

This text was originally inspired by Stedelijk Museum Amsterdam's display of net-based art as it was first encountered by the author in room 1.33 of Stedelijk Base in 2019. Across two chapters the factors that contribute to the shortcomings of the Stedelijk's net-based art presentation are analysed, and proposals for improvement are sought in the application of aesthetic theories and through examinations of curatorial practices applied to past presentations of cybernetic, conceptual, and net-based art.

Exhibiting net-based art IRL

On the presentational challenges net-based art presents, and the solutions to be found in past exhibitions of cybernetic, conceptual, and net-based art.

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Foreword

As a result of government measures active during the time of writing, during the Covid-19 pandemic, many museums were closed on a regular basis and international, let alone local travel to archives and libraries was often impossible. This limited available resources to those in the possession of Utrecht University library and those sourced and purchased by myself. Due to lack of presentations of net-based art in Dutch art museums other than the Stedelijk Museum Amsterdam, the collection presentation of this internationally well-regarded institution will function as central reference.

Many of the subjects discussed in this thesis were first encountered during two courses I followed during my master's degree. These formulative and insightful programs were supervised by dr. Sjoukje van der Meulen and prof. dr. Eva-Maria Troelenberg. Dr. van der Meulen's course focussed on museum collections, during which my fellow students and I studied works from the Stedelijk's MOTI Collection, an acquisition of seventeen artworks produced by contemporary digital artists.¹ Prof. dr. Troelenberg's course focussed on art historical theories and methods, for which I wrote an essay on differing curatorial methodologies at work in *Stedelijk Base*, the museum's collection presentation. This thesis marries these two subjects, focussing on the presentation of net-based artworks in art museums, the presentation at the Stedelijk providing the common thread.

¹ On 15 December 2016 Stedelijk Museum Amsterdam announced the joint-acquisition of seventeen works of net art, together with Museum of the Image (MOTI), the national museum for visual culture in Breda. Since the purchase, MOTI has closed, but the acquisition is still referred to as the MOTI Collection on various pages on Stedelijk's website. 'Aankoop 17 topwerken door Stedelijk en MOTI'. Stedelijk Museum Amsterdam website. Accessed 19 December 2021. <https://www.stedelijk.nl/nl/nieuws/aankopen-stedelijk-en-MOTI>.

Introduction

‘For a long time, the work of artists operating exclusively online was not collected by museums. Digital works are, after all, widely accessible, and rapidly changing software makes it difficult to preserve and present such *net art*.’² So states the wall text at Stedelijk Museum Amsterdam in room 1.33, which under the pretence of ‘the impact of new technology,’ brings together examples of art and (graphic) design produced in the 1980s up until the present, all of which are either the product of or refer to recent advancements in ‘materials, media, production methods (such as 3D printing), and computer-generated forms.’³ Included in the presentation are five works of net-based art, each of which shown on individual screens which have been incorporated into in a custom-designed wall-mounted display (fig. 2). The installation incorporates mousepads and audio-headsets for works that require them, and angles the screens so that an adult visitor can easily look down upon them. The presence of these works here is significant, for although this is the only part of the collection presentation to include works of net-based art, it is also the only museum display in the Netherlands to include them in the narrative of the history of modern art.⁴

The Stedelijk’s collection presentation, also referred to as *Stedelijk Base* by the institution, is a multidisciplinary showcase in chronological order grouped by art historical movements in part one, and thematically in part two. Five net-based artworks can be found in part two in room 1.33, which feels like a liminal space, less brightly lit than the galleries before it, but more illuminated than the film theatre it precedes. Despite the institution’s best efforts to present works of which the crux ‘often lies in its presence in the online public domain,’ judging by the bemused reactions of visitors after

² Wall text from room 1.33 ‘The Impact of New Technology’ at the Stedelijk. Emphasis Stedelijk Museum Amsterdam. Since the museum’s reopening to the public on the fifth of June 2021 net art is presented in a new display. The inquiry of this thesis however will focus on the old set-up, although findings will perhaps prove relevant to both the previous and the current presentations. For the complete wall text from room 1.33 ‘The Impact of New Technology’, see fig. 1.

³ Ibid.

⁴ The works of net-based art included in the presentation are *Scrollbar Composition* (2000) by Jan Robert Leegte (1973), *Mouchette.org* (1996-ongoing) by Martine Neddham (1953), *Fair Warning* (2016) by Jonas Lund (1984), *The Modular Body* (2016) by Floris Kaayk (1982), and *Abstract Browsing* (2014) by Rafaël Rozendaal (1980).

Figure 1: Wall text from room 1.33 ‘The Impact of New Technology’ at Stedelijk Museum Amsterdam. Photo: author, 2020.



Figure 2: Net art display in room 1.33 ‘The Impact of New Technology’ at Stedelijk Museum Amsterdam. Photo: author, 2020.



often short attempts to interact with the works on display, the net-based art part of the presentation leaves something to be desired.⁵

Definitions of net art

Part of the net-based art display's problem is perhaps the wall text, which offers visitors little guidance in how to relate to the works. Instead, it describes '*net art*' in the same breath as artists working with new technologies, yet the aesthetics of most of the works on display betray that they are distinctly older than the latest technologies.⁶ The text therefore is somewhat misleading for suggesting a cutting-edge where one is not. The artworks would perhaps be helped by an exacter description or definition, such as one offered by Michael Connor, artistic director at Rhizome, for the 2015 Prix Net Art.⁷ Together with fellow Prix Net Art organiser Zhang Ga, Connor arrived at a definition of 'net art' as art that 'acts on computer networks, and is acted on by them.'⁸ This definition alludes to the fact that a work of (net) art is not the result of a solitary figure's intent, but is the result of multiple actors, each affecting how the work is received and understood. In this description, the viewer is also an actor, for most works of net art incorporate interactive features, as are the standard components of a desktop computer through which the experience is often mediated.⁹

Connor and Zhang's definition was an update of 'art that is primarily experienced via browsers and computer networks,' which had been conceived for an earlier edition of the competition, but which they afterwards felt to be too formal and restrictive.¹⁰ Their revision was indebted to the scholarly research of Josephine Bosma,

⁵ Ibid.

⁶ The most recent of the works on display were produced in 2016. *Mouchette.org* (1996-ongoing) and *Scrollbar Composition* (2000) are the oldest, and their visuals have been updated little since their inception.

⁷ Rhizome, the organisation Connor has been affiliated with since 2002, describes itself on its website as championing 'born-digital art and culture through commissions, exhibitions, scholarship, and digital preservation. [...] Since 2003, Rhizome has been an affiliate in residence at the New Museum in New York City.' 'About'. Rhizome.org, last visited 07/06/2021. <https://rhizome.org/about/>.

⁸ Michael Connor, 'Notes on a definition of net art'. Rhizome.org, last visited 04/06/2021. <https://rhizome.org/editorial/2015/jul/17/notes-definition-net-art/>.

⁹ An example of a work of net-based art included in the Stedelijk's presentation is *Scrollbar Composition* by Jan Robert Leegte. The work is the product of the artist creative intentions, but also dependent on programming language that was used to code it. The viewer, perhaps better described as the user of the work, can utilise their mouse to click on and drag the bars presented onscreen. Although this does little to alter what the viewer can see, they afford a limited sense of interactivity, nonetheless. Aesthetic variations in the presentation of the work are dependant on if the viewer of the work is using either Microsoft or iOS software.

¹⁰ Connor, 'Notes on a definition.' Rhizome.org.

who in her book *Nettitudes: Let's Talk Net Art* notes that too often the artform is defined by its carriers, 'such as the computer screen or the browser,' and instead offers a non-medium specific definition that 'net art is art based in or on Internet cultures.'¹¹ Bosma clarifies that she chose 'net' (as opposed to 'digital,' 'internet' or 'net-based') because it evokes the term 'network,' which can be understood in both the technical and sociological sense. 'Cultures' should be broadly interpreted and seen as inseparable from technology, as part of an 'ensemble' in which both humans and machines 'interact via a much larger meta-machine.'¹² With her definition Bosma accommodates practices that can exist wholly offline yet function within the internet's frames of reference and projects created through or on precursory and parallel forms of the world wide web.

Both Bosma's and Connor's definitions account for the works in the Stedelijk's net art display, all of which were exclusively created and intended to be received online. Consequently, due to the determination of the early net art producers to circumvent art museums and markets, the audiences for their work occupied a specific niche separate from the general public. This also accounts for the absence of net art from most museum collections, as previously alluded to in the Stedelijk's wall text. A failure to be collected has thankfully not correlated into a failure to be researched, thanks to the efforts of scholars such as Bosma, but also Rachel Greene and Dieter Daniels, and many others.

Greene notes that net-based artforms first emerged in Eastern Europe shortly after the fall of the Berlin Wall in 1989.¹³ Greene places net-based art within the antagonistic art historical tradition of Marcel Duchamp and Dada, and compares it to other artistic practices prevalent during the 1980s and 1990s, such as 'the Guerrilla Girls activist, identity-based, and institutional critique projects; Sherrie Levine's appropriation art; and installations by Felix Gonzales-Torres and Rirkrit Tiravanija, emblematic to Nicholas Bourriaud's 'relational aesthetics'.¹⁴ Greene describes early net-based art as 'inextricable from the technology and politics of the 1990s and early

¹¹ Josephine Bosma, *Nettitudes: Let's Talk About Art* (Rotterdam: NAI Publishers, 2011), 24.

¹² *Ibid.*, 24-26.

¹³ This link is strongest in works of dada poetry that 'relied on instructions and chance word variations. The net analogue of such instructions is 'code', the algorithms that form the basis of all software and computer operations.' As a side note, throughout her book Greene refers to net-based art as 'internet art.' Rachel Greene, *Internet Art* (London: Thames & Hudson, 2004), 20.

¹⁴ *Ibid.*, 26-27.

twenty-first century,' but mostly preoccupied 'with themes such as "information", "communication", "interaction" and "systems",' hereby linking it to post-conceptual art.¹⁵ Daniels however has stated that this history gives more weight to the internet boom of the 1990s than is justified, pointing to artists who had envisioned the utilisation of earlier forms of telecommunication into artistic practices such as Nam Jun Paik and Gene Youngblood.¹⁶ Both authors however are seemingly in agreement that net art deserves more attention than it receives.

In short then, as can be the case even among more traditional visual artforms, there are different approaches to producing, presenting, and perceiving net art. As an artistic practice, 'net art' is not necessarily specific to the internet, for it can include other electronically connected (networked) public spaces that predate the internet and practices that do not utilise it for artwork production at all. The presentation at the Stedelijk includes works net art scholars view to be particularly significant to the field, but due to lack of historical context other than the 2016 acquisition date, the wall text essentially reduces the works to five screens on a wall. This neglects the legacy of net art as an artform which was internationally prevalent in the 1990s, if not present in art museum galleries.¹⁷ Instead, it contextualises net-based art within a general framework of experimental, material-centric art and design produced in the 1990s and 2000s, and doesn't inform visitors of either the history of the artform or describe the great diversity of approaches 'net art' includes.

Today many contemporary artists incorporate, reference, and utilise the internet in the production of their works. It is though possible to distinguish two cohorts of artists in the MOTI Collection. The first generation, which includes Martine Neddam, Olia Lialina and Jodi, among others, have been experimenting with the internet in their artistic practice since it was still an emerging communicative technology. A second

¹⁵ Ibid., 31.

¹⁶ Daniels specifically refers Paik's 1974 advocacy for an "electronic superhighway" and Gene Youngblood's 1984 concept of "metadesign." Dieter Daniels, "Reverse Engineering Modernism with the Last Avant-Garde," in *Net Pioneers 1.0: Contextualising Early Net-Based Art*, Dieter Daniels, Gunther Reisinger, eds., (Berlin: Sternberg Press, 2009), 16-18.

¹⁷ Many accounts of the production and reception of net art in non-artworld circles during this period can be found in the scholarly writings of authors mentioned so far (Bosma, Connor, Daniels, Greene). Other publications key in establishing a basic understanding of the development and reception of net art since its inception up until the present day were Christiane Paul, *Digital Art* (London: Thames & Hudson, 2003) and Eva Respini, ed., *Art in the Age of the Internet: 1989 to Today*, (Exh. cat. New Haven: Yale University Press, 2018).

generation, which includes Rafael Rozendael, Petra Cortright and Jon Rafman, are often associated with what is described as post-internet art.¹⁸ The younger, second cohort of artists have cooperated more freely with museums since the beginnings of their careers, and therefore often conceive works with a plan for how it is to be exhibited in a public space. This is not always the case however, as is exemplified in *Stedelijk Base*, in which all included works are technically located solely within an online environment, thus net-based art produced by either generation presents curatorial challenges for institutions .

Wall text is but one means of introducing an artform to members of the public. It often serves as a referent, aiding the viewer by providing additional information, but its inclusion in an exhibition is often not essential to the reception of the works on display. Though the inclusion of net-based art in *Stedelijk Base* is commendable, the current display is secluded and unnecessarily complicates the visitor's introduction to the artform. This issue calls for an examination of lacklustre presentations of net-based art in museums, with the aim of making recommendations through the study of past and present theories and practices. Particular attention will be paid to the interactivity of displays used to present interactive works of art and the approaches used in the presentation of dematerialised artforms popularised and produced from the 1960s onwards. The following research question will guide these inquiries: What improvements can art museums make to current approaches of presenting net-based art in gallery spaces?

This thesis seeks to improve the presentation of net-based art specifically, and not 'net art', as the discussion above highlights the variety of practices of that term can refer to. The preference to refer to net-based art, as opposed to net art, is due to the descriptive specificity of the term. Net-based art invokes certain material qualities of the works, such as their inherent multiplicity and location online. Though all net-based art is net art, not all net art is net-based. None of the works included in the current display at the *Stedelijk* incorporate non-digital elements or adhere to a specific installation plan

¹⁸ Much has been written on the artistic output of this post-internet generation, by the authors mentioned earlier in this text, and other writing of note includes the art criticism of Lauren Cornell, the essays "Post Internet" by Gene McHugh (2010, <https://122909a.com.rhizome.org/>) and "The Image Object Post-Internet" by Artie Vierkant (2010, https://jstchillin.org/artie/pdf/The_Image_Object_Post-Internet_a4.pdf), and publications such as Lauren Cornell, Ed Halter, Lisa Philips, Johanna Burton, eds., *Mass Effect: Art and the Internet in the Twenty-First Century* (Cambridge: MIT Press, 2015), and Omar Koneif, ed., *You Are Here: Art After the Internet*, second edition (Manchester: HOME, 2017).

conceived by the artist. Therefore, with the ever-changing, ever-updating, and outmoding forms of online accessibility, connectivity, and commodification, the history of net-based artistic production is at risk of being lost. It is here that art museums can fulfil a service to both producers and publics of these artworks. By exhibiting net-based artworks in their galleries a museum recognises the pioneering efforts of these artists whilst simultaneously inviting greater public awareness. To do so however, with the Stedelijk's presentation of their net-based artworks acting as a baseline by which institutional efforts are measured, seems less than straightforward.

Method

Over the course of two chapters, each of which departing from the net art presentation in room 1.33, notions of interactivity and integration of net art displays in art museums shall be discussed. These matters were chosen based on the observed shortcomings of the current setup. This study offers analyses of challenges and approaches curatorial staff could consider when exhibiting net art in the gallery-spaces of modern and contemporary art institutions. Each assessment will be followed by discussions on theoretical conceptualisations of artforms and examples from historically significant exhibitions, before concluding in practical analysis and evaluation.

Chapter one offers an analysis of the interactivity of the Stedelijk's net-based art installation, the display of which makes use of cumbersome hardware and a confusing layout. The current setup results in a poor visitor experience by impeding interaction with the works – a key part of the aesthetic experience of the displayed pieces of net-based art. Following this analysis, the works on show shall be reconceptualised using Katja Kwastek's aesthetic theory of interactive digital art, to better understand the needs thereof based in the relationship between artist, artwork, and recipient. The inquiry will then turn to 1968's *Cybernetic Serendipity* and 1997's *documenta X*, both exhibitions of historical significance and relevant to this paper due to their introduction of new media and interactive artforms to varied audiences.

Chapter two turns to matters of integration, specifically how net-based art could be included in museum presentations alongside other works of art. The Stedelijk's installation essentially isolates the net-based artworks from the rest of the collection. They are confined to their installation, presented together in a medium specific grouping otherwise absent from the rest of the collection presentation. This chapter will first

discuss Jack Burnham's theory of systems aesthetics, which was the organising principle for *Software*, an exhibition he curated in 1970 and which included works by conceptual artists, architects, and computer programmers. The exhibition will be analysed to evaluate if and how systems aesthetics could be utilised as an approach to improve the presentation of net-based art in a museum. From there we turn to *Written in Stone*, a net art exhibition held in 2003, which showcased a personal approach to the exhibition of net-based art, yet one in which the echoes of Burnham's systems aesthetics can still be heard.

The conclusion will bring together what has been discussed in chapters one and two into a coherent whole from which improvements to the presentation of net art in museums can be drawn. It also includes propositions for practices that incorporate such improvements, and hypothesises how these could be implemented into the Stedelijk's collection presentation.

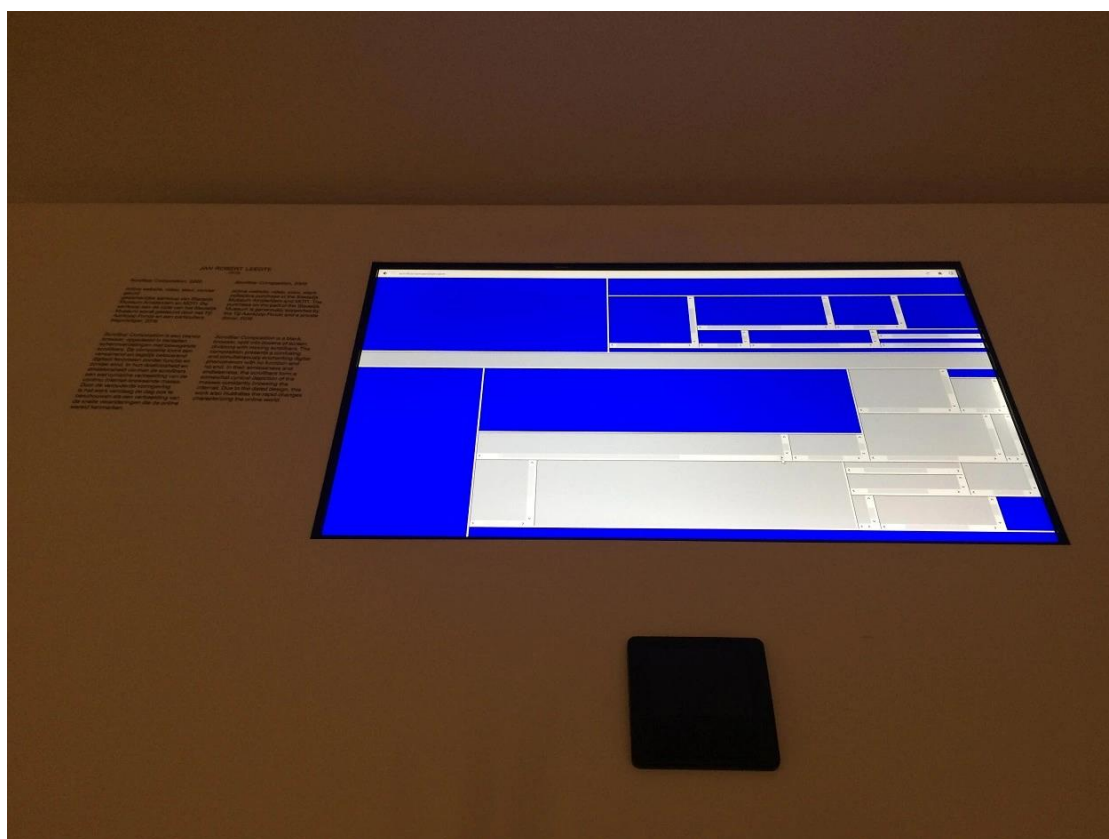
Chapter one: Interaction

Observations

Although probably unintentional, the public mediation of the net-based artworks in the Stedelijk's net art display hinders the recipient in experiencing them. At a passing glance the setup for each work included in the presentation seems identical, but the subtle differences in the interfaces for each work appear when subjected to more scrutiny. Of the five screens, four of are accompanied by a navigational mousepad, and two of these four are connected to audio headsets. The touchpads are not immediately obvious, and a visitor accustomed to touch-screen interfaces (like most nowadays) can be forgiven for at first fruitlessly tapping on the screen in expectation of affecting what is presented within the boundaries of the screen. It does not help that the first screen a visitor will encounter, the one on which [Scrollbar Composition](#) (2000) is presented, is not accompanied by a navigational touchpad, the curator apparently intending for them to contemplate the work at a similar aesthetic distance as they would more traditional art-objects on display (fig. 3).

All other works in the display are interactable via a mousepad. The interface is durable, but it is also somewhat cumbersome and at times unresponsive, impeding simple navigation of the screen. Those of [Mouchette.org](#) (1996-ongoing) and [The Modular Body](#) (2016) are accompanied by headphones, though not each page accessible on these blog- and website-formatted works utilise audio, leading the author to posit that the hardware is intended to isolate noise coming from the installation, instead of aiding the user in hearing. The current setup accommodates Jonas Lund's [Fair Warning](#) (2016) fine, but although it only requires limited mouse navigation to participate in the artist's test environments, a more responsive navigational tool would improve the experience. Similarly, Rozendael's [Abstract Browsing](#) (2014), a search engine extension that renders webpages into colourful abstract compositions, is a fun experience, though one that wears off quickly due to the cumbersomeness of mousepad navigation. The Stedelijk's presentation reduces the presence of cables and computer hardware necessary for an interactive experience of the works on display in a manner that makes the experience less user-friendly.

Figure 3: Installation view of *Scrollbar Composition* in the net art display at Stedelijk Museum Amsterdam. Photo: Lynne Leegte.



Through the inclusion of net art in the *Stedelijk Base* presentation the museum aids in making visitors aware of the existence of the artform, however, as described in this thesis' introduction the wall text does a poor job of explaining the art to visitors. Of course, wall text is not essential to the experience or to gain an understanding of most artforms, but without a little help a visitor may run into some difficulty in experiencing the works included in *Stedelijk Base*. The shortcomings of the current setup can be summarised as follows: Four out of five displays are interactive, and require the recipient to interact with computer hardware to fully experience the works they present. The touchpads are somewhat non-descript, and blend into the display through lack of defining features or markings, and the screens lean at an unusual angle compared to those encountered in an office setting. The result is an aesthetically uniform, albeit unfamiliar, interactive display.

In this chapter the focus will be to find means to improve upon the interactivity of *Stedelijk Base*'s display of net-based art at the Stedelijk. It is noteworthy that the net-based art presentation is the only interactive part of the collection presentation, perhaps revealing the importance with which the institution regards the interactive potential of net-based artworks. Though the intent of the Stedelijk to provide an interactive experience for visitors has its flaws, to study theories and practices of interactive art could provide insights which might improve the display in room 1.33, but also encourage the exhibiting of net-based art in other museums as well.

First, we turn to Katja Kwastek's (1970) *Aesthetics of Interaction in Digital Art* (2013), a crucial publication which establishes theories for the analysis of interactive art by putting the artwork and the recipients' experience thereof centre stage. The net-based artworks on display at the Stedelijk will then be viewed through the lens of Kwastek's theory as interactive digital artworks to better understand their requirements and experiential needs. Following this exercise an analysis will follow of two notable exhibitions. *Cybernetic Serendipity*, an exhibition that predates the creation of most works of net-based art by at least twenty years, but which is relevant to this study because it introduced many new approaches to art experience and production to members of the public in a well-received show. *Documenta X on the other hand*, was a controversial exhibition which brought net-based art to the attention of the international artworld mainstream and public. It is the aim that through an analysis of past

approaches to the presentation of new media and net-based art grounded in Kwastek's theory of interactive digital art, that possible improvements to public mediation practices of net-based art will be arrived at.

Aesthetics of Interaction

Today, many artists making net-based art or works that reflect upon net cultures consider that their art might get exhibited in a gallery, and therefore design specific installations in which visitors can experience their work. Canadian artist Jon Rafman (1981), for example, wrote up proposals for the installation of *Erysichthon* (2015), such as the inclusion of a swing for the viewer to sit on whilst observing a video projected on a nearby wall.¹⁹ Earlier forms of net-based art, particularly works produced by artists associated with the 90s net.art movement, were intended to be experienced by a recipient on a personal desktop computer – preferably as far away from a museum as possible. In these cases, there is no detailed artist proposal or list of installation requirements, making the establishment of a space for visitors to experience the work in a suitable manner the responsibility of the institution presenting it. As evidenced by variations in hardware incorporated into the Stedelijk's display, each work also has its own requirements to accommodate specific kinds of viewer-experience.

In the introduction to *Aesthetics of Interaction in Digital Art*, Kwastek describes interactive art as placing 'the action of the recipient at the heart of its aesthetics. It is the recipient's activity that gives form and presence to the interactive artwork, and the recipient's activity is also the primary source of his aesthetic experience.'²⁰ Kwastek goes on to distinguish interactive art from other traditional visual artforms such as painting and sculpture by noting that it does not 'manifest its gestalt,' – come together at a specific moment as more than the sum of its parts, 'in the absence of reception.'²¹ The artwork is preconceived by the artist, but performed by the recipient when they answer the artist's call to action. Kwastek contrasts this with other forms of participatory art in stating that the focus is not in the 'face-to-face communication,' but on 'technically mediated feedback processes.'²² She also notes the hybridity of

¹⁹ *Erysichthon* was one of the seventeen works that, along with the works of room 1.33's net art display, make up the Stedelijk's 2016 MOTI acquisition.

²⁰ Katja Kwastek, *Aesthetics of Interaction in Digital Art* (Cambridge, MA: MIT Press, 2013), xvii.

²¹ *Ibid.*, xvii.

²² *Ibid.*, xviii.

interactive art, in that it often combines elements of visual, time-based, and performing arts. Unlike non-interactive art, contemplation through aesthetic distance, or coming to an understanding of the work through observation alone, is often impossible.

Kwastek's primary concern expressed in *Aesthetics* is to provide a framework for to analyse interactive digital art, and to determine a works aesthetic potential.²³ A work's aesthetic potential is its potential as a source of aesthetic experience: a response to the object derived from an appreciation of aspects of the object, such as being struck by its beauty. According to Kwastek the three key concepts that shape an interactive artworks aesthetic potential are gestalt, aesthetic distance, and epistemic potential.²⁴ Gestalt is the idea that the whole is perceived as more than the sum of its parts. For Kwastek it is formed fleetingly during interaction and incorporates elements ranging from the recipient's actions to software, hardware, time-duration, and staging. Aesthetic distance should be understood as the degree to which the recipient can be engrossed by the work or is otherwise held at a critical distance. The experience of interactive art complicates matters of aesthetic experience, for unlike other artforms, action is a prerequisite to contemplation as well as something to be contemplated. Epistemic potential is the possibility for the recipient to garner knowledge of and through the work. It is during action and reflexively, post action, that the recipient processes information from a work of interactive art.

As mentioned above, the net-based artworks on display at the Stedelijk were originally conceived to be encountered outside of museum spaces, which is indicative of a certain type of aesthetic potential, namely: The artist creates a digital environment, sets its boundaries, decides the rules, and makes it accessible to others via the internet. Then the others, who herein become the recipients of the work, are free to participate to

²³ The framework for Kwastek's analysis of interactive digital art is underpinned by theories of performance and of play. 'Play is characterized by the *freedom* of the activity (Buytendijk, Caillois, Scheuerl) and by its *unproductiveness* (Caillois, Huizinga), as well as by *self-containedness* in the sense of being an activity with fixed spatial and temporal limits which is distinct from "real life" (Caillois, Scheuerl, Huizinga). Play *does not have a predictable course or outcome* and is based on *inner infinitude* (Buytendijk, Caillois, Scheuerl). It is *based on rules* (Buytendijk, Caillois, Scheuerl, Huizinga), and it resides in an *artificial* realm (Buytendijk, Huizinga, Caillois, Scheuerl).' Emphasis Kwastek. The analytical breakdown offered in the book is detailed and thorough, but due to the limited scope and wordcount of this thesis it is necessary to focus on notions which are intertwined with the experience of the recipient and museum presentation. Ibid., 74.

²⁴ Reference and referral to these concepts are constants throughout chapters two, three, and four, but first described as the elements by which the analysis is structured in chapter four, 'The Aesthetics of Interaction in Digital Art,' from which Kwastek's book takes its name. Ibid., 89-165.

the degree in which they wish, experiencing it through interacting with the systems it utilises. In this setup the artist is the creator of a system in which they themselves do not participate, and the work can only be experienced when the recipient performs it. It is through this interaction, the actions of the recipient within the artist's constructed virtual space, localised and facilitated through computer hardware, that the gestalt, aesthetic distance, and epistemic potential of the work takes place. These will differ between works, therefore it could be posited that when a desired aesthetic potential of a work is known, these three keystones to Kwastek's analysis could be used to reproduce the aesthetic potential, to reverse-engineer an installation for it.

Presentation of net-based art in a museum will standardise certain aspects contributing to the aesthetic potential (interaction spaces, time, and apparatus), but as is the case for any other artform, experiences of the artwork will differ between recipients. Kwastek defines four modes of experiences a recipient can have with any given work of interactive art: experimental exploration, expressive creation, constructive comprehension, and communication. In brief, experimental exploration is the initial wish of the recipient to interact with the system in attempt to discern the rules and the goal of the work, whereas expressive creation is the recipient's realisation of the ability to create and intervene within the parameters dictated by the agency the artist has granted.²⁵ Constructive comprehension, on the other hand, denotes a greater understanding of the rule system structuring the work, allowing for the recipient to anticipate the consequences of certain courses of interaction.²⁶ Lastly, communication is experienced by the recipient when their actions or presence is addressed by the artist through the system, though not necessarily in real time.²⁷ A museum presentation of net-based art therefore perhaps affords a certain type of aesthetic potential, however it should be evident that a presentation that limits or removes the diversity of potential experiences otherwise available in a non-museum setting is problematic. Bearing the above in mind we turn to an analysis of the works displayed at the Stedelijk using the aesthetic theory provided by Kwastek.

The aesthetic potential of Leegte's *Scrollbar Composition* is severely compromised in the Stedelijk's display. The net-based artwork contains limited

²⁵ Ibid., 128-130.

²⁶ Ibid., 130-131.

²⁷ Ibid., 133.

interactive elements, with those that do offering the recipient little in the way of agency or feedback, subverting expectations even in what is usually a fully interactive environment. The opportunity to experience these facets of the works however have been removed in the museum presentation, in which it has been reduced to a stuttering image on a screen. In this instance, the lack of interaction denies the recipient the artworks gestalt, severely inhibits epistemic potential, and limits aesthetic distance, for it allows only those prescribed by the non-interactive display. The gestalt, aesthetic distance, and epistemic potential of Rozendael's *Abstract Browsing* are also heavily predetermined in the current presentation. The curated experience does not let visitors apply the plug-in to websites they themselves are familiar with, hereby affecting the expressive creation and constructive comprehension of the work. In what should to be an interactive exhibit, the constraints the museum has applied to the recipients agency are particularly detrimental alterations to the work.

The headphones included in the installation of *Mouchette.org* reveal it's audio features, part of the gestalt of the work, yet also impede the experimental exploration, for the sound cannot draw a potential recipient's attention as it can only be perceived if the headphones are already being worn. Arguably though, this is the case for all net-based art with audio elements presented both inside and outside of a museum, for the sound cannot be heard until the work is being accessed by the recipient. Also, due to the sometimes-explicit sounds and images incorporated into the work, the public staging in which the recipient's actions can be observed by others is likely to cause embarrassment when such content is inadvertently opened onscreen. Being able to observe another recipient before interacting with the works perhaps alters initial experiences, though unlikely due to the many hidden and seemingly random links and flashes of images and sounds Neddham incorporated into *Mouchette.org*. The Stedelijk's clunky and unfamiliar display however further complicates interaction, perhaps decreasing the amount of time for which the recipient is willing to experience the work.

Unlike *Mouchette.org*, Kaayk's *Modular Body* does not contain such disruptive elements, making navigation within the parameters of the work comparatively rigid and predictable. Due to this experimental exploration, expressive creation, and constructive comprehension, are straightforward, and communication lengthy. Narrative elements are communicated to the recipient through both text and video with audio. The large

amount of such material the work presents perhaps merits the addition of seating-furniture to the display, to better accommodate a recipient willing to engage with narrative elements at length. Lund's *Fair Warning* permits the recipient little agency outside of moving the cursor from words or images visualised in tests onscreen. The work requires interaction, but does not enforce it. The tests roll on, presenting the viewer other recipients' choices visualising other users' cursors and clicks alongside their own, but not communicating any significance of the choices made. The public staging of the work adds another form of recipient observation, though having observers in the gallery not represented by cursors on the screen seems to subvert the transparency of Lund's tests. In comparison to the recipient, what the observer lacks in interactive agency they gain in critical distance.

The next part of this chapter will examine 1968's *Cybernetic Serendipity* and 1997's *documenta X*. *Cybernetic Serendipity* was the first exhibition to introduce computers into the galleries of art museums. *Documenta X* gave net-based art a prominent position in its exhibition concept and promotional material, hereby moving it from the fringes of the artworld to the attention of its centre. Although these shows are curatorial products of their respective times, both exhibitions pioneered new forms of presentation and visitor engagement to accommodate artistic practices which until then had not been encountered by the artworld's public..

Cybernetic Serendipity

Cybernetic Serendipity: the Computer and the Arts was a ground-breaking art and science exhibition held at the Institute of Contemporary Arts in London which ran from the second of August to the twentieth of October 1968. Three years of research preceded the exhibition curated by Jasia Reichardt (1933), the then associate director at the ICA. Although presentations of art and computer science was not an innovation in itself, only a handful of minor shows in Frankfurt and New York had preceded Reichardt's exhibition, and *Cybernetic Serendipity* was far more ambitious in scope and experimental in nature than anything that had come before it.²⁸ It was the first major exhibition to present artworks designed by artists experimenting with electronic computer technology, and many objects on display were interactive, making use of

²⁸ María Fernández, "Detached from HiStory: Jasia Reichardt and Cybernetic Serendipity," *Art Journal* 67(2008)3: 8.

audio-visual systems and motion-sensors. Due to the cutting-edge interdisciplinary nature of the exhibition many scholars have pointed to *Cybernetic Serendipity* as a watershed moment for the institutionalisation of media art.²⁹

In the catalogue, Reichardt described *Cybernetic Serendipity* as ‘an international exhibition exploring and demonstrating some of the relationships between technology and creativity.’³⁰ The show consisted of works by 130 contributors, ranging from early colour television sets configured by artist Nam June Paik (1932-2006) against which visitors were encouraged to hold magnets; cybernetician and psychologist Gordon Pask’s (1928-1996) *Colloquy of Mobiles* (1968), an installation involving suspended sculptural elements, each of which blinked, made noises, and rotated in reaction to lighting and sound originating from visitors and other mobiles; and a computer that composed and realised music designed by engineer and composer Peter Zinovieff (1933-2021). It was the first exhibition of its kind in the United Kingdom to present works of art and technology together in a transdisciplinary dialogue of new media objects.

According to Reichardt two points made the show unusual. The first was that the presentation had not been divided up by profession or discipline, but instead exhibited each object within the context of three transmedia themes. Throughout the presentation no distinction was made between artwork, computer, diagram, or machine, so that ‘no visitor to the exhibition [...] will know whether he is looking at something made by an artist, engineer, mathematician, or architect’ under the pretence that it ‘will not alter their impact although it might make us see them differently.’³¹ Her second revelation was to frame the advent of computing as the moment at which new technology through usage had the potential to transform users into creatives. Through new computer

²⁹ In his own article on the concept, realisation, and media reception of *Cybernetic Serendipity*, Rainer Usselman lists scholars who wrote about the exhibition before him, such as Paul Brown, "30 Years On: Remembering Cybernetic Serendipity," *Outline, The CTIAD Journal*6 (Autumn 1998) pp. 3-5; Mitchell Whitelaw, "1968/1998: Rethinking a Systems Aesthetic," *ANAT* (Australian Network for Art and Technology) (June 1998); Brent MacGregor, *Cybernetic Serendipity Revisited* (Edinburgh, Scotland: Edinburgh College of Art, 2002). Rainer Usselman, "The Dilemma of Media Art: Cybernetic Serendipity at the ICA," *Leonardo*, 36(2003)5: 398.

³⁰ Jasia Reichardt, "Introduction," in *Cybernetic Serendipity: the computer and the arts*, Jasia Reichardt, ed., second edition (London: Studio International 1968), 5.

³¹ The titles of the section of exhibition space: '1. Computer-generated graphics, computer-animated films, computer-composed and -played music, and computer poems and texts; 2. Cybernetic devices as works of art, cybernetic environments, remote-control robots and painting machines; 3. Machines demonstrating the uses of computers and an environment dealing with the history of cybernetics.' *Ibid.*, 5.

systems ‘people who would never have put pencil to paper’ now produce images that ‘often look identical to what we call “art” in public galleries.’³² Here Reichardt is referring to the similarities between the formal qualities of diagrams realised with the assistance of computers to those of contemporaneously produced abstract artworks.

Reichardt’s points aided in the realisation of the overarching thesis of the exhibition, that through computing systems any form of labour could become a creative activity resulting in both an appreciation for and production of art. Anyone could make art, by accident even, thanks to these new cybernetics – and to do so one need only waver acknowledgement of different producers and awareness of the utility of certain objects. Unsurprisingly, Reichardt’s thesis caused quite a stir among some critics, some of whom concluded that the exhibition signalled the end of abstract art, that art was not really for or about anything anymore, and that machines could do it too.³³ Also, because most artworks were the result of computer assisted design or not actually intended by their producers to be perceived as art, doubts were cast on the artistic merits of the show and if it should have been exhibited at a science museum instead.³⁴ It is perhaps of note that one of the venues the show travelled to was the Exploratorium, the newly opened science, technology, and art museum in San Francisco.

Regardless of its critical reception, the exhibition was well-received by members of the general press and public, of whom upwards of 45.000 visitors attended, at the time making it the most successful exhibition the ICA had ever held.³⁵ Mindful of the mixed reactions the Stedelijk’s net-based art installation solicits from visitors, close inspection of the public mediation of the art and objects presented at the ICA show might uncover approaches of use to improve the Stedelijk’s own presentation. *Cybernetic Serendipity* introduced members of the British public to the promise and possibilities of modern computing through a varied array of audio-visual and interactive exhibits, and it is the way the exhibition mediated the works to the public that we shall now turn.

³² Ibid., 5.

³³ Robert Melville, “Signalling the End,” *New Statesman*, 9 August 1968.

³⁴ Nigel Gosling, “Man in an Automated Wonderland,” *Observer*, 4 August 1968.

³⁵ The ICA did not officially count visitor numbers, but estimates range from 40.000 to 65.000 visitors. This figure, believed to be the most accurate, is from Terry Coleman, published in an article for the *Guardian*. Terry Coleman, “Wild in the Mall: Terry Coleman on the ICA’s Financial Crisis,” *Guardian*, 5 December 1968.

The design of the exhibition at the ICA was devised by artist and stage designer Franciszka Themerson (1907-1988). The diverse range of artworks and objects were displayed upon black or white modular plinths and walls, and Pask's mobiles hung from a suspended ceiling (fig. 4 and fig. 5). The plinths and walls divided what would otherwise have been an open space to steer the flow of the public and section-off certain works from others. This approach was necessary to hide a vast amount of electric cable and reduce build-ups of visitors around one of the many interactive exhibits. Also, the light sources and noise making devices integral to many works could interfere with both public perception as well as the sensory devices of other installations. Most of the available wall space was either lost behind the glowing displays of bulky machinery or covered in graphics, illustrations, and sheet music, all of which were the result of computer assisted design. Coupled with the cacophony of light and sound, the result was an exhibition that both overloaded the senses and expanded conceptions of what could be exhibited in art venues.

The attempt to expand what could be on view and the technologies with which art could be produced also resulted in an expansion of how visitors could relate to works on display. As has been noted by Ben Cranfield, *Cybernetic Serendipity* created an interactive 'user-oriented exhibition environment' in which visitors, through 'non-didactic forms of display,' could engage with works.³⁶ Cranfield connects exhibitions such as Reichardt's at the ICA to the development of 'edutainment' and 'customer-orientated corporate logic of the late twentieth-century art museum.'³⁷ In a less cynical formulation however, this could be described as an approach in which the curator presupposes the backgrounds and experiences of potential visitor groups, and by taking these into account creates an exhibition experience that can accommodate visitor expectations. Reichardt's decision to create an interdisciplinary non-hierarchical display of objects played into a presumed broad appeal of the exhibition, a presumption supported by reports of large numbers of visitors with non-traditional makeup.³⁸

³⁶ Cranfield bases his analysis in theories of play as discussed by renown historian and cultural theorist Johan Huizinga (1872-1945) in his seminal book *Homo Ludens* (1938). See: Ben Cranfield, 'All Play and No Work? A 'Ludistory' of the Curatorial as Transitional Object at the Early ICA', Tate website, <https://www.tate.org.uk/research/publications/tate-papers/22/all-play-and-no-work-a-ludistory-of-the-curatorial-as-transitional-object-at-the-early-ica> (accessed 02 March 2021).

³⁷ Ibid.

³⁸ Compiled from various newspaper reviews noting the range of visitors, such as the Evening Standard: 'a hippy, a computer programmer, a ten-year-old schoolboy,' and from the Guardian: 'people who would



Figure 4: Exhibition view of *Cybernetic Serendipity* at the Institute of Contemporary Arts, London, 1968. Photo: Yuri Pattison, unofficial Cybernetic Serendipity Archive.

Figure 5: Exhibition view of *Cybernetic Serendipity* at the Institute of Contemporary Arts, London, 1968. Photo: Yuri Pattison, unofficial Cybernetic Serendipity Archive.



never have dreamed of attending an ICA exhibition before.' Usselmann, "The Dilemma of Media Art," 390.

Of course, it is difficult to discern exactly what caused record visitor numbers, but the commissioning of many transdisciplinary non-traditional (art-) works coupled with the interdisciplinary non-hierarchical and often interactive displays accommodated an audience with perhaps less rigid expectations of what a modern art exhibition was supposed to be quite well.

To clarify, the computers visitors would have seen at the *Cybernetic Serendipity* were either historically significant systems complete with ‘audience-operated animations’ for educational purposes such as demonstrating data-processing, programming, and binary arithmetic (such as those provided by IBM, fig. 6), or those part of public demonstrations. Although the exhibition introduced and dealt with the creative possibilities of computers, they were still very much specialised tools requiring specialised knowledge to operate.³⁹ Therefore, members of the public were not given the opportunity to play with these expensive machines during the show and the artworks produced by artists using computers were not displayed on a monitor screen but materially present, akin to more traditional art installations. Though the inclusion of computers into the gallery space is a significant step in broadening art museum display typologies, what is perhaps more relevant to the public mediation of net art in a more contemporary art museum space such as *Stedelijk Base* are the non-didactic forms of display at play in *Cybernetic Serendipity* which accommodated various forms of audience participation.

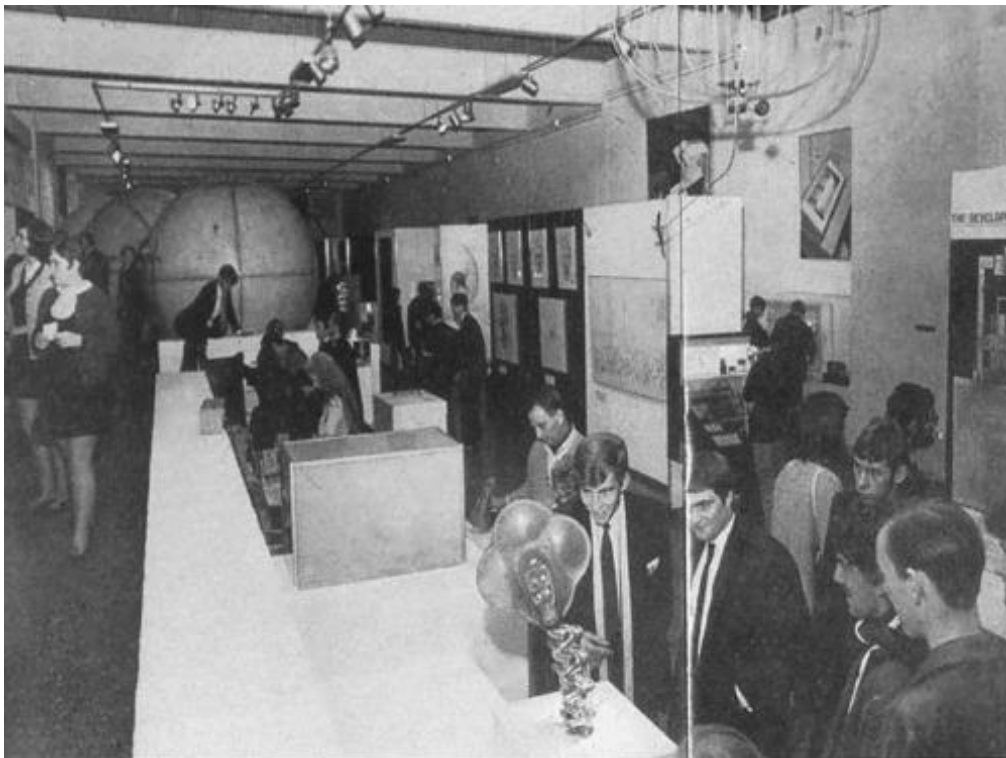
The anthropomorphic sculpture *Albert* (1967) by John Billingsley, would turn to face members of the public that came to inspect it. Light sensors incorporated into what resembled the bust of a man registered changes in lighting due to viewer proximity, activating a motor which would pivot the head in response. The familiarity of *Albert*’s pre-programmed behaviour of turning to face was both easy to understand and accessible form of viewer-artwork interaction. There were other more complex sculptures, such as Edward Ihnatowicz’s (1926-1988) *SAM* (Sound-activated mobile, 1968) which performed similar if more intricate motions in reaction to visitor noise.

³⁹ The exhibition catalogue contains a text in which the exhibition’s technological advisor Mark Dowson introduces the reader to the basic units that make up a digital computer, describes the size and cost of such machines (ranging from 4,000 pounds, the annual cost of running a car and imagines the possibilities of the inclusion of computer systems in the arts. Mark Dowson, “Digital Computers,” in *Cybernetic Serendipity: the computer and the arts*, Jasia Reichardt, ed. 2nd edition (London: Studio International 1968), 10-11.



Figure 6: Exhibition view of *Cybernetic Serendipity* at the Institute of Contemporary Arts, London, 1968. Photo: © IBM/Cybernetic Serendipity.

Figure 7: Visitors interacting with SAM can be seen in the bottom right corner. Exhibition view of *Cybernetic Serendipity* at the Institute of Contemporary Arts, London, 1968. Photo: Yuri Pattison, unofficial Cybernetic Serendipity Archive.



Again, this anticipated a specific audience behaviour (i.e. making a noise and remaining to observe) and through a pre-programmed response to the associated stimulus the flower-like face of the sculpture would turn to the origin of the sound in response. Multiple visitors could take turns making a noise to see how *SAM* would react, participating in a back and forth between artwork and recipients beyond the contemplation of a static object (visitors interacting with *SAM* can be seen in fig. 7 in the bottom right corner of picture).

Albert and *SAM* are two examples taken from the many installations presented in *Cybernetic Serendipity* that incorporated varying degrees of audience participation. They are also exemplary of most objects on display which similarly initiated the interaction, and the terms thereof were made obvious within the moment of interaction. This form of interaction is distinct from the educational display of IBM's computers in which visitors could follow the directions of written descriptions, whereas the audience-artwork interaction between *SAM* and a member of the public was reactionary and intuitive. The strength of this approach is its inclusivity, for it does not require familiarity with common methods of museum presentation to know how to react to the situation. Reichardt's commissioning of many transdisciplinary works coupled with the interdisciplinary non-hierarchical display and the introduction of a broader audience with less rigid expectations of what a modern art exhibition resulted in an expansion of what could be encountered and included in a museum presentation.

In terms of the aesthetic potential of the works, both *Albert* and *SAM*'s gestalt were in the artists' programming, the sculpture, powered electrical components, and input from the recipient. The hardware needed for the recipient to interface with the work was therefore minimal and required no additional support outside of those incorporated into the works. As for aesthetic distance, there were multiple degrees of separation, of critical distance, available. Both works reacted to the largest impulse, which could be perceived and experimented with individually or communally. The space allowed for both recipients and observers, who could either work together, compete, or merely observe. The reactive movements of the artworks were preconceived by the artists and powered by motors which reacted to input performed by the recipient when they became aware the sculptures movements are consequence of their actions. Epistemic potential was dependent upon the sensors, and through mere

proximity it became obvious the works reacted to impulses, even though the sensors which were incorporated into the sculptures were not immediately obvious. Through multiple actions, the thresholds of which were low, the recipient could soon acquire the knowledge to move the sculptures.

The aesthetic potential of *Albert* and *SAM* relied mostly upon the intuition and perceptiveness of the recipient. Apart from space and a power source, they required little else from the exhibitor for the public to be able to experience them. The strength of the presentation of *Albert* and *SAM* at the ICA was that it provided the works with the room for interaction they needed the encounter with them was equally accessible as the other works on display. In comparison, the net-based art presentation at the Stedelijk is over-produced, formatted unfamiliarly, and cramped. The efforts that have gone into removing signs of hardware and incorporating the interface into the space results in an unfamiliar experience. It is not immediately obvious to the recipient that they are encountering interactive works and that the interaction should be conducted differently to other artworks on display. The touching of the screen only to spot the mousepad afterwards point towards more intuitive reaction to touch the screen. If the hardware that mediates the interaction were either more obvious or reacted as expected, a similarly intuitive experience could be had with the net-based artworks in room 1.33 as anywhere else.

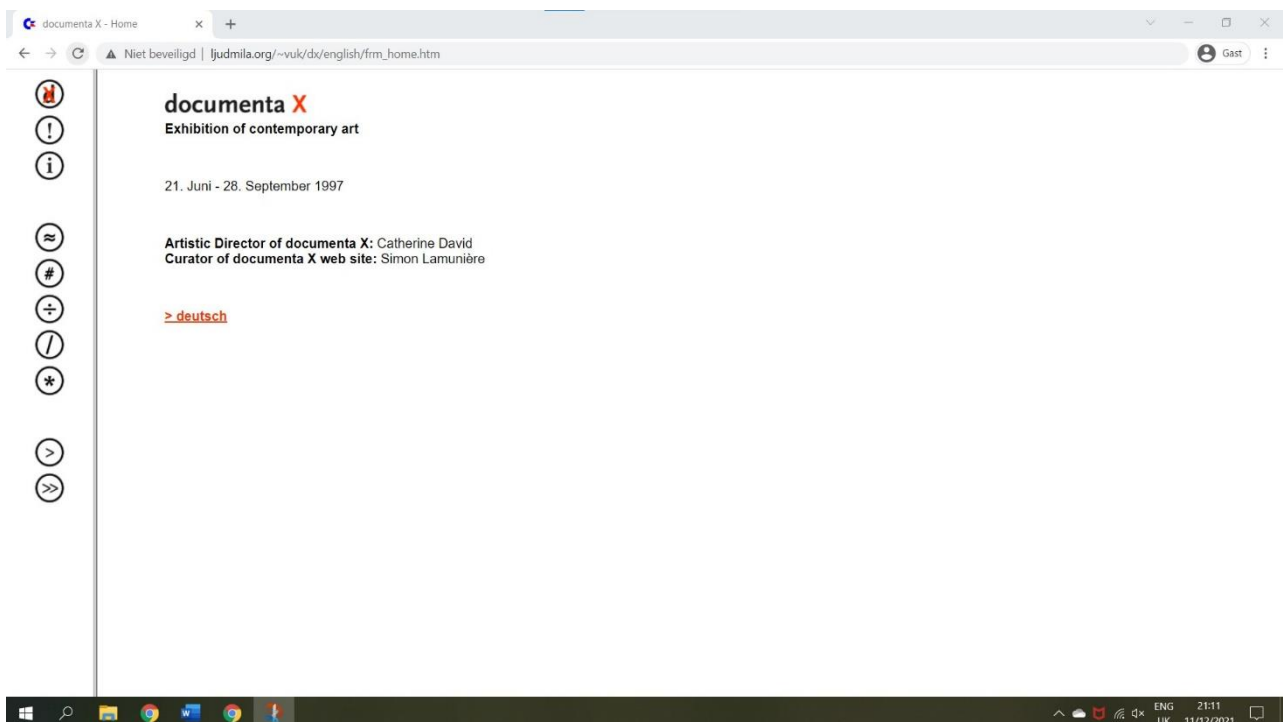
Documenta X

The 1997 major international art exhibition *documenta X* held in Kassel, Germany, offered visitors the chance to see and interact with works of net-based art on view at the documenta Halle as part of *Hybrid Workspace*. Documenta curator Catherine David (1954) had commissioned Austrian artists' Heimo Zobernig (1958) and Franz West (1947-2012) to design a space which incorporated the technical infrastructure needed to exhibit net-based art as well as provide a venue for conferences, discussions, lectures, and radio shows. The result was a blue-walled ironic echo of an office in which many computer monitors sat atop large desks (fig. 8). In this interactive experimental exhibition space visitors could use the computers to access a website curated by Simon Lamunière (1961) on which essays, digital artworks, and discussion-boards could be viewed (fig. 9). David envisioned that the *documenta X* website would allow for people to access net-based art works and forums remotely, hereby not needing



Figure 8: Exhibition view of net art section at *documenta X*, documenta-Halle, Kassel, 1997. Photo: Joachim Blank.

Figure 9: Screen capture of *documenta X* website. Photo: author, 2021.



to physically visit the exhibition to participate.⁴⁰ Similarly to more traditional forms of art exhibitions the website acted as a catalogue, and after the conclusion of the show a copy of it could be purchased on a CD-ROM.

The *documenta X* website was to be a lasting document of a temporary presentation, neatly packaged in an updated cross-spatial (“documenta-space”) format fit for the late twentieth century.⁴¹ Or at least so it had been intended. In practice, and much to the annoyance of many participating contributors, the presentation in Kassel was locally networked. The onsite computers granted visitors access to a version of the website which was not connected to the internet but nonetheless could allow for interaction with works of net-based art, which had needed to be reformatted to fit the offline presentation. Not all participants were willing to compromise their works, however. Stressing and protesting the disconnect between the local and the online exhibition, participating artist duo Jodi provided works that consisted of redirecting hyperlink chains which could only function with full internet access and were therefore unviewable from computers in the exhibition space. To add to the artists’ outrage at the organisers, the website was taken offline after *documenta X* and became accessible only as the copy sold on CD-ROM. This perceived institutional and unintended commercialisation of their work prompted participating artist Vuk Ćosić (1966) to produce *Documenta Done* (1997): an exact copy of the website made accessible by the artist online.⁴²

Despite failing to meet the wishes of participating artists, in the context of the line of inquiry presented in this thesis *documenta X* expands notions of the highly interactive art exhibition similarly to *Cybernetic Serendipity*. The exhibition introduced new participants, both contributing and visiting to an institutional art museum setting. The public mediation of Zobernig and West’s presentation design may at first seem to offer a practical (if predictable) solution, yet as the display at the Stedelijk shows, the difficulty of exhibiting digital projects conceived to be experienced in a non-museum

⁴⁰ ‘It allows participation in the event Kassel in the combination which distinguishes internet: within a framework both intimate and global, in one’s own living room and in the most varied corners of our world.’ Catherine David, ‘dx and new media’. *documenta X* website, accessed 01 April 2021, <http://web.archive.org/web/20061010125159/http://www.documenta12.de/archiv/dx/lists/debate/0001.html>.

⁴¹ Ibid.

⁴² Caitlin Jones, ‘The Copy and the Paste’. Rhizome.org, accessed 01 April 2021, <https://rhizome.org/editorial/2017/mar/02/the-copy-and-the-paste/>.

setting should not be taken for granted. Particularly when the museum-space in question is expecting to receive many visitors. Participating artist-duo Jodi however levelled many critiques at the office environment, describing it in an interview as ‘some kind of joke,’ and expressed concern that the presentation methodology might ‘be repeated over and over again.’⁴³ Needles to say, echoes of the methodology are encountered in room 1.33 of the Stedelijk. Prophetic critiques aside, the presentation arrived encountered at *documenta X* was many things, but chief among them it was a recognisable archetype for most visitors and came equipped with familiar interactive hardware, i.e., commercially available desktop computers.

The unfamiliarity of the presentation form to the recipient was one of the critiques levelled at the Stedelijk drawn from the analysis of *Cybernetic Serendipity*. A more familiar setup would allow for intuitive investigation of what at the time was the novel concept of a digital exhibition space very different from the white cube.⁴⁴ Jodi faulted Zobernig and West’s presentation design not for the familiarity of its aesthetic, but because it created distance where it need not be: computers are already encountered everywhere. The recreation of an office space is a décor, an unnecessary frame of reference instead of a real space.⁴⁵ With regards to the presentation in this real space, they note that the artists should be consulted, which also seems to suggest that there is no catch-all presentation method for net-based art when it is included in museum presentations. Furthermore, Jodi’s Paesmans also expresses that a room in which all works are presented together, ‘like an IBM showroom,’ is not inviting.⁴⁶ Computers are encountered everywhere, but most folks interact with only one at a time.

Jodi’s work at *documenta X* exemplifies an aesthetic potential of net-based art in its most disruptive and uncompromising form. Among elements which constitute its

⁴³ Tilman Baumgaertel, Dirk Paesmans, Joan Heemskerk, ‘We love your computer: Interview with jodi’. Nettime.org (31 august 1997), accessed 12 August 2021, <https://www.nettime.org/Lists-Archives/nettime-1-9708/msg00112.html>.

⁴⁴ Conversely, for those unfamiliar with art museums but at home on the web, the *documenta X* website could have introduced such recipients to the discursive space of contemporary art institutions.

⁴⁵ When Baumgaertel asks Jodi for an alternative for the presentation at *documenta*, Paesmans replies: ‘I think it is very important for net artists to deal with the presentation, or they will be re-presented by other people; [...] One should avoid that at all costs. All the different works disappear in the set up by the one guy who deals with the real space. The real space is of course much more powerful than all these networks.’ Heemskerk later adds: ‘The idea that computers are only in offices is from twenty years ago. [...] An office space creates a distance.’ Ibid.

⁴⁶ Ibid.

gestalt an internet connection is crucial, and lack thereof leads to changes in experience of the work. When the recipient encounters crashes or broken links during interaction that is fine, for they point to the importance of encountering the work online. Hardware needed is the standard desktop monitor, mouse, and keyboard, but should not be anything out of the ordinary unless requested by the artist. Aesthetic distance is encouraged through the slowness caused by the computers processual struggle to realise the work onscreen. The intention of producers of net-based art for their work to be encountered on personal computers suggests a singular experience, requiring space only for one recipient and with minimal observers. Sections not working or inaccessible due to lack of or bad internet connection are part of the epistemic potential of the work. Errors highlight points where the museum expected compromise from the artists, but where it was not given. Also, due to its connection to the internet the work of net-based art is kept changeable, as it can be updated by the artists whenever they see fit. What is once experienced by the recipient may not be the same the next time the work is encountered.⁴⁷

Documenta X illustrated how the aesthetic potential of works of net-based art are linked to their connection to the internet. In the interview with Baumgaertel, Paesmans states that ‘if you want to see the works well, then you have to look at them on the net.’⁴⁸ If net-based art is best experienced without concessions made by the artist to the museum, then the museum display should encourage the recipient to also look-up the works themselves remotely. Clunky interfaces in the gallery might encourage the recipient to try again from their own personal device, but they equally might discourage them from bothering. Also, any computer can be used in a gallery setting for the presentation of net-based art. It is now a familiar enough device that the recipient knows what to expect by its presence in the gallery. It is a framing device similar to a frame or pedestal. However, unlike frames and pedestals, when the whole space is filled with computers, it becomes harder to reference the space as a place for art, regardless of how well the display functions. In this regard, although the Stedelijk applied a decidedly different aesthetic strategy to the presentation of net-based art than *documenta X*, their

⁴⁷ Accounts of the work Jodi submitted to *documenta X*, *jodi.org* (1994-1997) describe a kind of map of the internet, a diagram of internet providers and links to alternative and art-websites. Today though, typing *jodi.org* into your browser redirects the recipient to a random website, each created by Jodi.

⁴⁸ *Ibid.*

angular, white, wall sculpture makes the same mistake as the office-décor: it isolates the works of net-based art from the rest of the collection.

Throughout this chapter many possible improvements to the Stedelijk's presentation of net-based art have been described. Kwastek's theoretic analysis of interactive digital art explained that each work on display has its own specific aesthetic potential. The museum could also improve the presentation simply by reflecting the variety of art on display, altering each installation accordingly. Visitors also should be able to interact with all the net-based artworks, so *Scrollbar Composition* should be displayed using hardware that permits that. Preferably in familiar desktop computer setup, allowing for an intuitive experience. As an interactive alternative to showing all works together in the same wall-mounted installation, *Mouchette.org*, *Modular Body*, and *Fair Warning* could be installed on the same computer monitor, with a regular, recognisable mouse, and audio system. *Fair Warning* would perhaps benefit most from being displayed in a single space, but across multiple monitors, hereby allowing for multiple visitors to interact with it simultaneously, recreating the effect of many users using the platform at once.

The modes of experiencing *Abstract Browsing* is overly curated in its current iteration, limiting the recipient's opportunities for experimental exploration and expressive creation. Instead, a practical solution would be to provide the means for visitors to download the app for the artwork onto their personal smartphone, likely the most familiar and intuitive device a visitor could use. A tutorial for how to use the app could be presented in the gallery, but the webstore page also provides a description and ample examples. Coincidentally, a location at which visitors could access all of the works of net-based art in the Stedelijk's collection using a personal device would not only be a highly interactive approach, but would also require a minimum amount of space and be extremely flexible to install. Scannable QR-codes fulfil a similar function and could be placed throughout the museum. Instalment thereof in the vicinity of seating could increase interaction whilst allowing for more comfortable viewing. An inherent advantage to this approach over the current one is that it does not isolate the works of net-based art, instead letting visitors juxtapose them with other objects in the collection without the need for any screens or electrical wiring. The next chapter will

examine approaches to integrate works of net-based art into presentations beyond the computer rooms the artform has seemingly been confined to since *documenta X*.

Chapter Two: Integration

Observations

Towards the end of last chapter, another issue with the Stedelijk Museum Amsterdam's presentation of net-based art became evident, namely that it confines the works by exhibiting them separately from the rest of the collection. Stedelijk Base is a multidisciplinary showcase of the collection in chronological order, grouped by movements in Part One and per theme in Part Two. It is at its most interdisciplinary in Part One, where pieces of modern furniture, graphic design, and abstract painting are presented together along the same stretch of wall space. In Part Two there is a greater divide between art and design, and the rigidly medium specific grouping net-based art is subjected to here is absent elsewhere. The wall mounted display hangs on one wall, and various design and graphic objects are arranged along another. Little seems to connect the objects and works of net-based art however, other than their medium – seemingly out of place in what was intended to be the thematic juxtapositions of Stedelijk Base. In room 1.33 art and objects share a space and seemingly little else. This is emphasised by the spatial division of the displays, which are set up across the room from each other.

Most of Stedelijk Base Part Two consists of an open-planned area in which artworks are placed directly on the floor, upon pedestals, or hung from white walls. The freestanding walls in the space do not reach the high ceiling and act as a surface for presentation and denote boundaries between thematic groupings. As for the net-based art installation's location, the gallery it is installed in sits sandwiched between the open-planned area and a stepped and darkened theatre in which films are played on a loop. When traversing Part Two, room 1.33 functions somewhat as a dimly lit transitional area between the open-plan galleries and the enclosed auditorium. The liminality of this space is also commented on by Sjoukje van der Meulen in her historical analysis of new media presentations at the Stedelijk, in which she describes it as a 'kind of walk through'.⁴⁹ Van der Meulen likens the curatorial approach towards net art in the collection presentation to that of the conceptual art display, which is similarly 'confined to a bland space of the Base'.⁵⁰

⁴⁹ Sjoukje van der Meulen, "Going Digital? New Media and Digital Art at the Stedelijk," *Arts*, 8(2019)3: 97, DOI: <https://doi.org/10.3390/arts8030097> (Accessed 20 December 2021).

⁵⁰ *Ibid.*

Though it may seem obvious that moving the net-based art display from its current underwhelming placement to a more dynamic and prominent space in the collection presentation will have a positive effect on its reception, if the works remain presented together within the same display it will do little to remove the reductive framing of ‘computer art’. As was discussed at the end of chapter one, there is no catch-all approach for presenting net-based art in a museum setting. A reshuffling of the Stedelijk Base will not immediately dispel the novelty of net-based art amongst other, more familiar and accepted artforms on display. This chapter therefore sets out to investigate means to improve the integration of net-based artworks into the collection presentation by examining alternative approaches to exhibition making and artwork presentation. Possible connections to other parts of Stedelijk Base will be examined, this time utilising display methods, conventions, and solutions museums have turned to in the presentation of artforms other than traditional visual objects, such as the ephemeral, time-based practices of conceptual and performance art from the 1960s and ‘70s.

In this chapter, two exhibitions will be examined: *Software Information Technology: it’s new meaning for art*, which took place at the Jewish Museum in New York in 1970, and *Written in Stone: net.art archaeology*, which was held at the Oslo Museum of Contemporary Art in 2003. *Software* presented conceptual art in a concept-first approach grounded in system theory, for which many artists had been invited to incorporate modern computing into their artistic process. This discussion of applied systems theory as an exhibition-making practice aims to discern approaches which could improve the further integration of net-based art into the Stedelijk’s collection presentation and provide blueprints for other modern and contemporary art institutions. *Written in Stone* took a personal approach, retelling and mythologising the experiences of a small group of net-based art producers, and showcases the utilisation of ephemera and performative documentation for the presentation of net-based art.

Software

Software: Information technology: its new meaning for art was on view at the Jewish Museum in New York from the 16th of September through to the 8th of November, 1970. It was curated by Jack Burnham (1931-2019), at the time a professor at Northwestern University, with research interests in art and technology, and who had

developed a holistic structural analysis of artworks as systems: systems aesthetics.⁵¹ Systems aesthetics was Burnham's attempt to provide a critical vocabulary for the analysis of 'unobjects,' the new artforms of the 1960s and 70s, such as 'kinetic and luminous art, some outdoor works, happenings, and mixed media presentations', that 'resisted prevailing critical analysis.'⁵² These works were typified by a non-material or dematerialised approach to artmaking, often temporary in nature, could be encountered outside of museum spaces, and utilised materials that at the time had not yet been employed by artists. Systems aesthetics was in part a reaction to the concept of objecthood described by Michael Fried (1939) in "Art and Objecthood" (1967). Fried's essay was a repudiation of the perceived turn in sculpture in the twentieth century towards literalism and theatre.⁵³ With systems aesthetics, Burnham proposed a critical approach which could encompass the environments and happenings discussed by Fried, but would also deal with concepts beyond the traditional boundaries of art.

Burnham's approach made sense of the art of his contemporaries by drawing parallels between artworks and technology, deducing a move from art as an object towards art as a system. As has been noted by Marga Bijvoet, Burnham arrived at his theory during a time when there was a proliferation of publications based on Ludwig von Bertalanffy's (1901-1972) general systems theory, which had provided the basis for much interdisciplinary research in such fields as biology, physics, computing, and cybernetics.⁵⁴ Foundational to a systems approach was analysis centred on connections between disparate elements – an approach that refuted the reductionism of prevailing theories of so-called closed systems. Similarly, whilst formalist interpretations of an artwork focussed on (reduced) singular objects, Bijvoet describes Burnham's systems approach paying equal attention 'to invisible elements, to processes and changes in the

⁵¹ "In systems perspective there are no contrived confines such as the theatre proscenium or picture frame. Conceptual focus rather than material limits define the system. [...] Where the object almost always has a fixed shape and boundaries, the consistency of a system may be altered in time and space, its behaviour determined both by external conditions and its mechanisms of control." Jack Burnham, "Systems Aesthetics," *Artforum* 7(September 1968)1, 32.

⁵² Ibid. In his essay Burnham describes works by Hans Haacke, Les Levine, Allan Kaprow, and Robert Morris.

⁵³ Michael Fried, "Art and Objecthood," *Artforum* 5(June 1967)10, <https://www.artforum.com/print/196706/art-and-objecthood-36708> (accessed 04 October 2021).

⁵⁴ Marga Bijvoet, *Art as Inquiry: Toward New Collaborations Between Art, Science, and Technology* (New York: Peter Lang, 1997), 68.

work, as well as its relationship with the outside.’⁵⁵ *Software* was Burnham’s attempt to demonstrate systems aesthetics in practice as an approach well-suited to the presentation of emergent conceptualism, happenings, and other dematerialised artistic practices of the late 1960s. His curatorial approach was characterised by its equal treatment of all objects in the exhibition regardless of medium, aimed at providing insights into peripheral matters surrounding the artworks, and presented documentation of works that did not or could not take place within the space, within the space.

Burnham had been invited by the Jewish Museum to curate an exhibition meant as a thematic successor to the Museum of Modern Art’s 1968 *The Machine as Seen at the End of the Mechanical Age* show.⁵⁶ Coincidentally, in the *Software* catalogue Burnham also discussed the fundamental position of *Cybernetic Serendipity* in the development process of his own show. Burnham described Reichardt’s ICA exhibition as a comprehensive documentation of the creative use of computers ‘both within and beyond the arts.’⁵⁷ *Software* attempted to employ a similarly interactive format and integrate the use of computers into the gallery space beyond educational displays by utilising them for art installations too. Many exhibits incorporated computer technology with the intent of introducing critical artistic investigation through and of such machines, with Burnham noting that ‘introspection rather than inspection is the point of the show.’⁵⁸ As *Cybernetic Serendipity* did before it, *Software* intended to draw no distinctions between art and non-art, , whilst also providing attention to invisible elements and projects that reached beyond the boundaries of the museum.

Many artists included in *Software* were those whose work Burnham had written about in his system theory essays, such as performance artists Vito Acconci and Allan Kaprow, as well as figures associated with conceptual art such as John Baldessari, Agnes Denes, Hans Haacke, Joseph Kosuth, Les Levine, and Lawrence Weiner. *Software* was not billed as a conceptual art exhibition, however, but as an art and technology exhibition, in which objects from both fields were exhibited together in an art museum. It was Burnham’s intention, like that of Reichardt for *Cybernetic*

⁵⁵ Ibid., 69.

⁵⁶ Jack Burnham, “Notes on art and information processing,” in Jack Burnham, Robert Jakob, eds., *Software: Information technology: its new meaning for art* (New York: Jewish Museum, 1970), 11.

⁵⁷ Ibid., 11.

⁵⁸ Ibid., 12.

Serendipity, that *Software* would leave distinguishing art from non-art to each visitor.⁵⁹ The exhibition contained installations which were the result of collaborations between artists and computer engineers, exhibits of experimental communication technology, and many conceptual artworks the instructions of which could be communicated in any medium. Although descriptions of these shows may seem similar, in practice *Software* was more theoretical and less object focussed than the playful *Cybernetic Serendipity* exhibition.⁶⁰

Matrix of Knowledge & Trigonal Ballet (1970, fig. 10) was one of several works presented on loaned IDIOM devices, so-called dynamic displays with built-in computer screens. The work consisted of diagrammatic drawings by Agnes Denes (1931) which had been rendered onto the machine's display and animated with the assistance of the R.E.S.I.S.T.O.R.S., a group of school-age children and young adults from Hopewell, New Jersey.⁶¹ An eye-catching construction was supplied by M.I.T.'s Architecture Machine Group in the form of *Seek* (1969-70), which consisted of metallic blocks, a computer guided electromagnet, and a small colony of gerbils all housed together in a glass enclosure (fig. 11). Supposedly showcasing the ineptitude of machines at adaptation to human unpredictability and context-based needs, the computer was programmed to stack blocks into towers – an impossible task due to its inability to account for the gerbils' activities, who would knock over the towers and move blocks to better suit their needs.

Although the works described above made use of the latest or experimental computer technologies, with regards to public mediation the employment of the devices was either purely presentational (Denes) or performative, but not interactive (Architecture Machine Group). Enter Sonia Sheridan's *Interactive Paper Systems* (1969-'70, fig. 12), an interactive presentation in which visitors could scan their face and hands using a loaned 3M Thermofax machine to produce coloured prints. At first

⁵⁹ Ibid., 10.

⁶⁰ A challenge expressed by exhibition designer James A. Mahoney in the catalogue: 'The first realization of a unique exhibition design and installation problems came months later with the realization that the work of many artists produces no objects. Equipment there is – but no "objects of art".' James A. Mahoney, "An installation design that minimizes 'museum atmosphere'," in Jack Burnham, Robert Jakob, eds., *Software: Information technology: its new meaning for art* (New York: Jewish Museum, 1970), 15.

⁶¹ R.E.S.I.S.T.O.R.S. is of course an abbreviation for Radically Emphatic Students Interested in Science, Technology and Other Research Studies.



Figure 10: Agnes Denes (right) and three members of the R.E.S.I.S.T.O.R.S. flanking the presentation of *Matrix of Knowledge & Trigonal Ballet* (1970) on an IDIOM dynamic display. Photo from the exhibition catalogue *Software Information Technology: Its New Meaning for Art*, 1970.

Figure 11: Installation view Architecture Machine Group's *Seek* in 1970. Photo from the exhibition catalogue *Software Information Technology: Its New Meaning for Art*, 1970.

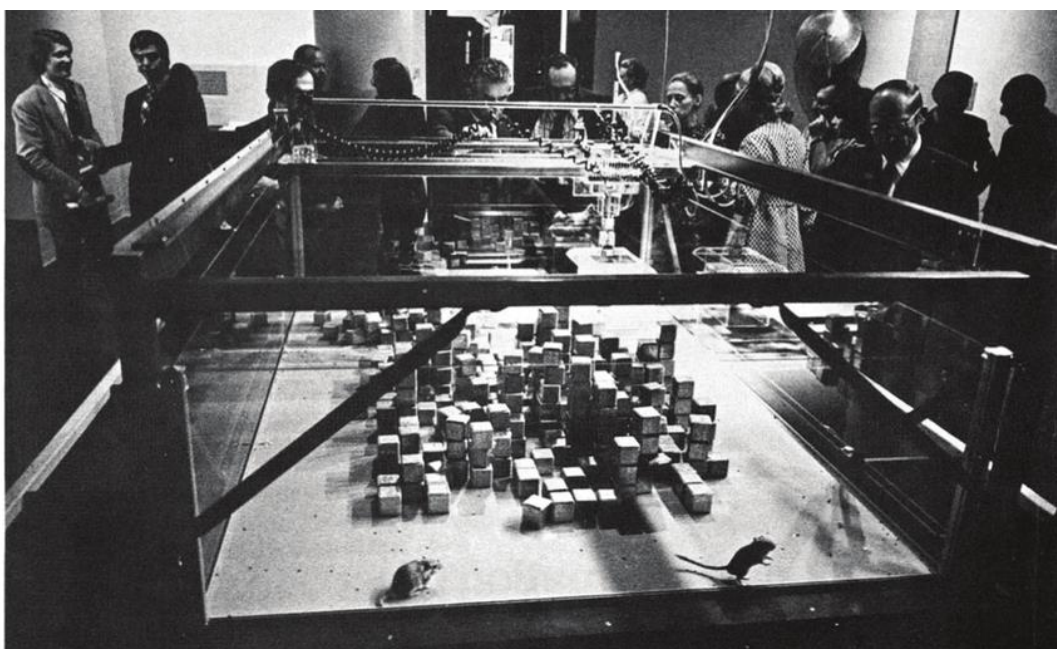
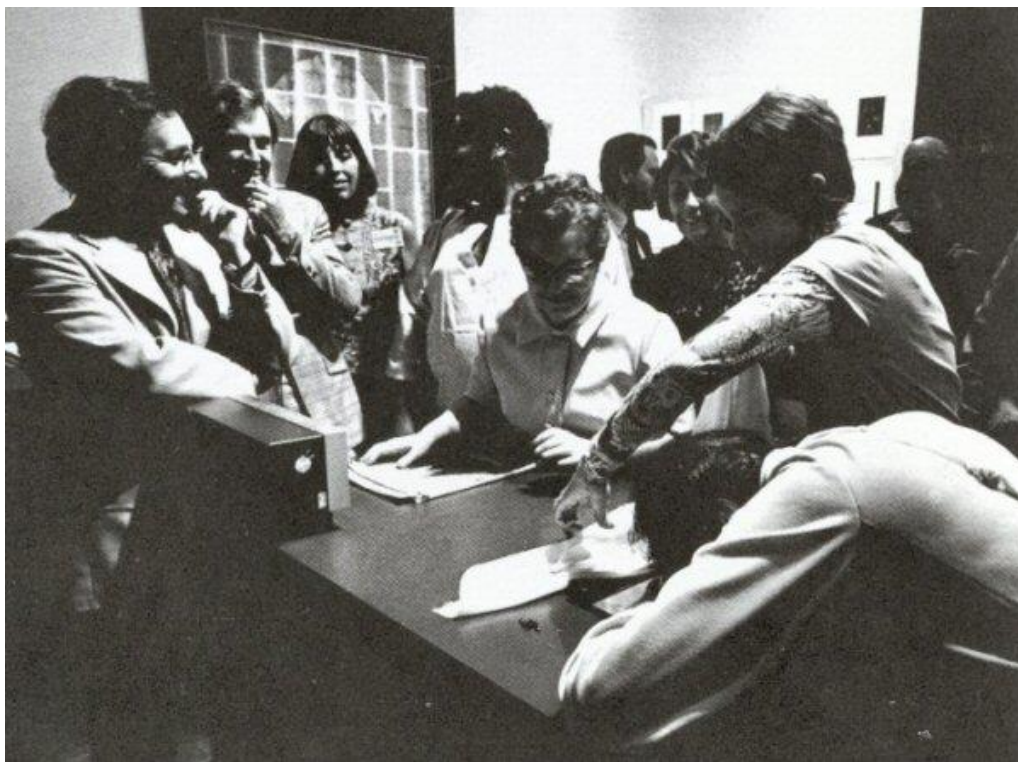


Figure 12: Sonia Sheridan (centre) demonstrating *Interactive Paper Systems* at *Software*, 1970. Photo from the exhibition catalogue *Software Information Technology: Its New Meaning for Art*, 1970.



glance Sheridan's work seems similar to a demonstration of the latest in photocopying technology, but it was in fact also typical of many conceptual and performance-based artworks of the time. It was fleeting in nature, lasting only for the duration of *Software*, similar to Kaprow's happenings, of which one was also part of the exhibition. Another inherent aspect to the artistic process was the production of documentation, or ephemera, in the form of prints made by participants. These ephemera were perhaps not works of art in themselves, but an integral part of the procedure the work contained and proof of its happening. Like many works in the exhibition *Interactive Paper Systems* was dependent on high-tech machinery for its mediation in the presentation, but otherwise a textbook example of the dematerialised approach to artmaking Burnham intended to showcase.

The only exhibit in the show in which visitors could directly interact with a computer was Ned Woodman and Theodor H. Nelson's *Labyrinth: An Interactive Catalogue* (1970). It was the first ever public display of hypertext, today a common computer function for browsing texts connected by links.⁶² Using a computer device visitors could read transcripts from the exhibition catalogue, navigating from one segment to the next by typing F (forward) or R (return) using the interface. Alternatively users could jump straight to an entry by entering a code. The PDP-8 computer used for the exhibit had been especially programmed to save user history, allowing for visitors to request a printout of what they had read on the computer, thus producing ephemera of the work in a similar manner to Sheridan's *Interactive Paper Systems*.

Labyrinth played an important role in the realisation of Burnham's application of systems aesthetics as a means to organise an exhibition. Unlike the PDP-8 terminals present in the exhibition space, which were hardware, *Labyrinth* was actual software. The terminals were objects visitors could access in the gallery space, but *Labyrinth* was also a means for visitors to experience conceptual artworks via hypertext, or in other words, beyond traditional boundaries. As part of the exhibition *Labyrinth* inhabited a dichotomic position, being both on display whilst also functioning as a means through which visitors could access information not present at the exhibition yet part of it

⁶² Poetically described by Nelson in the catalogue as 'writing that can branch or perform.' Theodor H. Nelson, "The crafting of media," in Jack Burnham, Robert Jakob, eds., *Software: Information technology: its new meaning for art* (New York: Jewish Museum, 1970), 17.

nonetheless. For example, in *Labyrinth* the recipient could read ...*confessions of a 'canteen revolutionary'* (1969), Nam Jun Paik's (1932-2006) response to the museum's request to participate. The publication of correspondence between the artist and a staff member, alongside plans for an unrealised artwork, displays elements of the art and exhibition making processes usually invisible to the visitor. Through the catalogue the recipient could also view photographs of artworks which were realised beyond the bounds of the museum, such as Joseph Kosuth's (1945) *The Seventh Investigation* (1970), an iteration of which was presented on a billboard in China Town, New York City, with another printed among the advertisements of a Washington state newspaper (fig. 13).⁶³

Unlike *Cybernetic Serendipity*, *Software* was not treated to favourable reviews despite its innovative premise and generous facilitation of artistic experiment.⁶⁴ Part of its attraction should have been the inclusion of many technologically advanced devices, but given the conceptual nature of many of the works presented, cutting-edge technology seemed to needlessly complicate matters. Visitors were often met with out-of-order machines, with New York Times art critic Grace Glueck noting that 'several of the show's programmed devices were out – an unfortunate occurrence, since the first requirement of a technological show is that it works.'⁶⁵ Hans Haacke (1936) provided two such programmed-device works for the show. *News* (1969), which consisted of five teletype machines receiving and printing out news stories in a continuous stream of paper, and *Visitors Profile* (1969), intended to be a technological upgrade of the artist's sociological poll-works. Unfortunately, the works never reached an operational state and remained distinctly non-functional for the duration of the exhibition, alongside many other works which also required constant technical support.⁶⁶

⁶³ Joseph Kosuth, "The Seventh Investigation (Art as an Idea)," in Jack Burnham, Robert Jakob, eds., *Software: Information technology: its new meaning for art* (New York: Jewish Museum, 1970), 68.

⁶⁴ An understatement. Kenneth Baker offered a particularly scathing review in *Artforum*. After rebuking the merit of the art and technology premise for and the philosophical underpinnings of the exhibition, Baker concludes that in '[accommodating] "Software" which was "not specifically . . . an art exhibition," the Jewish Museum tacitly agreed not to be "specifically" a museum for the duration as well, an embarrassing self-effacement which must have been intended by someone to enhance the Museum's reputation as a hip and daring institution.' Kenneth Baker, "Review: Software," *Artforum* 9(1970)4: 79-81.

⁶⁵ Grace Glueck, "Jewish Museum's 'Software' Confusing," *New York Times*, 26 September 1970.

⁶⁶ Luke Skrebowski even suggests that this incident caused Haacke to pursue a particularly low-tech and transparent approach for his now infamous *MoMa Poll* (1970), a work which linked art's financial

Figure 13: View of Joseph Kosuth's *The Seventh Investigation*, one paragraph of text in English and Chinese (top) on a billboard in Chinatown, New York City.

Photo from the exhibition catalogue *Software Information Technology: Its New Meaning for Art*, 1970.



dependence on ethically compromised institutions. Luke Skrebowski, "All Systems Go: Recovering Hans Haacke's System Art," *Grey Room* 30(winter 2008): 64-65.

Inherent to *Software* was a critical perspective aimed at drawing attention to societal matters beyond the scope of an ‘art and technology’ paradigm – for which it should be applauded. Burnham’s exhibition was an attempt to re-insert artistic sensitivity into everyday experience, which he viewed as increasingly alien due to permeations from advancements in computing technology.⁶⁷ He expanded conceptions of artistic practice to include new media by drawing the focus away from the media in which the works were produced, although ultimately failed to present such works effectively in an art museum setting – a problem for a show that had been billed as an ‘art and technology exhibition’. On the other hand, in fitting with the serious tone in which viewers were expected to contemplate big ideas through confrontation with various objects, thoroughly white cube surroundings were the default choice for the exhibition’s architectural context. This staging seems askew to Burnham’s desire to make ‘no distinction between art and non-art’, for it situates non-artworks in a setting most associated with aesthetic contemplation and preconceived behavioural norms of spectatorship and object-veneration.

Given the experimental nature of the technologies employed by artists in the show, it seems likely that should the equipment functioned as intended, *Software* would have been met with reviews more akin to those *Cybernetic Serendipity* received. Whilst the latter focussed on materiality of computer technologies and their products, *Software* instead opted to investigate dematerialisation of the work of art and viewer-artwork interactions. By working backwards using a systems approach from a preconceived idea of what an exhibition was, Burnham projected ways of behaving and perceiving the objects on display.⁶⁸ *Labyrinth* in particular pushed the envelope, introducing an entirely novel means for visitors to the exhibition to experience conceptual works of art. In its execution however, Burnham’s approach rendered the conceptual works that utilised interactive media both perceptively and philosophically inaccessible to an audience most of whom were not literate with the technologies used for their display – and, unless they had at some point taken the time to read the curator’s introductory

⁶⁷ Burnham, “Notes on art and information processing,” 14.

⁶⁸ A matter not missed by the shows many critics, and mentioned both by Baker (note 14) and Glueck’s (note 15) in their respective reviews of *Software*.

notes by some other means, left them unaware of their increased subjugation to the whims of a society increasingly organised by computer enabled systems.

In spite of its flaws, Burnham's white cube exhibition of dematerialised and ephemeral art alongside technological non-art objects seems in keeping with the spirit of the Stedelijk's current collection presentation. Through *Labyrinth*'s terminal, which in the context of the exhibition was not an overtly foreign object, visitors to *Software* could access works, find information about others on display, and even experience those situated elsewhere. A material-focussed alternative to the highly technical approach *Software* presented could be the inclusion of archival material (studies, correspondence, recordings) of works of net-based art. The inclusion of similar documentation when presenting historical works of conceptual and performance art is today commonplace and examples can be encountered in Stedelijk Base's presentation of conceptual art. This approach is thus not exclusively applicable to one particular artform of medium either, and its potential to support presentations of net-based art should become evident in the following discussion *Written in Stone: a net.art archaeology*.

Written in Stone

Software presented a theoretical approach for the integration of artworks and objects into an exhibition space regardless of the means through which they were mediated. 2002's *Net.ephemera*, a small net-based art exhibition curated by Rhizome founder Mark Tribe (1966) for Moving Image Gallery, New York, somewhat evolves facets of Burnham's approach of disregarding mediation of works in exhibition presentation. To work around the problems of recontextualising works of net-based art for institutional spaces Tribe instead presented ephemera, 'physical artefacts related to the making of net-based projects', provided by 25 New York-based artists.⁶⁹ Sadly, the only documentation of *Net.ephemera* is a short description of the project on Tribe's personal website, three images, and a broken link. Therefore, we turn to *Written in Stone: a net.art archaeology*, which took place but a year later at the Oslo Museum of Contemporary Art, and is an example of another net-based art exhibition to heavily incorporate the use of ephemera into its presentation.

⁶⁹ Mark Tribe, 'net.ephemera'. Mark Tribe studio website, accessed 6 October 2021, <https://www.marktribestudio.com/net-ephemera/>.

Curated by Per Platou (1964), the foci of *Written in Stone* were the contributions of Jodi, Alexei Shulgin, Heath Bunting, Olia Lialina, and Vuk Ćosić to the net.art movement. In an introductory text Platou explains that ‘Net.art is not primarily about technology, but about breaking into a specific social context.’⁷⁰ A large section of the presentation therefore consisted not of computer screens, but of paraphernalia, ‘iconic and ironic objects’ connected to the stories about net.art (fig. 14). These ephemera included mundane items with some semblance of biographical significance to the representatives of net.art, as well as correspondence, documents, and notes giving insight into certain works or artist’s practices. In a game of historical conventions, the ephemera were presented in vitrines and framed on the walls alongside artistic interventions commissioned by the curator. Platou hoped that by ‘taking an art institution seriously’ *Written in Stone* would ‘make a small contribution to the ongoing, existential discourse about net(.)art.’⁷¹ To that end the show was also accompanied by a website which functioned as an exhibition catalogue, and could be accessed online or printed and assembled on-site.

The presentation of documentary images in both the gallery space and exhibition catalogue has been common practice since the proliferation of dematerialised artistic practices such as conceptual and performance art in the late 1960s, as exemplified in the previously discussed *Software* show. Amelia Jones has posited that because ‘there is no possibility of an unmediated relationship to any kind of cultural object,’ the documentary exchange between viewer and document should not be treated less privileged than live experience for both are equally intersubjective.⁷² Although the documentation may not be the work, the use of thereof can be an equally viable route to garnering an understanding of it and the discourse to which it belongs. This approach harkens back to Burnham’s systems aesthetics, for the presentation treats non-art

⁷⁰ Per Platou, ‘not net dot art’. *Written in Stone: A net.art archaeology website*, accessed 8 October 2021, <http://www.perplatou.net/net.art/platouengelsk.html>.

⁷¹ Net.art, with the dot inserted between the words ‘net’ and ‘art’, is commonly used to refer to the loose movement of artists experimenting with net-based art in the 1990s. Net art denotes a broader artistic practice, which includes works produced by the artists associated with net.art, but also accommodates other forms of artistic expression which are not exclusively net-based. ‘What is net art?: A working definition’. Rhizome.org, accessed 11 December 2021, <https://rhizome.org/editorial/2017/jun/13/what-is-net-art-a-definition/>.

⁷² Amelia Jones, “‘Presence’ in Absentia: Experiencing Performance as Documentation,” *Art journal* 56(1997)4: 12.

Figure 14: Exhibition view, National Museum of Contemporary Art, Oslo. Photo: Vuk Ćosić, 2003.



objects with the same reverence as artworks in a museum setting and provides space for invisible elements by presenting correspondence, sketches, anecdotes, and reports of past events relating to the participating artists.

Although referenced to in the presentation via ephemera, the technical support required to access works of net art were not part of the show. Instead, visitors could watch recordings of user-interaction with various forms of net-based art. Using an overhead-beamer the recordings were displayed in a video room, allowing for user-experiences with such works to be showcased to a multitudinous audience. This performative documentation of net-based art by recording the events that unfold onscreen during the interaction with the artwork, has since then become more commonplace in both institutional and commercial art spaces with relation to presenting net-based art.⁷³ In a review of the exhibition, Josephine Bosma noted that this approach was ‘a way to reveal aspects of the works in question which an exhibition audience would miss, because it is too inexperienced or uncomfortable to explore something on a computer in a public setting.’⁷⁴ Presenting a recording of an individual’s interaction with a work can convey possible personal experiences of net-based art, making it a valid alternative to displaying it to the recipient in a constricted set-up.

Although the presentation of recordings in lieu of an interactive setup may at first seem counter to how the exhibited artists envisioned their work to be experienced, it bears repeating that net-based art (particularly early net-based art) had been intended to circumvent institutionalised spaces such as galleries and museums altogether. Presentation in a museum setting somewhat compromises the conceptual integrity of the works in the first place. It was Platou’s intention to ‘understand net.art as a “historical” art movement’ and ‘bring it into the established art debate’ without repeating the painful mistakes of past attempts at ‘integrating net artists and their work into the world of museums and curators.’⁷⁵ Realising that it was still too difficult to scale personal computer technologies for large public presentations, the exhibition’s website brought together ‘an ocean of links to net art’ (fig. 15) and articles of relevance a visitor could

⁷³ Paul Slocam, “A Brief History of And/Or Gallery,” in *Mass Effect: Art and the Internet in the Twenty-First Century*, Lauren Cornel, Ed Halter, Lisa Phillips, eds. (Cambridge MA: MIT Press, 2015), 123-126.

⁷⁴ Josephine Bosma, ‘Review: “written in stone, a net.art archeology” at the Museum of Contemporary Art in Oslo’. Rhizome discussion board 11 April 2003, accessed 14/10/2021, <https://rhizome.org/community/26042/>.

⁷⁵ Platou, ‘not net dot art’. Written in Stone website.

consult at their own leisure (fig. 16), whilst the recordings in the video room demonstrated how a selection of works functioned. Through this approach to public mediation, Platou found a way to integrate net-based art's discourse into the institutional space of the white cube without compromising the historical significance of the artworks by deferring exclusively to displays of documentation and demonstration.

Written in Stone's recordings may negate audience interaction, but they also make the works more accessible by allowing visitors to remain critically distant observers. By substituting the works for ephemera and recordings, *Written in Stone* provided an approach that fit into art museum display conventions without compromising the interactivity of any of the artworks for the sake of institutional presentation. The recordings also work in tandem with the website that accompanied the exhibition, which not only provided information about the artists and their works, but also nudged recipients to interact with the demonstrated works themselves. The ocean of links that could be found on the exhibition's website also provided a means to present art that reached beyond museum boundaries, reminiscent of *Labyrinth* in the *Software* presentation and Burnham's systems aesthetics approach to exhibition making. The ephemera and recordings introduced visitors to net-based art, and the website provided easy access to experience the works as they were intended to be received: on a desktop outside of the white cube spaces of any museum.

In spite of its flaws, Burnham's white cube exhibition of dematerialised and ephemeral art alongside technological non-art objects seems in keeping with the spirit of the Stedelijk's current collection presentation. *Software* incorporated new media and introduced new means of experiencing art, most notably through the use of hypertext. The juxtaposition of established artforms with unfamiliar, technological objects without privileging one over the other could provide a connection between net-based art and the dematerialised artistic practices of conceptual and performance art of the 1960s, also present in Stedelijk Base. Burnham's exhibition incorporated more high-tech presentation methods than a museum could cope with in 1970, though today, with the proliferation of wireless internet technology and many visitors likely owning smartphones, the opportunities for interfacing with net-based art during a visit to a museum has never been greater. Stedelijk could utilise these connections in particular to

integrate their solid collections of both conceptual art and net-based art effectively into various sections of the collection presentation.

The museum could install multiple interfaceable nodes through which visitors could link directly to the net-based art and digitised archival material, similar to but more sophisticated than *Labyrinth*. A more subtle approach would be to depend more on visitors being prompted to use their own personal devices at a relevant moment, though it is less inclusive towards visitors who do not own smartphones. Regardless the approach chosen, this alone would signify a more integrated approach than isolating the works to a singular room, instead allowing for them to be spread across the collection presentation. Displays need not be limited to similarities between artistic approaches, of course. Themes works are grouped by in Base Part Two are aids, environmental issues, social justice, and consumerism, and Floris Kaayk's *Modular Body* is a natural fit alongside the works of the 'consumerism' display, for example. Through access nodes a-historical interventions could also take place elsewhere in Stedelijk Base. A formal, aesthetic comparison can easily be made between Rozendael's *Abstract Browsing* or Leegte's *Scrollbar Composition* and Mondrian's *Composition with Yellow, Red, Black, Blue, and Gray* (1920), to name but one straightforward example.

Like many art museums, the Stedelijk makes use of documentation in its presentation of conceptual and performance-based art of the 1960s and '70s. Though ephemera aren't works of art, the use thereof can be an equally viable route to garnering an understanding of an artwork and the discourse to which it belongs. From *Written in Stone* can be gleaned that the same approach is applicable to net-based art too. The application of this methodology would not only provide visitors more anecdotal and contextual information about net-based art, but such a mirroring suggests a cohesive approach to the collection presentation overall, and could also be applied to objects on display elsewhere, from paintings to pieces of furniture. The size of Stedelijk's film-auditorium seems inappropriate for the presentation of recordings of net-based art, but the use of a smaller screen would both convey the personal scale of the interaction with net-based art as well as allow for greater flexibility for placement throughout Stedelijk Base.

A recording played on a wall-mounted screen could provide a solution for instances in which it makes thematic sense to include a work of net-based art, such as in

the above-mentioned example with *Modular Body*, whilst simultaneously circumventing the complexities of a fully interactive setup. In Stedelijk's object focussed collection presentation, a contemplative stance is generally required of the visitor. The interactive digital experience net-based art provides is a change of pace, but one ephemera can ease the accommodation of regardless. In a museum environment even a work of net-based art as inherently disorientating and subversive as [Mouchette.org](#) can be provided with contextual material, making it easier for a visitor to comprehend. In such an instance, ephemera can provide material to observe and study, offering a visitor more context before becoming recipients of the work. A recording of an informed interaction with *Mouchette.org* could also be played on a screen whilst it sits idle, offering an example what a recipient can expect from interacting with the work. A similar approach could be applied to [Fair Warning](#), with a recording demonstrating an interaction at a time when a multitude of recipients were using it simultaneously. The approaches discussed above are workable means to improve the integration of net-based art into Stedelijk Base beyond its current display. Curatorial restraint is required, however, to prevent an over-proliferation of net-based art throughout the museum, which would be contra to most net-based artists' intentions and the spirit of much of their work.

Conclusion

To improve the interactive capacity of the net-based art display, Stedelijk Museum Amsterdam should make it more inclusive, intuitive, use more-easily recognisable hardware, and build installations that meet the requirements of each work. Initial observations of the presentation of net-based art found that although the display was intended to be interactive, the setup was not user-friendly. Using Katja Kwastek's theory of interactive digital art the aesthetic experiences of the works of net-based art included in the display was analysed. Having deduced the most prevalent modes of experience a recipient could have for each work, it was then possible to turn to finding practical approaches to providing improved installations of the works through the study of two historic exhibitions. *Cybernetic Serendipity* brought forward the importance of an intuitive display. The Stedelijk could improve its display of net-based artworks by making it obviously interactive and easy to use, resulting in better management of recipient expectations. The familiarity of display methods used in *documenta X* for net-based art would also be an improvement to the current setup, and employed standard computer hardware which functioned as a recipient would expect. Another improvement would be to refrain from placing all artworks together, hereby portioning out interactive aesthetic experiences throughout the collection presentation.

Chapter two set out to uncover methods to improve the integration of net-based art into Stedelijk Base. It found that the presentation could be improved by expanding the methodologies of display used throughout the collection presentation and by placing works together based on common subjects and themes, rather than on the similarities of their installation needs. The theoretical basis for such an approach came from Jack Burnham's systems aesthetics, which in practice functioned as an organisational methodology for the presentation of dematerialised and temporal artworks of the late 1960s. Though Burnham's *Software* exhibition met many technical difficulties (it probably goes without saying that functioning computers are key to presenting net-based art), it also underscored that some artforms are not limited to a singular means of being experienced, and that a presentation can accommodate more than one mode of experience. To this point, *Written in Stone* demonstrated how ephemera and recordings, strategies commonly employed by museums for the presentation of dematerialised

artistic practices, could also be used to integrate net-based artworks into museum presentations. Displays of net-based art at the Stedelijk could be improved by these approaches, for they provide observers with additional context, expand interpretative capabilities, and allow for greater presentational flexibility.

Another improvement the Stedelijk should seek to make to their presentation of net-based art is its online accessibility. The presentations of net-based art in both *documenta X* and *Written in Stone* were supported by a website, each providing users additional depth and information in easy-to-use formats. Currently, however, it is difficult for a visitor to the institution's website to find anything about its collection of net-based art, and the works are also inaccessible.⁷⁶ Information is also unhelpfully indistinct, lacking descriptive material beyond 'time-based media,' and pages provide no link to the works either. Collecting net-based art but not providing baseline digital support is a considerably missed opportunity, particularly given the uniqueness of the institution's position as the only art museum in the Netherlands to have such works in its collection. Once these digital elements are supported the Stedelijk then could also improve the online accessibility of their net-based art collection by providing referrals to relevant webpages from within the exhibition galleries.

Proposals

After having critiqued and sought improvements to the Stedelijk's presentation of net-based art, it seems appropriate to end this process by offering proposals for alternative displays. What follows are three such recommendations, each intended as a presentational antidote to the three main shortcomings described throughout chapters one and two.

The first proposal aims to provide museum visitors with a fulfilling interactive experience with works of net-based art, and draws inspiration from *OFFLINE ART: new2*, an exhibition curated by Aram Bartholl at Xpo Gallery in Paris in 2013. Constant Dullaart, Jodi, Olia Liliانا, and Jonas Lund were among the twelve artists with well-established, web-based artistic practices who were invited to participate in *new2*. For the

⁷⁶ A straightforward improvement would be to raise the visibility of the works on the museum website, as currently works from the Stedelijk's net-based art collection are inaccessible via the institution's own 'Collection Online' website. The website is not easy to navigate to begin with, and probably only of use to the most determined visitor. The easiest route to finding a work is to use an artist's name as a search term, which presupposes prior knowledge a visitor is unlikely to have. If the user manages to arrive at the page of the work they are looking for, they are unlikely to find an image of it.

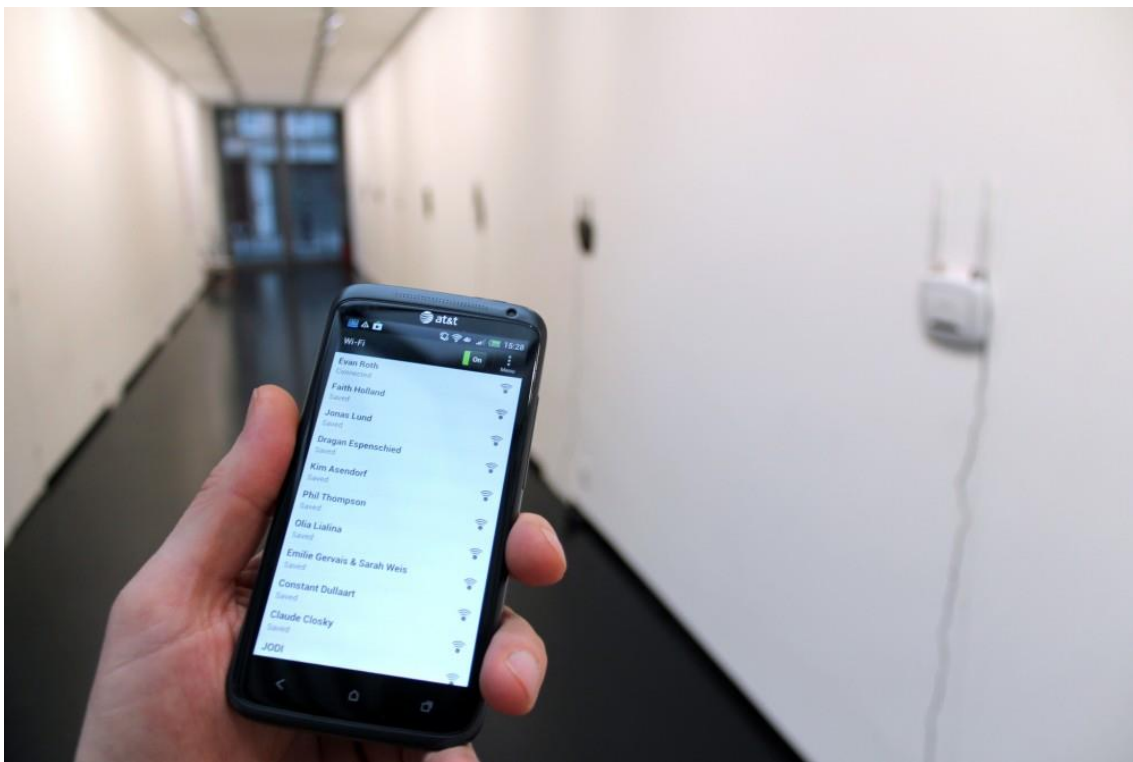
exhibition Bartholl hung routers on the walls of the gallery and each had its own local-Wi-Fi network that visitors could connect to using smartphones (fig. 17). All a visitor needed to do to interact with the work of a specific artist was to connect to the corresponding router. Part of the curatorial concept for *new2* was that the artworks were disconnected from the internet, but for a presentation at another venue such as the Stedelijk, this would not need to be the case.⁷⁷ Mobile-phone technology has also advanced considerably since 2013, and it is now common practice to use a smartphones camera software to connect to a webpage by scanning a QR-code.

One of the appeals of this approach is the minimal amount of presentational clutter, for all a contemporary version requires is stencilled QR-code, preferably accompanied by instructions and a caption. Both a router and a QR-code are familiar entities and everyday symbols of internet connectivity. Furthermore, the visitor's own smartphone should provide the most intuitive and private experience of net-based art possible. Due to the small amount of wall space QR-code takes up, plenty of room is left on which ephemera can be displayed, such as artist correspondence and concept sketches. These documents would in turn allow for the recipient to have an informed experience with the net-based artwork and help manage expectations. A possible drawback to this approach, however, is its dependency on museum visitors owning a smartphone. Though such devices today are relatively affordable, the museum should either be willing to provide such a device to visitors, or have a number of computer terminals installed throughout *Stedelijk Base* providing similar access.

The second proposal aims to integrate net-based art into the collection presentation through the construction of a 1990s period room. Apart from the opportunity this concept offers to present net-based art together in close association with other objects from the collection, it simultaneously emphasises the domestic and historical context in which net-based art originated. Although period rooms are a presentation method mostly encountered in historic house museums, the practice of reconstructing interior spaces also has its precedent at the Stedelijk, back when it was first moved to its the current building in 1895. Period rooms all but disappeared after 1920 when the museum's focus shifted to collecting modern and contemporary art.

⁷⁷ Aram Bartholl, 'OFFLINE ART: new2'. Curator's statement on Aram Bartholl website, accessed 19 December 2021, <https://arambartholl.com/offline-art-new2/>.

Figure 17: Exhibition view of *OFFLINE ART: new2*, XPO Gallery, Paris. Photo: Aram Bartholl.



However, Stedelijk Base currently contains something similar to a period room in the guise of a reconstruction of the *Harrenstein bedroom*, which was originally designed by Gerrit Rietveld and Truus Schröder-Schräder in 1926 (fig. 18). A 1990s period room could be a reconstruction of a home-office, though perhaps a more culturally and historically interesting display would be an early internet café.⁷⁸

A risk of this approach is that the significance of the work of net-based art is overshadowed by the Gesamtkunstwerk which is the period room. Room 1.33, however, exemplifies how difficult it can be to effectively present net-based art in the trans-historical vacuum of contemplative, white-cube museum spaces. In a chronologically ordered, mostly white walled open-plan collection presentation, the construction of a period room could provide a focal point and add more variety to the presentation methods encountered. It may be the opposite of the minimal approach described in the first proposal, yet it can similarly incorporate and provide contextual information about the works whilst situating them in an emulation of an everyday setting. Instead of an interactive display, a recording of the net-based artwork could be played on the monitor, with a QR-code linking to it online placed somewhere in the vicinity. At the Stedelijk, the 1990s period room could also signify the development of twentieth century interiors, with its placement mirroring that of the *Harrenstein family bedroom*, which is located near the beginning of Stedelijk Base.

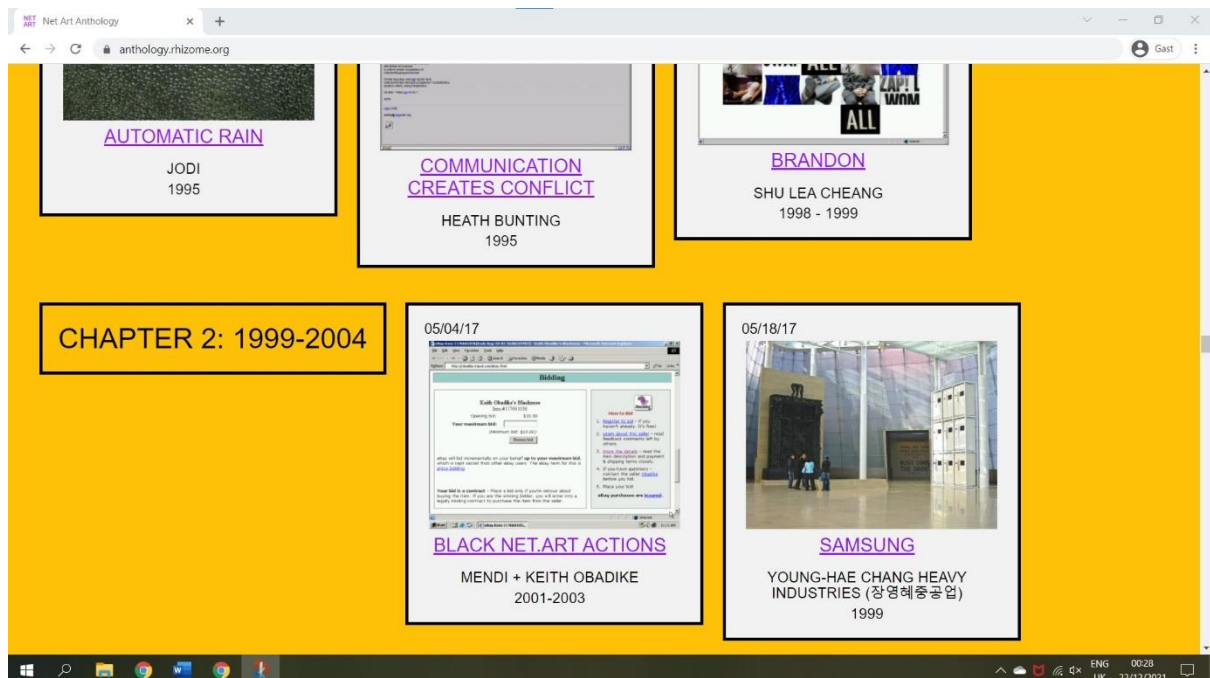
This final proposal is to dedicate a page of the Stedelijk's collection website to net-based art, hereby not only improving its online accessibility, but also allowing for visitors to the website to experience the artworks in their *natural* environment. Having the digital infrastructure in place would also allow for curators to produce wholly online exhibitions of net-based art, similar to Rhizome's *Net Art Anthology* (fig. 19). *Anthology* was curated by Michael Connor, consisting of a series of five online exhibitions, four of which encompassed historical periods in net art's development, the fifth filling in gaps left by the previous four. All content produced for the website is still available online, such as links to the works the exhibition included, as well as essays, interviews, and images. A possible drawback to such an approach however is a cause to remove net-based art from the collection presentation, with the website seeming a more

⁷⁸ Though should a curator not want to draw similar ire that Jodi directed at the documenta X presentation of net-based art, the period room definitely should not resemble any old office!



Figure 18: Gerrit Rietveld and Truus Schröder-Schröder *Harrenstein bedroom*, 1926, reconstruction of bedroom, various materials, dimensions: 303 x 508 x 591cm, collection Stedelijk Museum Amsterdam, KNA 3366(1-15) (c/o Pictoright Amsterdam / Stedelijk Museum Amsterdam, <https://www.stedelijk.nl/en/collection/580-gerrit-rietveld-truus-schroder-schrader-harrenstein-slaapkamer>, accessed 21 December 2021).

Figure 19: Screen capture of Net Art Anthology exhibition website. Photo: author.



natural location for audiences to engage with the net-based artworks. However, as demonstrated by *The Art Happens Here: Net Art's Archival Poetics* (fig. 20), an exhibition that took place in 2019 at the New Museum derived from Rhizome's online presentations, a website-first approach can also translate into museum presentations. Stedelijk could allow user-traffic on their website to inform which net-based artworks are included in Stedelijk Base.

Future research

Future research into making improvements to the presentation of net-based art in museums could focus on prevalent, general institutional blind spots such as the lack of a diverse collection policy and its impact on the collection and presentation of net-based artworks. Afterall, in a recent article published in the *Volkscrant*, Stedelijk director Rein Wolfs described that he wants to diversify the collection.⁷⁹ The net-based art collection contains works by important artists, such as Martine Neddam, Jan Robert Leegte, Olia Lialina, and Jodi, but all of these artists are white Europeans. As the only museum in the Netherlands with a collection of net-based art and in line with Wolfs' intentions, diversification should take place here too. Such a blind spot could be rectified through acquisitions of works by artists of colour and non-European cultural backgrounds who have produced works of net-based art, such as Damali Ayo, Pope.L, Pedro Vélez, and the UK-based group Mongrel. If institutions do not collect net-based art by these artists too, then their works are more likely to be lost after some unforeseen update to browser software. In the future collection presentation Wolfs' vision should translate across all artistic media, net-based art included. Research into the artist mentioned above could be used to inform new collection policy, add net-based artworks that are missing to the collection, and advise how best to install them in future exhibitions. Rhizome's online exhibitions could provide a blueprint for this approach, and perhaps even a whole exhibition strategy could be drawn from these projects.

During the ongoing Covid-19 pandemic, museums are often among the first public institutions to close when case-numbers are on the rise. To compensate these forced-closures, many museums have put a lot of effort into making their exhibitions accessible via podcast, live-streamed guided tour, interactive digital maps of their

⁷⁹ Anna van Leeuwen, "De collectiepresentatie van het Stedelijk Museum Amsterdam getuigt van de veranderdrang van directeur Rein Wolfs," *De Volkscrant*, 5 August 2021.

Figure 20: Exhibition view of *The Art Happens Here: Net Art's Archival Poetics*, New Museum, New York. Photo: Maris Hutchinson / EPW Studio.



gallery-spaces, and by improving the availability and quality of images of their collection online. It is hoped that these practices will outlast Covid-19, for they might all contribute to making museums more accessible in the long run. Not one Dutch institution attempted to present net-based art during this period though, despite the fact an unmediated experience of all such works can be had by anyone with an internet connection. The absence of net-based art presentations and divergent digital attempts by museums to connect to their publics at home point to a lack of institutional knowledge on the possibilities of the internet. From the late 1980s onwards net-based artworks were primarily shared across networks such as Nettime and the Thing. This was a time when internet access was more limited and computer literacy was low under members of the general public. Apart from historical examples, contemporary art spaces that also exhibit net-based art are LIMA (Amsterdam), Upstream Gallery (Amsterdam), and IMPAKT (Utrecht) to name but a few *local* organisations. Research into both recent and pre-web 2.0 communicative platforms and the approaches to spreading and presenting net-based art could inform museums in how best to contextualise and present works of art in an online environment, as well as reach audiences during the worst of the pandemic.

As exemplified by the situation in the Stedelijk, net-based art requires more effort than usual from visitors to interact with and for curators to display because it necessitates deviating from the most broadly implemented exhibition strategies. Thankfully, the methodologies required to present it in gallery spaces are approaches to exhibiting museums are already familiar with. Due to its unique position in the Netherlands as the only museum with a net-based art collection, Stedelijk Museum Amsterdam has an exclusive opportunity to introduce both new and old audiences to a less well-known artform, and should utilise the affordances net-based art offers to reach them. The addition of net-based art into museum presentations offers visitors more varied ways of experiencing and engaging with art, characteristics which could prove invaluable at a time when many museums are rethinking who, what, how, and for whom they collect and display. Improving approaches to exhibiting net-based art would not only prevent the erasure of an important development in artistic practice which took place at the close of the twentieth century, it could also result in improving ways museums reach audiences and make their collections accessible.

Synopsis

This thesis focusses on the presentational challenges net-based art presents, and seeks to find improvements to current museum presentations. This research was originally inspired by Stedelijk Museum Amsterdam's display of net-based art as it was first encountered by the author in 2019. Across two chapters the factors that contribute to the shortcomings of the Stedelijk's presentation are analysed, focussing on issues regarding interactivity of the display and the integration of net-based art into the collection presentation. Improvements are sought through application of aesthetic theories and examination of curatorial practices used for past presentations of cybernetic, conceptual, and net-based art.

Approaches that could expand the interactivity of net-based art presentations are arrived at via Kwastek's aesthetics of interaction and its application to digital art, and through assessments of Reichardt's 1968 *Cybernetic Serendipity* exhibition at ICA London and 1997's *documenta X* in Kassel, curated by David. Burnham's systems aesthetics and its employment as an organising principle for his *Software* exhibition at the Jewish Museum in New York in 1970, coupled with Platou's personal approach encountered at the *Written in Stone* exhibition at Oslo Museum of Contemporary Art in 2003, establish multiple methods that could be used to improve net-based art's integration into collection presentations.

Museums could improve upon the Stedelijk's net-based art display by making it more inclusive, intuitive, and tailored to each artwork. By expanding the methodologies of display and by grouping works based on common themes, rather than installation needs, a museum could improve the integration of net-based art into the collection presentation. The text also discusses the importance of providing online access to works of net-based art, and concludes with three proposals for presentations.

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