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PRESERVING ELECTRONIC LITERATURE: BETWEEN (RE)CONSTRUCTION AND EMULATION. SPACE FOR DOCUMENTATION AND PRESERVATION OF KATE PULLINGER'S DIGITAL FICTION¹

Abstract: The article is focused on the problems of preserving electronic literature. Authors discuss challenges they faced while documenting and preserving Kate Pullinger's digital fiction works for The NEXT: Museum, Library, and Preservation Space for electronic literature (the leading space for archiving, documenting, and presenting electronic literature of the past) and for the artist's online repository. They characterize the existing methodologies of preserving digital literary works and their pros and cons and report how they were used while working with Pullinger's digital literary heritage. The argument is illustrated with an analysis of examples of reconstructions undertaken within the research project that made the creation of both Pullinger's repositories possible, as well as detailed case studies and visualizations of the newly-created repository.

Keywords: Kate Pullinger, electronic literature preservation, The NEXT

¹ This research was realised as part of the Excellence Initiative – Research University (IDUB) project led by Dr Agnieszka Przybyszewska at the University of Łódź (2022–2024) and funded as part of the increased 2% subsidy for the universities participating in “The Excellence Initiative – Research University” competition. Chris Joseph, Andy Campbell and Simon Groth generously supported us while working on both repositories, and Rachel Pownall helped a lot with creating all video documentation.

Archiving electronic literature

The fast pace of changes in computer technologies makes preserving and archiving literary forms dependent on specific platforms, systems, and hardware a challenge for literary critics, librarians, and readers. This article focuses on problems and questions that such challenges pose. The emerging field of the preservation of digital cultural heritage activates three temporal landscapes: of the work that is preserved, of the preservationist, and of the future audience towards which a preservation effort is directed. From the point of view of the original work, we – as preservationists – live in the future, yet from the point of view of the intended audience of our preservation projects, we already live in the past. These three temporal planes share one common trait. They are populated by cultural production labeled two decades ago by Alan Liu as “the future literary,” made possible by the evolution of literariness amid the rich affordances of new media, which resulted in creative blends of aesthetics and critique, literature and art, intellect and hardware.² The numerical, programmable, and transcoding nature of digital art and literature³ would suggest that the flow of artefacts between the three temporal planes stays uninterrupted or at least can be easily reconstructed.⁴ Nothing more far from the truth. Because “the future literary” has always been situated at the crossroads of disciplines and practices and sometimes takes full advantage of “creative blends” of new and old media, the preservation of electronic literature relies not only on live cycles of digital platforms and systems but also on the material and social configurations that served as the exhibition ground for the digital works and the hybrid, multimodal means by which they conveyed their message to the audience. As such, the “future literary” had been subjected to disappearance in a peculiar state of permanent impermanence that Dene Grigar identified as the “Sappho Syndrome,”⁵ whereby – due to rapid change in technological developments – whole works are enjoyed in their full expressive capacity only for a short while and quickly became known only through fragments, references and lore that surrounds them if they are lucky enough to accumulate such discourse around themselves. Fun-

² A. Liu, *The Laws of Cool: Knowledge Work and the Culture of Information*, The University of Chicago Press, Chicago 2004, p. 373.

³ J. Pressman, *Old Media / New Media* [in:] M.-L. Ryan, L. Emerson, B.J. Robertson (eds.), *The Johns Hopkins Guide to Digital Media*, Johns Hopkins University Press, Baltimore 2014, pp. 54–56.

⁴ The hypertextual structure and numerical nature of digital objects makes them potentially more useful in creating literary archives than in the pre-digital environment because – as Manuel Portela points out – the elements and relations among the elements in a representation become susceptible to a multitude of variations. A single analogue object, in a digital archive of Fernando Pessoa that Portela developed, for example, can be represented in multitude of ways. Born-digital works, however, present a fundamental problem of ontological stability: the very object of preservation, in contrast to print books and artefacts, is transient. See: M. Portela, *Literary Simulation and the Digital Humanities: Reading, Editing, Writing*, Bloomsbury Academic, Bloomsbury 2022, pp. 22–23.

⁵ D. Grigar, S. Moulthrop, *Traversals: The Use of Preservation for Early Electronic Writing*, MIT Press, Cambridge, MA 2017, p. 227.

damental problems of media decomposition and content accessibility make historians and preservationists of electronic literature treat subjects of their studies as hybrids of objects and events, affiliated both with print books and installation or performance.⁶ An e-lit work, understood as a process rather than the object,⁷ complicates the process of documentation and archiving because of the disparity between presentation of the content, and the content itself. As Serge Bouchardon and Bruno Mechimont point out, digitalization does not preserve the content, but the resources and tools used to rebuild it: “Content is only accessible through the functionalities of the tools. The first consequence is that interpretation is conditioned by access tools. The second consequence is that reconstruction is variable.”⁸

In this article, we present challenges we faced while documenting and preserving the works of Canadian British author Kate Pullinger. The huge inaccessibility of many of her acclaimed works was a stimulus that prompted us to use all available methods to achieve the main preservationist’s goal situated between the past that they want to preserve and the future reader that their effort is aiming at, a goal that Alice Bell summed up in a convincing comparison: “Imagine if we couldn’t archive Shakespeare or Dickens, or Mary Shelley. We would lose those works. We wouldn’t want to lose those works. We don’t want to lose these digital fiction works either.”⁹

IDUB project short characteristics

Kate Pullinger’s digital writings belong to the canon of electronic literature. In 2021 the author was awarded the Marjorie C. Luesebrink Career Achievement Award for lifetime achievement (the most important award in the electronic literature field). Acclaimed previously for her print literature (e.g. Governor General’s Literary Award), Pullinger was a pioneer in many areas of electronic literature. Among her most famous projects, one will find digital storytelling using biofeedback as an alternative for clicking links (*The Breathing Wall*, 2004), smartphone novels (*Jellybone*, 2017), ambient works that use user’s data (*Breathe*, 2018) or various participatory projects (*Flight Paths*, 2007–2012). She helped build the media literacy of future generations by co-authoring many e-lit projects addressed to young readers (*Inanimate Alice*, 2005–ongoing; *Lifelines*, 2010). Last but not least, she was and still is a *spiritus movens* of the e-literature community, mentor for many artists and researchers working in cross-field of storytelling and new media (The Studio in Bath and Centre for Cultural

⁶ S. Bouchardon, B. Bachimont, *Preservation of Digital Literature: From Stored to Reinvented Memory*, “Revista Cibertextualidades” 2013, No. 5, pp. 185–202.

⁷ N.K. Hayles, *The Time of Digital Poetry: From Object to Event* [in:] A. Morris, T. Swiss (eds.), *New Media Poetics: Contexts, Technotexts and Theories*, MIT Press, Cambridge–London 2006, p. 185.

⁸ S. Bouchardon, B. Bachimont, *Preservation...*, op. cit., p. 187.

⁹ *Digital Fiction Curios Preview Night* [documentation], <https://vimeo.com/384415417> (accessed: 5.01.2021).

and Creative Industries she led at Bath Spa University are places that facilitate flourishing of collaboration between academia, artists and creative industries in South West England).

However, due to the obsolescence of media and platforms (for example, many of Pullinger's works were at least partially created with Adobe Flash), in 2021 only 4 of 14 digital works of the author were accessible. Moreover, not all of those 4 were working correctly. A smartphone novel *Breathe* and *Letter to an Unknown Soldier* were unproblematic. Ian Harper, the producer of *Inanimate Alice* series, rebuilt all episodes made with Flash so they still can be accessible (however, since then, behind a paywall). The fact that none of the existing e-literature archives, repositories or databases had complete and satisfactory (also mistake-free) records of such a prominent author's work and that so many of Pullinger's works became "dead" was a starting point for the project *Between (Re)construction and Emulation. Archiving and Popularization of Electronic Literature – Kate Pullinger's Archive*.

We defined our first goal as creating the author's collection in a well-known repository and archive that uses standard and cross-compliant methods of documenting, archiving and preserving digital works. Over the last two decades various research initiatives within the electronic literature community successfully defined goals and methods of preservation. The Preservation, Archiving and Dissemination Initiative (PAD) and the "X-literature Initiative" were the most prominent ones. In the proposal for the latter, called "Born-Again Bits,"¹⁰ two fundamental goals were highlighted: developing a universal interpreter that could read and display a work in any form and format, and creating an XML based, "human-readable, machine-playable and machine-transformable" way of (re)presenting electronic literature. The two ambitious prerogatives, whose scope N. Katherine Hayles praised as "breathtaking"¹¹ and other scholars criticized as a "pipe dream,"¹² has been so far realized only partially, in the realm of XML based metadata. ELMCIP (Electronic Literature Knowledge Base), its archiving offshoots such as ELMCIP Anthology of European Electronic Literature, local preservation projects, such as CIBERIA in Spain, NT2 in Canada, Hermenia for Catalan e-literature, or Brown Digital Repository all use a similar set of metadata and content description stored in XML files and outlined in common guidelines and taxonomies promoted by The Consortium on Electronic Literature (CELL), these

¹⁰ A. Liu, D. Durand, N. Montfort, M. Proffitt, L.R.E. Quin, J.-H. Réty, et al., *Born-again Bits: A Framework for Migrating Electronic Literature*, 2005, <https://www.eliterature.org/pad/bab.html> (accessed: 15.10.2024).

¹¹ N.K. Hayles, *Electronic Literature. What Is It?* [in:] C. Crompton, R.J. Lane, R. Siemens (eds.), *Doing Digital Humanities: Practice, Training, Research*, Routledge, London–New York 2016, p. 219.

¹² M. Bernstein, ELO: Hayles, blog, May 27, 2007, <https://www.markbernstein.org/May0701/ELOHayles.html> (accessed: 15.10.2024).

repositories can potentially “talk to each other” by using the same metadata sets and similarly structured XML documents.¹³

A contemporary, state-of-the-art repository and preservation space with a goal of both documenting and presenting electronic literature no longer available on modern devices is The NEXT: Museum, Library and Preservation Space for electronic literature – the leading space for archiving, documenting and presenting electronic literature of the past. Because the two pillars of preservation – universal reader and universal metadata model – are most fully realized in this repository (industry-leading methods of emulation and pioneering methods of reconstruction are supplementing the lack of universal interpreter), we aimed at creating Kate Pullinger’s collection in the NEXT. Founded by the Electronic Literature Lab and Dene Grigar at Washington State University Vancouver, The NEXT allowed us to apply the lab’s methodology (based on strategies of emulation, migration and reconstruction) and to verify the usefulness of the metadata scheme for preserving and documenting Pullinger’s works. We had no doubts that regardless of our critical approach towards the ELL methodology, Pullinger should have her collection within The NEXT, and we aimed to prepare it appropriately.

However, thinking about the complexity of the entire body of Pullinger’s work (in various media), we planned to verify other methodological approaches (at that moment perceived by us as more focused on the process of re-construction, re-building the work) in order to create the author’s private “archive” that could encompass more materials than those included in The NEXT, e.g. other Pullinger’s multimedia texts (movies, opera libretto, works for radio) or author’s blogs, that give a broader context for her digital creation. At that point, we perceived The NEXT as an online repository of digital works that was unable to collect and share materials other than still working or preserved digital works. At the starting point, our priority was also to offer its users truly working, fully reconstructed (not only emulated) works.

In this paper, we share our experience of working on two repositories of Pullinger’s digital works and reflect on this process. A strategy for preserving electronic literature should be developed in the context of a long tradition of preserving print-based cultural heritage. That is also because the audience of electronic literature consists of readers with a grounded image of literary archives or repositories strongly linked to the library concept. However, a digital preservationist faces new challenges and cannot simply repeat well-known patterns. Nor can simply adapt preservation strategies used in the context of digital art. What complicates matters of documenting and archiving electronic literature is the very ontology of artefacts and the inherent condition of digital textuality described by Michael Joyce in the often-quoted sentence,

¹³ J. Tabbi, *The Database at the Ends of Literature* [in:] *Manifesto*, Consortium on Electronic Literature (CELL), https://cellproject.net/manifesto#II._The_Database_at_the_Ends_of_Literature (accessed: 15.10.2024).

“Electronic text replaces itself, print text stays itself.”¹⁴ For Bouchardon and Bachinet, the primary reason for this special status of electronic literature is the separation of the “inscription form” and the “restitution form” of a digital work. Inscription form and restitution form are two separate planes, which, in the case of a print book, remained unified.¹⁵ Editors of *Digital Art through the Looking Glass: New Strategies for Archiving, Collecting and Preserving in Digital Humanities*, the book that focuses on redefining preservation methods for digital art in general,¹⁶ emphasize such an issue in the broader context of any born-digital work of art: “in their processuality, one cannot fixate the works, or artefactualize it, in one state of being.”¹⁷ In consequence, such artworks challenge traditional, used-so-far preservation methods and the concept of archive and collection and methods as well as “redefine traditional art historical concepts of authenticity, object-hood and originality.”¹⁸ Then, as a result, according to Oliver Grau, Janina Hoth and Eveline Wandl-Vogt “museums and other memory institutions both online and offline still struggle with archiving this ‘art of our time’ for future generations.”¹⁹

Even in the realm of digital documents, the status of electronic literature work remains an extreme case, because of its performative, networked qualities. The impermanent and unstable nature of electronic culture exposes standard and proven methods of description and archiving to unpredictability. How can we trust in the principle of interoperability of metadata and assimilate the reusing of records on electronic literature by various archival programs if the works themselves, their numerous versions and editions, their later emulations and reconstructions, appear and disappear before the eyes of record creators? Rapid changes in text-supporting technologies make even the simple task of accessing the work a significant obstacle. It became clear to us that among strategies of preservation, documentation and archiving that face such instability, the most suitable should be those founded on stable foundations.

Kate Pullinger’s Collection for The NEXT. Emulation and traversal: limits of digital preservation

Because of its modularity, reliance on existing metadata schemes, and connection to previous electronic literature repositories, The NEXT was both an ideal starting place

¹⁴ J. Michael, *(Re)placing the Author. A Book in the Ruins* [in:] G. Nunberg (ed.), *The Future of the Book*, University of California Press, Berkeley 1996, p. 276.

¹⁵ S. Bouchardon, B. Bachimont, *Preservation...*, op. cit., p. 186.

¹⁶ This multi-authored publication perfectly sketches the panorama of digital art archiving and preservation methods over the years, which is beyond the scope of this sketch.

¹⁷ O. Grau, J. Hoth, E. Wandl-Vogt (eds.), *Digital Art through the Looking Glass: New Strategies for Archiving, Collecting and Preserving in Digital Humanities*, Edition Donau-Universität Krems, Austrian Academy of Sciences Press, Hamburg 2019, p. 12.

¹⁸ *Ibidem*, p. 19.

¹⁹ *Ibidem*, p. 12.

and the ultimate point of reference for preserving, documenting and giving access to the diverse portfolio of born-digital works by Kate Pullinger. The NEXT's metadata scheme, in comparison to general "high level" model of digital records such as RiC-CM²⁰, derives from the Metadata Object Description Schema (MODS) maintained by the Network Development and MARC Standards Office of the Library of Congress. Another key advantage of the repository is that the ELL lab projected the existing standards of archiving and preservation into the digital domain and expanded it with medium-specific qualities such as 3D, Algorithmic, Animated, Artificial Intelligence (AI), Augmented Reality (AR), Codework, Combinatory, Generative, Glitch, etc. The second foundation of The NEXT's methodology is its focus on the reader's experience of the work, as it was presented to its audience in the original form at the time of publishing. Hence, the focus is on the modalities of the work, its multimedia capabilities, awareness of the hardware, software, peripheral specifications, and other salient features that define the work and make users experience it in its full intended scope. The NEXT allows for comprehensive entries of different versions and editions of a given work. Such documentation, of interest to scholars, archivists and researchers of an e-lit author, can be then used for curatorial efforts that present the work on preferred occasions and for preferred audiences.

Because The NEXT is connected to a network of databases at CELL (Consortium of Electronic Literature) and has grown out of an existing database (ELO Repository), four of Pullinger's works were already in the database when we started the IDUB project. *Inanimate Alice Episode 1: China* (v. 1.0), *Inanimate Alice Episode 4: Hometown* (v.1.0) and *Flight Paths* (v.1.0) were a part of one of the first initiatives of The NEXT – to save prominent and awarded born-digital works created in Adobe Flash. *Branded* (v. 2.0) was rescued from the trAce archives donated to ELL. As a result, these four works in the online repository of The NEXT also had live links to emulated versions of their original Flash files (emulations made in Ruffle in the case of *Branded* and in Conifer in three other cases). However, the *Flight Paths* Flash version preserved in The NEXT was working incorrectly. The emulation method offered by the open-source Flash Player emulator Ruffle changed the framing and the speed of videos; consequently, in some of the chapters, sound and video were not synchronized. The partial reconstruction made by Chris Joseph later, which was accessible through the project website, had the same problems. We discovered that neither the authors of the work nor the team responsible for the reconstruction had been conscious of that.

Although the presence of these selected works was a welcoming development, especially in the context of Adobe's ceased support of Flash, the quality of the readers' experience of the emulated versions, especially those made with Conifer, was not ideal. The metadata and documentation of the works also did not utilize The NEXT's full preservationist potential. Taking into consideration the rapid development of

²⁰ *Records in Contexts: Conceptual Model*, International Council on Archives, November 2023, <https://www.ica.org/resource/records-in-contexts-conceptual-model/> (accessed: 5.01.2024).

emulation technologies prompted by the curatorial efforts of rhizome.org and other institutions and initiatives, the first problem – the reader’s experience – could be solved in the course of the project that invited Pullinger’s collaborators to recreate the Flash works’ within editions and emulations under their own supervision. The second problem, documentation, could be addressed with a fuller implementation of the ELMS (Extended Electronic Literature Metadata Scheme), which underwent further iterations and updates, especially those related to user experience and accessibility.

Emulation, both the authorized one made by the ELL team in Conifer and the later authorized emulations made in Ruffle, proved to be the most approachable method of preservation. Emulations will ensure the work stays accessible to a contemporary audience after its original software environment is no longer supported. Andy Campbell’s project of porting and migrating Pullinger’s *Flight Paths* first episode from Adobe Flash to the open Web environment constitutes yet another preservation method. Yet, due to technical or legal reasons, not all works are lucky enough to be migrated in a relatively smooth manner. A significant group of born-digital works created in Flash cannot be fully rendered by current emulation software. Another group of works is bound to its original software and hardware environment by copyright reasons and legal complexities related to their release to the public. A number of hypertext fiction and non-fiction published by Eastgate Systems in the early 1990s remains copyrighted by Eastgate, who, as a publisher, is not keeping up with migrating all the works into modern platforms²¹.

Some works of Kate Pullinger found themselves in similar circumstances where technical or legal reasons do not allow preservationists to create updated versions and editions accessible to contemporary audiences. For works such as *The Breathing Wall* and *Lifelines* the preferred method of preservation is a form of extended documentation with the use of recorded reading sessions, preferably by authors themselves. These multimedia records can then be referred to in online repositories when links to live works are not possible. This last method is traversal. In their 2017 book *Traversals: The Use of Preservation for Early Electronic Writing*, Stuart Moulthrop and Dene Grigar highlight a methodology of digital preservation called “Pathfinders,” and the traversal was the center of its focus. As a form of oral storytelling and straightforward questioning traversals, as Moulthrop and Grigar argue – such recorded reading sessions with commentaries have an obvious value in preserving and documenting the works in a live conversation, enquiry and exchange of reflection on the work.²² The methodology was informed by experience in archiving and preserving early hypertext fiction, electronic poetry, text games and animated art in the Electronic Literature Lab at Washington State University Vancouver. At the same time, “Pathfinders” also informed further preservation efforts made in the lab in recent years, such as digital

²¹ A. Ensslin, *Pre-web Digital Publishing and the Lore of Electronic Literature*, Cambridge University Press, Cambridge 2022.

²² S. Moulthrop, D. Grigar, *Traversals...*, op. cit.

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reconstruction and media translation. Thanks to our cooperation with the ELL lab in the years 2019–2024, we were able to employ traversal as an expanded documentation for the preservation of *The Breathing Wall* and *Lifelines*. Recording for those (with Pullinger and Joseph) took place in November 2022, July 2023 and February 2024 (director Agnieszka Przybyszewska, camera Rachel Pownall).

Kate Pullinger's online preservation space

The concept of Pullinger's online repository (or archive) was evolving alongside our work on the collection for The NEXT, also in a constant dialogue with Pullinger, who, step by step, became more interested and involved in preserving her work. Having Pullinger's Collection in the crucial world repository of e-literature (that should be a starting point for any research on e-literature), we needed to think about the actual audience of Pullinger's private "archive." We concluded that the model user of this repository should be thought of as a "normal" reader, someone who wants to know more about Kate Pullinger's writings (not necessarily her digital works). Such an audience can have no experience with any kind of digital storytelling (such a situation would be rare in the case of The NEXT's users). They do not need a lot of metadata or subtle technical details; even information about the used platform or software can be irrelevant to them. Instead, what they do need is an invitation to the experience, a catchy short introduction and the work itself (working and easily accessible). Also, Pullinger emphasised that what she wanted in this repository were, above all, digital fiction works themselves. Thus, we realised we needed to abandon the idea of a more complex (and less commercial) preservation and documentation space.

Consequently, we decided that this artist's online repository should have a more personal character and one of our priorities was to create a close relation between the author and her readers. Because of that, we decided to use short video recordings to introduce each work in the archive. That way we could give the floor to Pullinger herself and start building a relationship between her and her readers. Recordings took place in July 2023 and February 2024 (director: Agnieszka Przybyszewska, camera: Rachel Pownall) and 14 video clips, each one no longer than 3 minutes, have been uploaded to Pullinger's Vimeo channel and embedded into the online repository residing on her website (www.katepullinger.com).²³

²³ This archive was opened in May 2024.

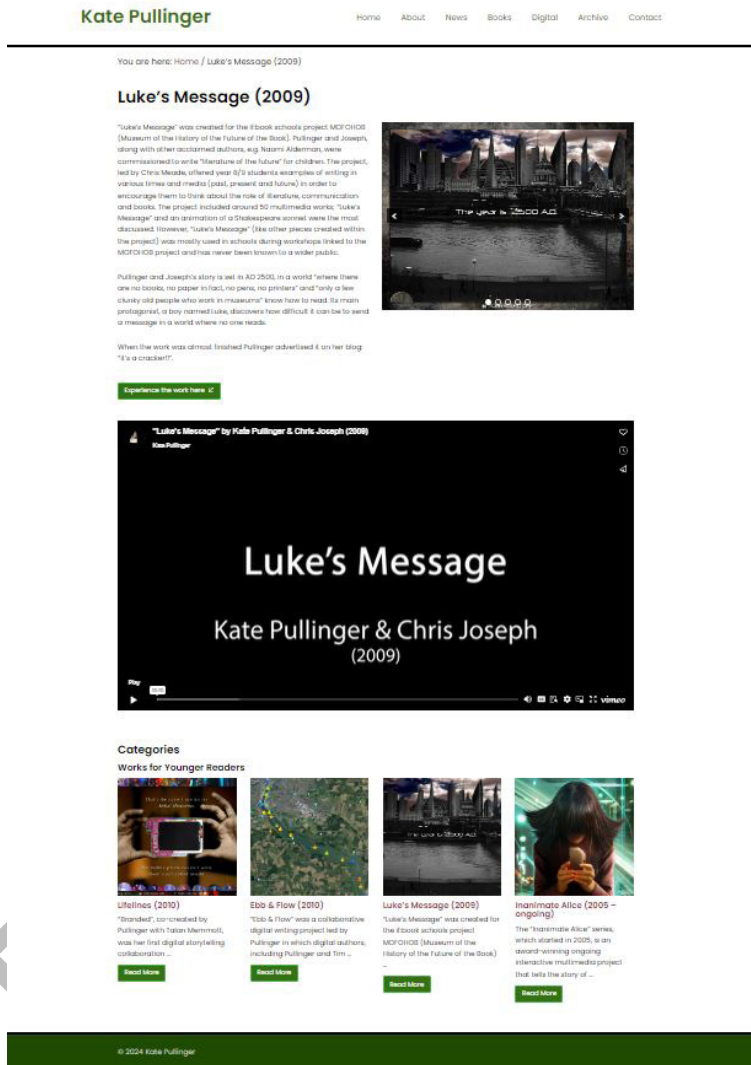


Figure 1. Screen from *Luke's Message* page from Pullinger's online repository (<https://www.katepullinger.com/lukes-message/>)

The style of recordings differs completely from traversals done for The NEXT collection, although the director, camera and place of recording were the same. While working on traversals, we were focused on the most objective shots. That was the reason for using three cameras – one to document the surroundings of the reading experience, another to record the work on the screen and the last one to document the

interaction. This time, we were looking for an aesthetic that helps build a relationship between the author and visitor of the archive, so we were far away from the documentary strategy used for traversals. We opted for a close shot of Pullinger talking because when she was looking directly into the camera lens, we could create a feeling that she was talking directly to the viewer. Such an impression was obviously strengthened by the “you” form used by the artist. Although we use the same studio to record the material as for previous traversal recordings, we choose to change the ambient a little (e.g. use plants in the background) to create a more cozy and relaxed atmosphere (also for the artist during the recordings). In each work entry, the video will accompany a piece of short written information about the work (used already in *The NEXT*), a little more detailed and less personal than the recording, and some visuals.

Another question was how to organize the data. Pullinger wanted her private preservation space to reside on her website and keeping its design simple and not changing the design created earlier by Chris Joseph (within WordPress) was a priority to her. Understanding the limitations related to using WordPress, we accepted the author’s decision. Our argument was that we need a durable platform that is resistant to technological changes, and any complicated design could be risky. Thus, the “archive” created within our project has substituted existing website tabs “Digital” (which used to offer info about four recent digital projects and information of MIX conference from 2021) and “Archive” (which used to link to the prior version of author’s website on which one can find information about other Pullinger’s digital projects, however still not all of them, as well as author’s *Secret Blog* which she kept 2008–2015). The new “Digital” tab gives access to 14 Pullinger’s digital fiction works (*Branded: Typing Version, Branded, The Breathing Wall, Inanimate Alice series, A Million Penguin, Flight Paths, Luke’s Message, Lifelines, Ebb & Flow, Duel, Memory Makes Us, Letter to an Unknown Soldier, Jellybone, Breathe*). In the case of those which, for various reasons, including copyrights, couldn’t be fully reconstructed, we decided to offer additional documentary materials instead of linking to the work. The “Archive” tab consists of reconstructed blogs, development journals etc. and old websites (*Transition Journal, The Breathing Wall: an online journal, Duel blog, Flight Paths blog, Flight Paths Netvibe Universe* and two websites prior to the one we were rebuilding). Such an information design and structure divide the repository of digital fiction works (and basic information about them) from other archival materials (blogs and other artist’s comments on her own production) that give a broader view of Pullinger’s digital experiments.

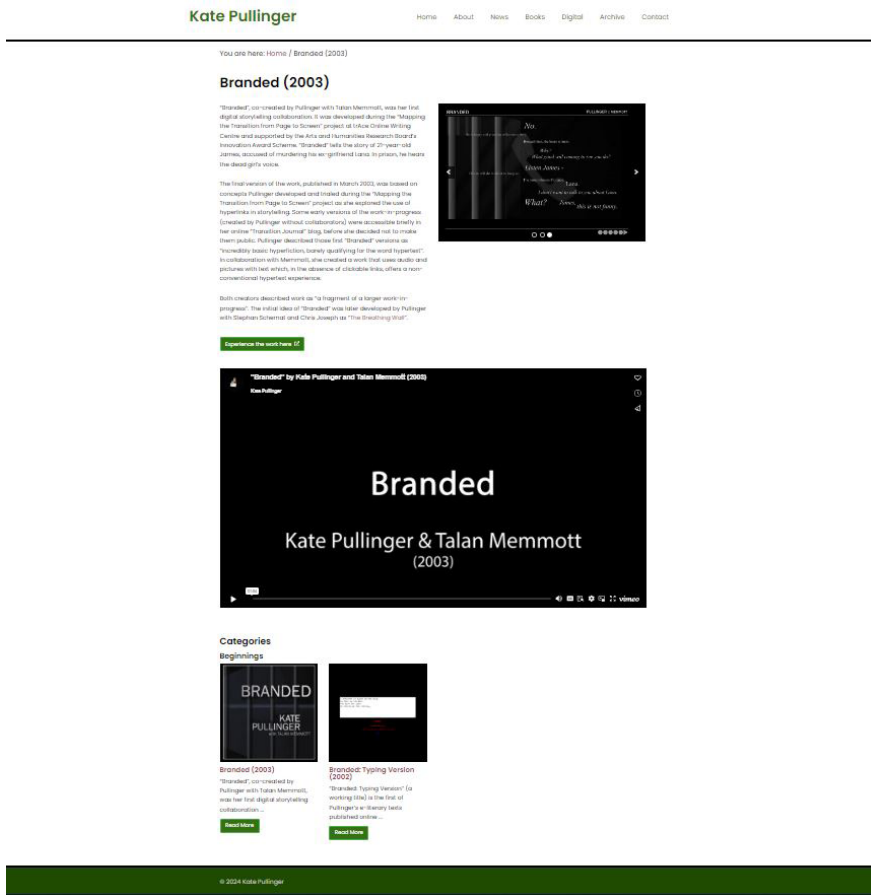


Figure 2. Screen from *Branded* page from Pullinger's online repository (<https://www.katepullinger.com/branded/>)

We also decided to implement a double way of organizing the data on the website: chronological order and thematic categories (The NEXT does not offer any kind of such an organization of data) (see Diagram 1). Looking at Pullinger's works in chronological order permits us to see the evolution in her digital writing and observe how particular topics or forms were typical for a particular time. Five categories (*Beginnings*, *Participatory Writing Projects*, *Embodied Interactivity*, *From Page to Smartphone* and *Works for Younger Readers*) make it easier to see the formal or thematic dominants and underline not obvious connections between works (e.g. *The Breathing Wall* and *Breathe*). When one browses the repository through categories, each work

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website links to the other works from the same category, which helps discover the logic and coherence of Pullinger's entire achievements.

Chronological vs thematic

Kate Pullinger „Branded: Typing Version” (2002)
Kate Pullinger, Talian Memmott “Branded” (2003)
Kate Pullinger, Chris Joseph, Stefan Schemat “The Breathing Wall” (2004)
Kate Pullinger, Chris Joseph, Andy Campbell & others “Inanimate Alice” (2005 – ongoing)
“A Million Penguins” collaborative novel (2007)
Kate Pullinger, Chris Joseph and participants “Flight Paths” (2007-2012)
Kate Pullinger, Chris Joseph “Luke’s Message” (2009)
Kate Pullinger, Chris Joseph “Lifelines” (2010)
Kate Pullinger, Andy Campbell “Ebb & Flow” (2010)
Kate Pullinger, Andy Campbell “Duel” (2012)
“Memory Makes Us” a live story by Kate Pullinger (2013)
Kate Pullinger, Neil Bartlett and participants “Letter to an Unknown Soldier” (2014)
Kate Pullinger “Jellybone” (2017)
Kate Pullinger “Breathe” (2018)

Beginnings

Kate Pullinger „Branded: Typing Version”
Kate Pullinger, Talian Memmott “Branded”

Participatory Writing Projects

“A Million Penguins” collaborative novel
Kate Pullinger, Chris Joseph and participants “Flight Paths”
“Memory Makes Us” – a live story by Kate Pullinger
Kate Pullinger, Neil Bartlett and participants “Letter to an Unknown Soldier”

Embodied Interactivity

Kate Pullinger, Chris Joseph, Stefan Schemat “The Breathing Wall”
Kate Pullinger, Breathe”

From Page to Smartphone

Kate Pullinger, Andy Campbell “Duel”
Kate Pullinger “Jellybone”
Kate Pullinger “Breathe”

Works for Younger Readers

Kate Pullinger, Chris Joseph and others “Inanimate Alice”
Kate Pullinger, Chris Joseph “Luke’s Message”
Kate Pullinger, Chris Joseph “Lifelines”
Kate Pullinger, Andy Campbell “Ebb & Flow”

Diagram 1. Ways of organizing data on Pullinger’s website
Source: authors’ own work.

Problematic life of preservationists (a case study of *Flight Paths* versions and editions)

The NEXT’s methodology of preservation and documentation allowed us to broaden and correct its own data about Pullinger’s works and make it ready for further preservation and curation efforts. The most telling example is *Flight Paths*. The initial scope of metadata entered on the *Flight Paths*’ NEXT web page included a set of essential areas such as creator, original date of publication, publication type, media format and rights notice. The work was listed as “version 1.0” and the two last entries directed to listings of the work in the existing repositories of ELMCIP and ELD. After receiving an updated and expanded ELMS sheet we were able to broaden the scope of metadata for this particular listing and identify an error in the versioning scheme employed in the initial *Flight Paths* listing. We expanded the metadata entries to include information about aspects of the work not previously covered such as genre (treated by ELMS broadly with a set of keywords “Fiction, Sound, Image”), accessibility (Graphical Navigation, Observation, Selection), digital qualities (Interactive, Multimedia), computer languages (Action Script), software dependencies (Flash emulation engine Conifer, Web Browser, Flash) or sensory modalities (Sight, Sound).

The level of detail that the metadata scheme embraces is illustrated by fields labelled as “Copy provenance” which in the case of The NEXT’s listing was given a note “The ELO gave this copy of the work to the Electronic Literature Lab in 2018,” “Last tested” which requires to indicate both the date and the platform or

browser on which the work was last accessed. Another important field in the metadata scheme asked us to identify who has committed the preservation work. This proved to be an important point which led us to understand that there needs to be a separation in the database between the original work presented in Flash and its following emulations. In this case the preservation work of the *Flight Paths* that was referred to in the repository was made by the ELL team. As such, this version should have already been branded 2.0, instead of 1.0. Identifying it as version 2.0 was further implied by the fact that *Branded* – as an emulated version of the original work made in Flash – was already referred to as version 2.0 in the editor note (“This work is listed in The NEXT as Version 2.0 since it has been preserved with ruffle.js”). The move to correct the versioning in The NEXT aligns with distinctions made by Grigar and Pisarski between versions and editions. The authors propose that we speak of a version of the work whenever its code is changed or expanded, as in emulation, but its content remains untouched. We can speak of edition when independently or along with code, the changes are made on the level of content.²⁴

Table 1. Editions of *Flight Paths* to be included in The NEXT in 2024

Edition	Software	Performance
Flight Paths 6 chapters (files)	Flash, ActionScript	Original performance
Flight Paths 5 chapters (Conifer by ELL)	Ruffle emulation 2020	Temporal lags
Flight Paths 5 Chapters (Ruffle by Chris Joseph)	Ruffle emulator 2022	Recreation of all modalities with smooth temporal flow of interaction
Flight Paths 6 chapters (Ruffle by Chris Joseph)	Ruffle emulator 2022	Recreation of all modalities with smooth temporal flow of interaction
Flight Paths HTML 5 (by Andy Campbell)	Reconstruction in HTML 5 and JavaScript	Fully working, fast interaction, limited 1st chapter only

Source: authors' own work.

The most significant change that resulted from the application of The NEXT's preservation methodology to Kate Pullinger's presence in online documentation and preservation repositories arrived when, just a year after the debut of The NEXT in 2020, Pullinger and her co-authors – thanks to the funding from the IDUB project –

²⁴ D. Grigar, M. Pisarski, *The Challenges of Born-Digital Fiction: Editions, Translations, and Emulations*, Cambridge University Press, Cambridge 2024.

donated to the Lab original files of the work (which was evolving through time, in years 2005–2012) and created updated versions and editions of *Flight Paths*. A complete 2012 edition comprising 6 chapters was documented. Chris Joseph created two Ruffle emulations of the 5 chapter and 6 chapter editions, and Andy Campbell presented to us an HTML edition of the first chapter of *Flight Paths*. As it turned out, a documentation, archiving and preservation project of only one single work created a whole range of digital artefacts and research questions that had to be answered.

It is important to emphasize that the preservation effort in the case of *Flight Paths* should be considered one of the easier and more straightforward ones. The necessary amendments of the *Flight Paths* entries to be included in The NEXT and the creation of the unpublished preservation instances of *Flight Paths* conducted and funded by the IDUB grant expanded the scope of entries of the work from 1 to 6. The inclusion of documentation, files and links associated with them will ensure that The NEXT remains a reference repository for Pullinger’s digital portfolio.

Nightmares and successes

We cannot say that we were successful in all our battles with time nor that we “rescued” or preserved all of Pullinger’s works (from the beginning, there was a high risk that we would not find a way to reconstruct or preserve some of them entirely). And three of the author’s works were our “nightmares” during the whole process.

Smartphone novel *Jellybone* seems to be gone forever. This ghost story was published with the Oolipo platform in 2017 and accessible only for a short period of time, as the German publisher Baste Lübbe AG ended its support for the platform only seven months after its launch. The Oolipo platform offered mobile stories created by prominent international authors (like Pullinger) but also gave the possibility of creating and publishing your own stories within the platform. Once the start-up was closed, all stories were gone. Even though we managed to rescue a lot of archival materials – including some audiovisuals and the almost final script of the story with comments from the whole team, and the main protagonist’s Instagram account – it has still not been enough to reconstruct the work and all possible reconstruction there were offered to us were far away from the experience of the original work. As for now, we have to end up with a short video documentary of experiencing the first episode of the story, created from all archival materials we got access to.

The Breathing Wall has been problematic at various levels. Stefan Schemat, author of the night dreams, 4 chapters that used the Hyper Trance Fiction Matrix that permits the delivery of content according to the reader’s way of breathing (the work needed to be experienced in a special headset), died. While Chris Joseph successfully reconstructed all day-dreams (created with Flash), we still couldn’t find a way to make the night-dreams work correctly (although we had saved all the video and audio files used in them as well as discovered kind of the script of every dream).

Still believing that we will make *The Breathing Wall* work again someday, we decided to finish the project by recording the traversal of this work. It's also because of the copyright licence which makes any reconstruction of the work illegal. However, the work has always been very "temperamental" (as Pullinger stated during all-day recordings) and did not always work. Although when all the checks had been done (the day before the final recording), the CD was working correctly on the PC computer we used for the traversal, the night dreams didn't work on the day of recording (we tried several times). Thus the material we have for now consists of Pullinger's intro to the work, Joseph's traversal of one of the day dreams and several unsuccessful Pullinger's traversals of two of the night dreams. Such recordings tell something about the work; however, it is hard to perceive it as satisfactory documentation. Because of that, we needed to plan a new attempt to record the night dream traversal in February 2024 (with another PC, checked several times).

After lengthy discussions, we decided that any reconstruction or emulation of *Memory Makes Us* would distort its original ephemeral nature. Therefore, we decided to stop at some visual documentation from the live event (created from photos found in if: book archives and scans of content delivered by participants, all made accessible to us thanks to Simon Groth).

The constant liquidity of e-lit projects (discussed in this paper with the example of *Flight Paths* versions) and the ephemeral character of simple documentation of their creation (starting the project, we didn't even think about reconstructing old blog and development journals as we didn't know they existed) have also been "nightmares" during the project. Additionally, we quickly learned that with all our reconstructions that enabled readers to access Pullinger's works, we were creating new digital artefacts. The same can be said about Pullinger's website, which is now a "refreshed" version of the one built in 2015. Despite all these "nightmares," we must admit that much work is done. All reconstructed works are now accessible (e.g. *Luke's Message*, *Ebb & Flow*), even though some of them have never been fully published online (*Duel*) or were absolutely unknown (*Branded: Typing Version*, the only one of Pullinger's digital projects she coded herself). Metadata for The NEXT has been collected and revised, and the Kate Pullinger Collection should be open in 2024.

Conclusions

While working on the project of Pullinger's collection for The NEXT, it became more and more apparent that our starting hypothesis, which was behind the idea of the need for a second Pullinger's "archive," was a simplification. In fact, there is, and always had been, a perfect way to marry the idea of re-construction and making works alive again (one which was crucial when we thought about Pullinger's personal repository) with the idea of emulation and reconstruction of the original way of interacting with work (that is behind The NEXT). Simply – all the reconstructions planned in our

IDUB project can be successfully included in the collection, as new versions of the works. We also had the possibility to correct errors in existing metadata and entries (which will soon be visible in The NEXT). While when starting the IDUB project, we had doubts about The NEXT's methodology (knowing that not all emulated works included in The NEXT were working correctly and smoothly), we managed to perform enough tests and consult the results of our work sufficiently to make sure that all Pullinger's works presented in her collection function as the author intended.

During the project, we also learnt about the possibilities of including ephemera in The NEXT archive, so we decided to create 3D assets for some of the materials that cannot be archived online (like *The Breathe* book with NFC, printed on transparent paper that accompanied the premiere of the work, newspaper publication linked to *Memory Makes Us* or teachers books and CDs for *Lifelines*). All these (material) materials will also be archived in their original form in the ELL, thus accessible for people visiting the lab.

In a nutshell, we learnt that although The NEXT collection cannot consist of all Pullinger's works and other materials linked to her digital creation, it can be a valuable academic resource, collecting all versions of works accompanied by detailed, searchable data about each. Works that cannot be accessed online (e.g., according to the IP, like in the case of *Lifelines*) can be accessible in the ELL after contacting the ELL team or be known in the form of traversals. Similarly, all additional material documentation (including leaflets and print publications linked to Pullinger's digital works) will be donated to ELL to be accessible to everyone.

We learnt that we do not need a better methodology to create Pullinger's preservation space. We discovered that our attempt to create two separate repositories was, in fact, dictated by thinking about its audience (users): Pullinger's collection in The NEXT is scholar-oriented, while the online author's preservation space accessible through her website has a reader-focused character. Because of this, we also decided to link both repositories so that more curious readers of Pullinger's website will be redirected to The NEXT and its resources. In the future, both repositories will also be linked to the monograph on Kate Pullinger's digital writing, which – in typical academic form – will give additional context that cannot be offered by the collections (Agnieszka Przybyszewska, *Kate Pullinger and Innovation in Digital Writing*, accepted for *Electronic Literature* series in Bloomsbury Press, to be published in 2025).

During the project, we also learnt that authors should be made aware that it is essential to think about preserving their own works. It is crucial for authors who don't code their work by themselves (problems with the reconstruction of *The Breathing Wall* after Schemat's death is a good example). Especially when working with "future literary," it is good to think about the future of created works (ink and paper or print books were far more durable and long-lasting storytelling media than modern platforms). In 2012, during the conference *Books in the Browsers*, Pullinger, when asked about the problem of obsolescence of platforms and preservation of digital works, responded: "That is not something I thought a lot about [...] I just think about the

story, about telling the story with available tools in the best way I can. And maybe if I am lucky, somebody else will think about archiving it.” Not every writer will be so lucky, so better if they prepare.

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