sup>40</sup> The commercial platform on which the screenshots are hosted reverberates the future instability and uncertainty of the dataset, similar to how the GeoCities pages themselves ceased to exist in their original form. The artists have expressed that they do not intend the Tumblr to be an archive but rather see it as a mode of distribution, bringing the GeoCities culture to where users already are (or were in 2014).<sup>41</sup> This is in contrast to the work by Archive Team and especially the Internet Archive, who stated to keep the internet "for generations to come." Especially the fact that Yahoo has owned Tumblr for some years might instil fear in users that their content is at risk of an endless cycle of creation and deletion. The *1TB* project is already an embodiment of the loss of GeoCities user content, which is only emphasised by the archival insecurity of the Tumblr page. Possibly this creates awareness for users of current commercial social media platforms, urging them to consider the future uncertainty of their content and explore other forms of hosting content and connecting to others online. The artists have expressed that the core of the work is the circulation of GeoCities heritage, and although the Tumblr is its current vehicle, it may take up other forms on other social platforms in the future.<sup>42</sup> In the context of the network of care that surrounds GeoCities' digital cultural heritage, if one link 'breaks,' others keep GeoCities 'alive.' This means that if – which at the moment does not seem to be an immediate danger – Tumblr discontinues its service, other parts of the body of work of *1TB* and the other archival organisations continue to present its culture, and traces will continue to be present throughout various platforms.

In their focus on circulation and narration, the artists of the *1TB* project prioritise accessibility over continued security of GeoCities content – which has implications for the remembrance of GeoCities. Richard Rinehart and Jon Ippolito propose a distinction between formal and informal social memory. Whereas the former emphasises preserving cultural objects in a fixed form to maintain historical accuracy, the latter emphasises updating or recreating cultural objects to keep them alive through migration, emulation, and re-interpretation.<sup>43</sup> In the context of GeoCities, the preservation efforts by the organisations resemble more closely formal social memory, and the



performative archiving approach of Lialina and Espenschied approaches an informal understanding of social memory. *1TB* reverberates a “desire to turn belatedness into becomingness,”<sup>44</sup> by re-animating the dataset with other people and allowing for new meaning-making in the present. In the case study of GeoCities, archival security forms the core of the distinction between the work of the described archiving organisations on the one hand and Lialina and Espenschied on the other. Whereas the organisations want to preserve and give access to the original ‘fixed’ (yet updated) dataset, the artists allow themselves space for circulation, interpretation, and narration. In the spirit of folklore, they accept that the data may not be preserved in its fixed form in the long run as their folkloric understanding of memory foregrounds the role of circulation amongst users. Notably, formal and informal social memory are not mutually exclusive,<sup>45</sup> and as emphasised by the term network of care, the practices of the archiving organisations and the artists do not exist in isolation but are rather complementary.

## 5 Conclusion

This paper researches the archiving and presentation strategies of GeoCities by web archiving organisations and the artists Olia Lialina and Dragan Espenschied in their project *1TB*. As an activist gesture, Archive Team scraped all possible data before shutdown and seeded it as a torrent; Internet Archive presents snapshots through Wayback Machine, and mirrors such as Restorativland allow exploring the city structure. The artists Lialina and Espenschied build upon and improve Archive Team’s dataset and present it in the form of performative distribution (Tumblr), thorough visual and social research (research blog), quick impressions (media wall), and a curated narrative (*Time/No More*).

The various archiving efforts of Archive Team, Internet Archive, Restorativland, Lialina and Espenschied and in extension users and bots form a network of care around GeoCities, collectively safeguarding the dataset and enabling remembrance – although in different forms. Whereas the archiving organisations preserve and present GeoCities largely as a fixed dataset in various mediums and levels of accessibility, the artists approach its digital cultural heritage as fluid and re-perform the dataset in the present together with old and new users. Through circulation and narratives of time, *1TB* invites users to re-interpret GeoCities through contemporary eyes, embracing the fluidity and changing nature of digital culture. Furthermore, they investigate the data on their research blog through the subjective memories of themselves and old users. Favouring circulation and participation of mass digital culture over archival security, the *Tumblr Photo Op* reverberates the archival instability of commercial platforms. In case the Tumblr would cease to exist, Geocities data can count on other nodes in its network of care, as it would continue to be present in other works within *1TB* and the archival practices of the other organisations.

This paper focuses on the preservation and presentation of many different agents with a specific focus on the archival practice of Lialina and Espenschied. As such, it does not analyse the histories, goals, and strategies of the Archive Team, the Internet Archive, and Restorativland in similar depth and detail. In addition, the paper analyses the presentation of GeoCities data from the perspective of the user, and as such, does not explore the technical background and motivations of the various archiving practices in depth. Further research would have to be undertaken to more precisely draw out the parallels and contrasts between the various web archiving agents among themselves and in relation to Lialina and Espenschied.

## Acknowledgements

I would like to thank Olia Lialina and Dragan Espenschied for the extensive conversation and elaboration on their practices.

## Notes

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## Biography

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