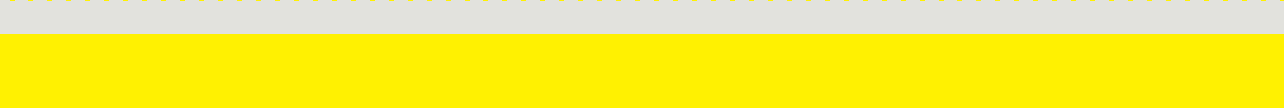
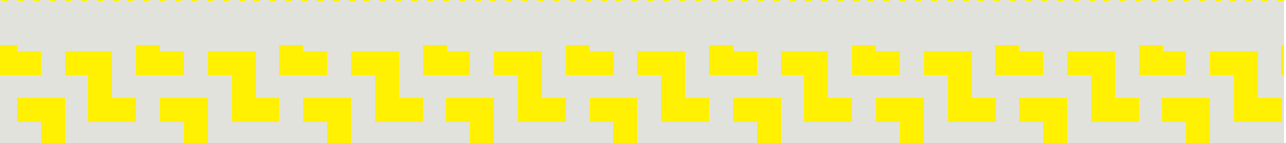
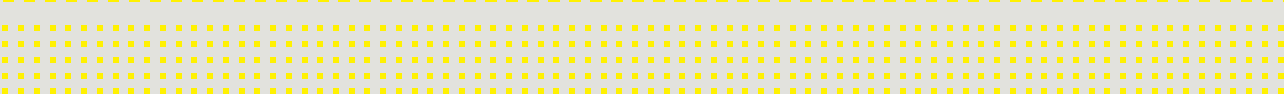
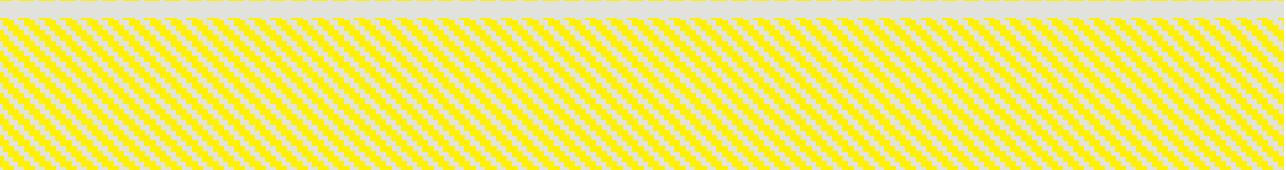


archive2020

SUSTAINABLE
ARCHIVING
OF
BORN-DIGITAL
CULTURAL
CONTENT



virtueel_
platform

SUSTAINABLE ARCHIVING OF BORN - DIGITAL CULTURAL CONTENT

Born-digital is a term derived from the field of digital preservation and digital heritage practises, describing digital materials that are not intended to have an analogue equivalent, either as the originating source or as a result of conversion to analogue form.^①

^① A brief archaeology of the term 'born-digital' can be found on our website: <http://www.virtueelplatform.nl/en/#2564>. Also see the list of definitions on the Digital Preservation Coalition website: <http://www.dpconline.org/advice/introduction-definitions-and-concepts.html>.

Introduction

Digitisation of archives has opened up possibilities for access to huge quantities of material, be it text, image or audiovisual. The heritage sector is increasingly aware of the value its archives have for a professional audience and the broader public. They see the digitisation of their collections and the use of new techniques as improving access to their collections. In addition, cultural organizations increasingly recognize the value of recording, streaming online and archiving their conferences, performances and other live events, and of implementing content management systems that make this content accessible. According to a recent report, BBC's Radio 4 has taken to using the word 'archive' as a noun, without a definite or indefinite article, as in, 'the programme will feature archive to tell the story of ...'. The same article highlights that there are even four 'archived' volumes of the computer game Sonic the Hedgehog available for purchase, inviting fans to 'travel back in time to where it all began'.^② In the Netherlands the National Archive has always been called the National Archive, but its equivalent in the UK has just changed its name from the UK Public Record Office to The National Archives, implying that archives are collective memory banks instead of state instruments.

At the same time many artworks created specifically for online purposes have already disappeared, victims of new standards, high-speed Internet connections or their own time-based design. Artists and cultural organizations alike face the challenge of developing sustainable, long-term systems to document and access their knowledge. There is also a growing interest and awareness on the part of the general public about the perils of born-digital content. Newspapers report about 'online history facing extinction', 'seeking clarity on archiving e-mails' and 'forget storage if you want your files to last'. All the above point to the need to understand the nature of this new type of material, or to put it simply: what does archiving mean in the Internet era?

Archives have the important task of saving cultural heritage from being lost forever. The field of archiving born-digital material has to deal with documents that are characterized by their dynamic nature, leading to difficulties in the archiving process. Rather than discussing the pros and cons of the digital world we need to examine the conditions of the digital realm and its effects in concrete terms. What, indeed, is the nature of born-digital material and how can we analyze it? Should we prioritize the preservation of the computer programs designed especially to make these works

^② Breakell, Sue, 'Perspectives: Negotiating the Archive', in *TATE Papers*, Issue 9, Spring 2008. Link: <http://www.tate.org.uk/research/tateresearch/tatepapers/08spring/breakell.shtm>.

accessible and legible over and above the evolution of software and hardware? Or do we need to find other methods such as recording, emulation and migration? And how can the contexts these works dealt with be preserved? Knowledge transfer is important but what does it mean - what is the significance and importance of knowledge transfer? These data are relative and we have to operate under this condition and so, at times, we have to be pragmatic. With this publication Virtueel Platform wants to get to the core of these issues: how manifold are they, who is dealing with them, and how, and what is needed and necessary. We have asked several stakeholders from different disciplines to write down their experiences, findings and solutions. These specialists from the area of born-digital preservation and archiving reflect on the current state of affairs in their specific field and identify the most pressing concerns.

Established Internet artist Martine Neddam elaborates on the challenges an Internet artist faces over the years, from domain name registration expirations, to database back-ups, recent updates and much more. Researchers and artists Anne Laforet, Aymeric Mansoux and Marloes de Valk explain the benefits of using FLOSS and open standards for preserving born-digital material. Florian Cramer, lecturer at the Piet Zwart Institute in Rotterdam, reflects on the PRINT/pixel international conference that was organized in May 2009, and discusses the issue of digital print material. Departing from the closure of two important advocates for media art preservation - the Daniel Langlois Foundation and the Ludwig Boltzmann Institute - Canadian researcher and writer Caitlin Jones focuses on the issue of responsibility for keeping our media art heritage alive. Gaby Wijers, head of Collection and Conservation at NIMk, Amsterdam and Gabriele Blome, art historian, University of Siegen, Germany, shed light on the first internationally shared online archive GAMA - the Gateway to European Media Art. Australian curator and researcher Lizzie Muller draws attention to the importance of capturing audience experiences when dealing with the preservation of born-digital cultural material. Jeroen van Mastrigt, lecturer at the Art, Media and Technology Faculty of the Utrecht School of the Arts (HKU-KMT) in Hilversum, discusses archiving strategies in gaming. This anthology concludes with a recent report by Digital Heritage Netherlands, which has conducted quantitative research into born-digital cultural heritage in the Netherlands.

Together with a report of the Archive 2020 expert meeting, organized by Virtueel Platform in May 2009, this publication is a first step towards understanding the challenges facing born-digital archiving and how to remedy these in an energetic and growing digital world.

Annet Dekker, *Virtueel Platform, May 2010*

REPORT: ARCHIVE 2020 EXPERT MEETING

Annet Dekker

In May 2009 Virtueel Platform organized Archive 2020, an expert meeting that focused on the longevity and sustainability of born-digital content produced by cultural organizations or practitioners.^③ The term 'born-digital' refers to 'digital materials that are not intended to have an analogue equivalent, either as the originating source or as a result of conversion to analogue form'.^④ The archiving of such content has received very little attention in the Netherlands, to the extent that, unless immediate steps are taken, we could soon talk of a 'digital Dark Age' in which valuable content is lost to future generations. The aim of the expert meeting was therefore to examine existing examples of these types of archives and determine which issues need to be addressed if we are to champion their growth in the short and long term. Some of the questions that Virtueel Platform raised included:

- Which born-digital cultural archives already exist and what lessons can we learn from them?
- Can a community establish its own archive without an institutional structure?
- Could a community-driven approach with social software help develop innovative strategies for group archiving? How can new and traditional tools best be merged to improve access and improve usability?

Representatives from international museums, organizations and artists' initiatives convened in Amsterdam in May 2009 for a frank dialogue regarding the current state of born-digital archives. The meeting provided a unique opportunity for both major collecting institutes and small artists' archives to reconsider the ways in which archives of born-digital cultural content are created, managed, disseminated and preserved.

Starting points

The participants grappled with the challenges and opportunities posed by existing online archives. We asked them to send us questions or statements relating to the theme of Archive 2020. Of course, the questions were manifold but could be summarized as follows:

^③ Virtueel Platform organised the event in consultation with Digital Heritage Netherlands, The Netherlands Institute for Heritage and Netherlands Media Art Institute.

^④ Sourced from the list of Definitions and Concepts on the Digital Preservation Coalition website: <http://www.dpconline.org/advice/introduction-definitions-and-concepts.html>.

The first question concerned **the nature of a born-digital archive**:

- Does archiving born-digital works raise problems that require new solutions?
- What does the act of archiving mean in terms of activity, software support, etc.?
- Could we regard archiving as a process?
- Should digital archives set up a retention policy or should they keep all the content and metadata and invest in search engine technology?
- How can we safeguard and archive contextual information (the context in which the work came into being, was commented on, and contributed to)?

Not surprisingly, these questions gave rise to issues about **the notions of visibility and accessibility** of archives:

- How can the quality of content in new archives be ensured within the larger and mostly institutional discourse?
- Should special organizations be established to research and systematically document media art, i.e., organizations that bundle relevant information, or should this task be transferred to traditional institutes such as museums (which, in some countries, are not very open to born-digital artworks)?
- Can an archive survive outside the museum structure?
- How can we make archives more visible and increase access?

Related to this notion of accessibility was, of course, a concern about **the dissemination of the content**, ways of possible reuse, and the role communities could play in this process:

- How can the knowledge about archiving born-digital content and digital archiving be disseminated and be made available to professionals and laymen; in other words, how open can an archive be?
- Should we design archives that facilitate the re-use or remixing of material, or the creation of mash-ups? What examples already exist?
- What role can communities play in strengthening connections between archives?
- Will we ever find a way to build a global archive - and do we want to?

And, obviously, the most pressing concern is who will pay for this. How will these archives deal with their **funding**?

- How can financial stability be guaranteed for non-institutional and/or informal online archives and platforms?
- What can be learned from new funding models that differ from 'traditional' institutional or project-based funding?

Group discussions

In order to direct the small group discussions we invited representatives from several established and emerging archives to present their archives and highlight the problems and challenges they faced. Each case involved a series of specific issues.^⑤ These issues were analyzed, compared and discussed.

Christiane Paul - Whitney Artport: Internet art in a museum context: preservation strategies and initiatives.

Eric Kluitenberg - The Living Archive: The Living Archive aims to create a model in which the documentation of ongoing cultural processes, archived materials, ephemera and discursive practices is interwoven as seamlessly as possible. Approaching the 'archive' as a discursive principle.

Olga Goriunova - Runme.org: Looking at the archive as a process: ethical considerations when dealing with aesthetic and historical change.

Monika Fleischmann & Wolfgang Strauss - Netzspannung.org: The archive as a constantly living and growing entity, and the possibilities of using semantic mapping as a tool that organizes the content in new ways each time it is visited.

Esther Weltevrede: The appearance of a web archive when capturing hyperlinks, search engine results, and other digital objects. Saving relevant aspects besides the digital document, and how to repurpose born-digital devices (search engines, platforms and recommendation systems) for web archiving.

Aymeric Mansoux - art.deb: Using live distribution systems, repositories, virtual machines and servers as more stable and lasting infrastructures for software art.

Alessandro Ludovico - Neural: What individual and small archives can learn from shared collaborative platforms.

We did not expect to provide answers to all the questions, nor did we believe there would be single perfect solutions for each of the problems raised. This meeting of professionals and peers was foremost an inventory of the challenges associated with born-digital archives. In this sense, the meeting was notable for the forum it provided for sharing and comparing experiences and priorities, but also because a group of professionals from various countries and organizations came together to devote attention to critical aspects of born-digital cultural content, discuss the potential benefits of sharing information, and learn from each other. As was stated at the end of the day:

^⑤ More information about these archives and the biographies of the presenters can be read on our website: <http://www.virtueelplatform.nl/archive2020>.

'There is an increasing overlap between the problems relating to the different types of archives (small, large, government-private, art, documentary, and audiovisual archives) with regard to storage, opening up and accessibility to the digital domain, which are, to a degree, becoming increasingly similar. Issues such as authenticity and integrity, selection and documentation, reproducibility, recording interactivity, etc., impact on all areas and are bound up with the type of collection that is being managed, to a greater degree than in the analogue era.'

Emerging issues

The working groups made many interesting remarks and raised several issues that require attention. Some participants were already familiar with the field of contemporary art conservation, but some very specific issues also emerged from the discussions.

Documentation strategies:

From Darwinistic Archiving to standardisation and DIY

A new strategy for the future re-creation of software art was suggested, aptly referred to as 'Jack the Wrapper', which would involve putting all the software in a box and describing and documenting the entire artwork so that it could be cloned in the future. But, as was clearly demonstrated, not all born-digital material is easily documented and packaged. The term 'Darwinistic Archiving' was suggested, referring to the survival of the best-documented artworks.

Discussions about these issues focused on whether different strategies should be considered. For example, should we focus on documentation instead of trying to preserve complete works? ⑥ There was general agreement that not everything can be saved, and that the most informative parts that convey the main idea of the work should be prioritized. This attitude echoes current strategies in contemporary art preservation. To what extent will the increasing democratization of the technology that is used also democratize the responsibility to preserve digital works? And at the same time, does archiving as a human-led centralized practice have any future - Internet storage and archiving can already cache data in two dimensions (location and time/revision)? Human or machine preservation aside, the most important concern was who decides and selects the material. Since most of the content is (not yet) collected in museum structures, their future as well as the choice of what to preserve becomes more problematic.

Other suggestions included documenting process. Instead of saving the original code it might be better to make a diagram that represents all the possible states and scenarios of the work. Recording the work to video - as both a desktop video and a context video - to capture the original work and how it was experienced would be

a vital step. Another strategy that some national archives use is 'scanning on demand', i.e., content is only digitised when someone asks for it. Issues of invisibility and choice will still remain, of course.

In order to highlight the problem a general call went out to write books and publish articles and reviews in magazine or newspapers: 'the online' has to become physical. This includes organizing exhibitions that will emphasize the urgency of preservation. ⑦ There was also a call to change the term 'digital preservation' into 'permanent access', which might provide an impetus to the understanding and importance of the work. Everyone was in favour of devoting more attention to presentation and exposure.

Sustainability

In order to ensure a longer lifespan for born-digital cultural content, it was suggested that online archives should share responsibility in a bottom-up approach: create or organise a network that feels responsible and is involved in the process or with the content of the work. One could think in terms of social networking strategies that collaborate on creating shared resources and knowledge. A certain level of centralisation was seen as important, if only to clarify and distribute responsibilities. Another approach to explore would be to integrate archiving into existing institutions and have them apply for project funding. While this strategy has many positive aspects it is important that everyone in the institute is aware of the activities involved in a project and that it is not in the hands of one (enthusiastic) individual. Moreover, the procedures to follow if funding stops must be unambiguous. Another strategy was to distribute the work as much as possible: think of remixing strategies and an approach Kevin Kelly calls 'movage': the more it is out there, the more it is seen, and the better it is archived. Although contested, standardisation should also be considered. The same indexing standards will improve access, but an international task force is needed to deal with this. Instead of traditional methods one could investigate strategies similar to the Wikipedia model.

Responsibility

The discussion about sustainability inevitably led to the issue of responsibility: who is responsible and what is the role of the artist, programmer, curator, museum and audience? A suggestion was made to increase the responsibility of the artists and make them aware of the problem by introducing preservation strategies into

⑥ The question of the differences between documentation and preservation was followed up by CRUMB, on their discussion list in June. For more information see their archive: <https://www.jiscmail.ac.uk/cgi-bin/webadmin?A2=ind0906&L=NEW-MEDIA-CURATING&D=0&P=1452>.

⑦ Some successful examples were named, for example, the 2004 Guggenheim exhibition *Seeing Double* and the *To clean or not to clean - schoonmaken van kunstwerken op zaal* exhibition at the Kröller-Müller Museum, the Netherlands, in 2009.

funding applications, for example. However, referring to Darwinistic Archiving, this raises the question of what is considered more important: the quality of the work or the preservation strategy. Institutes and museums, or even universities, who have more resources and expertise, should receive more attention. These institutes could assume a coordinating role, so that smaller organizations or individuals can participate. A 'funding for research' approach was suggested to make it beneficial for both sides.^⑧ Because the web is made by individuals and not by organizations the network community and users appealed for a strategy to mobilise these people and make them aware of their self-sustainability.^⑨ In some cases, this would also better reflect the origin and process of the work.

Urgent actions have to be taken

Central to the discussions at the meeting was the participants' high level of commitment and their sense of urgency, and there was a general agreement that the primary focus should be on:

0.8

- **Raising awareness:** About the websites of artists, curators, organizations, museums as well as of funding bodies;
- **Funding:** Preservation strategies could be included in funding applications. 'Artists should make digital wills';
- **Accessibility,** open standards: Because most institutions have specific demands, open source software can provide the flexibility that is needed in the field as well as provide a sound basis with universal standards;
- **Knowledge sharing:** Also between different disciplines (music, broadcasting, gaming, science, oral history);
- **Research and best practice:** Examine existing archives and how they function, as well as publish examples of best practices and unsuccessful strategies. This will create a shared knowledge base and foster the learning process;
- **Presentation:** Create urgency by showcasing, presenting and publishing. In the end it is vital that each work has more possibilities for presentation. Make the field visible.

We would very much like to thank the speakers, the reporters and of course all the participants of Archive 2020 for their efforts, insightful comments, and their genuine optimism that the sustainable archiving of born-digital material is just over the horizon. A special thanks goes to Niels Kerssens who helped process all the data and the notes of the discussions and talks.

^⑧ It was mentioned that the Daniel Langlois Foundation had participated in similar projects.

^⑨ Turbulence and Rhizome work in this way.

CULTURAL ANALYTICS

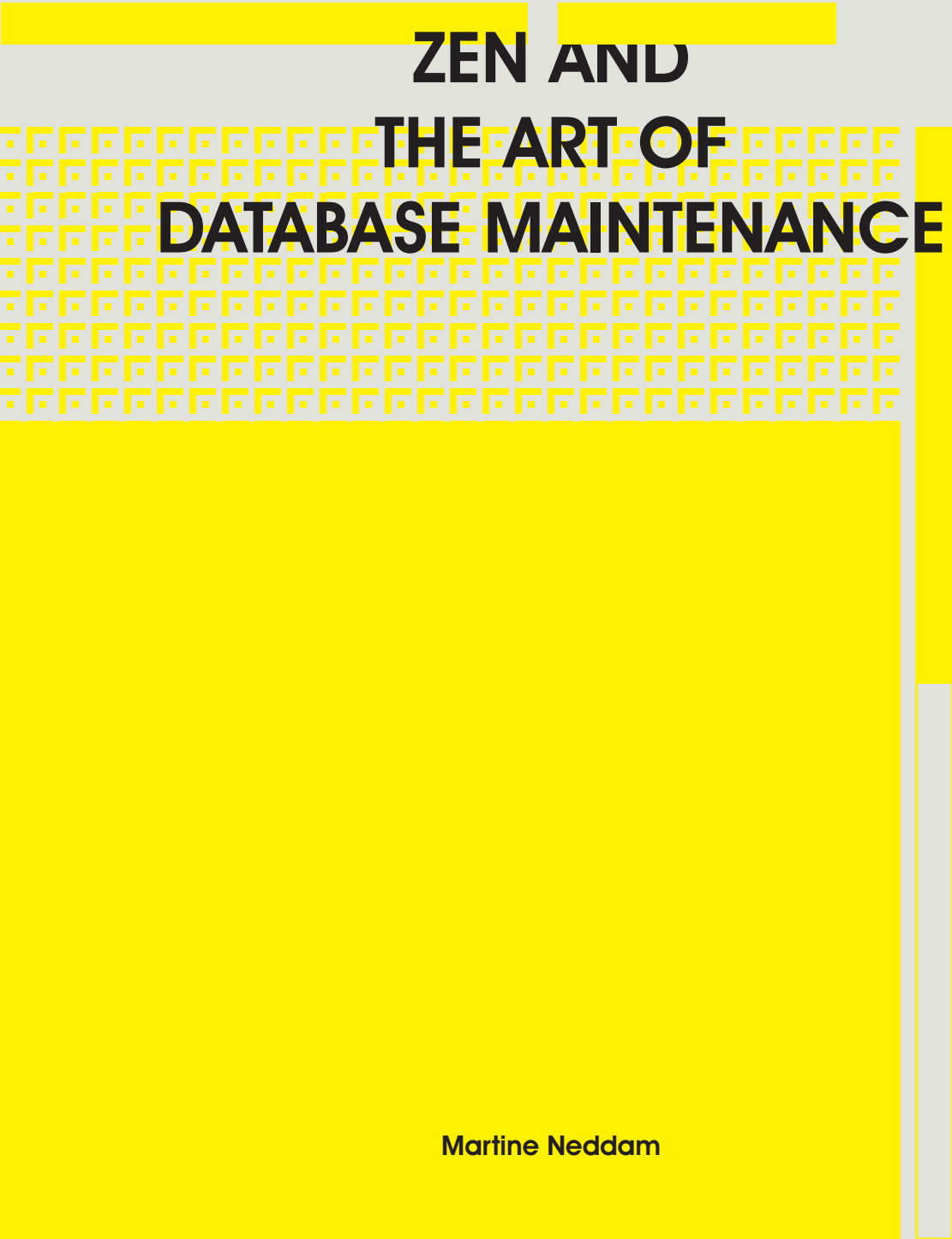
Lev Manovich Lecture Paradiso, Amsterdam, 17 May 2009

Swedish broadcasting corporations have assembled an archive of over seven million hours of material. The number of photographs uploaded to Flickr far exceeds the total number of objects preserved globally in art museums. Google Books is digitising and indexing books from libraries around the world; the ARTstor website includes almost a million images of art objects. Concurrently, with the growth in the production of cultural objects, there is also an increase in the amount of software that can be used for analytical purposes. How will people in the future regard the data we leave behind, and how will they navigate such a seemingly endless stream of data?

Preceding the Archive 2020 expert meeting Virtueel Platform invited cultural analyst Lev Manovich to shed light on new approaches to using archival material. Drawing on Cultural Analytics research conducted over the last few years at the University of California, San Diego, Manovich discussed theoretical and methodological issues that arise when we start treating culture as data. What will happen when the humanities start using interactive visualisations as a standard tool in their work, the way many scientists do already? If slides were the tools of art history, and movie projectors and video recorders the tools of film studies, what new cultural disciplines might emerge from the use of interactive visualisation and data analysis of large cultural data sets? Cultural Analytics has demonstrated that it is possible to look beyond a narrow collection of standard works. This reveals patterns that nobody noticed before. We are no longer considering a small sampling of culture, but the total distribution, the totality of cultural production.

Annet Dekker is program manager at Virtueel Platform, Amsterdam. Her main interests are the influence of digital media and popular culture on art, and vice versa. She worked as a curator and head of exhibitions and education at Netherlands Media Art Institute (NIMk) in Amsterdam. Besides her activities for Virtueel Platform, Annet works as a freelance curator and is currently writing her Ph.D. thesis, 'Archaeology of the Future: Strategies for Documenting Net Art', at the Centre for Cultural Studies, Goldsmiths, University of London, under the supervision of Matthew Fuller.

Darwinistic Archiving, standardization, DIY, sustainability, responsibility, accessibility, funding, knowledge sharing, best practices, presentation, Jack the Wrapper





ZEN AND THE ART OF DATABASE MAINTENANCE

Martine Neddham

In the context of Archive 2020 Virtueel Platform asked Martine Neddham to write down some of the technical experiences that she encountered in the years that she has been making Internet art.

Your domain name has expired
 You usually receive several reminders from your registrar warning you about the impending expiry date of your domain name. The first one arrives three months before the date, which is much too early to spend any time on, so you delete that e-mail until, a few weeks later, another warning from your registrar suddenly feels like an emergency threatening to stop everything you're doing. You grab your credit card and try to renew your registration online.

The warning message, which should have come at just the right moment, never arrived because you had suppressed that old e-mail address, which you thought was only full of spam anyway.

Finally, you remember the expiry date just one day before it's due. You want to log onto the registrar's site but you don't remember which registrar it was. Network Solutions? The one from the Origins? Directnic, the cheapest, you know? Your own webhost? (Most webhosts handle domain name registrations but transfers from other registrars don't always work.)

You finally work out which of your five different registrars is the correct one, but can't find the necessary login code and password because you last used it two years ago. You eventually manage to enter the registrar's interface, but when you want to pay for renewal (three years, that's the maximum here), your credit card is rejected, and after three attempts, concerned that your credit card number is being hijacked, you stop trying, while your domain name shows no sign of having been renewed.

Your domain name has now expired, and you receive regular warnings, but you can't find a way to contact this particular registrar, except via the website that refuses your credit card. There, you can use a support page, which sends back automatic replies with a very long code number in the subject header, but this is never followed by a real message written by a human being responding to your complaint. Your domain name has finally fallen into the hands of 'domain-name-snatchers', the resellers of domain names. Now you'll find a porn site under your domain name, or a webpage promoting the sale of expensive domain names (why isn't yours included in the list?), or a portal redirecting you to different commercial sites organized by categories.

All your content is still exactly in the same place on your server at the webhost, but nobody will ever be able to find it without your

domain name. Search engines won't be able to find it either, and because of their long-term memory and archives, will remember the old domain name forever. How long will it take you to rebuild your linkage under a different domain name and have the same ranking in the search engines? Will your domain name ever become available for a new registration?

Couldn't connect to database

You are browsing your site, clicking on a link to review the next entry on a board and suddenly the message 'couldn't connect to database' appears (or a much more obscure message with the same meaning). Your site is there, the top of the page is there, but the dynamic content is no longer accessible.

You become aware that your dynamic content - in other words, the entries of all your users - is stored on a different server, the MySQL server, which might be down while your http server is still up and running. You realise that your website is hosted on two separate servers, on two separate hard disks, which doubles your chances of downtime.

As the years go by and your users' participation continues and your database expands, becoming the most precious part of your art, you are constantly confronted with the many complexities of having a database server.

You have a local copy of your website on the hard disk of your personal computer, including all the html pages, images and Flash files, which is normal since you created all of them on that computer. But your database only exists online on the database server. You can only display your website through an Internet connection and not from a local copy.

Once your webhost went down while you were presenting a lecture about your website at a conference about art on the Internet. Out of desperation you tried to browse your site from your local copy but the pages displayed all the PHP codes instead of the dynamic content. Confronted by all this code and your evident confusion, your audience became really impatient and didn't even believe you really were the author of a virtual character. Later, you ask your database programmer if you could keep a copy of the database on your hard disk - just in case, even if it's not up to date - but he explains that the only way to do this is to run a local server, which is far too complicated for you to sort out, especially if you're using a Mac and it's pre-OSX, with OS9 not being able to run a local server. You try to accept the situation but sometimes your relationship with the Internet feels like you are a child depending on its parents, being disconnected for brief moments each day. Sometimes you feel like you are a part of the Internet in the same way that an unborn baby is part of its mother, nourished by the umbilical cord while resting inside a soft bubble.

We don't accept online documentation

You are assembling your documentation to apply for a grant from The Netherlands Foundation for Visual Arts, Design and Architecture (Fonds BKVB). In their guidelines you read that they accept digital files and websites, but only on a CD-ROM and not online. You call them and insist that your site has a database with important user-generated content and can only run online. They explain that it's their archival policy to keep and store the information and material from all the artists they sponsor, which is why they requested your website on a CD-ROM. Besides, they want to be 100 per cent certain that the documentation is available for the jury which only gathers once a month, so they don't want to run a risk with your information on a website.

So you decide to make screen snapshots of the database, a large series of pictures that you edit to a proper size and jpg format. You add reference titles and descriptions of the contents and combine all of this in a multiple window website (not online) that you design for the occasion, and it ends up being quite an elegant simulation of the user-generated content that can be browsed online. It is time-consuming work, but the results are good enough and the grant is awarded.

Ultimately you work out that this visual simulation might prove useful, and you decide to always keep a copy of this CD-ROM with you, in your bag, so that you can provide an offline impression of your website at any given moment, on any computer.

But the next time you want to use that CD-ROM, only a year later, you discover that the javascripts supporting the pop-up windows do not function anymore; they have become outdated and are now incompatible with most browsers.

Hopefully nobody at the Fonds BKVB archives will ever look at the contents of your CD-ROM again.

Database back-ups

Your database programmer once made a mistake in which the time-stamp of your entire database was destroyed. All your users' entries and all the text in your database were still there, in the right categories, but all under one date: 1.1.1970.

This was an incredible disaster, but a very ironic one: you would rather have lost the entire database than just this small 'piece of time', which was, you realised, the backbone of a

very heterogeneous collection of snippets of texts.

Fortunately, the webhost had a policy of a completely backing-up data every two days and could retrieve a two-day-old version of your database with the time-stamp intact. Just in time, because few hours later the back-up system would have overwritten a new back up with an invalid time-stamp.

That's when you realised the value of having a back-up system of your own and should no longer rely on

the webhost performing miracles. So, do you have a good automatic back-up system of your own now?

To be honest, you don't really know....

A good back-up system would automatically store a version of your complete database on a different hard disk every two days, and perhaps save one extra version each month in case of unnoticed damage. You discussed it with Zenuno, a very gentle database programmer who helps you run your server on a voluntary basis. Zenuno works for a Portuguese government website in Lisbon but is based in Amster-

dam, and has a great deal of experience in security and back-up issues. You were reassured by his knowledge and his promise that he would set up your back-up system.

Now, writing this, you realize that you haven't discussed this particular problem with Zenuno since you first raised it, as each time you contacted him since then, it was because you needed help with a different emergency, and the back-up issue wasn't part of that emergency.

So you're not certain if you have a database back-up system or not, and if you do, you don't really know what it does.

You realise that a number of your participants are 'hooked' on your website and you wonder what would happen if you died. How long would it take for them to give up on your site? You think that this could be the measure of the attention span of a dedicated contributor.

On the Internet nobody knows you're dead...

Like all human beings you've no doubt fantasised about your own death. In which ways would you be missed, how you would be remembered, etc.?

As a virtual person you fantasise about how long Internet access to your site and your database system would survive your actual death.

If you died, how long would it take your contributors to realize that nobody is maintaining the site anymore? If they send complaints about a 'dead site' nobody will publish them, so the information about the lack of maintenance will not alert anyone. Nobody will know you're dead.

Sometimes, you start to calculate mentally: 'My webhosting is paid by the year and is due for renewal in August. My domain registration is paid for two years and is due for renewal in February. The registrar will delete the domain name immediately after expiry but at least the webhost will tolerate one or two months of unpaid hosting before deleting the site. My credit card number is in their

system and the webhosting can be renewed at least one more year without my intervention. My credit card is renewed every two years, in January. If I die now, how long will my site stay online and what will be removed first?'

'After my death how many people will have surfed my site before it is removed?' This is an easy question and it can have a precise, numerical answer through your web statistics, and long after your site has disappeared, the free statistics (webstatsmotigo) site you are using will still provide this information to anyone requesting it.

Who has the codes, or your website, database and server IDs, and who can use them after your death?

Should you leave a will concerning all digital data?

How much of your digital data will stay in the public domain and how much of it do you want to remove?

Shouldn't you already be erasing your traces?

What kind of peace will you find in your digital afterlife?

1•4

Recent updates and user complaints

None of the content provided by users of your site is published automatically. Everything you receive, all the reactions to the different works of online art, enters a customized moderator's interface where you read, classify, publish or delete the entries. When an entry is published the author receives an e-mail informing him of its publication, with a link that enables him to delete his e-mail address from your database, all this wrapped inside a special narrative by Mouchette, written in her house style and related to each online narrative.

You never publish immediately, you always want to wait a few days before you put the text online and notify the author. Your intention is to shape your online relationship with the participating user in order to increase the attention span from a few minutes to a few days. If the delays last too long, a week for example, the attention might be lost and your e-mail becomes a message from an intruder at best; in most cases it is marked as spam and is blocked by the spam filter.

If you go on holiday and decide to avoid all computers for a couple of weeks - which rarely happens - you hope that your users will forget about you in the same way you try to forget about them, but what usually happens is the reverse: you are flooded with complaints and insults about a 'dead site' which is 'never updated'. It's comforting to know you have such faithful participants. To thank them for their loyalty you immediately publish the complaints about a 'dead site', tongue-in-cheek, classified in the 'favourite' category, long before you publish the more serious or pleasant entries.

1•5

Captchas and worms

To prevent unwanted comments from entering your database you can use 'captchas' (titbits of warped texts, little visual riddles that can only be solved by a human mind) to block access to automatic scripts. You don't have them because you couldn't implement them in your database system, as it was built long before captchas existed. Consequently your database is trashed by several entries

arriving automatically each day containing links to Viagra sites or online casinos. None of these are published on your site since you moderate all the entries, and manually delete many of these unwanted entries every day. Sometimes they arrive as full pages, so you need to read the entire text and recognize that one entry written by a human being among all the spam.

You become infuriated by the amount of time you waste deleting spam. You think that the love of art cannot justify such an absurd daily activity. You sigh.... But sometimes, while doing this, you picture yourself as a gardener sweeping away dead leaves or pulling weeds, and then you smile. Since the battle against spam and nasty scripts is lost and you don't believe any amount of codes can cure this evil, your last resort is your limitless imagination. While cleaning your database garden you start wondering if any of these unwanted messages have 'worms', or are 'worms', self-replicating themselves inside your database or replicating the spam message. You groan, your smile has disappeared and you spend the rest of your day reading anti-virus websites finding out about the 'worms' in your garden.

Is it art or is it spam?

- 1•6 You were one of the first to integrate the use of e-mail within your artistic practise. To advertise a new work online, your virtual character would send an e-mail recounting a personal story about her life, addressing each recipient by his or her first name. Your second virtual character was designed to share his identity, and to freely allow the use of his e-mail. He had a website from where you could send his personal stories using his e-mail, and the interface allowed you to personalise the e-mail by placing the name of the intended recipient in the subject line or inserting in the body of the message. At some point in the history of the Internet this type of personally addressed e-mail became a very popular device for spammers, who had also noticed how easily they could attract a re-
- ipient's attention by inserting their name everywhere, using this to simulate a one-on-one relationship. After spam filters were improved, they could easily detect this type of subterfuge and many of your art-related e-mails were dumped in everybody's e-mail junk folder. And although you had no commercial intentions and your bulk e-mails were very, very modest in quantities, it became very difficult for your art not to pass for spam. And if your webhost received a complaint about spam abuse, he would remove your website. Explaining to your webhost that your e-mails are art, and not spam, couldn't save the situation. The only option open to you was to move your content to another webhost, until the same problem happened again. Each time the delay before your removal became shorter and after the fourth time, you resolved to stop sending e-mails.

Warning: server space available on earth

It is a common misconception to think of cyberspace as independent of countries or a physical location. Nothing could be further from the truth. You often think that if your art were destroyed it wouldn't be because of censorship or related to the content of your information, but because of unfortunate local circumstances: an asteroid could fall precisely where your data is stored at the webhost, and that would be the end of your art. Very unlikely, you admit. But a fire or accident at the place where your webhost has their servers is a possibility, so is criminal destruction, if not targeting you, then possibly someone else who stores their data on the same hard disks. Google is said to have hidden the computers where they save all their users' data in a secret underground bunker, which makes perfect sense because there must be many people who would like to bomb that location and you could probably imagine yourself as one of them.

Your first webhost, Widexs.nl, was Dutch, located somewhere close to Schiphol (Amsterdam airport), and the servers were probably there too. An airplane never fell on their building, but because all the communication with the technicians was in Dutch, it sometimes added to your worries, especially when a complaint about spam abuse arrived and you had to defend your case with diplomacy. You failed. But you were rescued by a French art group who run their own servers in their own venue. They hosted you for free, being honoured to offer refuge to a banned Internet artist. They said they could afford to ignore the complaints of spam abuse since they ran the servers on their private computers. But one day the server failed. Someone had gone on holiday, leaving his computer on, but locked in a closet for safety's sake, and everyone had to wait until this person returned from holiday to re-boot the server. Being hosted on servers run by artists wasn't the safest option either.

After this episode all you wanted was to go back to a commercial webhost. You combined your efforts with one of the dissatisfied artists from the group who had rented a 'virtual server' at Amen.fr, a commercial French webhost. You paid for all the server space while only using a small part in exchange for the artist's help in running your database and setting the server configurations for you. At the time, you believed you couldn't cope with these tasks; moreover, the webhost server panels were all in French, which happens to be your mother tongue for everything, except computers. Dangerous territorial specificities became an issue again some time later when the French police started investigating you for promoting suicide through Mouchette.org. That took place in Marseille, the official address of the French artist renting the 'virtual server' where you were hosted. You hired a lawyer in Marseille to defend your case, which was the closest you ever got to real crime in your entire life because you were sure the lawyer

was more of a criminal than you could ever be. The lawyer wanted to address the question of territory because the accusation and search warrant were issued by the French authorities, but the supposed crime of promoting suicide was committed on Dutch territory where you had a residence permit and created your website. Lawyers in Marseille love crime so much they would use any kind of twisted reasoning to confirm its existence, including jurisprudence on the extraterritoriality of an Internet crime. Ultimately the investigating judge ruled that no crime had been committed, and no charges were pressed. The lawyer still billed you for a considerable amount of money on the grounds that he had found the evidence that the servers of Amen.fr were located on German soil (but he didn't know why).

Now you run your own 'virtual server' at Dreamhost.com, an American Internet hosting company based on the West Coast, where business likes to define itself as being a dream - meaning their own, of course. They wouldn't let you fulfil your own dream of using e-mail functions as a part of your art, because they are a business, after all.

1.8 Your 'virtual server' is called 'Bernado Soares', one of the heteronyms of Fernando Pessoa, the author of *The Book of Disquiet*. When you're in trouble with the server or the database, you ask the help of Zenuno, the same Portuguese programmer who helped you before. This new constellation of people and places has a certain sense of poetic 'disquiet', bringing you closer to a type of 'Zen and the Art of Database Maintenance'.

'I' is not the ultimate database configuration.

How many times have you dreamt of leaving everything behind, everything that made you who you are, and move to a new, unconnected life, escape the tyranny of your ego and find new love? You made up a new set of database configurations in charge of saying 'I' for you, a virtual character. And then another one. And another....

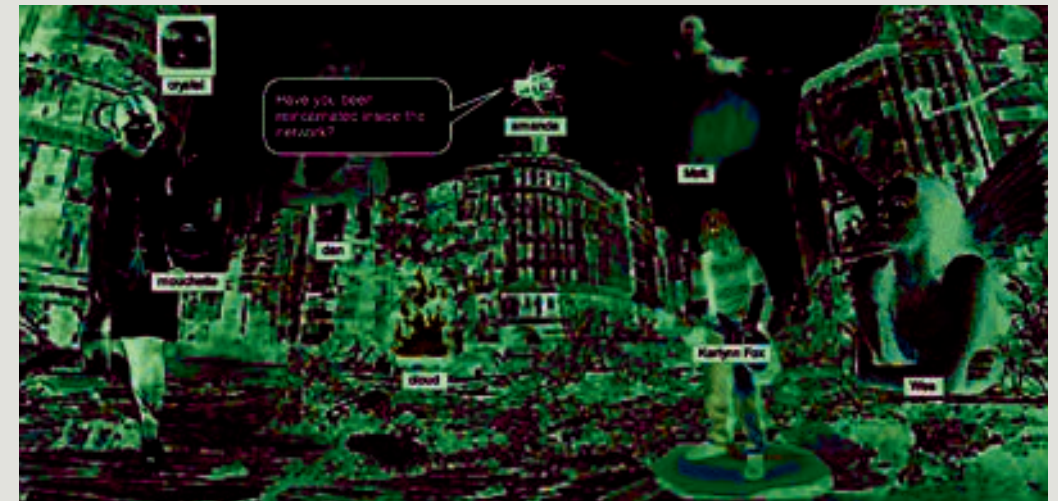
What was left behind (and never disappeared) was something you could call a 'you', a database

system exchange of characteristics.

'You' is a handy grammatical configuration that can be used for internal monologues since you're the addressed and the addressee all in one.

When writing a text about personal experience such as this one, 'you' embraces the reader inside the experience as if it had happened to him or her.

After all, doesn't everyone run a database system?



martine neddam

Martine Neddham is an artist who uses language as raw material. She has worked with 'speech acts', modes of address, words in the public space, and has created a number of text objects, both in museums and large-scale public commissions, since the late 1980s. She has been creating virtual characters on the Internet since 1996, who lead autonomous artistic existences while never revealing the real author. Martine teaches at the Rietveld Academy in Amsterdam and at the University of Quebec in Montreal.

<http://neddam.org>

Martine Neddham authors and maintains 9 websites:

<http://mouchette.org>
<http://mouchette.net>
<http://ihatemouchette.org>
<http://davidstill.org>
<http://virtualperson.net>
<http://virtualperson.org>
<http://neddam.info>
<http://neddam.org>
<http://bernardosoares.org>

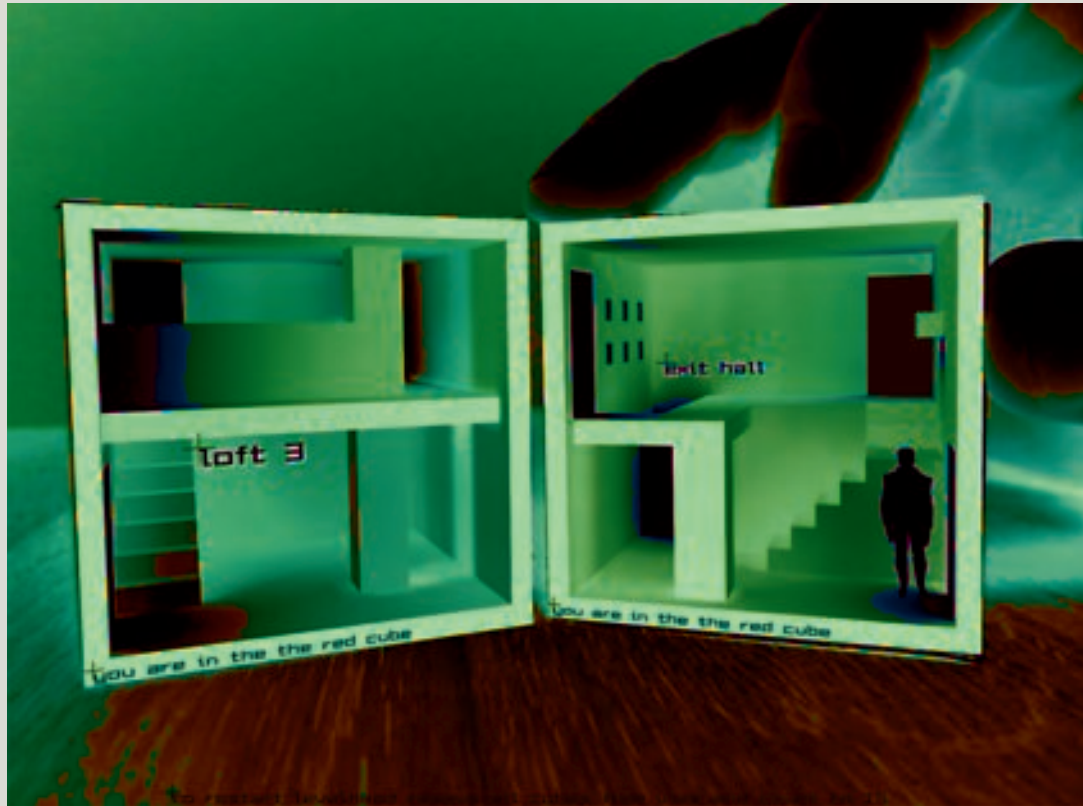
file under

database, registration, back-up, web-hosting, updates, browsers, captchas and worms

archive2020

ROCK PAPER SCISSORS AND FLOPPY DISKS

Anne Laforet
Aymeric Mansoux
Marloes de Valk



Julian Oliver, *Levelhead*, 2008.

ROCK, PAPER, SCISSORS AND FLOPPY DISK

Anne Laforet
Aymeric Mansoux
Marloes de Valk

How can artists contribute to an archive in progress? The problems software art archives have to deal with are immense, and are often linked to digital preservation problems faced on a global level: storage media change and age, and formats, operating systems, and software and hardware are updated or discontinued... Digital technology is evolving extremely rapidly and very few strategies have been developed to help preserve data for future generations.^① Solving these global problems is well beyond the reach of the individual artist, but there are strategies worth considering that prolong the life of an artwork and aid in the development of long-term solutions to these problems. Using Free/Libre/Open Source Software (FLOSS) to create work and publishing it using a copyleft license is one of those.^② It seems simple: having access to an artwork's source code and the source code of the software it depends on greatly increases the possibilities of maintaining it and keeping it operational. But the choices an artist faces when producing a work, the choices an archivist faces when maintaining it, and the tendencies within the world of software development - corporate and FLOSS alike - all impact on the eventual lifespan of a work. Are those artworks created using FLOSS and published with their source code better suited for preservation than other software art? Or is it best to forget about digital media all together and stick to rock, paper and scissors?

Hard software

Digital art is stored and developed on an extremely short-lived medium, and requires a constant migration process to avoid losing data.^③ This can be said of any medium, of course, but in the digital realm, a single fragment of corrupted or missing data (bit rot) results in the entire file becoming unreadable. This is a major difference with analogue media. The race for new digital storage solutions keeps on accelerating. Every week new progress is made, making the previous medium obsolete. Though a very attractive commercial strategy, it is lethal for the conservation of data. It makes one wonder, not without irony, if writing down source code on paper, even in the age of so-called cloud storage, is not one of the most secure ways to safely preserve information.

① Such as the International Research on Permanent Authentic Records in Electronic Systems (InterPARES) project.
<http://www.interpares.org>.

② Copyleft is a form of licensing that gives others the freedom to run, copy, distribute, study, change and improve a work, and requires all modified versions of a work to grant the same rights.
<http://www.gnu.org/copyleft>.

③ Data migration is needed when computer systems are upgraded, changed or merged, and involves transferring data from one storage type, system or format to another.

But even writing down source code on paper does not safeguard a work of art. Hardware is only one part of the story. Software problems are just as detrimental. Software decay,^④ mostly happening through planned obsolescence,^⑤ affects software art in two ways. The external software or framework, not written by the artist, will be superseded sooner or later and even though backward compatibility of an API^⑥ or file format is often advertised or aimed for, it always has practical limitations. Furthermore, the history of digital computing and media is still young and there is not enough knowledge about the viability of current strategies to work around obsolescence in the long term. Modern computing is already based on many legacy systems and it is highly questionable if such practices can be extended forever.^⑦ As such, there is no miracle cure for software decay.

There is an option that will at least limit the extent of necessary data migration: the implementation and use of open standards.^⑧ Using open standards contributes to the interoperability between software and is the safest choice when it comes to ensuring long-term availability.^⑨ Interoperability simplifies combining different software, resulting in less need for converting data to other formats.^⑩ The most obvious example of open standards is the Internet, which would be a collection of inaccessible and incompatible parts without them. Unfortunately, not all open standards are equally successful. They need to be widely adopted in order to survive, but this is not easily achieved. The greatest obstacle is the reluctance of software companies to adopt them, a result of the short-term commercial benefits of avoiding backward compatibility and interoperability, forcing users to keep purchasing and upgrading software. The awareness of the need for open standards is rising and even though they do not solve the entire problem of data preservation, they do contribute to a long-term solution.

Choice of framework

During the last decade, there has been a massive development of artistic software, presenting artists with an abundance of production environments to choose from. Selecting the right one is essential when it comes to the lifespan of a work. Choosing a FLOSS framework such as the GNU/Linux operating system and an open source programming language creates a transparent environment, allowing access to all layers of software that enable an artwork to function (operating system, software, libraries, etc.). The combination of the transparency of the framework of a work of art and the freedom to copy and modify all parts of it - given the artwork carries a copyleft license - creates a situation where upgrading, adjusting and even emulating becomes much easier compared to reverse engineering an artwork distributed as a binary on a proprietary platform.

However, not all FLOSS frameworks provide the same degree of flexibility and scalability needed for long-term maintenance. Some software is based on platforms that were meant as an educational environment instead of a production framework. Their specifications changed occasionally or they simply took a long time to mature, such as, for example, Processing.^⑪ The consequence of this is that the artist has to update his code frequently to make it work with the latest version of the platform, not to mention other likely headaches when looking at lower level software dependencies.^⑫ Other artistic software is produced by microscopic communities or even an individual programmer. These projects are relatively small efforts, placing the work created with it in a very fragile position. Unlike more popular software and languages, they are not backed up by an industry or a community demanding stability. The software only works under very specific conditions at a very specific time. Migrating such a work is a tremendous task, likely to involve the porting of a jungle of obscure libraries and frameworks. Choosing a certain framework not only affects the lifespan of a work, but, of course, has a major influence on the creative process of the artist.^⑬ The choice for a less popular but artistically very interesting programming language is a very valid one and can be worth the additional effort required to keep the work alive. More awareness about these issues is needed so that the choice of framework can be made in an informed way.

④ Software decay is a type of bit rot where software deteriorates due to a lack of updating.

⑤ Each piece of software or technology carries its own planned 'death'. Planned obsolescence was first developed in the 1920s and 1930s. Bernard London coined the term in his 1932 pamphlet 'Ending the Depression Through Planned Obsolescence'.

⑥ An API (Application Programming Interface) is an interface that is used to access an application or a service from a program.

⑦ Umberto Eco uses the phrase 'lability of present time' to explain that, nowadays, the rapid obsolescence of the objects we use, forces us to constantly prepare ourselves for the future. Carrière, Jean-Claude, and Umberto Eco, *N'espérez pas vous débarrasser des livres*. Paris: Éditions Grasset et Fasquelle, 2009.

⑧ An open standard is 'a published specification that is immune to vendor capture at all stages in its life-cycle' (definition by the Digital Standards Organization).

⑨ 'Obsolescence: File Formats and Software', in *Digital Preservation Management Workshop and Tutorial*, developed at Cornell University. Link: <http://www.icpsr.umich.edu/dpm/dpm-eng/oldmedia/obsolescencel.html>.

⑩ For example, a digital artist or graphic designer can generate an image in the open Scalable Vector Graphics (SVG) standard using, for example, a Python script, then load this SVG file in a more advanced editor such as Inkscape for further manipulation, and the final result, still as SVG, will be visible in a web browser such as Firefox.

⑪ Processing, initiated by Ben Fry and Casey Reas, has its roots in Design By Numbers, a project by John Maeda, of the Aesthetics and Computation Group at the MIT Media Laboratory. Link: <http://processing.org>.

⑫ JAVA in the case of Processing.

⑬ De Valk, Marloes, 'Tools to Fight Boredom: FLOSS and GNU/Linux for Artists Working in the Field of Generative Music and Software Art', in *The Contemporary Music Review*, vol. 28, no. 1, 2009.

Data sources, capture systems and lawyers

As if it is not already difficult enough to preserve a given piece of software art, some works that are not stand-alone require external sources of data to process. Typical examples are works that use, abuse or mock the content and data generated by web applications and other Internet-based social networks.¹⁴ Depending on the data used, it is highly likely that the source is ephemeral. In such a case a capture system is needed that samples this data, so that the artwork can still be shown even when its source of information no longer exists. This seems like a simple solution, and is without doubt facilitated by open standards, but it is hindered by the prevailing licensing and copyright jungle.

Thanks to a general effort to raise awareness about proprietary technology and copyright issues, there is a growing number of FLOSS and open standards that are simplifying the way network software communicates, distributes and stores its data, creating greater freedom for its users. Unfortunately a consequence of this effort is a rather ugly bureaucratic monster that is now very hard to avoid: the licensing of this data, with at least a dozen different licenses to choose from.¹⁵

2•4 At this moment, if someone's network data is not already owned by corporate groups, users can choose a certain license under which their data can be published, and in some cases this choice is already made for them, without them having the possibility to change it. In this increasingly complex legal construct, using corporate or privately owned data as part of a work of art and capturing this data for archival purposes can be a rather painful process. This flood of licenses introduces the risk of creating an unworkable situation in which archiving can only be done by lawyers and becomes almost impossible. When creating an artwork that uses external data, a certain amount of selection and research is needed prior to its production and release to avoid being limited to the use of artificial, locally generated data when exhibiting the work in the future, unless, of course, the work is meant to be as ephemeral as its data sources.

`dpkg --install art.deb: refactoring and porting`

At some point maintaining a work in its original environment becomes impossible because the technology has changed so much that there is no common ground with current software practices. We already see the rapid evolution of computing pushed by 'cloud' and mobile technology, and we could also very well argue that the Internet, as we know it, will eventually evolve into something else or simply disappear.

A current solution to this issue is to start a migration process in order to port and re-factor the code so it can run on another, more recent platform. In this case the custodian or archivist of

a work does not wait for a technology to become obsolete, but instead keeps transforming the work so it remains fully functional on the latest environments while providing the same 'artistic features'. For example, if the work is a software that generates prints of rotating squares every 2 seconds, and if it is clear that the artist considers the output - and not the processes that generate it - to be his art, it does not matter which code is used. The advantage of FLOSS is obvious here, if you can actually read the original code and understand it, you can maintain, update or port it. Of course the process behind printing a rotating square could be easily emulated or rewritten from scratch,¹⁶ but there is obviously a large body of software-based works that would be very difficult to reproduce without access to the source code.¹⁷

Looking at how software is maintained and ported in a free software GNU/Linux distribution such as Debian,¹⁸ it becomes clear that the idea of 'packaging' software artworks does have its advantages. First of all, all the changes made to the code are traceable. All the interventions required to have a working software are available as patches that are applied to the original source code as provided by its author(s). It is not a destructive process; the notion of archiving and logging changes and documentation are clearly embedded in the maintenance. Also, the software exists in two forms, its source package and its binary package, in a way that is meant to simplify its distribution and maintenance simultaneously over several different platforms. Finally, the possibility to contribute to the packaging makes it a distributed community effort.¹⁹ Even if it is highly speculative, could we envision a community-driven, distributed maintenance system for free software art and free cultural works?²⁰ Would it be possible to develop an 'art' section in the Debian project, and how close could software art be linked to the distribution of a free operating system?

2•5

¹⁴ For a study on the preservation of net art, see Laforet, Anne, *Le net art au musée: stratégies de conservation des œuvres en ligne*. Paris: Éditions Questions Théoriques, 2010.

¹⁵ For more information about Free Culture Licenses please visit <http://freedomdefined.org>.

¹⁶ One such example is Wayne Clements' *love2.pl* installation, which simulates the emulation of the Love Letters programme by Christopher Strachey (1952) by David Link, who reverse-engineered it from the emulated version.

¹⁷ For example, Scott Draves' *Electric Sheep*: <http://www.electricsheep.org>.

¹⁸ <http://debian.org>.

¹⁹ Contributing is not simple and you have to follow Debian guidelines and policies relating to this, but the possibility and the infrastructure exist, for example, public bug trackers to collect the odd contribution, is a reality. Cf. Lazaro, Christophe, *La liberté logicielle. Une ethnographie des pratiques d'échange et de coopération au sein de la communauté Debian*. Brussels: Academia-Bruylant, 2008.

²⁰ Julian Oliver was once approached by a group interested in packaging *Levelhead* (<http://julianoliver.com/levelhead>) for Ubuntu. Also, GOTO10 has a long history of distributing software art as part of their live distribution Puredyne (<http://puredyne.goto10.org>), such as the 'ap0202', 'cur2' and 'self3' software by Martin Howse/xxxxx (<http://www.1010.co.uk>).

Virtualization... or emulation?

Another approach to archiving software art is virtualization.²⁴ It is an increasingly popular method,²⁵ which aims at preserving and running the original code written by the artist. This implies that the original system must be left pristine because of the extremely fragile and very specific chain of software dependencies used by the artist. As a result, the maintenance shifts away from the artwork itself towards the system supporting it. This is not simplified maintenance, however; on the contrary, in the long term the maintenance of these virtual machines just postpones the problem. A virtual machine is also just software that decays and needs either code migration or emulation to work on new hardware and software. It is still unclear what will be most efficient: porting and refactoring the code of individual artworks or doing the same for virtual machines. Virtual machines are more complex but could, in theory, run different works of art. Artworks are often more simple, but have such specific requirements that most of them need a dedicated virtual machine to run them. More research is needed in this area in order to invest in the right approach, especially since they all differ so much, making it hard to share efforts.

2•6 The goal of virtualization is to leave the artist's code, or in some cases its compiled form, untouched, and it is clear that if the work is based on FLOSS one can more easily build the virtualization needed to run it. But is this essential? If one can provide contextual documentation and a reliable emulation²⁶ in addition to the original code provided for future critical code studies, this would supply enough valuable data for historical purposes. Besides, works in which the code is more important than its execution or interpretation on a machine, are always displayed... simply as text.²⁴

Documentation

In addition to the choice of framework and data sources, artists can greatly enhance the chances of their work surviving the test of time by documenting their work carefully. In the case of digital art involving code, writing clear technical documentation will help future attempts at turning it into operational software. It goes without saying that this process will be facilitated even further by working with a solid, revision-controlled code repository,²⁷ and by licensing that code in such a way that copying, changing and redistributing it will not encounter any bureaucratic obstacles. Furthermore, contextual and artistic documentation,²⁸ through text, video and images, is of immeasurable value. Knowing what results to aim for when rescuing non-functional software helps, and if in a not-too-distant future, worse came to worse, those traces might be the only vestiges of a work.

Documenting artworks is a very valuable practice,²⁹ and greatly improves access to works of software art, as many such artworks

are known only through their documentation. This aspect of preservation certainly requires more attention, and the media art distribution circuit is part of the problem. Festivals push artists to produce new works with topical themes and criteria that limit the submission of works to those produced no longer than one year ago. Many artworks are only shown once or twice, which does not encourage proper preservation and documentation.

Not only artists, but also cultural institutions and funding bodies benefit from the use of FLOSS and copyleft. Investing in a free artwork is a sensible public investment that goes against the financially driven art market by directly encouraging the production of works in which the knowledge and technology used to create it are made public. Also, even though an artwork's source code is central to the process of its preservation, it is not current practice for art galleries and artists to include it when a public or private collector acquires an artwork. With a free artwork, it is a given that its distribution is both desirable and possible. However, the promotion of free cultural content is not trivial. Free cultural content is described with terminology that often leads to misunderstandings and disagreements, both within the 'free culture' communities and beyond them. The recent *Public Domain Manifesto*³⁰ has been criticized for its choice of intellectual framework by, among others, Richard M. Stallman, the president of the Free Software Foundation.³¹ The failure of initiatives

2•7

²⁴ Virtualization refers to the abstraction of computer resources (<http://en.wikipedia.org/wiki/Virtualization>) and is an umbrella term. The most common forms are application virtualization, which encapsulates an application from the underlying operating system on which it is executed, and platform virtualization, which is performed on a given hardware platform by host software (a control program), which creates a simulated computer environment, a virtual machine, for its guest software.

²⁵ For example, Graham Harwood's 'Class Library' (<http://www.scotoma.org/notes/index.cgi?ClassLib>) and Pall Thayer's 'Microcodes' (<http://pallit.lhi.is/microcodes/>).

²⁶ Version control enables the management of changes to software and documents. See also Yuill, Simon, 'Concurrent Versions Systems', in Fuller, Matthew (ed.), *Software Studies. A Lexicon*. Cambridge, MA: The MIT Press, 2008.

²⁷ Research projects such as CASPAR (<http://www.casparpreserves.eu>) or Aktive Archives (<http://www.aktivearchive.ch>) include virtualization as a preservation strategy.

²⁸ Depocas, Alain. *Digital Preservation: Recording the Recoding*. 2001. Ars Electronica Festival. 31 December 2003. Link: http://www.aec.at/festival2001/texte/depocas_e.html.

²⁹ Emulation is the imitation of the behaviour of a particular software or hardware by other software or hardware. Emulation is often seen as the ideal solution for preserving digital artworks; see, for example, Rothenberg, Jeff, *Avoiding Technological Quicksand: Finding A Technical Foundation For Digital Preservation*. Washington: Council on Library and Information Resources, 1999. Link: <http://www.clir.org/pubs/abstract/pub77.html>. For an example of the emulation of a digital artwork, see Dimitrovsky, Isaac, *Final report, Erl-King project*. Variable Mediable Network. 2004.

³⁰ For a discussion about the role of documentation by artists, especially with regard to conceptual art, see Poinot, Jean-Marc, *Quand l'œuvre a lieu. L'art exposé et ses récits autorisés (nouvelle édition revue et augmentée)*. Dijon: Presses du reel, 2008.

³¹ The manifesto was produced within the context of COMMUNIA, the European Thematic Network on the Digital Public Domain, in 2009.

³² Stallman explains on his blog why he refuses to sign the manifesto. <http://www.fsf.org/blogs/rms/public-domain-manifesto>.

such as these to find common ground does not help convince people to critically examine the impact that patents, digital rights management (DRM) and copyright have on culture and its preservation. Such issues are less prevalent in the realm of software art. When producing an artwork, choosing an open, stable and well-documented framework with a large user base will simplify future maintenance. Similarly, a well-informed choice in the use of external data sources and capture systems are key. No matter what the archives decide, virtualization, porting and refactoring or emulation, FLOSS and copyleft make all the approaches easier. The source code of a work and the environment it runs on, including its documentation, is the main asset. Contextual documentation completes the picture.

Artists can make clear choices to extend the shelf life of their own work, create awareness about archiving issues and support open standards, open formats, interoperability, and compatibility - all working towards solving global issues that are essential for archiving data in general, and digital and software art in particular. There are no miraculous solutions, but the little time left may be what is needed to create awareness about the issues involved, and inspire long-term strategies.

```
e Poetic::Violence;

# Software for the aggressive assault on society.
# Thank GOD It's all right now - we all want equality -
use constant EQUALITY_FOR_ALL
=>

"the money to be in the right place at the right time";
use constant NEVER = 'for;;';
use constant SATISFIED => NEVER;
# It's time to liposuck the fat from the thighs of the bloated
# bloke society-smear it on ourselves and become invisible.
# We are left with no option but to construct code that
# concretizes its opposition to this meagre lifestyle.

package DONT::CARE;
use strict; use warnings;
sub aspire {
    my $class      = POOR;
    my $requested_type = GET_RICHER;
    my $aspiration   = "$requested_type.pm";
    my $class        = "POOR::$requested_type";
    require $aspiration;
    return $class->new(@_);
}
1;

# bought off with $40 dvd players

sub bought_off{
    my $self = shift;
    $self->{gain} = shift;
    for( $me = 0;
        $me <= SATISFIED;
        $me += EQUALITY_FOR_ALL ){

        $Exploit
        =
        push(@poverty_on_someone_else,$self->{gain});
        die "poor" if $Exploit
        =~ m / 'I feel better about $me' / g;
    }

    foreach my $self_worth ( @poverty_on_someone_else){
        wait 10;
        &Environmental_catastrophe (CHINA,$self_worth)

    }
}

# TODO: we need to seek algorithmic grit
# for the finely oiled wheels of capital.
# Perl Routines for the redistribution of the world's wealth
# Take the cash from the rich and turn it into clean
# drinking water

# Constants
use constant SKINT => 0;
use constant TOO_MUCH => SKINT + 1;
# This is an anonymous hash record to be filled with
# the Names and Cash of the rich

%{The_Rich} = {
    0 => {
        Name => '???' ,
        Cash => '???' ,
    },
}

# This is an anonymous hash record to be filled
# with the Price Of Clean Water
# for any number of people without clean water

%{The_Poor} = {
    0 => {
        #the place name were to build a well
        PlaceName      => '???' ,
        PriceOfCleanWater => '???' ,
        Cash            => '???' ,
    },
}

# for each of the rich, process them one at a time parsing
# them by reference to RedistributeCash.

foreach my $RichBastardIndex (keys %{The_Rich}){
    &ReDisdributeCash(\%{The_Rich->{$RichBastardIndex}});
}

# This is the core subroutine designed to give away
# cash as fast as possible.

sub ReDisdributeCash {
    my $RichBastard_REFERENCE = @_;

    # go through each on the poor list
    # giving away Cash until each group
    # can afford clean drinking water

    while($RichBastard_REFERENCE ->{CASH} >= TOO_MUCH){
        foreach my $Index (keys @poor){
            $RichBastard_REFERENCE->{CASH}-;
            $Poor->{$Index}->{Cash}++;
            if( $Poor->{$Index}->{Cash}
                =>
                $Poor->{$Index}->{PriceOfCleanWater} ){
                &BuildWell($Poor->{$Index}->{PlaceName});
            }
        }
    }
}
```


anne laforet

Anne Laforet is a researcher and a writer. She completed her Ph.D. in information science on the preservation of net art at the University of Avignon in France in 2009. In 2004 she wrote a report entitled 'Net Art and Artistic Institutions and Museums' for the French Ministry of Culture. She has presented her research in Europe and Canada, and is currently associated with research into digital preservation at the ARNUM laboratory and Basse Def. project in France. Anne writes on digital art and culture for Arte.tv and Poptronics.fr, and makes sounds with her computer.

<http://www.sakasama.net>

marloes de valk

Marloes de Valk is a Dutch digital artist, and a member of GOTO10, a collective of artists and programmers working in the field of digital art and Free/Libre Open Source Software. She studied Sound and Image at the Royal Conservatory in The Hague, specializing in abstract compositional computer games, HCI and crashing computers. Her work consists of audio-visual performances and installations, and investigating machine theatre and narratives of digital processes.

<http://no.systmz.goto10.org/blog>

aymeric mansoux

Founding member of the GOTO10 collective, Aymeric currently teaches at the Piet Zwart Institute in Rotterdam, Netherlands, and is a Ph.D. student at the Centre for Cultural Studies at Goldsmiths, University of London. His main artistic and research interests revolve around online communities, software as a medium, and the influence of FLOSS in the development and understanding of software art. Aymeric Mansoux is editor with Marloes de Valk of *FLOSS+Art* (OpenMute 2008) as well as *Folly's Digital Artists Handbook*, published in early 2008.

<http://goto10.org>

<http://makeart.goto10.org>

Free Art License 1.3 (FAL 1.3)

Copyleft: *This is a free work, you can copy, distribute, and modify it under the terms of the Free Art License*

<http://artlibre.org/licence/lal/en>

file under

migration, FLOSS, software decay, planned obsolescence, virtualization, framework, emulation, documentation

archive2020

PRINT OUT THE INTERNET

3•0

Twan Eikelenboom
in conversation with
Florian Cramer

PRINT OUT THE INTERNET

Twan Eikelenboom in conversation with Florian Cramer

In spring of 2009 you organized the PRINT/Pixel conference. Could you tell us about the background of the project?

At the moment there is a major international discussion about the future of the publishing industry. Although this is not necessarily new, for example, the paperless office or the end of paper and books have been proclaimed multiple times,^① I do think that something really has changed in the last year. The USA and Eastern Europe are going through the biggest newspaper and book-publishing crisis in their history, comparable to the problems already experienced by the music and film industry. Not surprisingly, the Internet has become a major competitor. The World Wide Web has proven to be a very good news medium. Most news is freely available online. Blogs provide a good alternative for editorial commentary and opinions - the blogger has become the online version of the newspaper columnist. More importantly, this shift has led to a decline in newspaper advertising. Much of the classifieds and private ads have moved to Craigslist, Marktplaats and eBay. Secondly, the Internet is very competitive:

it costs far less to advertise online than in print magazines. This provides the overall background of the conference. Questions arise, such as what role will designers play in this changing landscape? They probably need to think more about structure and the future of publication media. We wanted to attract people with new media backgrounds as well as those from the more traditional publishing field. We also invited companies such as Sony that are developing e-book readers, and sat everyone around a table to share their visions of the future of publishing. There is a strong connection to the research of our current fellow at the Piet Zwart Institute, Alessandro Ludovico from *Neural* magazine, one of the oldest new media art magazines. Alessandro is actively involved in mag.net, a project that has published on precisely these issues - the future of publishing and the relation between print and electronic media. He approaches this from an interesting angle, pointing to the quality of paper that facilitates the transfer and exchange of thoughts much more easily than moving documents from one computer to another.

^① Alessandro Ludovico has extensively researched this history in a book that is about to be published by the Piet Zwart Institute for Postgraduate Studies and Research, Willem de Kooning Academy, Rotterdam University.

Such a seemingly simple perspective can all of a sudden cast a different light on the subject, as opposed to making yet another grand media revolution prophesy.

Indeed, iPod and MP3 file sharing have radically changed the music industry. What are the types of changes that you are referring to that will impact the newspaper and book publishing industries?

In August 2009 the German novelist Peter Glaser, a member of Chaos Computer Club and well known in German computer culture since the 1980s, wrote in an article that the real revolution in computer culture is its atomicity: it splits up the large 'wholes' into smaller parts. By this he means that large entities, for example, the Dutch mail-order store Wehkamp, are broken up into single web pages or even specialized sites. This also happened with music. We rarely listen to entire albums anymore. The whole notion of the LP, the 40-minute collection, has lost its significance with people downloading single songs and tracks. Glaser argues that the same thing is happening with the news. In other words, newspapers have to rid themselves of the idea that they capture the entire world in their pages. This is an antiquated model. The web model is about snippets. Personally, I think this is more a generational than an Internet-related issue, and newspapers need to deal with it if they want to survive. The question of the

survival of so-called quality news media in an online culture of free content, was discussed at the conference, too. If you look at media history the same issues surfaced with the advent of the printing press. And this history has proven that parallel systems - free information in libraries versus the commercial bookstore business model - can co-exist and survive.

How will this affect books? What will change in the consumption of text now that e-book readers are becoming more ubiquitous? Will material books disappear?

No, I don't think so. Different ways of media production and consumption can very well exist at the same time. We need to get rid of the binary thought pattern of the 'old' versus the 'new'. There will always be people who like the tangible, material 'feel' and look of a book. In this sense, for example, art books will have the best chance of surviving. In bookstores like Boekie-Woekie in Amsterdam, you mostly come across books that can never be reproduced in electronic book format. On the other hand, e-books have the advantage of storing an entire collection or library in one small portable device. And this new device creates new challenges for designers: how do you design an e-book at all? Prior to the conference, I did some research and stumbled upon a German company that does this. Remarkably, the people working at those companies are engineers

and computer scientists, for whom the entire issue is about how to re-encode a publisher's text or PDF file into the electronic book format. This reminded me a lot of the early beginnings of the World Wide Web where web design was all about coding proper mark-up and understanding how servers and browsers work, and only later it evolved into a complex design profession.

How will we be able to keep these e-books? What effect does the digital book have on archiving books and newspapers?

The big problem is: we are embracing new technologies without thinking about archiving issues. For example, a printed book is a very good archival medium because it is distributed and self-contained. Unlike with a web page, you have multiple copies, sometimes hundreds of thousands of copies, distributed all over the world. If one copy disappears, there will likely be enough physical backups. Moreover, they do not depend on any display technologies, require no electricity, hardware, operating systems, software, or software and hardware updates to ensure that the document stays readable. As a self-hosting medium, the book is very robust. The Internet, on the other hand, is an archiving nightmare. Right now, I would argue, it is practically impossible to create

a sustainable archive because there are too many technical layers of fragility and breakage. It starts with the very technical organization of the Internet through IP addresses and the Domain Name System (DNS). If a domain goes offline, for example, all the links to a document or site break down, even if it's resurrected somewhere else. This problem has been exacerbated because most people no longer have traditional websites made of HTML files, but database-driven Content Management Systems (CMS), blogging systems and Wikis. These systems create their own URLs, and if you change the system or the database, all URLs will break down, the links to the site and within the site break down, and all embedded items break down too. There are technical solutions to get around these problems, such as using URNs^② instead of URLs, but they're not widely known, supported and used, and are often too complex for most people. The issue of distributed storage versus websites as single points of failure hasn't been solved at all. Distributed systems like Freenet don't seem to go anywhere...

Another problem is physical storage. At the moment there are several large Internet archives, but they are either commercial (Google Cache) or non-profit and severely underfunded (archive.org). None of them solve the

^② Uniform Resource Names (URNs) are intended to serve as persistent, location-independent resource identifiers and are designed to make it easy to map other namespaces (that share the properties of URNs) into URN space. Source: *Internet Engineering Task Force*, URN Proposed Syntax, <http://tools.ietf.org/html/rfc2141>.

fundamental issue, because these archives aren't distributed either. I think it should be the task of an organization like UNESCO to develop sustainable Internet archiving. Of course, this won't happen, because there is no public awareness, and thus no political urgency or will at this stage. All this leads to a situation in which we seem to be stuck, paralysed and nothing happens. Just to throw in some figures, archive.org has a lower annual budget than a small town theatre, and depends entirely on private donations.

When talking about archiving digital media, we also deal with a paradox, because in the end, all so-called digital media depends on analogue media: electricity, magnetism, metal, silicon, etc. This results in many problems; as I said before, if one layer breaks down the whole thing falls apart. Maybe the best and most stable archive is one that is stored on a self-contained medium. Print out the Internet. Why not? In a way, it is just as much an analogue storage method as a magnetic platter, with the advantage that paper is less prone to being erased than a magnetic platter. If I walk into a server room with a powerful magnet all the data could be erased, but if I do the same in a library nothing happens. Of course, it might rain in a library, or there may be acid, or fire. But can we think of self-contained archival media that are encoded in such a way that it becomes

easy to translate it back into digital information? Think, for example, of a metal or plastic disc with holes, resembling the working of a CD-ROM but without its fragility. We need to think outside the old categories of analogue and digital media to get beyond these issues.

florian cramer

Florian Cramer is the Course Director of the Networked Media specialization of the Master Media Design and Communication at the Piet Zwart Institute in Rotterdam. He has a background in comparative literature and art history combined with practical experience in computer culture, experimental arts, poetics and aesthetics. In 2007 he received the Prix Ars Electronica 2007 Media Art Research Award for his Ph.D. thesis 'Exe.cut[up]able statements'.

<http://www.pleintekst.nl>

twan eikelenboom

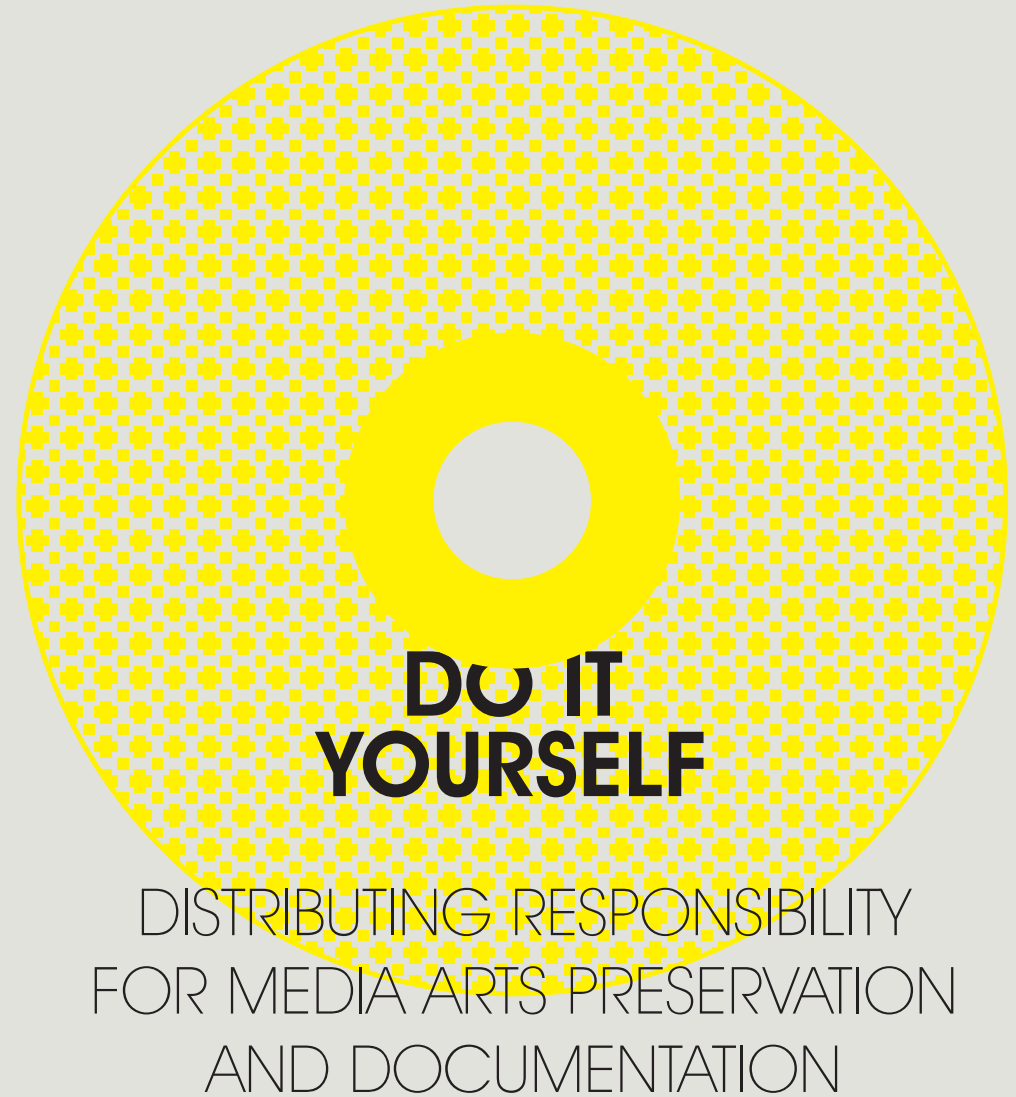
Twan Eikelenboom is web-editor at Virtueel Platform. His research focuses on the mapping of e-culture in the Netherlands. Twan holds an MA degree in New Media and Digital Culture (University of Amsterdam) and works as a freelance journalist and writer specializing in innovation in art and culture, non-linear narratives and storytelling.

<http://www.virtueelplatform.nl>

file under

digital print, e-book reader, paper, atomicity, archiving, URN, UNESCO

archive2020



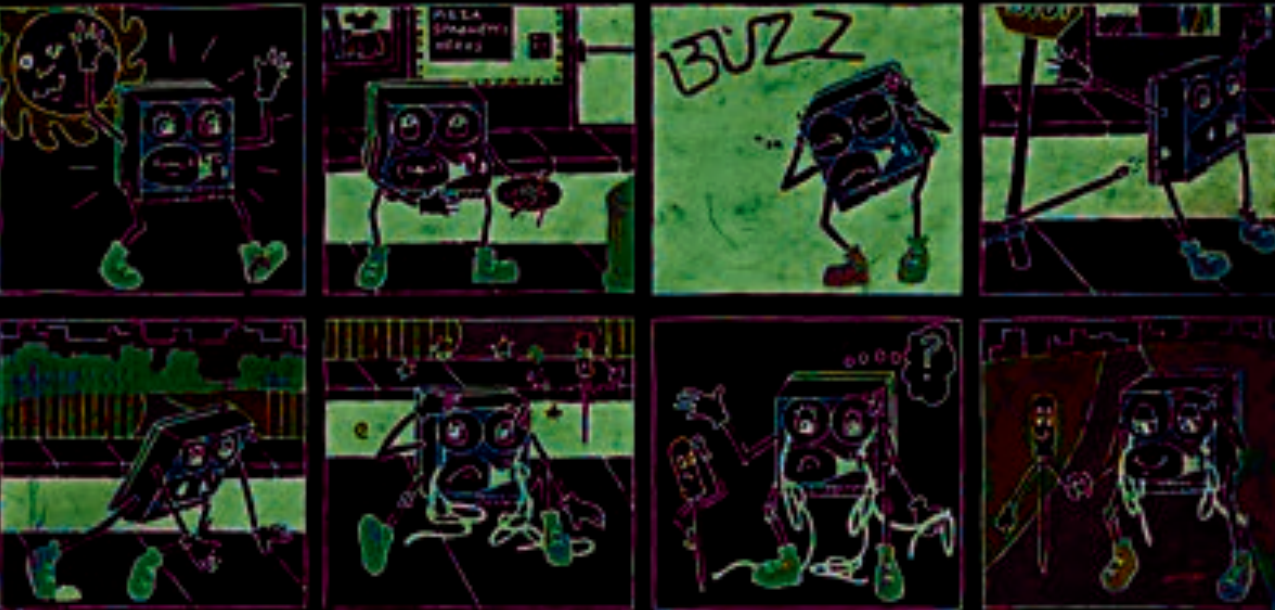
4•0

Caitlin Jones

THE SPAGHETTI CITY VIDEO MANUAL

by VIDEOFREEX

a guide to use, repair, and maintenance



The Videofreex.

The Spaghetti City Video Manual. New York: Praeger, 1973.

DO IT YOURSELF: DISTRIBUTING RESPONSIBILITY FOR MEDIA ARTS PRESERVATION AND DOCUMENTATION

Caitlin Jones

'This technology has provided us with tools that are at the same time exciting and frightening. If we are to use these tools, it is essential that we understand their very nature.'^①

This quote comes from the infamous *Spaghetti City Video Manual: A Guide to Use, Repair and Maintenance* - a do-it-yourself guide to video production compiled by a group of American media activists in 1973. Titled in response to the confounding mass of video, audio and computer cables that accumulate under our desks and in our studios, Videofreex endeavoured to demystify the soon-to-be dominant form of video production. Their DIY ethos was a political and social stance - putting the powerful tools of broadcasters into the hands of people. It was also an economic one - even the new, cheaper video equipment was still prohibitively expensive for

most people and information such as that contained in *Spaghetti City* made it more accessible. Viewed as a means to confront the dominance of large media corporations, many artists also started working with cameras as a way to challenge the object-dominated art world. Video opened up new territory to artists, not only in terms of materials, but it also expanded audiences. In 1971 former gallerist Howard Wise founded Electronic Arts Intermix (EAI) in New York, a non-profit organization dedicated to the production and dissemination of artists' videos. He stated his rationale for the switch in contexts in a videotaped address:

'The dinosaur may yet succumb to the mouse. Many new developments augur well for the independent video-artist producer... Theoretically at least the producer is now capable of producing programs that may be broadcast... thus enhancing the chances of the artist to participate in the system.'

And participate they did. Media art organizations began to pop up across the globe: Montevideo (now Netherlands Media Art Institute) in Amsterdam, London Video Arts (now LUX) in London, Video Hiroba in Japan and the Western Front Society in Vancouver, are only a fraction of the spaces that opened to support artists working with video technology.

^① Videofreex, *The Spaghetti City Video Manual: A Guide to Use, Repair, and Maintenance*. New York: Praeger Publishers, 1973.

Beyond the scope of Spaghetti City

As the original 1/2" decks died and had to be replaced by new models and new formats, the limits of the DIY philosophy began to show. Besides hardware obsolescence, tape deterioration was also a factor. New equipment and transfers to new formats were often financially out of reach and these chronically underfunded organizations realized they had a significant problem on their hands.

When we turn our gaze to born-digital materials we unfortunately see that utopian notions of freedom from hegemonic media monopolies, DIY production ethics and networks are not the only things video art pioneers have in common with new generations of media artists. Hardware becomes obsolete at an ever-increasing rate and storage formats are constantly shifting to accommodate increasing amounts of digital information. Add to this the additional burden of software, browser capabilities and tightened copyrights, and a dark future emerges for our digital heritage.

Major progress in the field

Over the past ten years a number of high profile museums and cultural institutes have addressed these concerns of deterioration, obsolescence and ephemerality in variable media art (a term used by many to incorporate a range of mediums including

performances, installations, conceptual works, etc.) in highly formalized, systematic and, most importantly, public ways.^②

Matters in Media Art, a large-scale effort by MoMA (New York), SFMOMA (San Francisco), the Tate (London) and the New Art Trust (San Francisco), is a massive ongoing project dedicated to the preservation and documentation of a range of media artworks. The Variable Media Network - with partners including the Guggenheim Museum, the Berkeley Art Museum/Pacific Film Archives, Rhizome.org and a number of other smaller independent arts organizations - sought to develop new strategies for preserving works of variable media. Both these projects were born from the necessity to preserve their own collections, but both were strongly committed to the dissemination of research to the field at large.

Not limited to large collecting institutes, some of the most significant work in the field has occurred within those media art centres where the material was born, and where large volumes of materials still lie. For example, the Netherlands Media Art Institute has made the preservation, distribution and access to its world-renowned collection of video art a major component of its mandate, and has led and participated in numerous related projects.^③

Howard Wise's Electronic Arts Intermix remains committed to the preservation of their col-

lection of single-channel works, and in 2007 the organization created an online Resource Guide aimed specifically at helping museums, galleries and artists address the complicated issues surrounding the collection, exhibition and preservation of media-based art.^④

Non-collecting institutes have also contributed greatly to the field. INCCA (International Network of Conservators of Contemporary Art) is a network of professional conservators whose prime mandate is the sharing and distribution of knowledge within the international conservation community. One of their best known projects, Inside Installations: Preservation and Presentation of Installation Art, involved more than 25 European institutes.^⑤ To date, 33 case studies have been made public through its website - making it an invaluable resource for the field. Similarly, the Ludwig Boltzmann Institute Media.Art.Research (LBI), a research facility devoted to the study of media art documentation, archiving and research, has funded significant independent research in media studies.^⑥ In particular they partnered with Ars Electronica, one of the oldest media art festivals still in existence, to make portions of its physical archive available online - predominantly documents related to the Prix Ars Electronica and

Golden Nica winners.

Festivals such as Ars Electronica and others play a major role in the history of media art - in many ways epitomizing the transitory, always evolving, networked and social nature of the material. The essential and transitory nature of these gatherings, however, often means that much of this important history has already been lost. In 2003, V2_ proposed a strategy to mitigate the loss of works included in their biennial DEAF (Dutch Electronic Art Festival). This extensive research project, titled Capturing Unstable Media,^⑦ laid out a clear structure that allowed the Festival organizers to 'capture' details about works of art rather than be obligated to preserve the works themselves. Its thoroughness was a major influence on subsequent thinking.

In the realm of the web, a number of organizations have attempted to capture the ephemeral history of Internet art. Netzpannung.org, an archive of born-digital content that has been online since 2001, defines itself as 'a tool for researching, reflecting upon, and imparting electronic culture'. With over 2500 work descriptions, texts, images and videos, this tremendous resource contextualizes Internet art in an online media arts journal. Rhizome.org's ArtBase accepts voluntary contributions to its archive of Internet art.^⑧

^④ <http://resourceguide.eai.org>.

^⑤ <http://www.inside-installations.org>.

^⑥ <http://media.lbg.ac.at>.

^⑦ <http://capturing.projects.v2.nl>.

^⑧ <http://rhizome.org/art>.

^② <http://www.tate.org.uk/research/tateresearch/majorprojects/mediamatters>.

^③ <http://nimk.nl>.

While not a collecting institute in the formal sense of the term, the ArtBase stores a 'copy' of a work and its metadata within the larger conceptual framework of Rhizome - a still preeminent hub for art on the web.

The scope of the work is impressive, and this list could be expanded with numerous other institutes and projects. Despite the challenges, costs and amount of material at risk, many case studies, tools for preservation and scholarship have been completed and made publicly available in a relatively short period. But it should not be all congratulations and 'high fives' just yet - much work still has to be done and funding is as much of an issue as ever.

Follow the money

Integral to an understanding of the field is comprehending the range of funding structures that have emerged to support it. Just as not every preservation initiative can be covered here, neither can every funder. What follows is a cursory look at some of the major trends and players in the field of media art preservation.

As in arts funding in general, governments - national, regional and municipal - play a huge role. For example, INCCA's Inside Installations project was supported by a large European Union grant, the Ludwig Boltzmann Institute was an Austrian government programme, and most of the smaller centres obtain

their basic operating funds from government sources. But as politics sways so too does arts funding and, as all who are dependent on it are painfully aware, government funding alone is not nearly enough.

Perhaps somewhat surprising is the amount of activity in the field that has been funded by the private sector. A prime example of this is The New Art Trust, a foundation started by media art collectors Pamela and Richard Kramlich in 1997. As part of the criteria of their joint bequest to MoMA, SFMOMA, and the Tate, they supported the Matters in Media Art project. While this type of 'gift-based' patronage can certainly be seen as safeguarding private investment, the foundation has also funded numerous other publications and symposia - significantly EAI's Resource Guide.

Another major private source of funds to emerge in the last ten years was the Daniel Langlois Foundation, the project of software developer Daniel Langlois. Begun in 1997 the Langlois Foundation not only funded the production of new work within the field of art and technology, but also the research for its preservation.^⑩ Their Center for Research and Documentation, both a physical and virtual resource, includes among the many gems the papers of Steina and Woody Vasulka and the tennis racquet used by Robert Rauschenberg in *9 Evenings*.

^⑩ <http://www.fondation-langlois.org>.

^⑩ <http://www.docam.ca>.

In many ways, the Langlois Foundation was a catalyst for action in the field, providing a steady stream of both financial and intellectual fuel for a wide range of projects. They were the major underwriter of both the Variable Media Network and V2_'s Capturing Unstable Media. Their most recent project DOCAM (Documentation and Conservation of Media Arts Heritage) capitalizes on their leadership role in the field and has provided a wealth of tools and resources.^⑪ Somewhat ironically, however, this massive multi-institutional, multidisciplinary research project also happens to be heavily funded by the Canadian government.

With governments providing funding to private foundations, private foundations supporting public institutes, and smaller institutes grabbing what they can, any attempt to discern separate funding streams are ultimately foiled. 'Following the money' reveals that these seemingly divergent funding streams are in fact quite interdependent and have ultimately created a supportive network that has resulted in a large amount of high-quality research.

Funding streams disrupted

If the pool of funds is limited and interdependent, what happens when this delicate balance is disrupted?

The field of media art preservation lost two of its main advocates recently, the Daniel Langlois Foundation and the Ludwig Boltzmann Institute Media.Art.Net.

With its government support withdrawn, the LBI had to shutter its doors completely and 'archive' its website. The situation at the Langlois Foundation is less definite. As a funding institute they have been incrementally scaling back their programming for years and the physical archive is being transferred to an as yet to be confirmed partner. Their website however - one of the most exceptional in the field - remains an active hub for research and the findings of DOCAM are closely linked to the Foundation. Other promising projects, such as Capturing Unstable Media and Variable Media Network, have also fallen by the wayside due to funding and shifting institutional priorities.

These situations have very direct and practical implications for the preservation of media art history, and they also raise a number of broader theoretical questions. Within these multiple streams of funding is there a discernible ideological difference in what is being preserved? Do different funding sources result in different kinds of discourse?

Large and dominant institutes like MoMA and the Tate have certainly been generous with their knowledge and support of smaller institutes, but their own collections contain only a fraction of the endangered material that is selected with criteria that excludes huge areas of cultural production. This is not news to anyone

versed in issues of canon and representation, but the fact that most of these large institutes have barely begun collecting born-digital materials such as Internet art further skews the picture.

The full history of media art exists within the smaller archives, festivals and online archives worldwide. Documents of performances and installations, presentations and lectures, exhibition documentation, single-channel video, Internet-based projects and experimental software tell the story. These spaces have captured the experiments, the processes and the dialogues, and it is precisely these places that are most vulnerable to fluctuating revenue streams.

New models:

Spaghetti City redux?

With all the information available on the web in the form of papers, case studies, templates and the like, we have the equivalent of hundreds of *Spaghetti City Manuals*. Best practices, such as the above, have the potential to arm the broader community of artists, galleries and centres with enough information so that they are best able to apply limited financial resources in strategic ways. But much work is still at risk, and some questions remain: if we all agree that our media art heritage is an important part of the art historical record, where does the responsibility for its preservation lie? Is there a

way to move beyond traditional funding structures? Are there other preservation strategies the field can look to as models? The concept of 'self-archiving' has gathered significant momentum in academic circles - it refers to authors uploading their publications to neutral and free locations on the Internet in order to provide broader access. Although most specifically related to academic publishing pressures and regulations, the term has much broader implications in both digital and non-digital contexts. Archiving is also a strategy in the non-digital world. The British artists Gilbert and George are renowned for a personal archive that documents their long and illustrious careers. Comprised of both their art and inspiration, in the form of magazines, books and other collectibles, Gilbert and George approach their archive as part-hobby, part-necessity. Catalogued and organized in a highly personalized manner, their archive leaves nothing of their legacy to chance. In an interview with curator Hans Ulrich Obrist, published in a large volume on the subject of artists' archives, *Interarchive*, the artists discussed their collections, process and their organic 'self-archiving' strategy:

'H.U.O: You don't have an archivist? It's all done by yourselves?

Gilbert: *We don't have anybody! Everything is in the right place,*

so that's why we don't need assistants. Life is simplified, we know where everything is; we never have to look for things.

George: *So even if we lose something very unimportant, which is extremely rare, we are disturbed for days until we find it. Because we feel that that could be the beginning of the end.'*^⑫

The work of Gilbert and George is represented in almost every major institute in the world, yet it is this self-determined archive that has the potential to tell us the most about these artists.

Another example of self-archiving in a network context can be seen in gaming culture. Subject to the same hardware and software obsolescence issues as media art, very few classic games have been lost. Individuals and groups of dedicated gamers have taken up the cause of sustaining these classic games, continually writing the software and emulators necessary to keep old games running on contemporary computers. A quote from The Software Preservation Society echoes sentiments so often expressed by those in the field of media art:

'Just by the passage of time these games are affected by the gradual deterioration of the media that stores them. These classics risk being lost forever in the near future, a tragedy that must be prevented. Our main

objective is to guarantee the preservation of such an important part of computer gaming history.'^⑬

Recognizing that their particular passion is at risk these gamers have fostered ad hoc and successful preservation strategies for an undeniably important element of contemporary culture. A viable system of self-archiving requires that one must trust in ideals of 'the commons' to preserve and document. Future models, including the viability of self-archiving in a media art context, have recently been the subject of debate on the CRUMB (Curatorial Resource for Upstart Media Bliss) list - a curatorial resource dedicated to issues specific to media art. Richard Rinehart and Jon Ippolito (both founding members of the Variable Media Network) have both long suggested that the responsibility for preservation of media art should not be trusted to institutes but decentralized and distributed.^⑭ Their proposed concept of The Open Museum is a self-archiving strategy in which artists deposit their work at a central locale where the source code and files can be copied and downloaded by other users.

Whether institutionally based or a more open access model, as with the early years of video art, professional and artistic networks remain vital; collective understanding and knowledge bases raise the level of

^⑫ Hans Ulrich Obrist, 'Interview with Gilbert & George', in *Interarchive*. Cologne: Verlag der Buchhandlung Walther König, 2002.

^⑬ <http://www.softpres.org>.

^⑭ <http://still-water.net>.

discourse and increase the odds for media-based art. A new kind of network has also recently emerged in the field, the Gateway to Archives of Media Art (GAMA) project. Based on the library model of 'union lists' (which provides access to numerous library collection catalogues from one central access point), GAMA is a consortium of media art archives in Europe allowing access to all their collections from one central point. By making it available from a unified portal, GAMA is able to promote collaboration between archives with similar collections and mandates, provide an opportunity for the participating institutes to promote their collections to a broader audience, and increase awareness of digital art and culture as a whole.¹⁴

Moving forward

The efforts of the past ten years have left plenty of well-articulated, informational and intellectual resources to help us all begin the process.

Funding is still a necessity, but it need not be the primary obstacle, or the beginning and end point of any discussion for future developments.

Projects such as Archive2020 and others continue to shed light on smaller institutes that have been doing the practical work of caring for their own collections for years with minimal resources. Self-archiving and DIY initiatives are being undertaken by many small institutes as well as by artists themselves. Drawing on available resources, both financial and informational, there is a network of people and places that are providing new frameworks, encompassing multiple perspectives and spreading the responsibility for preserving cultural memory.



¹⁴ Gabriele Blome and Gaby Wijers provide a detailed explanation of GAMA in Chapter 5.

Caitlin Jones is Executive Director of the Western Front Society in Vancouver, BC. Prior to this appointment she had a combined curatorial and conservation position at the Solomon R. Guggenheim Museum, and was the Director of Programming at the Bryce Wolkowitz Gallery in New York. A key member of the Variable Media Network, Caitlin is also credited with developing important tools and policy relating to the preservation of electronic and ephemeral artworks. She has contributed to Rhizome.org and her other writings have appeared in a wide range of exhibition catalogues, periodicals and other international publications.

funding, disruption, experiments,
canon, self-archiving, the commons,
open museum

VISIBILITY DISTRIBUTION AND MEMORY THROUGH NETWORKS AND COLLABORATION

5•0

Gabriele Blome
Gaby Wijers

VISIBILITY, DISTRIBUTION AND MEMORY THROUGH NETWORKS AND COLLABORATION

Gabriele Blome and Gaby Wijers



GAMA homepage



GAMA wiki

After about a decade developing and evaluating new strategies for the preservation of media art proved that networking and collaboration are very successful strategies. But there are still challenges to overcome: parts of the digital cultural heritage are at risk from loss of data, knowledge or memory. Furthermore, the last 30 years of electronic and digital art production has not yet been saved in a sustainable way. Concurrently, time-based media, digital formats and methods of archiving have changed. The Internet has become the most relevant medium to publicize and communicate the contents of repositories. While documents and artefacts are slowly being digitised, the infrastructure for describing, indexing and the administration is based on algorithmic processes. Although this development continues, and might never be fully realised, the fact that the different levels of archival practices are overlapping at the level of code causes a fundamental change while creating enormous potential at the same time. This change influences the way cultural archives participate in cultural life, cultural memory and scientific research. Media art archives and collections are also facing these changes, and in some respects are ahead of the times.

Production Preservation Presentation

The majority of institutes with relevant archives and collections of media art are not traditional archives or museums, but organizations that were founded in the late 1970s or early 1980s. Their initial focus was on the production and presentation of art based on electronic and digital media. Some of them are small, some large, and some of them have already disappeared. Distributors such as the Netherlands Media Art Institute (NIMk, Amsterdam), Sixpackfilm (Vienna), Electronic Arts Intermix (EAI, New York) and Lux (London) assembled growing collections, at first mostly comprising video art and experimental film. These institutes are now confronted with the problem of sustainable preservation and accessibility of the works. Other important works and documents can be found at festivals, media labs and production houses, for example, the V2_Institute for Unstable Media (Rotterdam), Ars Electronica (Linz), and C3 (Budapest). Over the years they brought together important archives with documents that need to be indexed, described and made accessible. Within the context of research into media art history, the documentation of both

types of institutes is important because of the ephemeral, process or context-based character of the works. However, institutes without collections are finding themselves in a dilemma, as the institutional mandate has a different focus. Gerfried Stocker, artistic director of Ars Electronica, summarized this problem as follows: 'Every euro we spend on dealing with this old material is one euro less for our real task, which is producing new projects, exhibits, festivals and things like this.'^①

In addition to collecting and preserving media artworks, documents and documentations, media art institutes need to contribute continuously to the processes of fostering attention for their artefacts, and their re-contextualisation - a task traditionally carried out by external researchers, teachers and curators. As Bart De Baere, director of the Museum of Contemporary Art in Antwerp (MuHKA), formulated: 'Preservation is not secured by conservation procedures, but by the continuous resumption of a web of meanings given... It is not the moment when things are cast out or not that is so decisive. Remembering and forgetting form a more important duo than preserving and throwing away.'^② He refers to the differentiation by Aleida Assmann between *Speichergedächtnis* (storage) and *Funktionsgedächtnis* (remembering), which together make up cultural memory. Assmann described *Speichergedächtnis* as the passive pole, and *Funktionsgedächtnis* as the active pole of memory.^③ Here the Internet is of the utmost importance and at the same time one of the areas where the current changes to our cultural life manifest very clearly. Assmann summarized this process as a transition from a culture of memory to a culture of attention, with the consequence that the abstract classification of a library catalogue is no longer sufficient. What is important in the visual medium of the Internet is the art of an attractive display,^④ meaning that, nowadays, users of media art archives expect high quality and great features on the websites they visit.

① Gerfried Stocker at the workshop 'Media Art Archiving - Politics and Strategies', Ars Electronica Festival 2009, organized by the Ludwig Boltzmann Institute Media.Art.Research, and Ars Electronica on the occasion of the launch of the Gateway to Archives of Media Art (GAMA), Linz, 5 September 2009.

② De Baere, Bart, 'Potentiality and Public Space. Archives as a Metaphor and Example for a Political Culture' (2002), pp. 106-7, in Von Bismarck, Beatrice, Sonja Eichele, Hans-Peter Feldmann (eds.), *Interarchive. Archivische Praktiken und Handlungsräume im zeitgenössischen Kunstfeld / Archival Practices and Sites in the Contemporary Art Field. Exhibition project "Interarchiv"*, Kunstraum der Universität Lüneburg. Cologne: Verlag der Buchhandlung Walther König, 2002, pp. 105-112.

③ Assmann, Aleida, 'Archive im Wandel der Mediengeschichte' (p. 169), in Ebeling, Knut and Stephan Günzel (eds.), *Archivologie. Theorien des Archivs in Philosophie, Medien und Künsten*. Berlin: Kulturverlag Kadmos, 2009, pp. 165-75.

④ Assmann, Aleida, 'Druckerpresse und Internet - von einer Gedächtniskultur zu einer Aufmerksamkeitskultur' (2003), in *Archiv und Wirtschaft*, 1/2003. Link: http://www.wirtschaftsarchive.de/zeitschrift/m_assmann.htm Attention in the context of the Internet is widely discussed; see, for example, Goldhaber, Michael H., 'The Attention Economy and the Net', in *First Monday*, 1997, vol. 2, no. 4. Link: <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/519/440>.

GAMA: Gateway to Archives of Media Art

The creation of a common Gateway to Archives of Media Art (GAMA) provided the institutes mentioned above - NIMk, C3, Ars Electronica, and others - with a worthwhile endeavour. The project, initiated in 2007, should facilitate sharing the necessary efforts for publication, communication and dissemination among the participating repositories. The platform www.gama-gateway.eu, launched in September 2009, provides common access and search tools to eight new media art collections and archives, which is a huge quantitative and qualitative improvement to the accessibility of media art on the net.^⑤ This access is based on a common metadata model to which the heterogeneous metadata sets of the different repositories are mapped.^⑥ In order to give the user a tool to deal with a multitude of search results, facet-based filtering options are provided. These are, among others, based on vocabularies that classify the artefacts on a formal level as content types, and on as keywords on a content level.^⑦ Furthermore the variations in naming and spelling countries and cities are harmonised during the integration of each individual source database by allocating the name in the source to the abbreviation indicated in the international standard of country codes ISO 3166.^⑧ The search function works with a homogeneous dataset whereas the original information of the archive is displayed. Maintaining each archive's individuality while displaying harmonized data in the portal is the general approach to dealing with the heterogeneity of the sources. The portal is not only an important distribution tool and a significant improvement to the visibility of the participating institutes and their repositories. The technical platform delivers tools and services especially for multimedia content that the participants could never afford themselves; moreover, they do not possess the skills to apply them. This applies especially to the video indexing software with its various applications that enable additional automatic metadata creation for the audiovisual content. The optical character recognition for the videos, for instance, enables accessing information that is stored in the

⑤ GAMA network links repositories of the following institutions: Heure Exquise! (Mons-en-Baroeul, FR), Netherlands Media Art Institute (Amsterdam, NL), Argos Center for Art & Media (Brussels, BE) and Filmform Foundation (Stockholm, SE), Ars Electronica (Linz, AT), Les Instants Vidéo Numériques et Poétiques (Marseille, FR), C3 Center for Culture & Communication (Budapest, HU), SCCA Center for Contemporary Arts (Ljubljana, SI).

⑦ The curatorial team of GAMA was very aware of the problems relating to classification systems and vocabularies. But the improvement of access that is enabled by using vocabularies was estimated higher. A glossary provides explanations of the terminology, see <http://www.gama-gateway.eu/index.php?id=search>.

⑧ http://www.iso.org/iso/country_codes/iso_3166_code_lists.htm.

⑥ For detailed information see the GAMA deliverable: Viliam Šimko, *D3.2 Content and Metadata Repository Report*, 30 April 2009.

video files and is not added manually. Based on shot boundary detection, key frames for each video file are created to provide users with a visual browsing tool, and previews in H.264 give an impression of the content. The GAMA portal also provides the necessary streaming technology.^⑨

The GAMA portal shows the benefits of collaborating on the levels of access, distribution and dissemination. Furthermore, the greater quantity and broader range of content in the gateway also increases the appeal for educational contexts.

Besides GAMA as model for cooperation between holders of archives, collections, technical institutes and universities, Rhizome and the Internet platform for digital art and culture, netzspannung.org, among others, can be regarded as examples of how to build digital archives collaboratively. These examples provide an online and publicly accessible infrastructure for storage and documentation. Whereas Rhizome stores communications about media art, and its ArtBase collection focuses on media art works, netzspannung.org was dedicated to storing and disseminating creative as well as scientific projects relating to digital culture, with the aim of monitoring contemporary productions and developments in this field. To fulfil this mandate, besides the establishment of the open submission channel, different models were developed to motivate user groups to participate in the creation of the archive. The netzspannung.org team collaborated with conference organizers, curators, teachers and research projects that did not have the capacities to document and archive their activities themselves, and saved this documentation on the platform. Furthermore, a student competition for media art, media design and media technology was initiated and realized entirely online, based on the platform infrastructure for submission, review and publication. In this way an archive of student projects and teaching concepts was created over the years, which, even now, is unique in its extent and transparency.^⑩ The selection of content for the netzspannung.org archive was realized through different levels of collaboration, ranging from a free submission policy to an editorial decision-making process including selection by external organizers or an appraisal by jury members.

Along with other examples, Rhizome and netzspannung.org prove that collaborative documentation and archiving is a very successful strategy to preserve cultural heritage. The time to improve sustainable archiving and open up the archive to its providers and users is upon us. Contemporary archiving is not only an obligation to future generations but it is also vital for current cultural life, as the use of both online resources proves, and Gerfried Stocker also pointed this out from his perspective as curator of Ars Electronica exhibitions: 'What we rather should do much, much earlier is work with the artists on descriptions, create manuals, create those materials that would help us now already and even more in the future to re-stage, restore and re-install these kinds of projects'.^⑪ Integrating the artist in the preservation of the works started with the INCCA artists' interviews and the Variable Media Questionnaire, but is not yet implemented in the documentation of the production process of festivals and exhibitions.

Open museum

With regard to the open structure of collaborative art platforms we can argue that, compared to the past, it might be easier today for works and documents to become part of an archive or a collection. The appraisal and selection of content is a general problem, though, which has to be dealt with in institutional as well as in community-based collections, as these online resources also show. 'Each platform has a filtering mechanism, filtering works invisibly at the backend but is always present. Filtering is a key to success: it can make the resource desirable to be a part of, and therefore accepted by the users. Filtering is carried out in a strict manner by a few decisive people with consistent judgements of taste. The way filtering is organized decides the destiny of the project: filtering is usually absolutist to keep up the quality of the resource, and is also democratic to allow for a variety of works and approaches.'^⑫ Besides excluding projects, this process can be organized with strategies of distinction or with tools for appraisal such as *The Pool* by the University of Maine's Still Water laboratory.^⑬ This is a collaborative online environment used in different contexts: the Creation Pools (for art, text and code) refer to projects by people who collaborate in *The Pool*, whereas Reference Pools help locate and rate external projects.^⑭

⑨ For further information about the GAMA video indexing system, see Lüdtker, Andree, Björn Gottfried, Otthein Herzog, George Ioannidis, Michael Leszczuk, Viliam Šimko, 'Accessing Libraries of Media Art through Metadata', in Tjoa, A.M. and R.R. Wagner (eds.), *Proceedings of the 20th International Workshop on Database and Expert Systems Application, DEXA 2009. 31 August - 4 September 2009, Linz, Austria*. Los Alamitos, CA: IEEE Computer Society, 2009, pp. 269-73.

⑩ <http://netzspannung.org/digital-sparks/projects>.

⑪ Gerfried Stocker at the workshop 'Media Art Archiving - Politics and Strategies' at Ars Electronica Festival 2009, organized by the Ludwig Boltzmann Institute Media.Art.Research and Ars Electronica on the occasion of the launch of the Gateway to Archives of Media Art (GAMA), Linz, 5 September 2009.

⑫ Goriunova, Olga and Alexej Shulgin, 'From Art on Networks to Art on Platforms' (p. 255), in Krysa, Joasia (ed.), *Curating Immateriality: The Work of the Curator in the Age of Network Systems*. New York: Autonomedia, 2006, pp. 237-64.

⑬ http://pool.newmedia.umaine.edu/artreference_pool.php.

⑭ <http://pool.newmedia.umaine.edu/faq.html>.

Tools for personal or community-based contextualisation and recollection, for collaborative teaching and research contexts, or for personal collections, are becoming increasingly relevant, as is the discourse on the public curating shows.¹⁵ In museums and exhibitions several strategies and tools have successfully integrated the audience into the process of creating contexts and the resumption of a web of meanings, for example, the project *Your Show Here* at the Massachusetts Museum of Modern Art, the *Connections Gallery* at the Whitney Museum,¹⁶ and the project *Curator for One Day*, realised by the Netherlands Media Art Institute as part of the *Video Vortex* exhibition.¹⁷ In the latter, visitors could select videos from the video collection via a web interface and create their own program, which was then screened in the exhibition for one day. User-defined vocabularies as enabled by several art platforms also involve the user in the contextualization of archival content. The results of the *steve.museum* project confirmed the ability of folksonomies to improve accessibility to museum collections.¹⁸ The networked environment is dedicated to collaborations, and this is a challenge and an opportunity for media art archives and collections. As Christiane Paul pointed out: 'Within a technological framework, curation is always mediated and agency becomes distributed between the curator and the public, and software is involved in the filtering process.'¹⁹ The GAMA portal provides a multimedia Wiki as a tool to integrate the works and documents in contexts that are defined by the users - teachers and their classes, or curators. Unlike normal Wikis, the GAMA multimedia Wiki enables users to easily insert information about a work or person that is sourced from the archives. It can be fully displayed (video preview inclusive) or is only visible on rollover. In the GAMA portal the multimedia Wiki is also used to create guided tours, enabling a topical approach to the archive's content for those users who are not familiar with the field.²⁰

¹⁵ See, for example, Paul, Christiane, 'Flexible Contexts, Democratic Filtering and Computer-aided Curating: Models for Online Curatorial Practice' in Krysa, Joasia (ed.), *Curating Immateriality: The Work of the Curator in the Age of Network Systems*. New York: Autonomedia, 2006, pp. 85-105.

¹⁶ *Your Show Here* was presented at the Massachusetts Museum of Modern Art, 26 January - 19 May 2002 (<http://www.lethaprojects.com/your-showwhere.html>). The *Connections Gallery* was shown at the Whitney Museum. Both projects are introduced in Paul, Christiane, 'Collaborative Curatorial Models and Public Curation', in *Switch*, no. 17 [Rivets and Denizens], 2002.

Link: http://switch.sjsu.edu/nextswitch/switch_engine/front/front.php?artc=70.

¹⁷ <http://nimk.nl/eng/search/curator-for-one-day>.

¹⁸ For more information on the evaluation of folksonomies in the context of museum's documentation of the *steve.museum* project, see Trant, Jennifer, 'Tagging, Folksonomy and Art Museums: Results of the *steve.museum*'s research project' (2008), in *Archives & Museums Informatics*, January 2009. Link: <http://conference.archimuse.com/files/trantSteveResearchReport2008.pdf>.

¹⁹ Paul, 2006, op. cit., p. 99.

Future challenges

Of course these examples only provide a glimpse of the type of tools that could - and probably will be - applied to networked contextualisation and appraisal in the future. Especially since online resources are constantly threatened with extinction and the problem of preservation is not yet solved, development of tools for contextualisation has to accompany strategies of sustainable archiving. Until now, repositories and projects are at risk and can only be saved if a museum or research institute can be found with the necessary skills and interest, and is willing to assume responsibility - sometimes at the price of their disappearance from the public domain. The question arises of where to 'leave' the archive and how this will affect the content. Transferring archives - and for institutes to reach a decision about this - is fraught with difficulties. As the history of media art also exists within smaller archives and the web has facilitated unprecedented tools to access these collections, a more profound question arises: In addition to all the steps necessary to ensure their continued survival, how can we publicize these remarkable materials? If we cannot locate them, how can we make the case for their inclusion in the art historical record?²¹ For example, *netzspannung.org* could no longer be maintained by its founders, who must now be content that the Centre for Art and Media (ZKM) in Karlsruhe keeps an archived version online without submission options.²² The *Thing Vienna* (1993-2004) and the *Thing New York* (1991-2004) are not available online anymore. The data has been delivered to the LBI Media.Art Research. in Linz, where the platforms are being reconstructed and will be maintained by the University of Graz (Austria).²³ The Internet art platform, *low-fi.org.uk*, is also currently offline and will be archived as an offline version by the Rose Goldsen Archive of New Media Art at Cornell University, which is also developing an offline archive for the net art projects commissioned and sponsored by Turbulence since 1996.²⁴

²⁰ <http://wiki.gama-gateway.eu/index.php/Tour>.

²¹ Some of the questions that were posed at the expert meeting 'Archive 2020', May 2009, Amsterdam, organised by Virtueel Platform.

²² According to Monika Fleischmann, who initiated *netzspannung.org* together with Wolfgang Strauss, the ZKM agreed to reactivate the submission option if new funding for the platform is acquired.

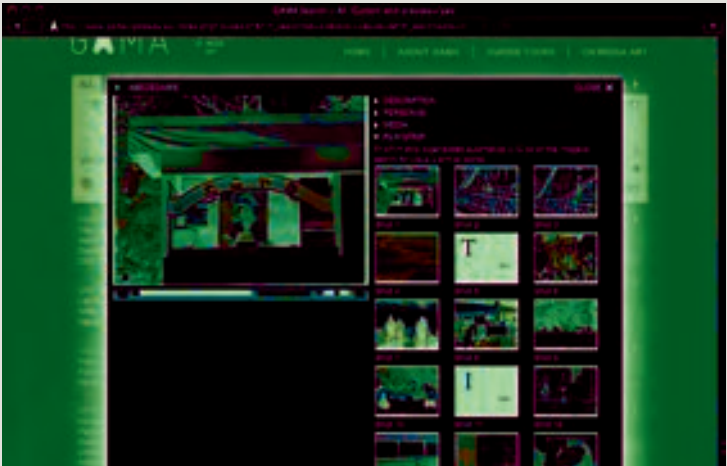
²³ 'The research project *netpioneers 1.0* was realized at the Ludwig Boltzmann Institute Media. Art. Research. in Linz, Austria (2007-2009). It includes online contextualisations and restorations of early net-based art projects like *The Thing New York*, *The Thing Vienna*, *t0 - Public Netbase* and selected works by *jodi.org* and Holger Friese. The project will be continued at the Karl-Franzens Universität Graz, Institute for Art History and the Center for Information Modelling in the Humanities.' Description from <http://www.netzpioniere.at>.

²⁴ <http://goldsen.library.cornell.edu/internet/index.php>.

As far we can predict, the future of our archives lies in networked infrastructure and in making data future-proof by ensuring that data sets and metadata meet certain requirements. Many archives do not have the infrastructure to preserve ‘born and reborn’ digital files. Digital Repository Services such as AVAN: Audiovisual Archive Network ²⁵ offer solutions to the archives’ lack of infrastructure, which will aid the archives’ preservation efforts. Furthermore, the development and adoption of a Data Seal of Approval²⁶ ensures that in the future media art data can still be processed in a high-quality and reliable manner, without resulting in new thresholds, regulations or high costs. Relying on networking and collaboration for media art archives are the challenges for the future.



GAMA search results for JF Guiton



GAMA filmstrip for ABÉCÉDAIRE

²⁵ <http://www.archivenetwork.org>.

²⁶ <http://www.datasealofapproval.org>.

gabriele blome

Gabriele Blome is an art historian and teaches at the Department of Media Studies at the University Siegen (Germany). She researches access and documentation strategies for media art archives. As a researcher at the Ludwig Boltzmann Institute Media.Art. Research. in Linz (Austria) from 2007 to 2009, she worked on online resources for scientific documentation and archiving of new media art and collaborated on the GAMA project. She worked at the media museum of the Center for Art and Media (ZKM) in Karlsruhe from 1997 to 1999, and was the editor of netzspannung.org at the MARS Exploratory Media Lab of Fraunhofer IAIS from 2000 to 2007.

gaby wijers

Gaby Wijers is the head of collection, conservation and related research at the Netherlands Media Art Institute (NIMk), Amsterdam (NL). She has a background in librarianship, theatre and informatics. Gaby coordinated the Preservation of Video Art in the Netherlands 2001-2003 project, and has participated in several research projects, including Inside Installations, GAMA, and currently, Inside Movement Knowledge and Obsolete Equipment. She has edited the online newsletter *Monitoring Media Art Preservation* since 2005 and is a guest lecturer at the University of Amsterdam. Gaby is head of the steering committee of the Foundation for the Preservation of Contemporary Art (SBMK).

file under

production, preservation, accessibility,
collaborative art platforms, open
museum, networked environment

archive2020

ORAL HISTORY AND THE MEDIA ART AUDIENCE

6•0

Lizzie Muller



ORAL HISTORY AND THE MEDIA ART AUDIENCE

Lizzie Muller

*'I'm an interactive artist:
I construct experiences.'*^①

*'Many limit the value of oral
history and interviewing to an-
ecdotes, the illustrative inci-
dent, the ambience of the time
... I think it helps get the event
itself... the guts of the event,
the heart of it.'*^②

Documenting audience experience is one of the greatest challenges and one of the most promising new directions in the creation of media art archives. Media art theory emphasizes the role of participants, but descriptions of their experiences in their own words rarely appear in the documentary record. The field of oral history provides a valuable approach to addressing this gap. It presents arguments for the historical legitimacy and significance of first-hand accounts of actual experiences, as well as guidance for good practice in creating and manag-

ing such resources. The use of oral history is not new in art documentation; it has been used effectively to record information from the perspective of artists and important figures in the art world. In this essay, however, I argue that oral histories of media art should be expanded to include the experiences of the audience. I describe a recent case study in this area that focuses on the work of the seminal media artist David Rokeby.^③

In the quote that opens this essay David Rokeby acknowledges that as an artist working with computers his role is not to create objects, but experiences. The experiential nature of such artworks is often seen as a problem for documentation, raising the question of how, or even whether, we should preserve their immaterial aspects. But the mutability of media art can also be seen as a valuable opportunity for developing new forms of documentation. Archivist and theorist Alain Depocas argues that documentary practice must address the transitory and transitional state of media art: 'grasping all the consequences of this transitoriness requires a profound paradigm shift'.

6•1

① Rokeby, D., 'The Construction of Experience: Interface as Content', in Dodsworth Jr., C. *Digital Illusion: Entertaining the Future with High Technology*, pp. 27-47. New York, NY: ACM Press/Addison-Wesley Publishing Co., 1998.

② Lord, W., *Oral History Review* (1968), quoted in Reimer, D., *Voices: A Guide to Oral History*. Victoria, B.C.: Sound and Moving Image Division, Provincial Archives of British Columbia, 1984.

③ The research reported in this chapter was conducted primarily during a residency at the Daniel Langlois Foundation in 2007. This essay was adapted from an essay published on the foundation's website <http://www.fondation-langlois.org>.

There have already been significant advances in methodologies for documenting media artworks from an archival and preservation perspective. The Variable Media Network, for example, has developed an approach that seeks to identify the essential qualities of an artwork by interviewing the artist and others involved in the creation of the work.^④ The Capturing Unstable Media project has developed a formal conceptual model for describing and preserving aspects of electronic artworks, which is flexible enough to accommodate the iterative and processual nature of media arts projects.^⑤ Both the Variable Media Network and the Capturing Unstable Media initiative agree that audience experience is important, and both make space in their structures for experiential material. However neither has developed methods for dealing with this aspect of documentation, and the audience experience continues to be a gap in the documentary record.

Oral Histories; valuing experience, listening to voices
The field of oral history offers precedents, models and guides for good practice in recording, cataloguing and preserving accounts of individual experiences.

It also redresses a historical imbalance in the kinds of information that are recorded, valued, and will be made available to people in the future. Reimer describes oral history as the use of the actual words and voices of those who lived and witnessed history to document people and topics previously absent from the historical record. Such gaps appear, he argues, when 'groups in society [have] neither the means nor occasion to represent themselves by written records and hence our knowledge of them [comes] through impersonal statistics....'^⑥ The media art audience is such a group.

Whilst there are already existing oral history projects that relate to art, these focus mainly on the lives and accounts of important or powerful figures in art history. The Archives of American Art Oral History Program, for example, which began in 1958, documents the history of the visual arts in the United States, primarily through interviews with artists, historians, dealers and critics. The CACHE Project (Computer Arts, Contexts, Histories, etc.) collates numerous archives relating to British computer art, and includes interviews with artists considered to be pioneers

in the field. The project What's Welsh for Performance Art?, led by Heike Roms, has created a rich archive of interviews with leading Welsh performance artists. Roms' innovative technique includes publicly staged interviews that allow members of the audience who were present during the events to question or correct the accounts given by the interviewee. Despite these valuable oral history projects there is still a lack of material that records the experience of the 'non-professional' participants. The audience remains a silent majority in the history of media art - much talked about but rarely heard.

Curators, conservators, artists and arts administrators have the power and the responsibility to select or produce institutional archival records about the art of today. Oral histories of media art should address the gap in experiential documentation by recording many different perspectives on a work - including the views of the artist, curator and technician - but their particular contributions would serve to emphasise the experience of the general audience. These histories would offer rich and varied portraits of how the artworks existed in experience and would necessarily widen our understanding of the relation-

ship of media art to its social and cultural context. Oral history is part of a spoken rather than a written tradition. Its materials are produced from a conversation between the archivist/researcher and the subject, which implies a significant ethical dimension in its production. As described in the quote from Walter Lord that opens this essay, many historians immediately consign oral documents to the periphery. Such accounts are necessarily less polished than written records, and therefore seem to have less authority in the text-based world of historical research. Countering this position Reimer points out that oral history was in fact one of the first ways of registering history, which was eclipsed when the technology of the written word became our primary mode of recording.^⑦ However, modern technologies such as the telephone, video and Internet are bringing orality back more strongly into our culture. Mackay argues that oral history has developed hand-in-hand with technology.^⑧ Beginning with the open reel tape recorders of the 1930s and 1940s, it was developments in recording technology that first made the recording of people's verbal descriptions possible. The 1960s and 1970s represented a boom in oral history recordings due to the introduction of small

④ Depocas, A., J. Ippolito, and C. Jones (eds.), *Permanence Through Change: The Variable Media Approach*. New York, NY: The Daniel Langlois Foundation for Art, Science, and Technology, Montreal, and Solomon R. Guggenheim Museum, 2003. Link: <http://www.fondation-langlois.org/html/e/page.php?NumPage=200>.

⑤ Fromme, R. and S. Fauconnier, 'Capturing Unstable Media Arts - A Formal Model for Describing and Preserving Aspects of Electronic Art', in Frohne, U., J. Guiton and M. Schieren (eds.), *Present Continuous Past(s): Media Art: Strategies of Presentation, Mediation and Dissemination*. Heidelberg: Springer Verlag, 2005.

⑥ Reimer, D. (ed.), *Voices: A Guide to Oral History*. Victoria, B.C.: Sound and Moving Image Division, Provincial Archives of British Columbia, 1984.

⑦ Reimer, D., 1984, op. cit.

⑧ Mackay, N., *Curating Oral Histories*. Walnut Creek, CA: Left Coast Press, 2007.

portable tape recorders. Digital technology introduced in the 1990s opened new possibilities for preserving and presenting records, and video offered the option of adding visual information. The relationship of oral history to technology makes it a particularly interesting form of documentation for media art, as both the artform and its means of documentation reflect and exploit technological change. Advances in Internet technologies - particularly the ability to easily upload and download video and audio content to websites - offer the possibilities of distributed production and widespread dissemination of audiovisual records.^⑨

Whereas in the early days of oral history the written transcription of an account was considered the primary document, current practice emphasizes the central importance of the audiovisual recording. This emphasis recognizes that the value and content of an oral account is inextricably bound up with its telling: the time-based unravelling of the story in the voice of the person who tells it. The tone of voice, attitude and the emotion of the speaker, the memory lapses and self-correction are all vital parts of oral records, which situate the account related by the speaker. Even in their complete form oral records are clearly subjective and selective; no single oral record claims to hold the whole truth. As Reimer argues, few historical records reveal the

biases of their creators as openly as oral interviews. The challenge, then, in creating an oral history of media art is to find ways to present experiential accounts that allow the oral register to be valued, understood and placed centrally in the history of media art. In the second part of this essay I describe an example that attempted to solve some of these problems through the creation of an online documentary case study that combined traditional archival materials with oral records from both the artist and the audience.

Case study:

An oral history of David

Rokeby's *The Giver of Names*

In 2007 The Daniel Langlois Foundation commissioned Caitlin Jones and me to create a documentary collection for the artwork *The Giver of Names* (1991-), by David Rokeby (see image). Through the creation of this case study we have developed a promising approach to media art documentation that integrates oral records from both the artist and the audience with traditional archival materials. *The Giver of Names* is a computer system programmed to see, analyze and describe objects offered to it by participants. In the ideal scenario envisaged by the artist, a participant chooses objects from a pile on the floor and places them on a plinth to be analyzed and described by the computer. The computer's descriptions are assembled

from its language database, responding to parameters such as colour, form and position. The computer speaks the description aloud, and it appears as text on a screen showing an image of the object, suspended directly above the plinth. The sentences it produces are grammatically correct but non-sensical. The descriptions may seem poetic, whimsical or foolish to the human observer, but, crucially for Rokeby, they should not be perceived as being completely random.

The documentary collection includes an interview with David Rokeby, interviews with audience members and museum guards, as well as detailed technical documentation of the work, photographs and bibliographic references. Our strategy was to emphasise the dialogue between the ideal, conceptual existence of the work, and its actual manifestation through different iterations and exhibitions in the real world. Maintaining this tension between the real and the ideal allowed us to articulate the relationship of experiential material in^⑩ the broader archival context.

During the course of the exhibition we interviewed audience members of all ages and with many different backgrounds, professions and levels of experience with art and technology. The creation of this case study shed light on the many

practical and methodological issues that must be considered when producing oral records of audience experiences. In the remainder of this essay I outline the most important of these issues, and describe the solutions we implemented in our own work.

1

The role of the researcher

The creation of oral records necessarily entails questions of validity and reliability. Oral records are considered by some to have diminished status among other forms of historical documentation, because they necessarily reflect the personal viewpoints of both the record-creator and the subject. There are two useful strategies proposed in the literature of oral history^⑪ to counter these objections. The first is to make created oral materials available in conjunction with a variety of other kinds of materials wherever possible. This allows for a form of triangulation in which different types of material can validate and problematize one another. The second is to emphasise the unique value of the reflexive way in which oral records are produced. Oral documentation implies a proactive role for the archivist/researcher as the record-creator - and not merely as the custodian. Materials are produced self-consciously for an array of future purposes and

^⑨ Mackay N., 2007, op. cit.

^⑩ Jones, C. and L. Muller 'Between Real and Ideal: Documenting Media Art', in *Leonardo*, vol. 41, no. 4, 2008, pp. 418-19.

^⑪ Ellis, J., *Keeping Archives*. Port Melbourne: Thorpe in association with the Australian Society of Archivists, 1993.

with an awareness of current practice. The rigour of this practice is generated through an emphasis on clarity of motives and methods and a reflex.

2

Technical considerations

Creating audiovisual documentation of digital installations is notoriously difficult because of the prevalence of darkness, screens and projections. Often the local conditions of an artwork (e.g., the ambient lighting) will need to be adjusted to create good photographic or video documentation. When documenting audience interactions, these kinds of adjustments are impossible, as they will affect the participant's experience of the work. There is no easy solution to this problem. Experience suggests that a combination of the best available camera and maximum manual control (to avoid particular problems like autofocus), a good camera operator, as well as considerable tweaking during post-production, achieves reasonable results. On the other hand it is important to remember that in recording audience experiences the verbal report of the participant is the most important information. Our technical priority in *The Giver of Names* case study was to always ensure that the sound quality was as good as possible.

3

Ethics, consent, copyright

The ethical and legal status of an experiential record is vital if it is to be made available

to future researchers. The main requirements include the need to certify informed consent, and to transfer copyright from the participant to the researcher. In most instances the necessity of completing the correct paperwork needs to be balanced against the challenge of persuading general visitors to participate in an interview. Long, complex and intimidating consent forms could discourage potential participants, so it is vital to spend time preparing the simplest paperwork possible, whilst meeting all necessary legal and ethical requirements.

4

Capturing negative or neutral experiences

An important challenge in creating experiential documentation is the question of how to record 'negative' experiences. It is much easier for researchers to record interviews with participants who have clearly had a satisfying, or at least a reasonably long interaction with the artwork. In many cases, however, visitors are likely to have only minimal engagement with the work. In order for the documentation not to be misleading, it is necessary to contextualise the high-quality experiences recorded in interviews within the larger field of less attentive encounters. The solution we used in *The Giver of Names* case study was to include interviews with the professional gallery attendants who watch over the artwork every day. The attendants describe their

own perceptions of the general behaviour of the crowd, and provide something of a contextual overview of the audience. Capturing the individual experiences of the attendants in this way provides a more interesting source of more general information than quantitative surveys.

5

How many experiences to record?

The aim of creating an oral record of the audience's experiences of any particular artwork is not (and could never be) to create a complete record of the different ways in which an artwork manifests. Each person's experience is both necessarily partial - only showing some of the many aspects of an artwork - and at the same time complete in itself. Just one real experience is enough to open up the field of possibilities that exists in an artwork and add a spark of life to its documentation. The kind of experiential records that would form an oral history are qualitative rather than quantitative in nature, and do not lend themselves to statistical uses. On the other hand, comparisons between different people's experiences can be very illuminating, and recording a variety of different experiences adds richness to a collection. In *The Giver of Names* case study we created a multilayered portrait of the work by ensuring a balance between the genders, a good spread of ages, and different kinds of expertise and interests in the people we interviewed.

Conclusion: Towards an oral history of media art

The work done for *The Giver of Names* case study demonstrates that oral documentation is valuable, but also time-consuming and difficult. To make a significant impact on the way that media art is understood now and in the future, oral history initiatives need to pool the efforts of the many researchers and institutions who are interested in audience experience, and to galvanize others to begin to include this kind of work in their documentary processes. The increasing ease of uploading and downloading video content via the Internet makes such a global perspective not only desirable, but also achievable. The issues raised by this case study show that such an initiative would need to strike a delicate balance between openness and flexibility on the one hand, and rigour and structure on the other. An oral history of media art would need to establish standards of collection and curating that cover a range of areas, including production values, ethical and legal issues, reflexive and accountable methods, and the intelligibility of records supported by detailed contextual information and cataloguing. The reward would be a significant response to the gap that currently exists in our records of audience experience. Such a resource would ensure the lively existence of today's artworks

in the future, as well as a re-balancing of art historical accounts to include the reality, not just the idea, of the audience's active role in media art.

David Rokeby, *The Giver of Names*, 1991-2004, variable dimensions, video camera, computer, custom software, objects, pedestal, video projector, rear-projection screen, small multimedia speakers. Photograph: Silversalt Photography, courtesy Campbelltown Arts Centre.



Lizzie Muller is a curator, writer and researcher specializing in interaction, audience experience and interdisciplinary collaboration. She is Senior Lecturer in the School of Design at the University of Technology, Sydney. Recent projects include Thinking Through the Body, a programme of interdisciplinary collaborative research funded by the Australia Council and Mirror States; and an exhibition of interactive artworks at Campbelltown Art Centre, Sydney and MIC Toi Rerehiko, Auckland. In 2007 she was Researcher in Residence at the Daniel Langlois Foundation in Montreal, investigating the role of audience experience in media art archives and documentation.

<http://www.lizziemuller.com>

audience participation, oral history, non-professional, context, (audio) visual documentation, copyright, standards

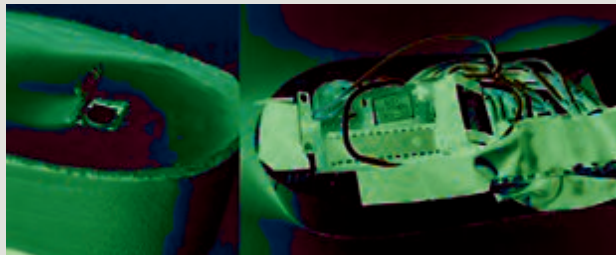
SERIOUS ARCHIVING

PRESERVING THE
INTANGIBLE BY
CAPTURING
PROCESSES

Annet Dekker
in conversation with
Jeroen van Mastrigt

SERIOUS ARCHIVING: PRESERVING THE INTANGIBLE BY CAPTURING PROCESSES

Annet Dekker
in conversation with
Jeroen van Mastrigt



F.A.T.S. (Fitness Achievement Technology Sneaker), 2008.

At the Art, Media and Technology Faculty at the Utrecht School of the Arts (HKU) you develop knowhow for education and related fields about new disciplines that occur at the boundary of art and technology. Why has the emphasis shifted to games in the last few years?

Games are incredibly popular. In the past few decades games have grown into a mainstream phenomenon at the centre of the media landscape and they play an increasingly important role in contemporary culture. They are symbolic centres in and around which various subcultures define themselves. In my opinion, we can describe many of these subcultures as 'playful cultures'. As a result, game development has become an important new design discipline. Young developers want to express themselves by making games and by reflecting on playful cultures.

Games are also applied to an increasing degree in other contexts, such as communication, education, cultural heritage and health care. People have been using game technology and game design beyond an entertainment context for as long as video games have existed. Armies have been using computer simulations to train soldiers for decades: flight simulators, combat simulators and strategy war games are all examples of these. The American military created the game *America's Army* at the beginning of the twenty-first century and used it to attract new recruits. It was a huge success. This led to the evolution of a 'serious games' movement. Besides being used as educational aids or as supplementary tools during therapy, academics, designers and entrepreneurs widely believed that games could be implemented to modify behaviour. I no longer use the term 'serious games' because you learn something from every game you play, including entertainment games. What you learn cannot always be applied immediately beyond the context of the game itself. This is why I use the term 'Applied Game Design' when referring to applying gaming principles to stimulate people to take action or induce a perception relating to all manner of contexts and problems.

The creative and meaningful application of game design and gaming technology in all sorts of contexts is a very complicated activity. Designing a meaningful experience and gameplay based

on well-balanced game rules and mechanics is already complex - certainly when it comes to multi-player games. Relating the experiences and gameplay to set objectives is even more difficult. Furthermore, designing these types of games involves many disparate disciplines that do not always mesh properly. In particular the interaction between specialists from the field and game designers leaves much to be desired. The creative fields and the context in which games are used call for design models and methods for Applied Game Design and knowledge relating to the design process. This is why the research conducted by the Art, Media and Technology Faculty pays a great deal of attention to design models, methods and processes.

Can you tell us more about the role of games in society?

Media theoretician Henry Jenkins suggests that while gamers are playing games they develop all types of skills that are of vital importance in an information society, such as coping with vast amounts of highly complex information, recognizing patterns in rapidly changing information streams, working with others to interpret information and basing actions on that interpretation, assuming roles, etc. You cannot learn these types of skills from a book; at best you only develop them to a very limited degree. Gaming is an important aid to learning essential skills such as these. The institutes that play an important role in nurturing these skills among new generations - museums, schools, universities and the media - are not yet ready to start integrating games and gaming in their core activities. One of the reasons for this is that they do not understand games, gaming and gamers. They regard the phenomenon from their own perspective in which games are objects, and consequently they are walking backwards into the future.

Perhaps the ascent of social media, wireless networking and sensor technology will alter this perception. People are playing 'together' and 'outside', and realize that game design principles can also be applied to their physical and social surroundings. For example, *Foursquare* is a popular application for the iPhone (and others) that relates game design principles to the physical and social space. In *Foursquare* people can 'log-in' from a location, for example, a station, museum, shop or cafe. If you visit specific locations you are awarded a 'badge' (a type of scouting insignia). A gamer can receive the 'gym rat badge' if he goes to the gym several times a week. People who most frequently visit a particular location become the 'mayor' of that place. Many people like collecting the badges and gaining recognition on social networks. Using gaming principles could be a way to get people to go to the gym more often. *Foursquare* is still quite

simple at the moment and the application is primarily applicable in marketing contexts, for example, free coffee for the 'mayor' at Starbucks.

You could also think of other contexts to which this could be applied. For example, our students developed a shoe called F.A.T.S. (Fitness Achievement Technology Sneaker) in cooperation with the Netherlands Organisation for Applied Scientific Research (TNO) that changes colour if it is used a lot. The shoe was primarily developed for children with obesity. You add aspects such as competitiveness and status to the shoes, but users are not necessarily aware of this. In the future more of these metagames will be developed that will stimulate people to deal more responsibly with energy in their day-to-day lives. These games are not necessarily *about* something, but they can use gaming principles to modify behaviour.

Back to the subject of this publication: archiving and preserving born-digital material. Besides traditional computer and console games we are witnessing the emergence of games in which the social and physical realities beyond the console are becoming more important. How should we approach this when dealing with management and preservation?

You probably shouldn't make games if you want to create something that lasts forever, but there are ways to preserve games. There are two paradigms. The first is a traditional paradigm that regards a game as an *object*. The other paradigm regards a game as a *system* that only exists in relation to social and physical contexts.

Let's start with the first paradigm. Some people preserve games by maintaining or emulating the hardware and software (the game system, the operating systems and other necessary software) of all sorts of old systems, so that these games can still be played. This is an expensive and time-consuming procedure. Preserving this history and ensuring its accessibility at several locations is a very worthwhile endeavour, however. It is important that researchers and developers can access this essential part of history in the future. It might be interesting, for example, to investigate how a new generation of gamers deal with older games like *Simcity2000*.

This brings me to the second paradigm: preserving games with a view to their social and physical contexts. This is considerably more complex, but still important because many contemporary games only exist in relation to social and physical contexts. For example, how do you preserve games like *World of Warcraft*, *Farmville* or a virtual world like *Second Life*? Millions of people now play these MMOGs (massive multiplayer online games). These types of games do

not exist without players, gameplay or user-generated content. The gameplay consists of moments that you create and experience together. It is impossible to 'save' these gaming worlds and their social contexts as objects. Of course, it is possible to document and analyze the data relating to the behaviour of players, or by using a more qualitative method such as conducting ethnographic research within these worlds and saving the information gleaned. The growing tendency to link these types of games to physical reality by means of devices like the WiiMote, the WiiBalance board, Microsoft's Project Natal, and mobile iPhone and iPad games, compounds the difficulties involved in preserving these games because the physical context of the gaming experience is an essential component. How do you save a football game? You can save the rules of the game and even film a match while it is being played. Furthermore, you can now use technology to capture all kinds of data about the game, for example, by placing sensors in the shoes of the players and the ball, and save it in a different way. But what do these recordings and saved data reveal about the types of experiences the players had? With the aid of information technology like sensors we can save more data *about* performances than we could previously, but not the performance itself.

7•4

How can you preserve games if you start with the paradigm that games are *systems* that only exist in relation to social and physical contexts?

Saving data about (the digital component relating to) the use of games is simple. Analyzing and anticipating user behaviour plays an increasingly important role for large game companies, just as it does for Google. Saving this data does not necessarily mean that it will be accessible, however. As a rule the data is usually in private hands and cannot be accessed by researchers, curators or even the players themselves. The huge quantity of data that the makers of *Farmville* have accumulated relating to the use of this game is staggering, but does it actually contribute anything to our understanding of a specific group of players' specific *Farmville* experience at a specific moment?

In my opinion, documenting games or gaming moments is comparable to preserving oral cultures, sports, martial arts or performing arts such as theatre and dance. A dance performance is a living system that continues developing, and because it is passed on through body movements it can only ever be in a state of development. In fact, saving the performance itself is impossible. Preserving recordings and user data is only one side of the coin. Other possibilities could include ethnographic in-game research or documenting the ideas behind the development of a game, the design strategies that underlie specific games, and the relationship

between design decisions and the experiences players had while playing them. I believe the highest priority at the moment is transferring and maintaining design knowhow and developing a gaming culture that is capable of developing itself in relation to other aspects of our culture. Such a gaming culture will then be able to re-mediate past gaming concepts and principles and re-apply them in new contexts. We haven't reached this point yet.

How do we get there?

Games are still in their infancy and we still know relatively little about how they are designed. The poetics of gaming are still very much in development. An academy where game creation and research go hand in hand and where makers, users and contexts are involved in the collective design and reflection on design plays a important role in developing and transferring these poetics, and in their meaningful application. Reflecting on design and on transferring design knowhow is essential to advancing a gaming culture that is capable of developing itself in relation to other aspects of our culture.

I think that preserving and transferring design models, techniques, strategies, methods and processes are key issues. These have to be made much more explicit than they are at present, and should be preserved and transferred to a new generation of makers who can then apply them in contexts that they consider relevant. This is why, in this context, I believe more in a living museum, a living laboratory, a new academy.

7•5

This is not about exchanging knowledge but more about an ongoing discussion between practise and theory?

It is important to understand that certain games work for specific reasons. There is still too little information available about the relationship between design choices and the creation of behaviour or sensations among groups of players. These insights are now slowly gaining currency among 'reflective practitioners' but have to be developed further and made explicit. How can we deploy gaming principles, game rules and mechanics in strategic ways to create feelings and experiences or motivate people to act in a certain way?

Next, you can examine the issue of how knowledge can be transferred to new generations through physical activity - in the same way that poses and movements are used to transfer knowledge in martial arts or dance. You can then use this knowledge to preserve all types of material that we did not preserve in the past. You not only transfer the *result* of a specific action or a particular way of thinking, but you transfer the action or the particular way

of thinking *itself*, so that someone else can make, experience or think about it themselves afterwards.

Anyway, I don't think that this only applies to games but to all kinds of creative and less creative practises. Here's an example from a more traditional discipline, the art of painting. Technology makes it possible for us to gather a great deal of information about the methods and processes that artists use. Brushes could be fitted with sensors that record how a particular artist works. In addition, you could structurally document more qualitative reflection on the painting process. Recording, preserving and ensuring accessibility to the information will enable new generations to see how an artist went about creating his work. Picasso experimented by filming himself painting. You can then transfer this knowledge, perhaps in a game that teaches you to paint like Picasso. Nowadays all types of design (and other) practises are supported with digital tools. Saving processes and reflecting on them is becoming easier.

Currently, many of these developments are taking place in the creative industry, but this field is not known for research and reflection. What are your thoughts about this?

Art is part of the creative industry and I believe its relationship with the creative industry is comparable to the relationship between fundamental science and practical (product) application. This is why art, and especially born-digital art, is so important for the contemporary creative industry. Many companies in the creative industry are very small, and are often one-man businesses. At the moment there is a drastic downscaling within the creative field because of the ascent of networking technology and applications. Unlike large companies, small companies usually have far less time to spend on far-reaching analyses of their processes and methods. There is also less urgency, because there is less need to harmonize. Large companies have to account for their actions, which means that they are automatically more concerned with methods and processes. Reflecting on methods and processes has been going on for a long time in fields such as architecture and product development. This is because they are more regulated and greater consequences can result from poor design decisions. Buildings can collapse, after all. Until now there hasn't been much interest in processes and methods in art and their creative applications. Many creatives hide behind terms like 'inspiration' and mystify their design processes. Because of the increasing importance of applying creativity and its effectiveness, more attention should be paid to design processes and methods, and to sharing and transferring these processes.

What's more, the increasing use of digital tools will provide much more information about methods and processes. But as I mentioned earlier, data can only convey so much. Other aspects about works or objects that you cannot actually save should be recorded, for example, through ethnographic methods. Art education can and should, in my opinion, play an important role in clarifying and transferring design methods and processes. Not only because it is the only area where you can directly access a large portion of the creative industry, but especially because art education can reflect intensively on design and methods and processes of production for longer periods. Art education is a 'living laboratory' that plays an essential role in capturing, preserving, transferring and re-mediating the intangible.

In which ways does a 'living laboratory' compare to traditional museums?

At this point in time I think that a conservation strategy in which a dynamic place like an (art) academy plays a more central role is more practical than a strategy that is dominated by traditional museums focusing on preserving 'objects'. Online games are important symbolic centres for new generations, and form the 'heart' of their subculture, but many of these symbolic centres are controlled by global media conglomerates. It is vital that we not only teach younger generations to read, but also teach them to write and speak (in gaming terms) and that we link their symbolic centres to public culture and the knowledge infrastructure so that we can make collective decisions about what we as a society consider important to preserve. This results in an entirely different definition of a museum. It has to be a place where people can become actively engaged. Ideally, it is a place where you can study - not only the game but also how it's played.



Permanent exhibition developed by Nintendo game designer Shigeru Miyamoto in which he applies game-design principles and technology as a way to inspire visitors to discover traditional Japanese gaming culture. Photograph: Shigureden, Kyoto.

jeroen van mastrigt

Jeroen van Mastrigt lectures in Art & Technology at the Utrecht School of the Arts (HKU), where he is also responsible for the multi-disciplinary R&D programme Applied Game Design, among others. Jeroen is a member of the steering commission of GATE, a government-funded national research programme in the area of games and gaming technology. He is the secretary of Dutch Game Garden, a game-incubator and hub for the Dutch gaming industry. Jeroen's past activities include co-founding the web-technology company GX and developing Europe's first course in gaming technology for the Utrecht School of the Arts.

<http://gain.hku.nl>

file under

Playful cultures, Applied Game Design, F.A.T.S., (in-game) ethnographic research, strategies, methods and processes, living laboratory, new academy, living museum

archive2020



CULTURAL HERITAGE IN LIMBO: REFLECTIONS ON PRELIMINARY RESEARCH INTO BORN-DIGITAL CULTURAL HERITAGE IN THE NETHERLANDS

8 • 0

&
**NEDERLANDSE
SAMENVATTINGEN**

&
**REFERENCES AND
FURTHER READING**

CULTURAL HERITAGE IN LIMBO:

REFLECTIONS ON PRELIMINARY RESEARCH INTO BORN-DIGITAL CULTURAL HERITAGE IN THE NETHERLANDS

Maurits van der Graaf, Gerhard Jan Nauta

There is a general expectation that we will witness an explosive growth of born-digital heritage in the near future. The number of cultural manifestations that use digital techniques is increasing rapidly. But is the national heritage sector adequately prepared for this anticipated growth? Insiders are pessimistic and fear that much valuable digital cultural heritage has already been lost, and more will be in the future. To gain a better understanding of the scope of the problem, Digital Heritage Netherlands (DEN) asked Maurits van der Graaf from Pleiade research bureau to conduct preliminary studies at a number of heritage institutes. The archives, libraries and museums selected for this research can be regarded as among the trailblazers in the Netherlands.^①

The purpose of the study

On the one hand, the research concentrated on the possibility of assessing the size

and growth of born-digital cultural heritage collections - hard facts are needed to underpin future policy aimed at the preservation of digital cultural heritage, and, on the other hand, on identifying the areas where an institutional - possibly even a cross-sectoral - approach is desirable. The quantitative part of the research focused on developing acceptable terminology for future research: what are the most important types of born-digital cultural heritage, and how can the size of collections of this type of material be measured? This research is part of The Digital Facts project that DEN has worked on since 2008.^② The study encompassed exploratory research in the literature, interviews, group discussions and a short questionnaire. Research was conducted at approximately 40 Dutch institutes that are considered to be among the pioneers in the area of digital heritage and in ensuring long-term accessibility to digital

^① Graaf, Maurits van der. *Born-digital erfgoedmaterialen bij een selectie van Nederlandse erfgoedinstellingen*. Technical report, DEN Foundation: The Hague, 2010. Link: http://www.den.nl/getasset.aspx?id=Rapporten/Born-digitalErfgoedmaterialenBijNlErfgoedinstellingen_versie20100205.pdf&assettype=attachments.

^② See ICT Monitor DEN: *De Digitale Feiten*. Link: <http://www.den.nl/ictmonitor/onderzoek/digitalefeiten>.

cultural heritage. Nearly 30 institutes participated in at least one of the areas of the study. The exploratory character of the study means that the results cannot be applied across the board arbitrarily.

Qualitative results from the research

The study indicates that it is important to start dealing with born-digital material as early as possible. It is not a good idea to wait to process it for as long as is usual with conventional/analogue cultural heritage because of the rapid obsolescence of file formats and computer applications, and the limited lifespan of storage media. The research considered measures such as establishing guidelines, providing information to the producers of cultural heritage, making interim backups, and providing services (tools, storage capacity, etc.). It was evident from the interviews, group discussions and the online questionnaire that people are concerned about losing born-digital cultural heritage produced in the Netherlands. All the participants acknowledged the importance of reaching suitable agreements regarding collecting practises, particularly of the new types of born-digital material. There also appears to be an overall demand for best practices in the context of digital sustainability, selection and acquisition procedures, and other issues.

A surprising result of the re-

search is that the distinction between digitised and born-digital cultural heritage had little relevance for many of the respondents. This seems to be linked to the fact that many collections include both digitised analogue material and born-digital material, while both types of material appear to be managed in the same systems. Is it possible that most of the institutes involved in the study concentrate on material that strongly resembles digitised analogue material? Or is the management and preservation of born-digital cultural heritage - in the strictest sense, material that does not lend itself to being converted to an analogue form - too complex? Is the interest in this still too limited? Perhaps quantitative research into this issue will provide a definite answer.

Quantitative research into born-digital cultural heritage

Part of the research conducted in the Netherlands focused on creating definitions and units of measurement for different types of born-digital cultural heritage. How can born-digital collections be quantified in a consistent, reproducible way? The underlying idea is that in order to take cross-institutional measures - whether this involves agreements about acquisitions and selection, and processing and providing accessibility to an archive - there should be clarity about who collects and manages what (and how much of it) and where

gaps threaten to occur in the national heritage. For this reason, a table was included in the DEN research with a balanced selection of types of objects, compiled based on the research in the literature and information gleaned from the interviews. The use of the table by the participants in the research facilitated the creation of a more concise version that can be applied during subsequent research, for example, in the framework of the European Numeric project.^③

While developing the quantitative methodology decisions have to be made in response to complex questions such as those that arose during interviews and group discussions.

- How does the question above relate to the importance that is attached to the quality of cultural heritage material? Video art and documentaries can be grouped into one category, but video art is more likely to be included in distinct heritage collections and, as a result, the choices that are made with regard to storage media and/or the loss of image quality can vary widely for video works.

- An unavoidable issue relating to several types of objects was determining at which aggregation level born-digital collections could best be described. It is difficult to provide unequivocal answers: does the assessment refer to journals or articles, weblogs or weblog entries, databases or

database records? Furthermore, the digital equivalents of some conventional categories of objects fragment into primary (constituent) categories. Perhaps the greatest problem is that digital artworks can be combined in numerous ways in the digital environment, they can be related to each other, and they can incorporate one another (embedding, for example). This compounds the difficulty of estimating the size of a digital collection, which only seems to be exacerbated when dealing with born-digital archival material. By its very nature an archive is a collection of containers, but how does one start measuring an archive? In the analogue world archival collections are measured by the number of metres that an archive comprises, or in terms of separate objects. It is difficult to make clear digital equivalents. Perhaps this partly explains the reluctance of the participating institutes to provide details in the survey about how many archives they have (macro level) and the number of objects in their archives (micro level). The available categories do not adequately reflect the complexity of a modern hybrid archive. Another explanation could be that archives no longer distinguish between digitised and born-digital material for important data flows, with the exception of institutes that mainly acquire and manage

^③ See the (archived) Numeric website: <http://www.numeric.ws>.

private archives. In such cases is it still advisable to deploy the concept 'born-digital cultural heritage'?

The way in which respondents dealt with the request to provide details in the table about the digital collections in their own institute resulted in the following provisional conclusions:

- Large quantities of several types of objects with a traditional and/or digitised equivalent are included in the heritage collections of the institutes that participated in the survey. Examples include photographs, video and audio recordings, e-books and e-articles.

- Several new manifestations in the born-digital world, i.e., objects without a traditional or digitised equivalent, are either not or are only collected in negligible quantities by the institutes that participated in the survey. Examples include websites (several thousands have been included, while 3,6 million websites are registered in the Netherlands domain);^④ games (a few have been included); and 3D designs or reconstructions (dozens have been included).

Stagnation during the collecting of new digital cultural heritage

It thus appears that stagnation occurs when new born-digital cultural heritage is brought

together, prompting the question: which circumstances cause this stagnation? In this respect, it can be helpful to refocus on the parties identified in the Open Archival Information System (OAIS) model, namely the producer/maker of the heritage, the consumer/user, and their intermediary, the custodian of the material: the heritage institute.^⑤ Besides these three parties, the nature of the material itself is also a determining factor for the feasibility of long-term accessibility to born-digital material.

Producer/maker

According to the OAIS model the cultural heritage material and any relevant information is provided by the producer to the archive (ingest). An ideal approach would be to formalize this procedure in such a way that we can speak of a submission agreement. This would establish how much and what type of data is involved, the formats used to encode the transferred data, the type of metadata that is available, etc. The reference model assumes the involvement of a discerning producer, but this figure is absent from a large proportion of heritage institutes. Artists, writers and architects are not used to having to think about image formats or metadata during the creative process. Moreover, it is extremely simple to develop

different versions of almost all digital objects while they are being made. Institutes are discouraged by the additional workload if the producer/maker allows this to happen, and if his personal archive is provided to the cultural heritage institute in a raw state. The heritage institute can do two things:

1. Persuade the producer to explain his working method, or
2. Accept the situation for what it is and invest in unravelling the transferred material (digital detective work or even digital archaeology).

National heritage institutes

Although the global community has come up with numerous solutions for the processing of digital cultural heritage, and although many methods and techniques are documented online, it remains difficult for a heritage institute without any experience in the digital domain to make an informed choice from the maze of possibilities. They would have to free up time to conduct research and develop systems, but the regular budget of many institutes does not even allow for the processing of the increasing analogue cultural heritage in a suitable way. Postponing the problems associated with processing born-digital cultural heritage is an understandable strategy under such conditions, but this will likely give rise to a 'digital no man's land'. Traditional acquisition practices can also impede the

collection of born-digital cultural heritage. Collections at heritage institutes are frequently organized according to conventional categories: photographs, paintings, utility wares... One of the characteristics of born-digital material is precisely that different types of objects can be combined and interrelated with great ease. This applies in particular to compound objects (see below) and results in a blurring of the boundaries between traditional categories, with possible consequences for the thoroughness with which an institute can acquire its objects.

Consumer/user

Users are assigned a central role in the OAIS model. The organization of the repository of a cultural heritage collection is dependent on the target group of the system, the so-called designated community. It makes a great deal of difference if clear requirements relating to the material can be made with respect to this target group that can then be rendered as unambiguous requirements for its storage. The philosopher Nelson Goodman once made the distinction regarding representation between repleteness and attenuation. A schematic representation is attenuated: not all the characteristics of the image are relevant. An oil painting is replete: all the qualities of the image have a potential meaning. Goodman's ideas play a role

^④ Source: SIDN website: <http://www.sidn.nl>.

^⑤ CCSDS. Reference Model for an Open Archival Information System (OAIS). Blue book. 1 January 2002. <http://public.ccsds.org/publications/archive/650x0b1.pdf>.

in his discussion about the notation of images.[©] The parallel in the digital domain is that bitstream is also a form of notation. With regard to digital artworks it is not possible to anticipate which characteristics of the object are - or will be - deemed to be relevant by the designated community. This can directly influence the efficiency with which an institute can process cultural heritage and the storage capacity that this will require.

Cultural heritage

Finally, the material itself can obviously also have qualities that can either simplify or even aggravate the sustainability of a digital collection. We concentrate here on the distinguishing characteristics that are related to the fact that the representation of born-digital material is always dependent on information technology. Here are a few examples to illustrate this:

- Computer applications required to process digital objects: it is easier to invest in these types of applications if they can be used to deal with large quantities of objects. Digital objects that can be processed in bulk (automatically, for example, e-mails) are differentiated from digital objects to which this does not apply (for example, digital artworks).
- Depending on the software, the same digital object can

take various forms. Digital objects for which alternative presentation formats are provided during their creation (for example, a page of text with a structural mark-up) differ from objects for which in principle only one (fixed) form is intended (for example, a digital photograph).

- The complexity of a digital object is also a distinguishing feature. At one end of the scale we have simple autonomous objects (a digital bitmap, for example), and at the other end there are digital compound objects, which may depend on one or more external factors for their representation (for example, embedded objects in a webpage).

- An exception to the above is the degree to which the components of a born-digital object are locally available, or are distributed in extremis (as with cloud computing), whereby a single party no longer controls access to the components.

We believe that distinctions such as those described above determine if the handling of born-digital objects will facilitate or hinder heritage institutes. It is important that institutes take this into account when drafting their plans.

Conclusions

Although the development of a quantitative measuring instrument could be an important long-term aid when forming institu-

tional and even cross-sectoral agreements, the mutability of the digital domain still makes it unfeasible to formulate overarching policy based on the facts alone (in the short term). This means that institutes should not wait for cues that could point to an unequivocal direction for their policy relating to collecting born-digital materials, or that could guide their approach when transferring and processing the material and making it available externally. Instead, they must rely on their own resourcefulness and initiate - possibly small scale/collaborative - projects to gain experience with precisely these new types of cultural heritage. It is advisable to provide local projects with information about best practices from the moment they start. Furthermore, a cross-sectoral/ international orientation that acknowledges the distinctions described above, is also urgently required.

[This essay was adapted from an article published in *Information Professional* (April 2010).]

gerhard jan nauta

Gerhard Jan Nauta studied Art History, Psychology and Computer Science (as a subsidiary subject) at Leiden University. He has lectured on the theory of art history and has worked as a researcher at Leiden University Special Collections. He teaches humanities and computing with a focus on the use of computers in exposing visual resources. He is currently a researcher at the Digital Heritage Netherlands Foundation (DEN) and coordinator of education at the Department of Art History in Leiden.

<http://www.den.nl>

maurits van der graaf

Maurits van der Graaf is senior consultant/researcher at Pleiade Management & Consultancy and is specialized in information services, science, education and culture. Before joining Pleiade, he held various management positions in publishing, at libraries and documentation institutes, and in public education, including Director of the Dutch Influenza Foundation, the Dutch Agency for Current Research Information, and Deputy Director of the Netherlands Institute of Scientific Information Services.

<http://www.pleiade.nl>

file under

digital and digitised archives, submission agreement, designated community, compound objects, digital archaeology

NEDERLANDSE SAMENVATTINGEN

0 • ARCHIVE 2020: HET DUURZAAM ARCHIVEREN VAN BORN-DIGITAL CULTUREEL ERFGOED.

Born-digital is een term die voortkomt uit het domein van digitaal behoud en digitaal erfgoed en beschrijft digitaal materiaal dat wordt veronderstelt geen overeenkomstig equivalent te hebben, als de oorspronkelijke bron of als een resultaat van conversie naar analoge vorm.^①

De digitalisering van grote hoeveelheden materiaal zoals tekst, foto's of video, zorgt voor de opkomst van grote online databases van cultureel erfgoed. Ook de erfgoed sector is zich steeds meer bewust van de waarde van het archief voor deskundigen en voor een breder publiek. Zij zien de digitalisering van hun collecties en het gebruik van nieuwe technieken als een verbetering van de toegankelijkheid tot deze collecties. Daarnaast zien culturele organisaties steeds vaker de waarde in van het vastleggen, het online streamen en het archiveren van hun conferenties, voorstellingen en andere live evenementen, waarbij ze gebruik maken van verschillende content management systemen die deze inhoud toegankelijk maken. Volgens een recent rapport is Radio 4 van de BBC zelfs het zelfstandig naamwoord 'archief' gaan gebruiken zonder

bepaald of onbepaald lidwoord, zoals: het programma vertoont archief om het verhaal te vertellen van...' Hetzelfde artikel benadrukt dat er vier 'gearchiveerde' delen van het computerspel *Sonic the Hedgehog* verkrijgbaar zijn die fans uitnodigen om 'terug in de tijd te reizen waar het ooit allemaal begon'.^② In Nederland heeft het Nationale Archief altijd al zo geheten, maar het equivalent in het Verenigd Koninkrijk heeft onlangs zijn naam verandert van *UK Public Record Office* in *The National Archive*. Deze veranderingen geven aan dat archieven toegroeien naar collectieve geheugenbanken en geen instrument van de staat meer zijn. Inmiddels zijn veel online kunstwerken al verdwenen als gevolg van nieuwe richtlijnen, andere internetverbindingen of hun eigen tijdgebonden (time-based) ontwerp. Zowel kunstenaars als culturele organisaties staan voor de uitdaging duurzame systemen voor de lange termijn te ontwikkelen die hun vergaarde digitale en gedigitaliseerde materiaal vastleggen en toegankelijk maken. Bij het grote publiek is ook een toenemende interesse en een groeiende bewustwording voor de risico's van *born-digital* inhoud. Kranten berichten dat 'de geschiedenis op internet op het punt van uitsterven staat', 'het streven naar duidelijkheid omtrent het archiveren van emails' en '*forget storage if you want your files to last.*' Deze ontwikkelingen bevestigen het belang om inzicht te krijgen in de kenmerken van dit nieuwe materiaal, of simpel gezegd: wat houdt archiveren in het internet tijdperk in?

Archieven hebben de belangrijke taak om cultureel erfgoed te bewaren zodat het nooit verloren gaat. Het domein van het archiveren van *born-digital* materiaal heeft te maken met documenten die gekenmerkt worden door hun dynamische karakter, wat niet altijd makkelijk te bewaren is. In plaats van de voor- en nadelen van de digitale wereld te bespreken, is het beter om in concrete termen de voorwaarden en de gevolgen van het digitale domein op de lange termijn te onderzoeken. Wat zijn de kenmerken van *born-digital* materiaal en hoe kunnen we het materiaal analyseren? Moeten we het behoud van computerprogramma's die speciaal ontworpen zijn om deze werken toegankelijk en leesbaar te maken vooropstellen, of de ontwikkeling van software en hardware? Of moeten we andere methoden zoeken om het materiaal later te kunnen begrijpen, zoals het documenteren van het werk en het ontwikkelen van emulatie of migratie strategieën? Hoe belangrijk is het om de context van deze werken te bewaren? De overdracht van kennis is belangrijk, maar wat houdt dat in - wat is de betekenis en de waarde ervan? Met deze publicatie wil het Virtueel Platform doordringen tot de kern van deze vraagstukken: hoe veelvuldig zijn ze, wie houdt er zich mee bezig, wat doen zij en wat zijn de belangrijkste stappen die nu genomen moeten worden om in 2020 *born-digital* cultureel erfgoed nog te kunnen bekijken? Virtueel Platform heeft een aantal betrokkenen uit verschillende disciplines gevraagd om hun ervaringen, bevindingen en oplossingen op te schrijven. Deze specialisten op het gebied van productie, behoud en archivering van *born-digital* materiaal werpen licht op de huidige stand van zaken bin-

nen hun vakgebied en brengen de meest urgente problemen naar voren.

Gevestigd internet kunstenaar Martine Neddham gaat in op de uitdagingen waar een internet kunstenaar door de jaren heen mee te maken krijgt: van het verlopen van domeinnaam registraties tot database back-ups, software updates en nog veel meer. Onderzoekers en kunstenaars Anne Laforet, Aymeric Mansoux en Marloes de Valk leggen de voordelen uit van het gebruik van *FLOSS* en open standaarden voor het behoud van *born-digital* materiaal. Florian Cramer, docent aan het Piet Zwart Instituut in Rotterdam blikt terug op de internationale *PRINT/Pixel* conferentie die werd gehouden in mei 2009, en bespreekt het vraagstuk over digitaal print materiaal. De Canadese onderzoeker en schrijver Caitlin Jones richt zich op de verantwoordelijkheid van het in stand houden van het erfgoed van de mediakunst, met als vertrekpunt de sluiting van twee belangrijke organisaties die pleiten voor het behoud van mediakunst - de Daniel Langlois Foundation en het Ludwig Boltzmann Institute. Hoofd Collectie en Conservering bij het NIMk Gaby Wijers (NIMk, Amsterdam) en kunsthistoricus Gabriele Blome (Universiteit van Siegen, Duitsland) gaan in op het eerste internationaal gedeelde online archief GAMA - *Gateway to European Media Art*. De Australische curator en onderzoeker Lizzie Muller wijst op het belang van het vastleggen van ervaringen van het publiek in het proces van het bewaren van *born-digital* cultureel materiaal. Jeroen van Mastrigt, docent aan de Faculteit Kunst, Media & Technologie van de Hogeschool voor de Kunsten Utrecht (HKU-KMT) in Hilversum, bespreekt archive-

^① Een korte archeologie van de term 'born-digital' kunt u vinden op onze website: <http://www.virtueel-platform.nl/en/#2564>. Zie ook de lijst van definities op de Digital Preservation Coalition website: <http://www.dpconline.org/advice/introduction-definitions-and-concepts.html>.

^② Breakell, Sue, 'Perspectives: Negotiating the Archive' in *TATE Papers*, nummer 9, lente 2008: <http://www.tate.org.uk/research/tateresearch/tatepapers/08spring/breakell.shtm>.

ring van processen in games. Deze anthologie eindigt met een recent rapport van Digitaal Erfgoed Nederland, dat kwantitatief onderzoek heeft uitgevoerd naar *born-digital* cultureel erfgoed in Nederland.

Deze publicatie is samen met een rapport van de expertmeeting *Archive 2020*, georganiseerd door het Virtueel Platform in mei 2009, de eerste stap richting meer inzicht in de uitdagingen waar *born-digital* archiveren mee te maken heeft en hoe je deze moet aanpakken in een dynamische en groeiende digitale wereld.

----- SAMENVATTINGEN -----

1•ZEN AND THE ART OF DATABASE MAINTANCE

Martine Neddham is een pionier in de internet kunst en beheert een negental websites rondom virtuele karakters, zoals mouchette.org en davidstill.org. In dit korte verhalende essay beschrijft Neddham op basis van haar persoonlijke ervaring tal van situaties die het voortbestaan van haar websites continue in gevaar hebben gebracht. Een voorbeeld hiervan is het verlopen van de registratie van de domeinnaam en het in handen vallen van het domein bij de zogenaamde ‘domain-name-snatchers’. Verder beschrijft Neddham hoe ze tijdens een presentatie van haar websites geconfronteerd wordt met een webhost die offline is, waarna zij overgeleverd is aan een lokale kopie, en er vervolgens achterkomt dat de dynamische content van de website is opgeslagen in een andere database waardoor er niets anders op het scherm getoond kan worden dan lege pagina’s en PHP

script. Tevens ontstaan er problemen door niet sluitende afspraken met een database programmeur bij het uitbesteden van de noodzakelijke back-up, met als gevolg een regen van klachten van gebruikers door het uitblijven van actuele updates. ‘Op dat moment realiseer je’, aldus Neddham, ‘dat er veel mensen verslaafd zijn aan je website, en vraag je je af wat er gebeurt als je overlijdt? Maar, op internet weet niemand dat je dood bent’. Dan is er ook nog spam. Deze ongewilde comments en links naar viagra sites of casino’s moeten dagelijks verwijderd worden, wat de nodige tijd kost en frustratie met zich meebrengt. Tot slot gaat Neddham in op moeilijkheden met de lokaliteit van de server en de continue en problematische zoektocht naar een host die zorg kan dragen voor een stabiele hosting op de lange termijn.

2•ROCK, PAPER, SCISSORS AND FLOPPY DISKS

Anne Laforet, Aymeric Mansoux en Marloes de Valk reflecteren op de vraag in hoeverre kunstenaars kunnen bijdragen aan het archiveringsproces van software kunst. Software kunst blijkt een lastig te archiveren kunstobject voor de lange termijn. Zowel de onderliggende hardware als software verouderen in korte tijd, vaak door het achterblijven van regelmatige updates (software decay). Volgens de auteurs kan een kunstenaar op basis van bewuste keuzes tijdens het ontwikkelen van het werk het latere archiveringsproces vergemakkelijken en zo bijdragen aan een langere levensduur van het werk. Het gebruik van Free/Libre/Open Source Software (FLOSS) in de productie van het werk en de keuze voor het publi-

ceren onder een copyleft licentie vormen (naast het zorgvuldig documenteren van het werk), volgens de auteurs de belangrijkste onderdelen in dit proces. Het FLOSS framework moet zorgvuldig gekozen worden. Het moet voldoende transparantie bieden voor alle lagen van het kunstwerk door implementatie van open standaarden, zoals een open-source programmeertaal. Een copyleft licentie geeft daarnaast iedereen het recht om de software vrijuit te kopiëren, te distribueren, en te veranderen. Een kunstenaar moet zich ook bewust zijn van latere copyright issues die het toekomstig conserveren van het werk in de weg kunnen staan. Diverse benaderingen in het archiveren van softwarekunst zoals ‘refactoring’, ‘porteren’, ‘virtualizeren’ en ‘emuleren’ worden kort uiteengezet. De conclusie van de auteurs is dat FLOSS en copyleft deze benaderingen vergemakkelijken. Voor een kunstenaar is een belangrijke taak weggelegd die al begint tijdens het ontwikkelingsproces.

3•PRINT OUT THE INTERNET: TWAN EIKELENBOOM IN CONVERSATION WITH FLORIAN CRAMER

In mei 2009 organiseerde Florian Cramer (lector in Media Design en Communicatie aan de Piet Zwart academie in Rotterdam) PRINT/pixel, een internationale conferentie over de veranderende verhouding tussen online en print publicaties. De recente crisis in de gedrukte nieuwsmidia (mede veroorzaakt door toenemende aandacht van adverteerders voor online werving die ten koste gaat van printadvertenties) en de opkomst van nieuwe technologieën zoals e-books en print-on-demand veranderen de wereld van ontwer-

pers, redacteurs en uitgevers. Eén van de onderwerpen tijdens de conferentie was het effect van online media op de vorm en het voortbestaan van gedrukte media. Vergelijkbaar met hoe mp3 de muziekindustrie heeft opgesplitst, ontwikkelt de online publicatie zich tot een fragmentarisch model. Volgens Cramer moeten uitgevers het traditionele idee dat ze een geheel universum kunnen bereiken loslaten. Dit wil echter niet zeggen dat de zogenaamde kwaliteitsmedia zoals de krant zullen verdwijnen. De (media) geschiedenis laat zien dat commerciële modellen en modellen gebaseerd op vrij beschikbare informatie vaker naast elkaar hebben bestaan. Het e-boek zal het gedrukte boek niet laten verdwijnen, maar heeft andere kwaliteiten, aldus Cramer, zoals de mogelijkheid een gehele collectie op te slaan, wat nieuwe uitdagingen voor de designer met zich meebrengt.

Een belangrijk probleem volgens Cramer is dat nieuwe technologieën zoals het e-book omarmt worden zonder over archiveringskwesties na te denken. Het gedrukte boek als gedistribueerd medium is (voor een groot deel) zelfvoorzienend in archivering. Daarentegen is internet volgens Cramer een nachtmerrie om te archiveren. Zowel de technische organisatie als mogelijkheden tot fysieke opslag zijn uitermate beperkt. De beste oplossing is het uitprinten van internet. Het is in ieder geval belangrijk om buiten de traditionele categorieën van analoog en digitaal te denken om op die manier tot oplossingen te komen.

4• DO IT YOURSELF: DISTRIBUTING RESPONSIBILITY FOR MEDIA ARTS PRESERVATION AND DOCUMENTATION

Caitlin Jones gebruikt de DIY mentaliteit van de vroege video pioniersdagen als basis om de archiverings- en documentatietactieken binnen de mediakunst te omschrijven. Veel problemen van toen gelden ook voor *born-digital* materiaal: de veroudering van hard- en software, het continue veranderen van opslagformaten en de vergankelijke aard van veel kunstwerken. Jones onderscheidt twee documentatiepraktijken: enerzijds die van gevestigde organisaties - zowel instituten met eigen collecties (Guggenheim, Berkely Art Museum, mediakunst instituten zoals NIMk, kennisinstituten zoals INCCA, Ludwig Boltzmann Instituut) als online archieven (netzspannung.org, Rhizome.org's ArtBase) - en anderzijds initiatieven vanuit het gedistribueerde netwerk van DIY-initiatieven en zelfarchivering. Financiering voor de ontwikkeling van het veld komt van nationale, regionale en lokale overheden en (voor een groot deel) uit de private sector. Als de delicate balans van deze met elkaar verbonden geldstromen wordt verstoord, zijn de gevolgen ingrijpend. Jones noemt twee belangrijke instellingen die hun activiteiten drastisch verkleind hebben (Daniel Langlois Foundation) of zelfs moesten sluiten (Ludwig Boltzmann Instituut). De recente ontwikkeling rondom financieringsbronnen is volgens Jones zorgwekkend maar zou niet de boventoon moeten voeren in de discussie. De reeds ondernomen initiatieven en onderzoeken gericht op het conserveren en documenteren van mediakunst bieden een rijke basis voor kleine instituten en in-

dividuele kunstenaars die de praktijk in eigen hand hebben genomen. Zelfarchivering, een praktijk die vooral binnen academische kringen en gaming bekend is, volgt het model van publiceren op neutrale en openbare plekken op internet, om op die manier toegang tot kennis te vergroten. Deze aanpak is volgens Jones een mogelijkheid om aan de financieringsproblematiek te ontkomen. Binnen mediakunst is de notie van een Open Museum opgekomen, waarbij de verantwoordelijkheid voor conservering gedecentraliseerd en gedistribueerd is. Professionele en kunstenaarsnetwerken zijn cruciaal, of het nu gaat om een open of geïnstitutionaliseerd model, collectieve kennis en begrip verhogen de kwaliteit van het discours en vergroten de kansen voor duurzame oplossing van *born-digital* materiaal.

5• VISIBILITY, DISTRIBUTION AND MEMORY THROUGH NETWORKING AND COLLABORATION

Mediakunst instituten hebben belangrijke mediakunst collecties en archieven in beheer die vragen om duurzame archivering en een zo breed mogelijke toegankelijkheid. In dit essay beargumenteren Gabriele Blome en Gaby Wijers dat netwerken en samenwerken belangrijke strategieën vormen in het conserveren van mediakunst. Deze strategieën kunnen echter nog verder uitgediept worden ten behoeve van een betere distributie en het contextualiseren van de werken. Naast het opbouwen van een collectie en het conserveren van media kunst is het in herinnering houden en voortdurend (re)contextualiseren van de werken een belangrijke taak voor de instituten. Het ontwikkelen

van genetwerkte en door samenwerking opererende online software tools zoals de Gateway to Archives of Media Art (GAMA) zijn hierbij volgens de auteurs dan ook cruciaal. Het in 2009 gelanceerde GAMA biedt gedeelde toegang en zoekmogelijkheid in acht collecties en archieven van mediakunst. De tool is belangrijk voor de distributie van kennis en voor een verbetering van de zichtbaarheid van de instituten en hun collecties. Op samenwerking gebaseerde software tools kunnen tevens een belangrijke rol spelen bij het integreren van het publiek in het betekenis en context geven aan de werken, zoals veel recente voorbeelden van door het publiek samengestelde tentoonstellingen aantonen. Met het oog op de toekomst van mediakunst archieven zou volgens de auteurs duurzaam archiveren hand in hand moeten gaan met het ontwikkelen van genetwerkte en op samenwerking gebaseerde software tools.

6• ORAL HISTORY AND THE AUDIENCE OF MEDIA ART

Lizzie Muller beargumenteert dat de geschiedenis van mediakunst uitgebreid moet worden met publiekservaringen. Tot op heden ontbreken beschrijvingen van publieksbeleving bijna volledig in de documentatie van mediakunst. Er zijn wel mondelinge overleveringen, maar dan voornamelijk van kunstenaars en belangrijke personen binnen de kunstwereld. Ervaringen met het documenteren van de individuele beleving in de praktijk, bekeken vanuit het gebied van de orale geschiedenis, vormt volgens Muller het beste model om het immateriële karakter van de ervaring te conserveren. Internet maakt het tevens mogelijk

om een globaal perspectief te hanteren: mondelinge overleveringen in de vorm van audio-visuele bestanden kunnen makkelijk verspreid en gedeeld worden. Als voorbeeld bespreekt Muller een case-study naar het werk *The Giver of Names* (1991) van David Rokeby. Hieruit komen vijf praktische en methodologische punten naar voren die in acht genomen moeten worden bij het produceren van verbale documenten: de pro-actieve rol van de onderzoeker, het belang van de techniek, ethische en rechten status van het document, het documenteren van negatieve ervaringen, en het aantal te documenteren belevingen. Deze belangrijke onderwerpen tonen volgens Muller dat een initiatief tot mondelinge documentatie zowel open en flexibel, als uiterst nauwkeurig en gestructureerd moet zijn. Tot slot stelt Muller dat verbale documentatie waardevol is, maar ook tijdsrovend. Om een significante impact te hebben op het begrip van mediakunst nu en in de toekomst is het daarom belangrijk de krachten van diverse partijen in het gebied te bundelen.

7• SERIOUS GAMING. PRESERVING THE INTANGIBLE BY CAPTURING PROCESSES

Games zijn enorm populair en worden op steeds grotere schaal toegepast binnen verschillende contexten, zoals communicatie, educatie, erfgoed en zorg. Binnen het lectoraat *Art and Technology* van de Hogeschool voor de Kunsten Utrecht (HKU) ligt de nadruk op onderzoek naar ontwerpmodellen en -methoden voor games. Oftewel, gameprincipes ontwikkelen die mensen motiveren of kennis bijbrengen. Sinds kort is het aantal games waarbij de sociale en fysieke

werkelijkheid een rol speelt enorm gegroeid. Dit brengt specifieke uitdagingen met zich mee voor het beheer en behoud van deze games. Van Mastrigt onderscheidt twee paradigma's. De eerste is traditioneel en gaat uit van de game als *object*. Het tweede paradigma benadert de game als *systeem* - hierbij krijgt een game slechts betekenis in relatie tot een sociale en fysieke handelingscontext. Deze games bestaan niet zonder spelers, spelersgedrag en *user-generated content*, en zijn daarmee onmogelijk op te slaan als object. Als de fysieke context onderdeel wordt van de game ervaring wordt het behoud nog moeilijker. Games vragen om alternatieve conserveringsstrategieën. Voorbeelden daarvan zijn het opslaan van gebruikersdata, (*in-game*) etnografisch onderzoek en vooral het bewaren van ontwerpmodellen, -technieken, -strategieën, -methoden en processen. Hiermee kan men inzicht krijgen in het ontstaan en de werking van creatieve processen, essentiële elementen in onze informatie maatschappij. Van Mastrigt pleit voor een levend museum, een *living lab*, een nieuwe academie, waarin maken en onderzoeken hand in hand gaan, waar makers en gebruikers gezamenlijk ontwerpen en reflecteren op ontwerpen en een belangrijke rol spelen in het ontwikkelen en overdragen van die kennis.

8•ERFGOED IN LIMBO: OVERWEGINGEN BIJ EEN ORIENTEREND ONDERZOEK NAAR BORN-DIGITAL ERFGOED-MATERIALEN IN NEDERLAND

De algemene verwachting is dat er op de korte termijn een explosieve groei van *born-digital* erfgoedmaterialen gaat plaatsvinden. Interes-

sant digitaal erfgoed zal de komende jaren echter verloren gaan omdat erfgoedinstellingen nog onvoldoende voorbereid zijn op de verwerking van het ‘nieuwe’ materiaal. Om een beter begrip te krijgen van de omvang van het probleem vroeg DEN aan Maurits van der Graaf (onderzoeksbureau Pleiade) om oriënterend onderzoek te doen bij een aantal erfgoedinstellingen. Het onderzoek concentreerde zich enerzijds op de mogelijkheid om de grootte en groei van *born-digital* erfgoedcollecties kwantitatief te meten en anderzijds op het benoemen van de punten waarop een instellings- en mogelijk zelfs sectoroverschrijdende aanpak wenselijk is. De vanzelfsprekendheid waarmee sommige materialen nu al verwerkt worden en tegelijkertijd een gebrek aan actie ten aanzien van nieuwe materiaalsoorten is opvallend. Er wordt betwijfeld of het zinnig is om alle *born-digital* erfgoedprojecten, denkend aan de noodzaak van actie, als één categorie te beschouwen. Het artikel besluit met een aantal kenmerken van *born-digital* erfgoedmateriaal die de toekomstvaste opbouw van een digitale collectie kunnen vergemakkelijken of juist bemoeilijken. De conclusie is dat de ontwikkeling van een kwantitatief meetinstrument op termijn een belangrijk hulpmiddel kan zijn bij het komen tot instelling- en zelfs sectoroverschrijdende afspraken. De veranderlijkheid van het digitale domein maakt het echter nog ondoenlijk om overkoepelend beleid te formuleren op basis van harde cijfers. De consequentie is dat instellingen zelf actief aan de slag moeten gaan en projecten moeten opstarten om ervaring op te doen met nieuwe soorten erfgoedmateriaal. Een sectoroverschrijdende en internationale oriëntatie is hierbij noodzakelijk.

REFERENCES AND FURTHER READING

Adgent, Nancy, Riccardo Ferrante, Lynda Schmitz Fuhrig, and Darwin Stapleton, *Collaborative Electronic Records Project: An Introduction and Overview*. Technical report, New York: Rockefeller Archive Center, December 2008.

Assmann, Aleida, ‘Druckerpresse und Internet - von einer Gedächtniskultur zu einer Aufmerksamkeitskultur’ in *Archiv und Wirtschaft*, vol. 1, 2003. Link: http://www.wirtschaft-sarchive.de/zeitschrift/m_assmann.htm.

Assmann, Aleida, ‘Archive im Wandel der Mediengeschichte’, in Ebeling, Knut and Szephan Günzel (eds.), *Archivologie. Theorien des Archivs in Philosophie, Medien und Künsten*. Kulturverlag Kadmos. Berlin: Kulturverlag Kadmos, 2009, pp. 165-75.

Breakell, Sue, *Perspectives: Negotiating the Archive*. London: Tate Online, 2008. Link: <http://www.tate.org.uk/research/tateresearch/tatepapers/08spring/breakell.shtm>.

Brown, P., Charlie Gere, Nicholas Lambert and Catherine Mason, *White Heat Cold Logic British Computer Art 1960-1980*. Cambridge, MA: MIT Press, 2009.

Clough, Paul, Jennifer Marlow and Neil Ireson, *Enabling Semantic Access to Cultural Heritage: A Case Study of Tate Online*, 2008. Link: http://ilps.science.uva.nl/IACH2008/papers/Clough_etal_TateOnline_IACH2008.pdf.

De Baere, Bart, ‘Potentiality and Public Space. Archives as a metaphor and example for a political culture’ (2002), in Von Bismarck, Beatrice, Sonja Eichele, Hans-Peter Feldmann (eds.), *Interarchive. Archivische Praktiken und Handlungsräume im zeitgenössischen Kunstfeld / Archival Practices and Sites in the Contemporary Art Field. Exhibition project “Interarchiv”*. Cologne: Kunstraum der Universität Lüneburg, 1997-2002, pp. 105-12.

Depocas, Alain, *Digital Preservation: Recording the Recoding - The Documentary Strategy*. Montreal: The Daniel Langlois Foundation for Art, Science and Technology, 2002. Link: <http://www.fondation-langlois.org/html/e/page.php?NumPage=152>.

Depocas, Alain, Jon Ippolito, and Caitlin Jones (eds.), *Permanence Through Change: The Variable Media Approach*. Montreal, New York: The Daniel Langlois Foundation for Art, Science, and Technology and Solomon R. Guggenheim Museum, 2003. Link: <http://www.fondation-langlois.org/html/e/page.php?NumPage=200>.

Eaton, Lance, ‘Books Born Digital: The Emerging Phenomenon of Books Published First in Digital Format’, in *Library Journal*, 15 May 2009. Link: <http://www.libraryjournal.com/article/CA6657392.html>.

Ellis, J., *Keeping Archives*. Port Melbourne: Thorpe in association with the Australian Society of Archivists, 1993.

Forstrom, Michael, ‘Managing Electronic Records in Manuscript Collections: A Case Study from the Beinecke Rare Book and Manuscript Library’, in *The American Archivist*, vol. 72, 2009, pp. 460-77.

Fromme, Rene and Sandra Fauconnier, ‘Capturing Unstable Media Arts - A Formal Model for Describing and Preserving Aspects of Electronic Art’, in Frohne, U., J. Guiton and M. Schieren (eds.), *Present Continuous Past(s): Media Art: Strategies of Presentation, Mediation and Dissemination*. Heidelberg: Springer Verlag, 2004.

Goldhaber, Michael H., ‘The Attention Economy and the Net’, in *First Monday*, vol. 2, no. 4, 1997. Link: <http://firstmonday.org/htbin/cgi-wrap/bin/ojs/index.php/fm/article/view/519/440>.

Gooding, Paul and Melissa Terras, ‘“Grand Theft Archive”: A Quantitative Analysis of the State of Computer Game Preservation’, in *International Journal of Digital Curation*, vol. 3, no.2, 2008, pp. 19-41.

Goodman, Nelson, *Languages of Art: An Approach to a Theory of Symbols*. Indianapolis: Hackett, 1976.

Goriunova, Olga and Alexei Shulgin, ‘From Art on Networks to Art on Platforms’, in Krysa, Joasia (ed.), *Curating Immateriality: The Work of the Curator in the Age of Network Systems*. New York: Autonomedia, 2006, pp. 237-64.

Graaf, Maurits van der, *Born-digital erfgoedmaterialen bij een selectie van Nederlandse erfgoedinstellingen*. Technical report, The Hague: DEN Foundation, 2010. Link: http://www.den.nl/getasset.aspx?id=Rapporten/Born-digitalErfgoedmaterialenBijNlErfgoedinstellingen_versie20100205.pdf&assettype=attachments.

Hilton, Chris and Dave Thompson, ‘Collecting Born Digital Archives at the Wellcome Library’, in *Ariadne*, no. 50, 2007. Link: <http://www.ariadne.ac.uk/issue50/hilton-thompson/>.

Hilton, Christopher and Dave Thompson, ‘Further Experiences in Collecting Born Digital Archives at the Wellcome Library’, in *Ariadne*, no. 53, 2007. Link: <http://www.ariadne.ac.uk/issue53/hilton-thompson/>.

John, Jeremy L., ‘Adapting Existing Technologies for Digitally Archiving Personal Lives: Digital Forensics, Ancestral Computing, and Evolutionary Perspectives and Tools’, 2008. Paper presented at iPRES 2008: The Fifth International Conference on Preservation of Digital Objects.

Jones, Caitlin and Lizzie Muller, *The Giver of Names: Documentary Collection*. Montreal: The Daniel Langlois Foundation for Art, Science, and Technology, 2008. Link: <http://www.fondation-langlois.org/html/e/page.php?NumPage=2121>.

Jones, Caitlin and Lizzie Muller, ‘Between Real and Ideal: Documenting Media Art’, in *Leonardo*, vol. 41, no. 4, 2008, pp. 418-19.

Kirschenbaum, Matthew, ‘Hamlet.doc? Literature in a Digital Age’, in *The Chronicle Review*, vol. 53, no. 50, 2007.

Kirschenbaum, Matthew, Erika Farr, Kari M. Kraus, Naomi L. Nelson, Catherine Stollar Peters, Gabriela Redwine, and Doug Reside, *Approaches to Managing and Collecting Born-Digital Literary Materials for Scholarly Use*. Technical report, Washington DC: NEH/Institute of Museum and Library Services, 2009.

Kirschenbaum, Matthew, Erika L. Farr, Kari M. Kraus, Naomi Nelson, Catherine Stollar Peters, Gabriela Redwine, and Doug Reside, 'Digital Materiality: Preserving Access to Computers as Complete Environments', 2009. Paper presented at iPres 2009: The Sixth International Conference on Preservation of Digital Objects.

Kolowich, Steve, 'Archiving Writers' Work in the Age of e-mail', in *The Chronicle of Higher Education*, vol. 55, no. 31, April 2009.

Laforet, Anne, *Net art et institutions artistiques et muséales : problématiques et pratiques de la conservation*. Paris, Ministère de la Culture et de la Communication - Délégation aux Arts Plastiques - Bureau de la Recherche et de l'Innovation, 2004. Link: <http://www.sakasama.net/conservationnetart/DL-001052-04-01.01.00.pdf>.

Lap, Sanja, *Het ontwerpproces bewaard: Beknopt ABC archiveren voor architecten, ontwerpers en vormgevers*. Rotterdam, Amsterdam, The Hague: NAI/Premisela/RKD, 2008. Link: http://www.nai.nl/content/225591/het_ontwerpproces_bewaard.

Laurenson, Pip, *Authenticity, Change and Loss in the Conservation of Time-Based Media Installations*. London: Tate Online, 2006. Link: <http://www.tate.org.uk/research/tateresearch/tatepapers/06autumn/laurenson.htm>.

Lazinger, Susan S., *Digital Preservation and Metadata: History, Theory, Practice*. Englewood, Colorado: Libraries Unlimited, 2001.

Lord, W., *Oral History Review* (1968), quoted in Reimer, D., *Voices: A Guide to Oral History*. Victoria, B.C.: Provincial Archives of British Columbia, Sound and Moving Image Division, 1984.

Loverance, Rowena, 'Digital preservation of user-generated content: the next challenge for museums, libraries and archives' (2006), in *CULTURAL HERITAGE on line: the challenge of accessibility and preservation. International Conference Firenze, 14-16 December 2006*, pp. 232-39.

Lüdtke, Andree, Björn Gottfried, Otthein Herzog, George Ioannidis, Michael Leszczuk, Viliam Šimko, 'Accessing Libraries of Media Art through Metadata' (2009), in Tjoa, A.M. and R.R. Wagner, *Proceedings of the 20th International Workshop on Database and Expert Systems Application, DEXA 2009*. Los Alamitos, CA: IEEE Computer Society, 2009, pp. 269-73.

Lukesch, Susan S., 'E-Mail and Potential Loss to Future Archives and Scholarship or The Dog that Didn't Bark', in *First Monday*, vol. 4, no. 9, 2009. Link: <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/692/602>.

Lynch, Clifford A., 'Preserving Digital Documents: Choices, Approaches, and Standards', in *Law Library Journal*, vol. 96, no. 4, 2004, pp. 609-17.

Mackay, N., *Curating Oral Histories*. Walnut Creek, CA: Left Coast Press, 2007.

NCDD, *Toekomst voor ons digitaal geheugen: duurzame toegang tot informatie in Nederland*. Technical report, The Hague: NCDD, November 2009.

Paul, Christiane, 'Collaborative Curatorial Models and Public Curation', in *Switch. Rivets and Denizens*, 2002. Link: http://switch.sjsu.edu/nextswitch/switch_engine/front/front.php?artc=70.

Paul, Christiane, 'Flexible Contexts, Democratic Filtering and Computer-Aided Curating: Models for Online Curatorial Practice' (2006), in Krysa, Joasia (ed.), *Curating Immateriality: The Work of the Curator in the Age of Network Systems*. New York: Autonomedia, 2006, pp. 85-105.

Petersen, Søren M., 'Loser Generated Content: From Participation to Exploitation', in *First Monday*, vol.13, no. 3, 2008.

Rauber, Andreas and Andreas Aschenbrenner, 'Part of Our Culture is Born Digital - On Efforts to Preserve it for Future Generations', in *TRANS. Internet-Zeitschrift für Kulturwissenschaften*, vol. 10, 2001.

Reimer, D. (ed.), *Voices: A Guide to Oral History*. Victoria, B.C.: Provincial Archives of British Columbia, Sound and Moving Image Division, 1984.

Rinehart, Richard, 'The Media Art Notation System: Documenting and Preserving Digital/Media Art', in *Leonardo*, vol. 40, 2007, pp. 181-87.

Risen, Clay, 'Pac Rat: The Fight to Preserve Old Video Games from Bit Rot, Obsolescence, and Cultural Oblivion', in *Atlantic Magazine*, 2010. Link: <http://www.theatlantic.com/magazine/archive/2010/03/pac-rat/7911/>.

Rokeby, David, 'The Construction of Experience: Interface as Content', in Dodsworth Jr., C. *Digital Illusion: Entertaining the Future with High Technology*. New York: ACM Press/Addison-Wesley Publishing Co., 1998, pp. 27-47.

Roms, H., *What's Welsh for Performance?* Cardiff: Samizdat Press, 2008.

Taylor, Robin, 'MINERVA: Archiving Born-Digital Material at the Library of Congress', in *Slavic & East European Information Resources*, vol. 5, nos. 1/2, 2004, pp. 157-62.

Trant, Jennifer, 'Tagging, Folksonomy and Art Museums: Results of steve.museum's Research' (2008), in *Archives & Museums Informatics*, January 2009. Link: <http://conference.archimuse.com/files/trantSteveResearchReport2008.pdf>.

Wysocka, Elizabet, *Agatha Re-Appears, Net Art Restoration Project*. Budapest: Center for Culture & Communication Foundation, 2008. Link: <http://www.incca.org/preservation/390-wysocka-e-agatha-reappears-net-art-resoration-project>.

ACKNOWLEDGEMENTS

virtueelplatform

Virtueel Platform, 2010

We would like to thank all the authors for contributing to this publication.

This publication was made possible with the support of the Netherlands Ministry of Education, Culture and Science.

Creative Commons
Publication:
Virtueel Platform, 2010



Attribution



Non commercial

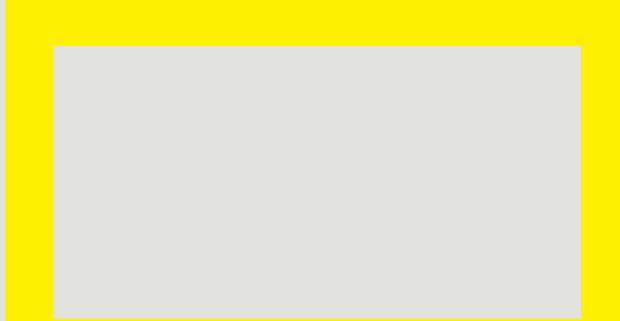


No derivative works



3.0 Netherlands license

Compiled and edited by	Annet Dekker
Copy-editing	Annet Dekker Mark Poysden
Translations NL-UK	Mark Poysden
Translations UK-NL	Martje Dekkers
Dutch summaries	Niels Kerssens
Design	Studio GloriusVandeVen www.gloriusvandeven.nl
Printing	Palteam
Thanks to	Cathy Brickwood Ward ten Voorde Annette Wolfsberger
ISBN/EAN: 978-94-90108-04-5	



[0•0]

SUSTAINABLE ARCHIVING
OF BORN-DIGITAL
CULTURAL CONTENT
ANNET DEKKER

[1•0]

ZEN AND THE ART OF
DATABASE MAINTENANCE
MARTINE NEDDAM

[2•0]

ROCK, PAPER, SCISSORS
AND FLOPPY DISKS
ANNE LAFORET
AYMERIC MANSOUX
MARLOES DE VALK

[3•0]

PRINT OUT
THE INTERNET
TWAN EIKELENBOOM
IN CONVERSATION WITH
FLORIAN CRAMER

[4•0]

DO IT YOURSELF:
DISTRIBUTING
RESPONSIBILITY
FOR MEDIA-ARTS
PRESERVATION AND
DOCUMENTATION
CAITLIN JONES

[5•0]

VISIBILITY,
DISTRIBUTION AND
MEMORY THROUGH
NETWORKS AND
COLLABORATION
GABRIELE BLOME
GABY WIJERS

[6•0]

ORAL HISTORY AND
THE MEDIA ART
AUDIENCE
LIZZIE MULLER

[7•0]

SERIOUS ARCHIVING
ANNET DEKKER
IN CONVERSATION WITH
JEROEN VAN MASTRIGT

[8•0]

CULTURAL HERITAGE
IN LIMBO
MAURITS VAN DER GRAAF
GERHARD JAN NAUTA

[9•0]

NEDERLANDSE
SAMENVATTINGEN

REFERENCES AND
FURTHER READING