COLLECTING AND CONSERVING NET ART

MOVING BEYOND CONVENTIONAL METHODS

Annet Dekker

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Collecting and Conserving Net Art explores the qualities and characteristics of net art and its influence on conservation practices. By addressing and answering some of the challenges facing net art and providing an exploration of its intersection with conservation, the book casts a new light on net art, conservation, curating and museum studies.

Viewing net art as a process rather than as a fixed object, the book considers how this is influenced by and executed through other systems and users. Arguing that these processes and networks are imbued with ambiguity, the book suggests that this is strategically used to create suspense, obfuscate existing systems and disrupt power structures. The rapid obsolescence of hardware and software, the existence of many net artworks within restricted platforms and the fact that artworks often act as assemblages that change or mutate, make net art a challenging case for conservation. Taking the performative and interpretive roles conservators play into account, the book demonstrates how practitioners can make more informed decisions when responding to, critically analyzing or working with net art, particularly software-based processes.

Collecting and Conserving Net Art is intended for researchers, academics and postgraduate students, especially those engaged in the study of museum studies, conservation and heritage studies, curatorial studies, digital art and art history. The book should also be interesting to professionals who are involved in the conservation and curation of digital arts, performance, media and software.

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Introduction

Around the turn of the millennium, artist duo JODI, Joan Heemskerk and Dirk Paesmans, started to revive the old computer game *Jet Set Willy* (1984). The game drew their attention because it was programmed in BASIC, one of the first computer languages designed to empower users of one of the first personal home computers, the now obsolete ZX Spectrum, which was released in the UK in 1984. The popular video game *Jet Set Willy* was one of the earliest non-linear games, featuring branching storylines, from the 1980s. The protagonist of the game, the tired miner Willy, is ordered by his housekeeper to tidy up all the items left around his house after a huge party before being allowed to go to sleep. The player moves Willy through the vast villa, consisting of 60 rooms, a beach and a yacht, and tries to gather as many objects as possible in each of the spaces. Trying to reprogram the code with the help of an emulator (a software application that accurately imitates hardware and/or software functions) proved to be more difficult than JODI had envisioned.[1] The keys of the original keyboard had multiple functions and to re-type a command on a contemporary computer keyboard, even a simple 'GOTO' statement (goto is a statement found in many computer programming languages that performs a one-way transfer of control to another line of code; at the level of machine code, a goto is a form of branch or jump statement) turned out to be a complicated issue, because all the easy short cuts were missing and now the right key combination for each task had to be found. In the end, JODI gained control over the game by using the emulator to access the machine code – the binary or hexadecimal instructions to which a computer can respond directly – and, once inside, reconfigured the colours and sounds byte by byte. Their version was recorded on an audiocassette that could be played on the original ZX Spectrum. They lost some of the original hardware and the original audiotape from which the game was played, but this did not interfere with the experience of the user who could still play JODI's *Jet Set Willy ©1984* (2002) with the old keyboard since only the arrow keys were needed to move Willy around.

JODI are renowned for their subversive and, at first sight, often seemingly incomprehensible artworks, and, to complicate matters further, their projects often vary from presentation to presentation. Not only do they present different variations of a work from venue to venue, but they might suddenly, and without notification, also change aspects of the work's presentation during its exhibition.

Jet Set Willy ©1984 has been exhibited in various ways over the years. The first time it was shown was on a table, with a 1980s television (CRT) monitor, the audiocassette with the tape, and the ZX Spectrum. At other times JODI showed *Jet Set Willy Variations* (2002), a DVD containing videos of modifications to the game, alongside the game itself. Almost ten years after the launch of the project, *Jet Set Willy ©1984* was transformed into *Jet Set Willy FOREVER* (2010) when it was presented at the exhibition *Funware* at MU in Eindhoven (Figure 0.1). This time JODI decided to add documentation of the work as part of the presentation, thus making documentation part of the 'final work'. *Jet Set Willy FOREVER* included the game on a ZX Spectrum, the DVD, video documentation of the artists demonstrating how the game can be played during a previous presentation of the work, a set of written instructions on how to play it and 60 prints showing the interior of the game – a cross section of the house. The organization of exhibitions always entails a discussion about the extent to which a work should speak for itself or whether any additional explanation and documentation of the project's previous manifestations is needed. In the case of *Jet Set Willy*, documentation serves several purposes. It provides instructions on how to install the game by showing on video which equipment is preferred, and how to play the game. As such, the documentation could be seen as an informational document. However, JODI's approach to documentation material is different; they do not see the documentation of *Jet Set Willy FOREVER* as separate from the work or as merely educational and informative, but as integral to it. From an aesthetic perspective,

Figure 0.1 JODI, *Jet Set Willy FOREVER*, 2013. Floorplan of the game. Installation shot MU Eindhoven.

Photo by Boudewijn Bollman.

the components of *Jet Set Willy FOREVER* declare the value of documentation as an aesthetic element of the work. An emphasis on documentation is not uncommon when it comes to ephemeral artworks such as performance art, or dance and theatre pieces. In the case of artworks that contain or consist of components prone to obsolescence, documentation, for better or worse, often becomes a substitute for the project. Some conservators and curators find these scenarios frightening and consider the approach of 'simply' changing the presentation, or hardware, of an installation, or of showing documentation instead of the work itself as utterly inappropriate. What implications do changes in the presentation format, or the exhibition of documentation, have for the conservation of an artwork? How will *Jet Set Willy FOREVER* survive in the future? More importantly, what can conservators and curators of contemporary art learn from JODI's practice of variability and use of documentation?

Contemporary conservation

Whether or not to conserve a work of art has been and will be debated for as long as conservators, museums and collections exist. Similarly, the job description of a conservator has evolved drastically from the 'three-legged stool' – a term coined in the 1920s by conservator George Leslie Stout meaning that a conservator should have a thorough grounding in art history, archaeology or library science; excellent hand skills, either in painting, drawing, sewing, sculpting, casting etc.; and excellent training in organic and inorganic chemistry – to the description by art conservator Joyce Hill Stoner who argues that a conservator of the twenty-first century:

> must thoroughly know their specialities, including current philosophy, history, literature, ethics, and the material properties and methods of analysis (subjects might range from underwater cannonballs to ivory miniatures); collaborate with scientists and be able to understand scientific terms and methods; cooperate with allied professionals, including archaeologists, art historians, and the various cultures of origin; understand proper light levels, indoor pollutants, insect life cycles, climate control, emergency preparedness, and toxicity; be articulate advocates who write papers, give presentations, and in this time of economic cutbacks, be able to charm politicians, foundation heads, and reporters from 'Sixty Minutes' if necessary.
>
> (2005:56)

The modern discipline of conservation started with scientific examination, practical knowledge and connoisseurship of the use of materials, and an ethical understanding and recognition of the importance of keeping conservation records (Caple 2000; Philippot 1996), but at the end of the twentieth century the metaphor from a three-legged stool extended to a 'ten-legged settee' (Stoner 2005:56). Most prominently during the 1980s the pursuit of 'objectivity' and 'truth-enforcing strategies' slowly transformed into a search for meaning. This meant that a new

set of concepts entered the conservation field – concepts such as significance, meanings, language, diversity, collective memory and identity became important issues (Pereira 2007). Notable in this sense is the work of conservator Miriam Clavir (2002), who vividly described and analyzed the underlying problems of a singular Western perspective. Based on her research with First Nations, she argues that conservation is inseparable from traditions, oral history, community and identity (Clavir 2002:xvii). From this perspective, she argues, it is not the object that is the centre of attention, but the cultural life of which the objects are part. In other words, and as she stresses, meaning is constituted *through* the object and is not necessarily or solely held *within* the object.

At the same time, the conceptual, unstable, variable or process-like character of many modern and contemporary artworks challenged the conventional object-oriented approach of fine art conservation. Unlike traditional painting and sculpture, these artworks often include ephemeral materials and technologies that quickly become obsolete. Moreover, these artworks were not always made to last for eternity. They inherently address the notion of variability within their own conceptual framework. Consequently, it seems logical to move away from a fixation on the conservation of materials or an artwork's physical components, as it would most likely turn out to be counterproductive. Some conservators have broached these challenges. Important steps have been made in this direction by several collaborative research projects, among them the Variable Media Network, Matters in Media Art, Inside Installations and DOCAM. Three basic notions underlie the methodologies of these initiatives: (1) enabling artists' participation as much as possible; (2) flexibility in approaches and methods; and, (3) openness (provenance and transparency). This way of thinking confirms the necessity to relinquish traditional conservation methods that focus on re-creation and develop new ways of documenting obsolete artworks. In addition, it invites new approaches to conserving works of art. As such, Head of Collection Care Research at Tate, Pip Laurenson (2006) suggests that the focus of conservation must move away from the purely material to include the original function and contextual meaning of the artwork. In her exploration of a conceptual framework for the conservation of time-based media installations, she concludes that:

> The reference 'state' of an object has been replaced with the concept of the 'identity' of the work, which describes everything that must be preserved in order to avoid the loss of something of value in the work of art.

In other words, as opposed to the traditional view from fine art conservation, it is not necessarily the material object that is considered to be the most valuable, but rather the intrinsic qualities of the artwork that evoke certain experiences.

Such a perspective is useful when thinking of net art conservation as the value of a net artwork does not necessarily reside strictly in the materiality of the medium itself, but in a number of contributing elements that, together, establish the work's aesthetic qualities. As well, since these artworks change meaning as they progress through history and can consequently be interpreted in different

ways by different people, understanding these artworks requires a mix of different fields of knowledge, ranging from art history to computer science and cultural studies to name a few. What remains is the question: on which basis are criteria and decisions made? To make decision processes more transparent, issues of provenance, and more recently mandates that future users and context be taken into account in decision-making processes and documentation models, are important factors in conservation practices. Despite these new attitudes, the profession and practice of conservation have led a secluded life in which change happens at a very slow pace. This is partly due to historical controversies around restoration practices, which even though they pushed the boundaries of conservation ethics, have also led to lost jobs as well as devaluation of artworks.[2] Some even mention that the profession of a conservator can be hazardous, a 'high-risk activity' (Van Saaze 2009:41). Although controversy in itself is not a bad thing, perceptions – and consequently interpretations – change throughout history; issues cannot be clarified by perpetuating discussions in terms of polarized stereotypes, nor will they provide a framework within which evaluation and further analyses can progress. Still, controversies often result in a reluctance to propose ideas, or at the very least they propagated uncertainty when making decisions. Surprisingly, this topic has received little attention, perhaps encouraging concealment more than anything else.[3] A 'cautious' attitude is also reflected in the practice itself, as Van Saaze notes:

> Historically preservation issues are concealed and confidentiality agreements are quite common to conservation practices [. . .] deliberation processes and conservation treatments took place behind closed doors, cautiously concealing them from the museum public.
>
> (2009:23)[4]

These feelings of uncertainty strengthen the role of science in conservation. Widespread faith and acceptance in 'objective' and independent methodologies allowed conservators to hide behind the methodology while projecting. The lack of open discussion among conservators (even those working in the same institute) intensified this conviction, and asserted the authority of a 'superior' conservator. The individual character of the profession added to this status. The conservator was and is someone with specialized knowledge only applicable to his or her specific field. This has led to stereotyping but also to isolation from others involved (e.g., curators, lawyers), resulting in much miscommunication. It is only recently that the decision-making process became a more open debate, leaving the traditional stakeholders behind.[5] At the same time, conservators were concerned that new and different methods could backfire and undermine their status. This fear of the new is also one of the reason why conservators (and curators) are reluctant to discuss the conservation (or presentation) of net art. They prefer to stick to their well-known fields of interests in which they can build on works that have been recognized and validated in the past. It is often said that conservation depends on the notion that past cultural epochs have something to offer the present. It is also

claimed that an increase in conservation efforts is seen as a dread of the present and an aversion to technical progress (Lowenthal and Binney 1981). Although this is a rather bold statement, these and the previously mentioned reactions form the basis for an understanding of the psychological developments in conservation theory and hence the slow pace of progress in the practice.

Another factor that prevents quick changes is the structure of managerial thinking in museums. This is exemplified by net artist Olia Lialina, who in her article 'About Exhibiting Net Art' (2000), aptly describes the underlying problem of acquisition and conservation of net art by museums. She recounts her observations and experiences from the time she became a net artist:

> What to do with net art? How to deal with it? How to include something in a collection that cannot be stored on a shelf? Everything would be so much easier if net art was just web art, consisting of hypertext pages with funny animations and experiments with browsers (which does apply to a few interesting projects). In such a case, one could just buy the work and store it on the server of the buyer. But how does one deal with works of which the main concern is by no means websites on a server, but the journey which starts there and cannot be controlled? Works that are strictly defined as net artworks contradict the logic of proprietary thinking. Contradict the old logic of proprietary thinking. And contradict the old logic in general.

Lialina's last remark is also a reflection of media theorist Charlie Gere's analysis of how 'new media art' is received and understood by galleries and museums. As he states, museums and galleries affect an understanding of and access to the past, as well as a relation to the future (Gere 2008). Similarly, net art challenges traditional thinking in conservation, in which the past prevails over the present or future. Despite tendencies to 'group think' within organizational, personal or disciplinary limitations, which can slow the pace of change, a transformation can be witnessed, for example, the success of SFMOMA's 'Team Media', which consists of managers, curators, conservators, technicians and IT specialists; decisions about acquisitions, presentation and conservation are discussed in monthly meetings.[6] As well, training and education are changing, and decision-making models are bringing disciplines together to encourage trust and mutual understanding. For example, following the experience from MoMA, in 2014 Guggenheim began to collaborate with computer scientist Deena Engel and her students at NYU.[7] Stressing the importance of such collaboration Engel said:

> Today, a great deal of scientific research relies heavily on computational techniques; therefore, the software and hardware environment used to obtain scientific results must be fully documented and preserved in such a way that the same scientific results can be achieved in perpetuity. This is analogous in many ways to the goal of art conservation, as museums will wish to re-exhibit contemporary works of time-based media and software-based art well into the future.
>
> (Dover 2016)

These examples show that when conserving net art conservators can benefit greatly from working with experts from outside the museum (artists, programmers and other specialists), bringing technical expertise and conceptual thinking together.

As a practice, conservation has always changed the 'authentic' state of a work. When dealing with net art, conservation has to come to terms with change in a more radical way. Such a new understanding of conservation theory embraces change and variability as inherent qualities of the artform and consequently of conservation itself. Analyzing non-institutional examples shows that mandates to collect and conserve are not universal standards, nor can they be applied as such. By examining these 'outside' strategies, as I will show in this book, museums could better participate in decisions about the conservation of net art. Whereas net artworks are acquired by museums, I focus on how some artists think about conserving their works. By emphasizing these artists' perspectives, I try to avoid discussing whether the museums that have conserved artworks did it properly or not. Rather than contesting the best conservation practice, I want to stress artists' practices when doing conservation. This is not to imply that a museum's perspective is less relevant when talking about caretaking. Even though this position may change as more and more specialized organizations, artists and the public start conserving artworks, museums are significant as they are the places where art conservation began and where its practices have developed.

Materiality

Jet Set Willy FOREVER shows the challenges that curators and conservators face when dealing with net artworks. These manifest in different ways. First of all, to assure a (future) presentation, artworks require active intervention by the curator or conservator. For example, *Jet Set Willy FOREVER* is built from several layers, or components, that change or can evolve for each presentation. Such a variable process reflects a perpetually renewed present instead of the linear temporal perspectives followed in conservation. Although the components of *Jet Set Willy FOREVER* can be changed, there is a specific materiality that is important to present. Some of it is visible, for example the CRT monitor or the ZX Spectrum. Others are less obvious but can be traced in the code, the BASIC language, or in the interactions or relations between different elements. The question is, what part(s) need to be shown, and consequently, how do they function and relate to each other? What is needed to make them function? First of all, what is 'materiality'? In conservation the notion of 'materiality' is closely related to the study of material culture, an interdisciplinary field that explores and analyzes relationships between people and artefacts. For many years, the field tended to focus on the passive use of material culture by humans (Durkheim 1982[1895]; Lévi-Strauss 1963[1958]). The term gained prominence in post-Structuralist inspired anthropology and archaeology in the late 1980s, particularly through the works of Hodder (1986) and Tilley (1991). Materiality came to imply that social reality is actively constructed or challenged. However, most theories still focus on human

agency and intentionality. In this book, I follow literary scholar N. Katherine Hayles' approach to materiality. She explains:

> The physical attributes constituting any artifact are potentially infinite; in a digital computer, for example, they include the polymers used to fabricate the case, the rare earth elements used to make the phosphors in the CRT screen, the palladium used for the power cord prongs, and so forth. [. . .] [Materiality] emerges from interactions between physical properties and a work's artistic strategies. For this reason, materiality cannot be specified in advance, as if it pre-existed the specificity of the work. An emergent property, materiality depends on how the work mobilizes its resources as a physical artifact as well as the user's interactions with the work and the interpretive strategies she develops – strategies that include physical manipulations as well as conceptual frameworks. In the broadest sense, materiality emerges from the dynamic interplay between the richness of a physically robust world and human intelligence as it crafts this physicality to create meaning.
>
> (2002:32–3)

Hayles opens up and complicates the notion of materiality in material culture, without stepping into views of technological determinism. Such an approach serves the sensibilities and uniqueness of individual instances of hardware and software and should be coupled with the awareness that the affordances of particular systems, environments and technologies are often integral to creative processes. In other words, both hardware and software components influence the creative process, the aesthetics and the perception of the work. In addition, material conditions are not solely technical, but also socially and culturally determined. This leads to the second point: to (re)assemble and comprehend the functioning, and thus presentation or conservation of these artworks, people from various backgrounds need to be involved. Most likely, these people are not yet working in or with museums.

These points expand approaches to materiality in conservation, which focus solely on the analysis of material properties of physical objects. Although artists' intentions are becoming more prevalent in decisions about conservation, most conservation practices depart from the final object when thinking about conservation treatments. Conservation tends to discard the importance of the 'social space'; i.e., seeing materiality as a meaningful process through which the execution or presentation of the work and the process of creation are extended and prolonged through active exchange. The social network makes the material meaningful. While conservators may take different kinds of information into account, a narrow focus on object-based materiality could neglect the creative or development process of an artwork.[8] To understand the functions in, or performativity of, a work, before deciding on conservation approaches, it is important to understand the decisions artists make during development. Following Hayles (2002), materiality emerges from technical, political and social relations of network culture, without excluding the medium-based approach. An expanded approach could be helpful when discussing the importance of materiality in net art conservation.

As such, this approach is an argument for historical research embedded in socio-technical ensembles, as well as for the specificity of practices that emerge through networks and processes. In short: it emphasizes the importance of acknowledging the historical, social and technical contexts in which materiality is formed.

Throughout this book I claim that a strict or deterministic focus on materials (hardware and software) forecloses alternative approaches for conservation. A similar argument can be made for conservation's inclination to prefer a 'Cartesian' concept of time, which enforces an eternal present. By departing from the norm (of the present), what is sought is predictive knowledge. How will a work of art function in the future? In terms of conservation, what needs to be done so that it can function in its 'ideal state'? I will argue that it is more interesting to follow the variability of the work and thereby accept the idea that time is not neutral or objective. In other words, what does time mean when discussing change and variability as defining characteristics of net art and its conservation? Net art is often not the outcome of a single presentation in time; it comprises different projects that (also) vary and change. Existing as fragments, net art is created, computed and layered with distributed interactions that sometimes overlap or return as they move through various platforms. As such, net art is constructed and evolves over time. Its convoluted trajectory zooms in and out, from micro-level traces to the macro-domains of the entire network.

Media archaeology, media ecology and circulation

A study of conservation may seem counter-intuitive for an artform that is also a variable process or assemblage. However, conservation is not merely a static practice. Throughout the years, it has been influenced by changing social and political dimensions in- and outside of the workplace (Ashley-Smith 2009). Future conservations of net art could benefit from what can be seen as a regressive strategy, not in the least because many net artworks consist of materials that have a long history in conservation practices. At the same time, dealing with emerging and evolving networks and processes might not be seen as conservation. However, seeing conservation as process – in which certain elements mutate, become obsolete or stay the same – signals a conservation that aids in the possibility of production and development. Such a process does not exclude conservation, but incorporates future thinking into its practice. At the same time, it guards or creates documentation that serves as traces of a past that can be inserted into art history. In short, a methodology for studying these processes should follow a similar trajectory: following net art and its method of 'construction', i.e., signalling the possibility of change, means exploring artworks by looking inside and through them to see what they consist of and how they behave, which includes analyzing social and cultural influences. I want to emphasize that net art is not shaped solely by conservation but also shapes conservation through its interactions and relations. This does not exclude the use of conservation methods and theories but regards the conservation of net art as a process.

Such an approach can learn from methods in media archaeology, such as 'variantology' (Zielinski 2006) and 'cycle' (Huhtamo 1994), as well as the idea of

'assemblages' found in media ecology (Fuller 2005). Early media archaeologists such as hardware specialists Bernhard Siegert (1999[1993]) and Erkki Huhtamo (1994, 1995) followed the *a priori* of the technical, for instance, the materiality of objects such as circuit boards or fibre optic cables. This technological focus has been criticized for being too hermetic, for excluding the anthropological influence in, and on, technology (O'Driscoll 2002; Zielinski 2006; Daniels 2002). The main criticism focused on how media theory should not be reduced to issues of media technology alone. Despite intentions to broaden the scope of this research and include notions of social-technical assemblages, most remained focused on examining the physical workings of technologies. Although methods differ between various media archaeologies and media archaeologists, a common goal is to re-examine precursors of current media to analyze the importance of sometimes dead or forgotten media, and to assess their influence on the supposed newness of present (and future) media.[9] As Siegfried Zielinski explains:

> The goal is to uncover dynamic moments in the media-archaeological record that abound and revel in heterogeneity and, in this way, to enter into a relationship of tension with various present-day moments, relativize them, and render them more decisive.

> (2006:11)

By promoting a non-linear approach to history, Zielinski uses Michel Foucault's (2010[1972]) concept of archaeology as a method for analyzing media. Zielinski proposes a search for 'individual variations' within historical records. This could lead to the discovery of 'fractures or turning points in historical master plans that provide useful ideas for navigating the labyrinth of that which is currently firmly established' (2006:7). In the long term, individual 'anarchaeological' studies will form a 'variantology' of media. Although it could be argued that Zielinski lacks a methodological framework or point of departure, his project embraces experimentation and heterogeneity. These are important to consider in a field that is still developing, but which has already lost a lot of its material due to (planned) obsolescence. To escape the fixation on content in the discourse about (mass-)media, a rewriting is imperative. Media archaeology insists on looking at media in operation, an approach that further distinguishes it from other historical practices.[10]

However, net art's emphasis on circulation and the processual makes it difficult to apply a media-archaeological perspective in isolation. Huhtamo's idea of 'cycles' comes closest to including processes as part of media-archaeological analyses. Also following Foucault's archaeological concept, Huhtamo (1994) stresses the importance of an approach that follows cyclical developments and recurrent innovations instead of chronological accounts and continual progress. This kind of cyclic movement, or circulation, specifies a constant interchange between past and present, in which both inform and explain each other, but also raises issues that signal possible futures (Huhtamo and Parikka 2011:15). Similarly, Garnet Hertz and Jussi Parikka (2012) have suggested ways of reimagining media archaeology as an artistic methodology that bends circuits and repurposes

old media for new uses. Rather than adopting the concept of a cycle, they prefer to recycle. Whereas recycle implicates the building of something new, the notion of a cycle – following artist Shu Lea Cheang – signifies repetition. As such, cyclical development is a learning process that is not geared towards something else, but provides an answer to what is strikingly absent in most media-archaeological research: attention for the implications of this approach in terms of cultural heritage and conservation. Most importantly, media-archaeological research neglects variability in the display and documentation of artworks that are made with and through technical means.

Looking beyond a media-archaeological approach, 'media ecologies' more keenly address the idea of circulation and the cyclic. The term ecology is used in various ways. Explaining the differences goes beyond the aims of this book. Here, I refer to the media-ecological approach proposed by media theorist Matthew Fuller (2005).[11] Fuller uses the term 'media ecology' to analyze intricate artworks, in which he looks at 'modes or dynamics that *properly* form or make sensible an object or process' (Fuller 2005:2). Media ecology is a conceptual device that questions the evolving couplings of unlimited sets of humans, animals, networks, machines etc. to avoid closure. More than in media archaeology, Fuller's emphasis is on the different kinds of qualities *in* media systems and how these qualities mix and (inter)relate (Fuller 2005:2). In media ecologies all kinds of systems compose discourse, have rules of formation, and generate processes (Fuller 2005:61). Media ecology is insistent on materiality. As Fuller says:

> how it can be sensed, made use of, and how in turn it makes other elements or compositions tangible [. . .] the different kinds of such qualities in media systems with their various and particular or shared rhythms, codes, politics, capacities, predispositions, and drives, and how can these be said to mix, to interrelate, and to produce patterns, dangers, and potentials.
>
> (2005:2)

Thus, a media-ecological approach explores different elements in their context and/or relation to the event, installation or performance, including their developments. As such, the approach both complicates and opens up possibilities in media archaeology. Such relational analysis is particularly useful for net art when characterized through networks and processes that relate, often in incongruent ways, to different projects, actions, symbolic systems and people. With its focus on physical matter, a media-archaeological approach misses the transgressions, incongruities and confusions that are fundamental to net art, especially in the way it relates to existing power relations. Moreover, since such constellations evolve into something else as they move from variability to assemblages, the approach is also helpful when thinking of expanded conservation practices.

To summarize, the strategies of media archaeologists combined with the approach taken in media ecology are useful when considering a conservation approach to net art, or to understand the implications of traditional conservation on the practice. Take, for instance, the emphasis on individual variations or

'variantology' in media archaeology and other case studies that think through materials (Zielinski 2006; Parikka 2012). Whereas a media-archaeological approach finds profound richness in the work, rather than in its mutations, relations and processes, I focus on key notions, specifically variability and process, and how these characteristics influence a conservation practice that prioritizes a final object. The concept of circulation (Huhtamo 1994) will be helpful, as will an emphasis on assemblages that evolve due to audience behaviour and hardware and software changes (Fuller 2005).[12]

Structure of the book

The survival of net art is at the heart of this book. Net art operates through often imperceptible or ambiguous performance of processes and is networked in various ways. It is also one of the most viewed and experienced artforms. In his article 'Ten Myths of Internet Art' (2002b), Jon Ippolito stated that the audience for net art far exceeds visitor numbers at any contemporary art museum. Yet, some net artworks cease functioning in less than five months.[13] This book takes issue with three assumptions that have pervaded the claim that conservation studies and museums lack adequate conceptual tools to understand and work with net art.[14] The first is that net art does not belong in a museum, since one of its main components, a (networked) computer, is not seen as a valid medium for art creation and/or exhibition. Historically this bias can be seen in the lack of these kinds of artworks in museum collections (Dekker 2010), and recent discussions point to the neglect of net art, and digital art more generally, in art historical discussions (Shanken 2016). The second assumption is that net art cannot be acquired because it involves networks, processes and interactivity that are beyond a museum's control. Directly related is the third assumption that net art cannot be conserved because its technical infrastructure defies the standard classification systems used by museums, while the rapid obsolescence of the technologies involved also complicates traditional conservation methods and ethics. By departing from artists' perspectives and comparing their methods to those of a museum, this book opens up these different processes and their consequences for museums. Arguing for the need to reconsider traditional attitudes in museums and notions of static conservation as well as acknowledging decentralized and community-based approaches, this book describes an expanded practice of conservation in the computational age. It explains how net art functions, and examines the ways these strategies are used and folded back into art historical notions of authenticity, documentation and variability. It is not the intention of this book to present a structured approach or practical conservation methods to support a sustainable future for these types of works. On the contrary, based on the case studies, these artworks require new ways of dealing with issues like 'objectivity' (the scientific approach in conservation), legal matters and finance models, as well as the internal organization and function of a museum. Rather than merely emphasizing contemporary technical and legal issues, which will quickly become outdated, net art practices are analyzed from a combination of cultural, social and technical perspectives. The

focus in this book is on continuing existing discourses in art history, curation and conservation, while applying these to the broader challenges in the case studies.

In Chapter 1, I elaborate on the nature and characteristics of net art. The term net art has been disputed through the years; I describe it as a set of creative practices built on a number of innovative processes that are formal and contingent, functioning through systems, networks, designs and histories, and influenced by and executed through other processes and/or users. This includes technology, but it is not restricted to it. It is foremost about seeing systems and social situations as a medium. The often invisible construction of net art complicates or even obstructs an easy comprehension of the aesthetics or recognition of the multiple layers in these artworks. This chapter focuses on three characteristics that are most relevant and challenging when dealing with conservation issues: the networked, processual and ambiguous nature of net art. Net art is created by a dispersed network of 'actors' and its characteristics can lead to multiple instances or versions of a work. This process is not necessarily unique to net art and can also be traced in, for example, performance art, land art, conceptual art, installation art, media art and bio art. The newness (and urgency) of net art is embedded in the speed of developments and a new and poorly understood creation process and consequently its conservation. In the next three chapters based on the analysis of several case studies I explore how the notion of conservation can be expanded and developed. Conservation as a practice has always operated on, and through the idea of changes to 'authentic' works. When dealing with net art, conservation will have to come to terms with the notion of change in a more radical way. As such, I propose a new understanding of conservation theory that embraces versioning and process as inherent qualities of the artform, and consequently of conservation.

In Chapter 2, I focus on documentation as a conservation method to capture (the context of) an artwork, and contend that documentation is as important as conventional technical maintenance and material restoration. The chapter begins by briefly tracing the meaning of 'documentation' to understand the different roles and functions of documents and documentation in conservation and the consequences it will have when documentation is a primary conservation method. Describing and analyzing the work by early documentalists, in particular Paul Otlet (1934) and Suzanne Briet (2006[1951]), I explain how documentation is understood and how distinguishing between different documents informs changing relationships within documentation practices. By analyzing the documentation methods of, among others, the UK-based performance group Blast Theory, I consider in what ways current artists' documentation methods can be of help in conservation. I discuss three different types and phases of documentation: (1) *documentation as process*: the documentation that reflects the decisions that are made during the development of a work; (2) *documentation as presentation*: documentation of the behaviour of an artwork once finished and/or representing the experience that users have with it; and (3) *documentation for re-creation*: documentation that is kept or made for reference and possible re-creation in the future. To answer whether, and in what way, these types of documentation help to conserve net art, in the second part of the chapter, I analyze documentation models

developed by museum conservators and assess whether such a structured way of documentation is useful for the conservation of net art. By comparing the different approaches I demonstrate how the combined strategies can facilitate the creation of new versions that build, elaborate and comment on previous states. This will open new ways of thinking about what conservation means, and provoke new ways of dealing with documents, documentation and the organizational structure of the museum. Whereas Chapter 2 is an extended contextualization of current conservation practices, I discuss methods that move beyond such approaches in subsequent chapters.

In Chapter 3, exploring the context and the 'social life' of net art and its emergence through networks and processes, I propose the notion and method of 'networks of care' for the conservation of net art. Analyzing the example of *mouchette.org* by Martine Neddam, I challenge the notion that net art is more complex to conserve than traditional artworks. Whereas the technical elements of many net artworks can be conserved, either through emulation methods or by sensitively redoing the hardware and software (following media-archaeological approaches), such attempts may fail to capture the essence of the artwork: mistaking technical failures for what they are; neglecting the temporary condition and value of the work (changing conditions can render a work meaningless); or disregarding the 'open ideology' of a work involving multiple authors. The latter, I argue, could be one of the solutions for the prolongation and longevity of the work. It is not uncommon for networks to form around artworks that are not collected by museums, large institutes or private collectors: either to protect the work from censorship, or to safeguard and protect it, often after an artist dies. I suggest that such a network could evolve into a 'network of care' that maintains or conserves (parts of) an artwork and consists of a combination of experts and non-specialists and introduces knowledge from a variety of fields and backgrounds. Rather than solely focusing on technical aspects, this approach acknowledges the distributed character of many net artworks. This means recognizing the incompleteness of net artworks, in which conservation is less about conserving materials and more about the preservation of social information and relations.

By analyzing the case study *Naked on Pluto* (a Facebook-based game by Dave Griffiths, Aymeric Mansoux and Marloes de Valk) in Chapter 4, I show how the use of open source practices further complicates and affects the current structures and functions of museums. With artworks that can be freely copied, used, presented and distributed by everyone, several challenges arise for a museum. While in general open source helps the conservator to more easily access the different elements of an artwork, when other people can use and change the artwork the conceptual and economic value of an artwork changes. Moreover, many net artists are not necessarily interested in a final artistic product. Rather, they want to create a set of relationships and processes, from the way of production via distribution to reception and back again. A cycle emerges that can continue potentially forever. Importantly, the idea of circulation does not necessarily include constant progress. Rather, it emphasizes that development time also allows for return and revision.

This shifts the perception from representations of objects to interpretation of their forms, flows and flaws. Working with relations and processes also emphasizes the end of a single author, in favour of a collaborative process that, by allowing for hybridity and complexity to play out within new aesthetic practices, opens possibilities for new social structures or tactical behaviours. However, in some cases, such as communal authorship, it does not suffice to describe a process that favours development and (dis)continuation over collaboration. Here, one author is dependent on another, not for collaboration but to continue a process. Instead of claiming single or collaborative authorship, such practices signal that questions of authorship are less relevant than the drive to continue a process. These processes change the question of what net art *is* to what net art *does*. Rather than seeing this as a problem, following artists' strategies, I propose to reverse the acquisition (and thus conservation) process. The museum does not acquire a 'final' artwork, but is financially, and perhaps conceptually, involved in the development of an artwork. Instead of trying to fix an artwork as much as possible, providing boundaries, or guidelines, of past, present and ideal states of the artwork in which construction and execution are stitched together to create a moment in time, when following an 'open approach' the museum becomes also a facilitator of development and processes.

The question of whether and, if so, how, such new *modi operandi* in conservation will affect existing structures, systems and more traditional artworks, calls for further research. In the next two chapters I make a first attempt to open such discourses and ways of thinking. In Chapter 5 I take the well-known and used concept of authenticity for identifying value and meaning in an artwork, and explore its value and meaning in net art. Expanding the multiple descriptions of the term, I argue for a broadening of authenticity by connecting it to 'alliances'. With the term 'authentic alliances' I emphasize the importance of seeing seemingly different and incommensurate parts as a whole. Although the most common used identifiers for authenticity (of what the work consists, who is the author and when is it made) do not necessarily give an indication of authenticity in net art; it is in the alliances inside and between these concepts that authenticity can be identified. This emphasizes the layered nature of these artworks, and that different elements should not be identified as singular entities, but as influencing each other. Thus, while independent elements can change, it is in the relations and the execution – in between a and b – that authentic alliances can be traced. In other words, the infrastructure and the context are more important than the individual components. This is not saying that questions about the work, authorship and date of an artwork are irrelevant, but that there is a shift of focus to those which prioritize questions about ownership, authorship and copyright.

The notion of a dynamic unfolding of events in my proposal of authentic alliances – in which different elements only function in execution – is closely related to the assumption of the performativity of digital documents. In the final Chapter 6, I take up Lev Manovich's (2013) argument that software culture is moving beyond the twentieth-century terminology of document, work,

message or recording. Rather than a fixed document he proposes referring to these 'documents' as dynamic 'software performances'. I agree that a work's content cannot be defined by a single file or document. In effect, what I proposed in Chapter 5 is that net art's characteristics can only be defined by looking at their alliances. However, to see what this 'performance' means, I explore the dichotomy between fixed and fluid documents. In line with computer scientist David M. Levy (1994), and by looking at the way how for example computer memory functions, I conclude that digital documents are both, which moves closer to answering the question: which aspects perform, and for what purpose? By emphasizing the function of a document, rather than looking at its physical form, more than the performative (something that executes) I want to stress the processual qualities (something that is *in* execution) of software and net art. At the same time, net art both consists of fixed properties and is constituted through technical, social and cultural matter and processes that keep changing. To recognize such contextual dependencies, I propose to extend J.L. Austin's well-known performative acts (1962) with the notion of circulation as described by Benjamin Lee and Edward LiPuma (2002). Analyzed this way, performativity has the potential for meaningful production, as well being a constitutive act in itself. I thereby stress the need to see the processes underlying net art as primary acts by looking at how the acts perform through the code, specifically by looking at the function of a hyperlink; at the interaction between code, programmer and context; and at the distribution process of net art. As such, net art is indeed a document with performative qualities. It executes, acts, reacts and evolves, or mutates. At the same time, it is a complex document with kinks, folds, hiccups and slippages, which twist and bend in various directions, creating uncertainty and unpredictable behaviour. In addition, the code is intertwined with the programmer(s), and/or the actions of visitors. Thus, performativity should be seen and understood as relational (or as *alliances*). At the same time, net art is also a formally specifiable entity, so it has a dual nature. In this sense, net art is part of a process that moves beyond mere execution. Being more than performative (something that executes), it would be better to use the term processual, which in computing is described as a program *in* execution. I conclude by turning my attention to explaining how the concepts of performative circulation and processual help with the conservation of net art. While conservators recognize variability, most still depart from the question of what the material is, instead of addressing what it does or how it functions. My emphasis on the processual dimensions of materiality is meant to extend, rather than replace, these perceptions. This means that what net art is and how it can be conserved has to be understood in terms of what it does: how it functions within and through machinic, systemic, social and cultural domains.

Notes

1 JODI interview for the exhibition and research project *Seeing Double* (2004) by the Variable Media Network: http://variablemedia.net/e/seeingdouble/.

2 See, for example, the effects of the 'Newman-affair' as described by Ex (1993).

3 Jonathan Ashley-Smith has written several texts dealing with ethical issues and related matters concerning the restoration, exhibition, loan and transport of artworks. For example, 'Let's be Honest' a talk presented at the IIC conference, Preventive Conservation: Practice, Theory and Research, Ottawa, Canada, 15 September 1994: http://cool.conservation-us.org/byauth/ashley-smith/honest.html (accessed September 2017).

4 The notion of confidential conservation is still debated among conservators. Whereas some conservators feel that the condition and treatment reports are confidential, others feel that to maintain the professional nature of conservation, and to best protect the artwork, the free exchange of information, including access to these types of records should never be denied. Even though laws around confidentiality are straightforward, the perceptions of the issue within the profession are not. For a more detailed account, see Stavroudis et al. (1986). For the relative absence of discussions in the context of contemporary art, see Learner (2008).

5 For a more elaborate discussion on the status of the conservator see, among others, Caple (2000:182–99) and Muñoz Viñas (2005).

6 Jill Sterrett (director of collections at SFMOMA) initiated Team Media in 1994. Although problems are discussed between different people on a meta-level, the practical work stays with allocated specialists and direct conversations only happen (occasionally) on a natural basis (based on conversations with Rudolf Frieling, during 'The New Media Art Network on Performativity and Authenticity', Tate Modern, 28 July 2009).

7 In 2008 MoMA (Glenn Wharton, at the time media conservator at MoMA) started working with Engel on the conservation of software-based artworks.

8 There are cases where the artist's creative processes are being studied, in particular with paintings. Whereas technical artworks have not received the same attention, strikingly, these studies have become possible with the use of advanced imaging and analytical techniques such as X-ray, UV-fluorescence and Infrared, which allow researchers to see earlier changes by the artist, and, as they concluded, developments in the creative process. See, for example, Van Bommel et al. (2012).

9 For more information, see, for example, Strauven (2013), who discusses various contemporary approaches or 'schools' of media archaeology. She extracts four approaches from three different methods (film, media art and new media) and compares them to Foucault's conception of archaeology.

10 This is particularly emphasized by Ernst (2011) and Parikka (2012), who depart from the notion of theoretical media archaeology and instead make a claim for media archaeology as a practice.

11 The term ecology has been adopted in different fields. For example, in organization and management ecology is a metaphor for viewing informational space as an ecosystem; see, for instance, Iansiti and Levien (2004). Or in the sense of environment, most prominent is Neil Postman's media-ecology association (www.media-ecology.org/), where media are the sole determinants for social growth and functioning.

12 Although net artworks are often dependent on participants, I will not emphasize or analyze audience behaviour or experience as such. This calls for additional research, which goes beyond the purview of this book. The importance of audience behaviour and experience is slowly receiving more attention in conservation. See, for example, Muller (2010), whose research deals specifically with audience behaviour and interactive installations.

13 To refer to such an artwork as 'a work' could be seen as problematic. Although this may be true, it is beyond the scope of this book to explore this. For the clarity of my argument, I use the term 'work' to refer to net art.

14 Conservation, restoration and preservation are loaded terms that often lead to confusion. The terms may have different meanings depending on the country or organization.

In general, the term restoration is used with regard to a certain practice in conservation, namely the actions undertaken to restore an object to known preceding states. Preservation, on the other hand, focuses on the prevention of future deterioration of artworks. According to the AIC conservation activities include examination, documentation, treatment, and preventive care, supported by research and education. Similarly, and following Muñoz Viñas (2005:15), I will use the term conservation as an umbrella term to refer to conservation as a theory and practice that restores and works towards preservation.

1   Net art

New media art, digital art, software art, networked art, Internet art, net.art, net-worked art, post-Internet, new aesthetics. . . . Over the past decades, many terms have been used to signify contemporary art that works with networked media. In this light the term *net art* that I propose here has not been uncontested. Some of the first discussions about the name can be traced in the e-mail list *nettime-I*, for example when David Garcia mentioned 'The term net-art (as opposed to art that happens to appear on the net) should be quietly ditched' (12 March 1997), a list of critical and less critical responses followed. In 2003 Julian Stallabrass used the term *Internet Art* to avoid the then charged term net art. Stallabrass argued that '"net.art" is a term that has become associated with a small group of early prac-titioners and a particular style, and it cannot be applied to online art as a whole' (Stallabrass 2003:11). In the same year, Christiane Paul used the broader term *digital art* to present a 'survey of the multiple forms of digital arts, the basic char-acteristics of their aesthetic language, and their technological and art-historical evolution', not to 'describe one unified set of aesthetics' (Paul 2006:8). A year later in 2004, Rachel Greene used 'Internet Art' in her popular account *Internet Art* on the history of art and the Internet. Unlike Stallabrass, Greene refrains from explaining why she uses the particular term Internet Art, which she uses inter-changeably with net art. In the following years, many works of net art were placed under even broader umbrellas like *electronic media art* (Shanken 2009) or *new media* (Tribe and Jana 2006; Graham and Cook 2010). With the acceptance of the computer and digital culture by mainstream users, and in particular in artists' prac-tices, around 2007 terms such as *post-digital* and *post-Internet* surfaced. Artists and critics used the terms to emphasize the influence of the Internet on artworks that were created with conventional material such as sculptures, photographs and paintings. The terms signal a post-medium condition in which the original mate-rial of the artwork is translated into another material (Paul 2016:2–3). As Paul mentions the prefix 'post' is problematic because it suggests a temporal condition while the medium (i.e., digital or Internet) continues to thrive (Paul 2016:3).

Despite the diversity and the urge to come up with new names, the term net art keeps returning. For example, in 1999 Verena Kuni edited the German book *Netz.kunst* and in the same year Tilman Baumgärtel published *Net.Art*, followed by a second edition in 2001, and in 2011 Josephine Bosma wrote *Nettitudes* defending

the term net art. Also art organization Rhizome has insisted on using the term net art for the artworks in their collection, largely because of its wide usage by the artists themselves.[1] All of them try to move beyond what was defined as net.art by incorporating different types of art and artists. As Baumgärtel describes:

> Net art addresses its own medium; it deals with the specific conditions the Internet offers. It explores the possibilities that arise from its taking place within the electronic network and is therefore 'Net specific'. Net art plays with the protocols of the Internet, with its technical peculiarities. It puts known or as yet undiscovered errors within the system to its own use. It deals creatively with software and with the rules software follows in order to work. It only has meaning at all within its medium.[2]

Whereas Baumgärtel positions net art inside, and as part of, the Internet, given the wider dispersion of the Internet and taking into account that its computational qualities such as connectivity, globality, multi-mediality, mobility, performativity and interactivity have started moving beyond the 'confines' of the Internet, Bosma broadens the description of net art to include artworks that are rooted in or are based on Internet cultures. Without trying to define a discipline or movement, which due to the sheer diversity of practices is almost impossible, like Bosma, I want to stress the need to comprehend the networks by which these artworks are created. Such an approach is close to Craig Saper's book *Networked Art* (2001), in which he offers a glimpse of the emerging networked culture that has become omnipresent due to technical advances. Referencing early examples from Fluxus and mail art, among others, he describes how artists are using the trappings of bureaucratic systems – money, logos, corporate names, stamps – to create intimate situations among the participants rather than objects. Similarly, I point to a wider function of networks that although informed by, also go beyond the scope of technology, thereby addressing the correspondence between analogue and computational positions, and emphasizing the social situations through which net art is created and prospers.

For the purpose of this book, I focus on those characteristics of net art that are most relevant and challenging in the context of conservation: networks, processes and ambiguity. These features are not *a priori* technical; they connect with the theoretical concepts and practices of art, and are part of net art's specificity.[3] To phrase this more strongly, these qualities function as the constructive nature of net art. The term 'construction' indicates that the aesthetics of net art are constructed. This means that net art is combined, composed, compiled and dependent on (non) human action and is not necessarily the consequence of a straightforward procedure that leads to specific results. Thus, to understand net art, it is necessary to see what it consists of, how these parts are built up, and how they behave. In other words, it is important to gain insight into the characteristics of net artworks and the ways they operate. To briefly summarize, when it comes to net art, the process of creation is heterogeneous and involves incompatibilities, constraints, rules and a certain level of improvisation that continually re-negotiates its structure.

Although net art is very particular in many ways, often behaving unpredictably, it also consists of specifiable entities. It could therefore be said that net art is dual in nature. Nonetheless, I would like to emphasize that whereas the structures may remain stable (or fixed) to a certain extent, re-negotiation processes are continuous and incongruent.

Net art = Network

A network consists of linked structures and distribution systems that connect traces, projects and people. The organizational design of networks is based on flexibility and adaptability that serves to distribute data. Organizations and artists are using the networked structures, the situation, not only as an ability to inform others, but also as their canvas to create and construct new languages, poetries and arts. In such cases 'networked' is about using relationships between people: this can include technology but it is primarily about seeing a network as a situation or a medium; or, in other words, as art. Being networked is not confined to technology, or to a medium; it is a condition from which specific situations arise. At the core of infrastructures, the term derives from 'net' and 'work'. Net is an old English word for 'netting, network, spider web, mesh used for capturing', as well as 'something knotted'.[4] The meaning changed from 1839 to include 'any complex, interlocking system' (originally in reference to transport by rivers, canals and railways). However, the term network surfaced in 1887 when used to describe something 'to cover with a network'. The definition was further expanded in 1940 'to broadcast over a (radio) network'. In 1972, it was used in reference to computers and in the 1980s to people.[5] Despite the definition, networks are not confined to technology. For instance, one of the main characteristics of communications networks is their ability to copy, share and distribute information between people and places.[6]

   Visionaries like Paul Otlet (1934) and Vannevar Bush (1945) dreamt of an underlying communications structure that would connect all of the world's information. Although such networks existed, it took a few decades before computers were networked on a wider scale. The ARPANET in 1967 was the first large network (Abbate 1999). It was based on packet switching.[7] In packet switching, each data file – regardless of content, type or structure – is divided into fixed-sized units. For instance, larger documents are divided into many blocks, whereas smaller documents can travel in just one. A data system uses a single communications link to communicate with more than one machine. After connecting to the network, the user's station adds control information and a header to each packet. Switching nodes use this information to determine which route each packet should take to its destination. Each packet is sent independently, making it possible to traverse different routes. This routing is best served by a distributed network system (Baran 1964). At its destination, the local station strips the header information and reassembles the packets to form one complete message (Abbate 1999:17–18). Every object is first coded into a packet, then copied, distributed and reassembled. What appears as a fully connected network is actually composed of a mesh-like

interconnection of sub-networks of varying topologies (and technologies) that are all linked. Each action can cause a break or failure; therefore independent tasks can easily influence the end result.

The theoretical concept of 'network' is often related to Actor-Network Theory (ANT), developed by Bruno Latour, Michel Callon and John Law in the early 1980s (Latour 1987).[8] From its sociological background it is understood as a method that studies relations in which actors of different orders are combined. For example, humans and (technical) objects – the actors – are viewed on the same ontological level where both are of similar influence in the execution of performance (Latour 1998). These actor-networks are transient and can exist in a constant process of making and re-making. As such, a network is about difference, transformation and heterogeneity, realized through ongoing relations between various actants. When applied to art, it follows that artworks (objects) can also be regarded as actants that have agency within a process.[9] As such, an interesting change occurs in which the artwork shifts from a fixed entity to one in transformation. Seen in this way, Actor-Network Theory can be useful for analyzing 'art in action' as it draws attention to changes as well as places of friction (Van Saaze 2009). However, how are things in motion, like the moving images in film and other processes, described? And in what way is instability, unpredictability or friction between actants or networks taken into account? A theorization of networks or networked processes is also a struggle with the abstraction of dispersed elements that are hard to capture. Another aspect that often remains implicit in Actor-Network Theory is that things, and especially technology, are also inherently political. A seamless rendering of actants runs the risk of flattening out the inherent (political) qualities of the actants. Moreover, Latour has stated that he does not see the 'strategically organized computer network' as a metaphor of the actor-network. As he states, 'a technical network in the engineer's sense is only one of the possible *final* and *stabilized* state of an actor-network' (1996a[1990]:67). Looking at the inner workings of a computer or the catalytic networks of relays that, at times, unexpectedly connect sets of data, requires one to move beyond final and stabilized states.

An interesting example that explores the conceptual, political and technical nature of networks is the alternative Web browser *I/O/D 4: The Web Stalker* (1997) by Matthew Fuller, Colin Green and Simon Pope. Developed at the time when Web browsers started to be standardized, the 'Browser Wars' were in full swing (Fuller 2017). As a response to the different browser companies (primarily a battle between Netscape and Internet Explorer), *The Web Stalker* was a browser that offered an alternative interface to navigate the Web. Emphasizing the connections between files, it queries the files in a website, including how they are structured, then displays information a regular browser would conceal: the stream of HTML code, the progress of connection, maps of links from the website, relations between URLs and automatic records of the site. *The Web Stalker* crawls a website and generates clear visualizations of the different weblinks and how they connect, slowly unpacking the navigation of the site. Since the tool is modular, the content and links can be explored in different ways; it also highlights the emergent behaviour of networks. Another example that focuses on the functioning and

social aspects of the network is Olia Lialina's *Summer* (2013). The work shows the artist on a swing. With a smile on her face, wearing a summer dress and her hair loosely hanging in the air, she swings to and fro against a blank background that bleeds from bright blue to white (Figure 1.1). The swing is attached to the top of the browser, almost as if it is attached to the location bar. The illusion of swinging at different locations is actually executed, since with every swing the URL changes. First slowly, but after a while it swings at 'regular' speed. It turns out that each URL with the extension /olia/summer, shows a specific instance of the swing – one frame of an animated GIF – and together they create the movement. *Summer* is distributed across several websites (a minimum of 18 is needed according to the Terms and Conditions),[10] each hosting a different interlinking frame. As she mentions: 'I like to swing on the location bar of the browser, and I like to know that the speed of swinging depends on the connection speed, and that you can't watch this GIF offline. This GIF is distributed over many Web servers, it is very fragile, can freeze from time to time. Sorry!'.[11] *Summer* is fully depending on the network and the 'swing' moves according to the connection speeds of the particular hosts. *Summer* foregrounds and thematizes the network; it reflects its dispersive nature and unstable state, and shows how conservation needs a network of many to succeed.

Another example that illustrates the characteristics of net art, but which is offline and without technical means can be found in Tino Sehgal's 'situated constructions', choreographed situations that unfold in time and space, and are performed by nonprofessional 'interpreters'.[12] Discussions about his practice often focus on his refusal of any form of documentation of his performances, including
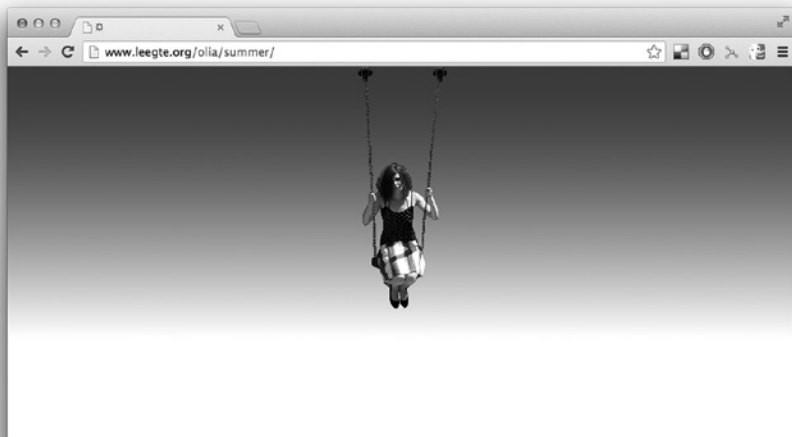
Figure 1.1 Olia Lialina, *Summer*, 2013–present. Screenshot, 12 October 2017.

note taking, photography and other recordings. Critics have discussed his work as a provocation to institutionalized artworlds.[13] However, this is not Sehgal's aim. On the contrary, he emphasizes that the museum is 'one of the main agents of cultural values, and over time, offers a possibility for long-term politics. It is a place where one can influence discourse in the future perfect tense' (Von Hantelmann 2010:136). His reluctance to document is concerned with the way memory is transmitted though the functions of archiving and collecting. This non-documentation is a way to avoid or prevent surrogacy or practices that use documentation to (re) inscribe works in unintended ways. From a network point of view, this part of the work, the (re-)creation process, is more interesting than the performance. His method involves the transference of knowledge and memory processes through oral communication. As Laurenson and Van Saaze (2014) point out, the work is not only challenging for its live-ness or non-materiality, but rather because of the demands it makes on the organization to maintain a memory of the event – not to mention the skills needed for its enactment – skills that reside and perpetuate in external networks. Sehgal's working method goes against the structures of large institutional systems by emphasizing the act of collecting and archiving as an event (Von Hantelmann 2010:135). This event consists of bringing those involved in the transfer together to share knowledge of how to perform the works in the form of oral (or bodily) narratives. Sehgal creates intimate situations while critically addressing existing structures, including the pleasure of sharing special knowledge among a network of participants. His approach, quickly taken up by institutional artworlds, may seem a cunning method to attract attention. However, his attempts are primarily a way to use a social situation as a canvas to look for an alternative modus of production. All of these examples show the importance of collectivity in networks – in both technical and conceptual ways. Analyzing the underlying structures of networks, by seeing the individual and the group as entities or components that influence each other and together constitute a constant process of becoming, is helpful when thinking about conserving these works.

Net art = Process

Networks are closely connected to processes. In art, the term 'process' is used to signify the creation or development process of the work, which may or may not lead to a specific outcome. In art history this is known as process art, a movement from the 1960s when artists emphasized the 'process' of making art by stressing concepts of change and transience. In computing, a process is an instance of a computer program that is being executed. It contains the program code and its current activity. The process happens in between an input and an output. Simply put, a process is a series of actions, changes or functions that bring about some kind of result. This is not to imply that there is always an end point. Similar to a network, processes are not independent; they address themselves and are connected to other elements and dynamics. The nature and power of processes is graspable in relations. Processes are also unstable. During execution, noise can appear or develop, causing errors, uncertainty and misunderstanding. This is of

course also an interesting philosophical subject. However, in the interest of this book, I will focus on the practical design and function of processes. In particular, to the creation and development processes of net art to see how they operate, drive and determine social and cultural conduct; from playing games, to Amazon.com recommendation systems, and whether and how one is included or excluded from databases. This involves computing processes, but is not restricted to them.

Similar to process art, net art processes are often continuous. During the process, single objects or projects might emerge, but these single elements have little value by themselves and only function within the larger network. As such, processual relates to a study of processes rather than discrete events. In their project *Database Documentary* (2009–11), YoHa (Matsuko Yokokoji and Graham Harwood) investigated the workings of the National Health Service databases in the United Kingdom.[14] To comprehend how databases change our conduct, they followed the process of modelling, creating, implementing, completing, ordering and using databases, by health services in particular. They traced the databases processes by interviewing midwives, following database administrators and organizing workshops. The outcomes revealed specific points of authority and agency, leading to new perspectives on empowerment. As such, the project demonstrated that database processes motivate all kinds of narratives and are connected to histories, economies and ideologies. In other words, while processes can be highly formal, they are also contingent. As such, they are expressive actants that function through systems, designs and histories, which can simultaneously be influenced and executed through other processes and/or users. Similarly exemplary is *The Project Formerly Known as Kindle Forkbomb* (2013) by Übermorgen.[15] Übermorgen wrote scripts for bots to harvest YouTube comments on videos, which were then compiled in 'narratives' and uploaded in vast quantities as e-books in Amazon's Kindle shop.[16] In this project, the entire book publishing procedure is the story: from code and platforms, to writing and the distribution of texts (Figure 1.2). The stories are outcomes of relations between texts and the different context of which they are part; thus, narratives are both human and machinic. The project both illustrates *and* produces reality. Übermorgen makes poetic use of the trappings of systems that produce new literature, while critically exploring the changing process and infrastructure in and of the writing, production and distribution of books. Or, as Übermorgen says, a 'new breed – humans and algorithms alike – write within the cloud as the crowd and publishes in the cloud to the crowd'.[17]

These examples imply that what is most important is the process and not necessarily the outcome. Übermorgen's books will likely never be read. Because they exposed the effects and pitfalls of database structures and systems, the dialogues with midwives, administrators and participants in the workshops were more important than a final outcome. A process can be endless, continually moving from one stage to another. Although a process is often made visible through an outcome, or by the actions of users, these are merely presentations of a temporary state. Processes continue, sometimes evolving in new directions. For some processes it is difficult to say where they end, since specific parts might develop in
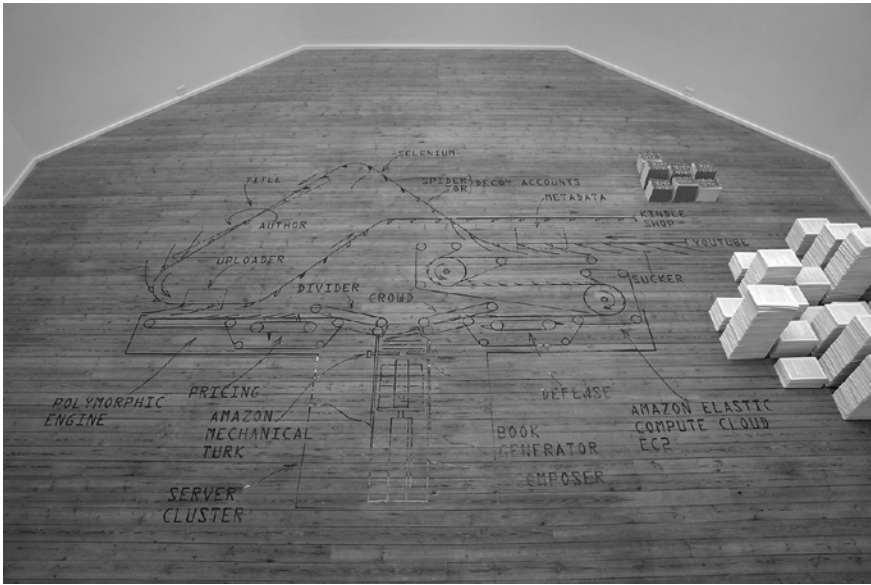
Figure 1.2 Übermorgen, *The Project Formerly Known As Kindle Forkbomb*, 2011–13. Installation shot Kunsthal Aarhus, 2013.

other ways. The significance is in the process of making rather than what is made. This is not to say that the latter is insignificant, but that meaning extends to a larger context. As mentioned before, the processual is not exclusive to technology. Earlier experiments can be seen in process art, some examples of land art, Fluxus, conceptual art and mail art, but technologies have made it easier to accommodate processes.[18] Technologies made whole new spectra of processes possible. Some of these examples have been absorbed into art history, but most projects that deal with processes do not fit neatly into art-historical contexts. This is partly because they are part of an assemblage of works that can be difficult to read outside their environments. Or, by including bright coloured stuffed animals, stickers, magazines, animated GIFs or corporate logos, they are considered to be closer to pop and mass culture with little 'art aesthetic sophistication'. These works about systems, distributions and their communities of participants are contextual, social and cultural constructions.

Net art = Ambiguous

Ambiguous means open to, or having several possible meanings or interpretations at once. If the goal of software development is to be useful and usable, then ambiguity is often regarded as the enemy. Whereas the simplicity of zeros and ones may be said to express no ambiguity, it is in their reading, their compiling

and translating where ambiguity happens. This refers to more than just the reading and understanding of computer results by humans. Uncertainty is already present in the process of compiling and translating from a low- to high-level machine language (the zeros and ones).[19] In other words, ambiguity takes places in the execution (Chun 2011). Ambiguity is a manifold strategy that functions and is used by artists in multiple ways. They may utilize ambiguity to create suspense, go against the grain, counter existing power and knowledge structures, or to obfuscate systems by purposely inserting breaks and interruptions. A wide range of forms which span an array of media and circumstances can be loosely clustered around three strategies where ambiguity is deployed through technical execution, both in irony and fun, and contextually. Although there are interpretational differences between them, they just as often overlap, or are used simultaneously.

A statement by Alexei Shulgin beautifully shows the importance and function of the type of ambiguity found in execution. In 1997, Shulgin explained the origin of the term 'net.art' in a post on the e-mailing list Nettime-I. According to him, the term *net.art* emerged through happenstance. It was an unplanned technical misinterpretation: an 'incompatibility of software' (Shulgin 1997). Such technical failures, or 'glitches', are unpredictable changes in a system's behaviour and are a popular genre in software art (Goriunova and Shulgin 2008; Menkman 2011). Whereas glitch art often leads to abstract and formal aesthetics, failures are also used to create suspense or heighten the awareness of what is happening. It is often difficult to perceive the distinction between an actual breakdown and a simulation of the unexpected in the realm of novelty production (Berry 2001). Shulgin's statement also exemplifies another type of ambiguity that presents itself in irony and fun. This is the kind of fun that reflects on the process of making. These processes are analyzed to provide insights and inspire. Fun in this sense is almost methodological and skilful, self-reflexive and inclusive of the strategies of sharing. It is through the fun that takes place in the process and practice of making art, as well as during the production of concepts, that the artist arrives at unexpected events and projects. The aesthetics of fun reside in such processes, whether prepared or accidental, spatial or code-based, terminal or open-ended, or across scales, strata and time.[20]

An example of ambiguous 'fun' is JODI's website http://wwwwwwwww.jodi. org/ (1993). When opened it shows a gibberish of unintelligible green text, punctuation marks and numerals on a black background. Looking at the back-end of the site, the 'view page source code', what at first appears to be an error reveals itself as a diagram of a hydrogen bomb, drawn in slashes and dots (Figure 1.3). Here, ambiguity is exposed through analyzing and understanding the material. The work reflects and amplifies the difficulties underlying communication in relation to current technologies. In this instance they 'explode' expectations about computation. In Shulgin's example, ambiguity and fun show themselves primarily in the proliferation of the story. He uses the underlying immediacy of the event to his benefit by posting the message on a popular e-mailing list, where artists had already made statements about the origin of the term net.art. Unlike other accounts, Shulgin's e-mail message to Ćosić lingered – perhaps because,
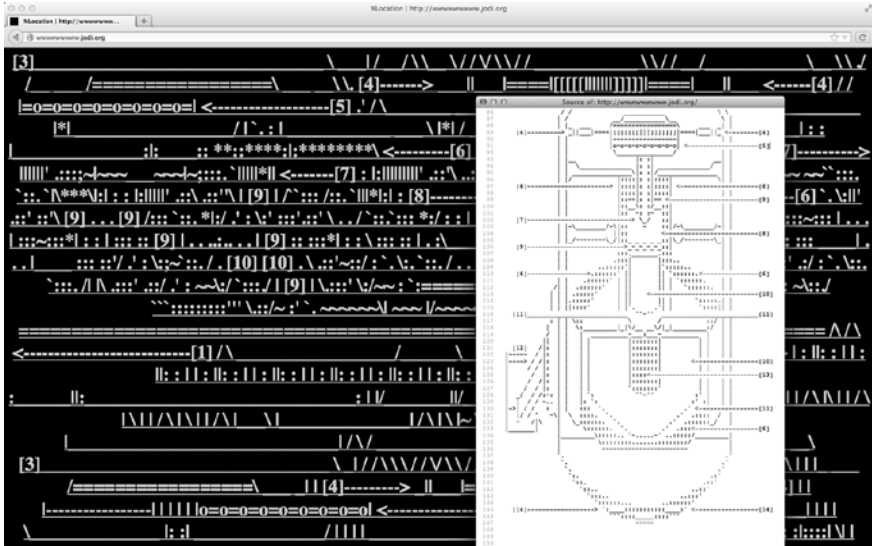
Figure 1.3 JODI, *wwwwwwww.jodi.org*, 1993–present. Screenshot, 15 November 2013.

as Josephine Bosma reveals, it 'was simply too good not to use as fact' (Bosma 2011:241, n.85).[21] Bosma contacted Ćosić to check the truth of the statement. As she recalls: 'When the mail first appeared I immediately contacted Ćosić to check the story, which I would have expected to have heard from the talkative Ćosić's mouth if it were true, and was told with a wink to let it be' (Bosma 2011:241, n.82). Several years later this ambiguous answer 'revealed' itself through Wikipedia, where it was stated that Pit Schulz was the one who coined the term.[22] What this short account shows is that artists were trying hard to be ambiguous about their art, practice and history, which in this case was successfully engrained in many art history accounts. Such ambiguity is evocative rather than didactic, and mysterious rather than explicit.

A third type of ambiguity is that of context. Here ambiguity arises when things can be understood differently in varying (historical) contexts, suggesting alternative meanings for each. An example is Shulgin's statement that net.art is 'readymade'. Although Shulgin explicitly refers to the creation process of this word, presumably not everyone noticed the reference to Duchamp's *readymades*, in which he turned a 'readymade' (the term used in United States in the 1910s to distinguish manufactured objects from handmade ones) object into art by repositioning it, or giving it a title, and signing it. Ambiguity is reinforced by the 'decoding' of the message, which appeared *and* disappeared by technical accident even though it apparently was read – in line with Duchamp – as a manifesto against traditional art institutions. The net made it possible for artists to be free and independent. But, free and independent from whom? At that time institutions were

certainly not acquiring the artworks. The only world where net art existed was in the worlds the artists created themselves. So, there was little to battle against, or from which to be freed. The divergence that took place was more of an ongoing – and broader – discussion between art and technology. Perhaps ironically, this is foremost reflected in the merging of the words 'net' and 'art' through the dot. As Josephine Berry (2001) reasons, the dot between net and art signifies the utopianism of a small group of artists that came to adopt the name and the computer that converged the terms 'net' and 'art'. Or, as argued by Stallabrass, the dot signifies technology and culture (2003:10), where the computer is mediator between net and art. Here, art and technology use each other's strengths to make the perfect combination, according to Berry:

> Art takes explicit possession of technology's power to penetrate the 'web of reality' by presenting it to us afresh, by side-stepping the censorship of consciousness and rendering it open to a new kind of deployment. Conversely, technology unites with art's power to reveal and articulate the world in non-instrumental ways.

> (2001:26)

However, traditional artworlds were less inclined – as they had been for decades – to recognize this merger.[23] In this sense, the statement can also be read as a way to emphasize the division between two domains 'net' and 'art'. Tellingly, it does not say 'art.net', which would have been obvious because '.net' was one of the six abbreviations used in the domain name system.[24] As such it implies a hierarchy suggesting that 'art' is in the 'net'.

These examples show that ambiguity functions in net art by using, and at times, exploiting the technical means of communication and distribution of information. This is done to either explicitly or implicitly delude, (mis)guide, provoke or create suspense. The more people that join, the more the 'network effect' increases the success of ambiguous actions. Ambiguity shows itself here through context. Although it could be said that uncertainty in the form of ambiguity is a defining feature of aesthetic experiences in modern and contemporary art (Farr Tormey and Tormey 1983), the explicit use of 'computational aesthetics as ambiguous' distinguishes net art from a purely visual or experiential practice. Ambiguity in relation to computation is dependent on sociocultural discourses that are implicit in recognizing and understanding its function and meaning. Such a function of ambiguity actualizes modes of being, levels and kinds of agency, and procedures of thought and configuration that operate through various scales of the technical, cultural, societal and political.

From variability to assemblages

Some of the characteristics of net art are networked, processual and ambiguous. This can lead to multiple instances of ambiguous works that are made by a dispersed network of participants. But what does such multiplicity, or variability,

mean? In biology the term variability means the power of living organisms to adapt themselves to changes in their environment, possibly giving rise to infinite variations in structure and function.[25] The Variable Media Network (VMN) uses the term variability in a similar way. There, variability defines acceptable levels of change within any given art object without losing a work's essential meaning (Depocas et al. 2003). Together with Richard Rinehart, VMN co-founder Jon Ippolito stresses that digital art is inherently variable: 'variability is built into the medium and the artwork to some extent inherits that variability from its material substrata'.[26] Variability is also a fundamental aspect of software. Lev Manovich uses variability to describe a consequence of numerical representation and modularity that renders media 'programmable' and thus able to be manipulated mathematically (2001:32).[27] It is generally recognized and accepted that eventually any successful software has to exist in multiple variations to survive (Czarnecki 2013).

It is important to note that variability is always variable *to* something. In other words, such artworks change but remain based on, or closely related to, (parts of) earlier instances. Although this will be the case for many net artworks, it is also possible that parts of the artworks cease to exist. Such ruptures, or breaks can influence an artwork in multiple ways. As previously mentioned, parts can change because of technical or other constraints and mutate into something else. Similarly, important parts may become useless or cease to exist all together, and be replaced.[28] In these cases, artworks become dissonant instead of harmonic. Although variability is possible, mutation means something new, and is thus closer to versioning than variability. Because of the ease and speed of distributing information, versioning can be said to be characteristic of electronic and digital culture. This is not to say that newer versions are better than older ones. To overcome the assumption that newer versions are better than older ones, Ippolito (2008) uses the word 'variant' instead of 'version'.[29] It is also important to note the difference between different versions of a work and exhibition copies or editions. The latter do not necessarily change the work. In the case of photography, film or video, they are copies of the original master. The practice of versioning is also very common in literary circles. Bryant provides eight determinants of a version, of which the following are useful when taking (net) art into account: versions entail some reimagining of the work in question. One version is always linked to another and therefore cannot be seen as a separate work. Next, versions are always the result of alteration, either by the author or readers. Or versions are culturally induced, or incidental, and are therefore not necessarily linked to authorization. A version must also be defined by its degree of difference, not similarity. A comparison of sequential versions will reveal its strategic pattern since versions are partly defined by their rhetorical impact on audiences. Lastly, versions are critical constructs by virtue of historical and editorial construction, thus their existence can always be contested (2002:88–90). In short, versioning is about reconceptualization and alteration, it is a critical construct and because it is culturally induced it is not necessarily linked to authorization. Essentially, versioning becomes evident through multiplicity, enumeration and evolvement. Next

to these material and conceptual changes, versioning can be identified in social relations. Surprisingly the system of versioning is often not directly visible in artworks, even though this could explain a lot about the nature of a work. Similarly, in conservation versioning could be seen as a point where something new begins. How can this seeming impasse be overcome?

One solution could be the notion of assemblage as proposed by Gilles Deleuze and Félix Guattari (2004[1988]) and later simplified by Manuel DeLanda (2006). DeLanda uses the term as a way of conceptualizing a wide range of patterns that hold heterogeneous elements together. An assemblage expresses relationships in which processes and emergent properties are not seen as belonging to properties of individual parts, but attain meaning through the relations (i.e., an assemblage is always a collective). This is not unlike a description of Surrealist collages in which unrelated and eclectic elements are brought together through different types of connections (Fortun and Bernstein 1998:99). More importantly, in an analysis of Deleuze and Guattari, and subsequently DeLanda, the different components of an assemblage have and maintain autonomy from the whole, which allows them to disconnect and become part of other assemblages while conserving their identities. Such a reprocessing signals conservation of the new and a practice of reinvention. This is not simply about conserving or rearticulating the past, but about following a trajectory that can be assembled in different ways. It follows that conservation is not restricted by a past. It is more concerned with the present and possible future. Regarding net art as an assemblage does not allow for nostalgia; it perpetuates in its recombination. Whereas a network (or ANT) provides a descriptive method that is aimed at creating chains of associations that do not foreclose on the network, it does not account for processual behaviour. Neither does it explain why a particular network emerged or how it relates to other networks. An assemblage can help to diversify and clarify these relationships. As such, the assemblage does not replace but rather adds to an understanding of network behaviour and processes.

To conclude, net art poses particular challenges for conservations because the (technical) network structures and the social situation in which these work appear are inherently intertwined in ambiguous ways. The challenge for conservation starts once technical, cultural and social contexts become historical, making it difficult to interpret artists' (ab)use of techniques and (social) systems. As mentioned, these characteristics can be traced in other artforms and are not unique to net art. Steve Dietz (2005) argues that what all of these artforms have in common is that specific knowledge is required to understand, maintain and re-create these works. They have no foundation in tradition, nor are they always easily referenced. For instance, a conservator may be able to read, understand and apply the instructions of Sol LeWitt's drawings, but it is very difficult for most people to read, understand and meaningfully work with code that is used in a piece of net art. In other words, the newness of net art is embedded in the speed of developments, a new and poorly understood creation process and conservation approach. Moreover, these two phases can no longer be separated.

Notes

 1 For more information, see https://anthology.rhizome.org/.
 2 This description of net art was written in Baumgärtel's second book (2001) and is a summary of the introduction and foreword of his first book on net art (1999). Whereas the first publication was only in German, the second edition is in German and English. Much of these early writings on net art, the Internet and its critical context were originally written in German.
 3 See, for example, Carroll (1999) on the philosophy of art. Networked art has its precursors in many experimental arts of the 1970s and 1980s. For extensive accounts, see Chandler and Neumark (2005). On the use of ambiguity and indeterminacy in modern art, see, for example, Gamboni (2004).
 4 Harper, Online Etymology Dictionary, www.etymonline.com/index.php?term=net&allowed_in_frame=0.
 5 Ibid.
 6 In an attempt to move beyond the presentism in historical writing, which conveys the contemporary experience of a perpetual present, Mattelart (1996[1994]) provides thought-provoking accounts of the origins of communications networks and argues that these networks far precede a media-centric perspective.
 7 Donald Davies is credited with coining the term 'packet switching' (Abbate 1999:222, n. 11). Paul Baran (US) and Davies (UK) developed the concept of packet-switched networks independently from each other. A main difference between the two was that Baran devised his system in the light of sustainability, to survive a nuclear attack. Davies was more interested in making a commercially smooth and easy-to-use system for business communications. For more information on their concepts, see Baran (1964), and Davies et al. (1967). For a historical perspective of the developments, see Abbate (1999).
 8 There is much theoretical work on the influence of networks: from Lyotard's description of the postmodern self as a 'nodal point' (1984[1979]) and Castells' book *The Rise of the Network Society* (1996), in which he describes the new social morphology of our societies, to Hardt and Negri's examination of US sovereignty as a form of 'network power' (2000), and Terranova's *Network Culture* (2004), where she investigates the political dimension of network cultures. However, relatively little attention has been paid to networks in relation to art.
 9 ANT differentiates between actors and actants (Latour also speaks of a mediator, Latour 2005). These terms are oftentimes used interchangeably, although others keep a strict division between them. I prefer to use the term actant, as it captures the performativity of that which I describe. For a more detailed discussion between the different terms, see, among others, Greimas (1991), Gielen (2008) and Latour (1987, 2005).
10 http://art.teleportacia.org/olia/summer/terms.html.
11 Ibid.
12 Sehgal is adamant about not referring to his works as performances, because they are shown during the full period of an exhibition. More importantly, Sehgal questions how choreographed bodies can become visual art and, in the process, provide art with a new material foundation. For more information about the material qualities of the work, see Von Hantelmann (2010:130–43).
13 See, for example, Bishop (2005) and Lubow (2010) for a more nuanced perspective concerning the non-documentation and live nature of his work. See Sehgal in conversation with Heiser (Heiser 2005:102–5) about how Sehgal tries to transform the relationship between conceptualism, choreography and the art object.
14 For more information about the project, see http://yoha.co.uk/database_documentary.
15 In 2012, Übermorgen collaborated with Luc Gross and Bernhard Bauch to build the Web robot. After they parted, Gross and Bauch released their own version of the

project as *Kindle'voke Ghost Writers*, http://traumawien.at/ghostwriters/. At the time of writing, both versions exist concurrently.

16 Amazon Kindle's e-book shop functions through 'Whispernet', a cloud service that stores all reading data, i.e., what, when, where one reads and potentially which notes and underscores are made.

17 For more information about the project, see http://uuuuuuuntitled.com. About the infrastructure of digital publishing and its implications, see Andersen and Pold (2013).

18 See, for example, Saper (2001) on mail art and examples of Fluxus and conceptual art in Chandler and Neumark (2005).

19 It is important to note that this is different from 'ambiguous computing', a field that is concerned with how ambiguity can be used as a resource for creating more engaging computer systems. Gaver is among the important pioneers in this field. Of interest to my analyses of documentation practices of Blast Theory is Gaver et al. (2003) for their use of ambiguity in relation to capturing experiences. See also Benford and Giannachi (2011).

20 For more information, see Dekker (2014). This notion of fun is also explored and analyzed in Goriunova (2014).

21 This remark demonstrates Lowenthal's discussion on how history is fabricated (1998), but it also shows the importance of acknowledging that what is said depends on what, where and by whom it is uttered, as well as who is paying for it, how long it is meant to last and how it is marketed (Lowenthal 2008).

22 Debates about accuracy and its role as a source of valid information have plagued Wikipedia since its beginning. Many critics have tried to downplay Wikipedia by pointing to the Encyclopedia Britannica (EB) as an example of an accurate reference. In 2005 the magazine Nature compared Wikipedia with the EB in terms of the accuracy of its science entries. For more information, see www.nature.com/nature/journal/v438/n7070/full/438900a.html (accessed May 2011).

23 A division between a technological and an art historical lineage is still visible in most of the writing about net art. Rarely do the two meet or interact (Stallabrass 2010). The artworks, however, are taking part in multiple domains. Art historian Shanken (2007) has written extensively on reasons for the non-existing crossover between art and technology in art discourse.

24 Another reason for not using 'art.net' was because this name already existed. In 1994 the website www.art.net started to show traditional art like paintings on the net. For more information about the top-level domains, see http://tools.ietf.org/html/rfc920.

25 See, for example, Mayr (1963) who explains that evolution is facilitated by the fact that wild species are not genetically uniform populations, but are characterized by a high degree of overt or concealed variability.

26 Quote by Rinehart during his presentation at the symposium *POCOS, Software Art* (Glasgow, 11 October 2011).

27 According to Manovich, this also means a one-to-many relationship. This relationship is, for example, characterized by the possibility of multiple applications in a single file.

28 This situation is also known in more traditional arts. For example, in painting the use of colour changed due to chemical innovations, the introduction of synthetic pigments and the relevance or status of older pigments. See, for instance, Ball (2001), who stresses the importance of chemistry in painting by explaining how styles and genres in painting have been influenced by what was available to the painter. Similarly, Pastoureau (2001) investigates the ever-changing role of blue in painting and in society at large.

29 Ippolito (2008) argues for more attention for versioning in presentations, especially in relation to wall labels at exhibitions. Kirschenbaum also stresses the importance of acknowledging versioning: because, for one, it exposes the cumulative labour that attends to a piece of software (2008:195–207).

2 Documenting variability

Documentation is the process of gathering and organizing information about a work, including its condition, its content, its context and the actions taken to conserve it. For the writing of art history one used to be able to rely on the art objects. When artworks become prone to obsolescence or are only meant to exist for a short period, documentation is the only thing people can fall back on. The traditional documentation strategy for the conservation of art is focused on describing the object, in the best objective way possible. But conservation as a practice is not as fixed as one might assume, and hence documentation strategies tend to vary a lot. Needless to say, like any other form of representation, documentation will always be arbitrary and incomplete in relation to the artwork. By analyzing the documentation practice of the performance group Blast Theory, I argue in the first part of this chapter that documents (such as texts, videos, still images, instructions, etc.) can sometimes communicate more about a work and how it is experienced than its physical manifestation can. In the second part of this chapter I focus on documentation as a tool in conservation. Despite the recognition that net art will not survive or endure due to its often ephemeral and obsolescent nature, many conservators attempt to fix the processual and fluid nature of these works. I compare various documentation strategies that are used in traditional museum structures and those developed by other organizations involved with conservation. The analyses will be compared to Blast Theory's project *Uncle Roy All Around You* (2003). Instead of working towards an object-oriented approach of fixation, by referring to current artists' practices, in this case Blast Theory, I propose focusing on conserving and documenting the process and experience of a work: that is, keeping the memory alive but accepting historical loss. Furthermore, documenting net art requires a new understanding of conservation theory, which will have an influence on current documentation methodologies in conservation. To analyze what documentation consists of, I briefly trace the meaning of 'document'. The term 'document' is used in various contexts, often in reference to disparate things. I concentrate on the development of the meaning of 'document' in as far as it connects and is relevant to the practice of conservation of net artworks.

From document to documentation

The word 'document' derives from the Latin verb *docere*, 'to learn, show, and inform', as well as *documentum* that signifies instruction and/or teaching.[1] Although

we have lost this sense of *documentum*, 'something that teaches or informs', the root of the word shows that in the original Latin it is not just an object, but rather a testimony, an example, an instructive demonstration of some principle or idea (Windfeld Lund 2003). From the seventeenth century onwards, it was the emergence of the European state bureaucracy that added two other meanings to the word. Firstly, a document was constituted as a written object that articulates transactions, agreements and decisions that are made by citizens. This in turn implicated the second notion, the document as proof – the authenticity of the document becomes a subject of investigation (Windfeld Lund 2003). However, it was not until the 1900s that a new professional was born: the documentalist.[2] Notable in this respect are the writings by Paul Otlet, *Traité de documentation* (1934), and Suzanne Briet, *Qu'est-ce que la documentation* (1951). Both argued for an expanded notion of the document that would include artefacts, natural objects and works of art; documents were regarded as examples or groupings of things that derive meaning from their context.

The outspoken bibliographer and entrepreneur, Otlet, attempted to broaden the definition of a document from written records to objects of any kind. He also emphasized the social function of documentation as a way to gain knowledge and prepare a better world, or as Ronald E. Day notes, to project humanity into a universal and global future (2001:10). Otlet's tendency for overstatement and vast generalization (Day 2001:12) also led to the development of a new system of research that would assist science and bring world peace. The proposal was even transformed into plans to build the *Cité Mondiale*, which he envisioned as a collaboration with several architects, including Hendrik Christian Andersen and Le Corbusier (Levie 2006). Despite his utopian views, Otlet is important as a visionary. His ideas connect technical development with social progress. Otlet is best remembered for his interest in solutions for the quantitative problem of information overload. His well-known *Monographic Principle* was a systematization process, which later became his Universal Decimal Classification System (UDC), a library system that is still used by many academic libraries in Europe (Hahn and Buckland 1998).[3] Otlet suggested that information in social science bibliographies could be categorized into four elements: facts, interpretation of facts, statistics and sources (Otlet 1990:16). The systematic recording of facts, statistical data and the interpretation of them in final analysis was facilitated by the 'creation of a kind of artificial brain by means of cards containing actual information or simply notes or references' (Otlet 1990:17). The cards allowed single and separate pieces of information – from bibliographical to more substantive data – to be recorded. This is known in hypertext as nodes or chunks of text. Separate sheets were used to record larger parts of information (Hahn and Buckland 1998:68). As such, the documentalists understood documentation as part of the 'historical development of global organization in modernity [. . .] not simply a bibliographical technique but as a cultural technique' (Day 2001:7–8).

Both Otlet and Briet emphasize the technical retrieval of information and the global organization and transmission of this information, which they tied to social systems. Seeing the need for standardization, efficiency and for the interoperability that was a precondition for effective collaboration and knowledge dissemination,

they also envisioned changes to the profession of the librarian as well as the func-
tion of a library or archive. In particular, Briet saw the documentalist as paired
with the researcher (Briet 2006[1951]:28, 51):

> It is not too much to speak of a new *humanism* in this regard. A different
> breed of researchers 'is in the making'. It springs from the reconciliation of
> the machine and the mind.
>
> (2006[1951]:17)

She continued to stress the influence of technology that facilitated new conditions
of research, which led to the birth of 'Homo documentator' (Briet 2006[1951]:20).
Briet was more straightforward in her writing and her ideas were less utopian
than Otlet's. By 1924, she was one of the first women to work as a professional
librarian at the National Library in France. More than Otlet, Briet focused on the
nature of the document, breaking the trope of the book (traditionally seen as the
embodiment of proof) for documentation. Briet leaned on work by linguists and
philosophers to expand the notion of a document to include, in particular,

> any concrete or symbolic indexical sign [indice], preserved or recorded
> toward the ends of representing, of reconstituting, or of proving a physical
> and intellectual phenomenon.
>
> (2006[1951]:10)

Although she recognized the abstractness and hence the possible inaccessibility of
this definition, by referring to the word 'indexical/indice' she placed the document
in an organized and meaningful relationship with other material, ultimately grant-
ing objects documentary status.[4] Moreover, rather than emphasizing documents as
essential 'facts' or 'proof', she stressed the referential value of documents. Docu-
ments only become proof or facts in relation to other material. Thus, documents are
examples of things, or groupings of things that derive meaning from their context. In
this sense, Briet stresses the kind of materiality as later also described and expanded
upon by Hayles (2002). Similarly, it relates to the concerns of many contemporary art
conservators, who emphasized, more than Briet, the social construction of meaning.[5]

   Not everything becomes a document automatically. For Briet, something only
becomes a document when it is made accessible. It should unfold in social and
cultural spaces (Briet 2006[1951]:10).[6] A stone, for example, or Briet's famous
example of the antelope, only becomes a document once it is separated and cata-
logued, and made known to the rest of the world through articles, etc., after which
it can be put on display and studied as a primary document. For Briet the primary
document is the original document, and the secondary document is created from
the primary document, as she mentioned:

> The proper job of documentation agencies is to produce secondary docu-
> ments, deriving from those initial documents that these agencies do not ordi-
> narily create, but which they sometimes preserve.
>
> (2006[1951]:25)[7]

The comparison between the documentalist and the conservator is interesting. Both adhere to a hierarchy in documents: the primary document equals the artwork, the object that is kept in the collection archive, and the secondary document is the information about the artwork held in the documentation archive (Dekker 2010).[8] It is important to distinguish between 'document' and 'documentation'; a document is created for a specific purpose and it can become part of the documentation of an artwork (Sant 2017). It signifies an act of doing. Documentation is often seen as a secondary concern; it is the process of making documents accessible. In this sense, and following archival or library science, documentation is the standardized management of documents for long-term access or re-use.[9]

Exciting and expansive possibilities and developments are visible in the methods of different documentalists who view technology as a way to bring change. However, of interest to Briet, and to a lesser degree Otlet, was the importance and influence of social networks and cultural forms that give value to documents (Briet 2006[1951]:vii). This changing discourse has also been slowly adopted in the field of conservation. As mentioned, a conservator is no longer 'king in his own territory', but works together with other specialists, sometimes forming one team. Increasingly through the evolving notion of the 'document', contextuality was emphasized. This can also be witnessed in the presentation of digital art. For example, Ippolito (2008) argued for the inclusion of all kinds of contextual information on the exhibition's wall labels to express the variation or multiple versions that are common in digital artworks. He cited the example of the evolving work *Apartment* (2001) by Marek Walczak and Martin Wattenberg, who very clearly marked each new version. For example:

> *Apartment v0.1* (mw2mw.com, Fall 2000) A variant that took in words and created a floor plan using a map-of-the-market style layout [a rectangle filled with grids of proportional size].
> *Apartment v1.1* (turbulence.org, 12 February 2001) Apartment opens. We choose 9 'seed' apartments to place in the city. Maybe after a few apartments are inserted, we can take these out.[10]

They identified the place, date and any changes that were made before the new version was released. Ippolito emphasized that such elaborations are necessary, because

> mutations in code and appearance are a necessary consequence of adapting to the new media landscape [. . .] new media artists and technicians are used to this ferocious pace of media turnover, but unfortunately, the curators and archivists charged with capturing an artwork's vital statistics are not.
>
> (2008:115)

Elaborate wall labels educate and inform what has happened with the work. In other words, the work is acknowledged as part of a specific context. This begs the question: if an artwork is part of a longer legacy of other works, is it then still possible to talk about the primary or original document/object after it ceases to

exist? I will return to this question in Chapter 6; for now, it suffices to say that by not referring to previous (or other) states, an artwork is regarded as a single object, thus affirming its stability instead of its variability.[11]

The fixation on the single object obscures the fact that many net artworks are constituted through convergent networks of media platforms and social communities. These works always derive meaning from the context. It follows that documents are also interpreted differently depending on the person and location. Moreover, that closure is never stable and shifts according to time and context (Szmelter 2012). The intertwining of context and content can lead to situations where the distinctions between primary and secondary documents collapse – as was the case, for example, with JODI's *Jet Set Willy FOREVER*, where the documentation (among others, the floorplan of the game) became the work.[12] Briet mentions that documents are contextual, and rather than conveying the remains of an isolated event, they are reflective of the networks in which that object appears. This, according to Briet, 'can in certain cases end in a genuine *creation*, through the juxtaposition, selection, and the comparison of documents, and the production of auxiliary documents' (2006:16, original emphasis). Could Briet's distinction between primary, secondary and auxiliary documents shed light on the hierarchies between documents as they are used in conservation practices – while questioning whether her classification still holds today?

As mentioned, in the field of art, documentation is generally understood as the process of gathering and organizing information about a work, including its condition, its content, its context and the actions taken to conserve it. At present, several types of documents can be distinguished: first, documents produced for publicity and presentation; second, for purposes of reconstruction or conservation; third, for describing processual changes in the appearance of a work; fourth, for developing an aesthetical and/or a historical 'framework' or reference; fifth, for educational purposes; sixth, for capturing audience experiences; and seventh, for capturing the creative or working process of the artist(s). The traditional documentation method for the conservation of art is focused on describing the artwork in the best objective way possible. In some cases, intuitive knowledge (information about the artists' intent and aesthetic and historical considerations) is taken into account, but most methods rely on material measurements, emphasizing a way of structuring, a use of systems and logic that is reminiscent of scientific research.[13] With the arrival of more and more live, ephemeral, networked, processual and obsolete works of art, documents – as the physical remaining trace of a work – became the focus of conservation strategies, and new ways of thinking about documentation emerged.[14] At the same time, the notion that creating documents is a subjective process where selection criteria are of great importance was more widely acknowledged.[15]

What happens with documents after they have been produced? In most museum practices the core of documentation is focused on the conservation of a work and other documents, for example, flyers or video that are produced for publicity and presentation, are kept but they are often regarded as being of secondary importance and stored in the 'documentation archive' instead of the 'collection

archive'. As such, for a long time these documents were not considered of great relevance for the re-creation of a work. By analyzing the way artists' group Blast Theory creates documents, I show how these documents should be seen as 'inter-documents' – environments that comprise primary, secondary, auxiliary documents – how they can become artworks in their own right, and how they can be helpful when re-creating a work. Finally, I address how the valuation and subsequent hierarchy of documents needs to change to reflect the growing complexity of artistic and visitor- or audience-generated documents. This includes new ways of thinking about what the document and documentation mean, which could also require a reconsideration of their structure and role in the museum.

Artists' documentation: Blast Theory

Blast Theory is renowned internationally as one of the most adventurous artists' groups using interactive media, to create groundbreaking new forms of performance and interactive art that mixes audiences across the Internet, live performance and digital broadcasting. Matt Adams, Ju Row Farr and Nick Tandavanitj lead this UK-based artists' group. From the early 1990s, they have explored and questioned the social, cultural and political facets and influences of technology. Blast Theory confronts a media-saturated world in which popular culture rules, and use performance, installation, video, mobile and online technologies to ask questions about the ideologies present in the information that envelops us. Their art- and research-focused interactive projects have been created for gallery, street and television spaces. Most of their work centres on conceiving new uses for location-aware technologies (such as navigational instruments) in public spaces, to create non-commercial content by means of already present technologies. Blast Theory's curiosity for and use of technology, and the innovative possibilities that arise from this, stems from an interest in communication.[16] They approach technology as an ideology, a constraint, a cultural space, a communication medium or platform, and not only as a tool. In 2003 their work *Uncle Roy All Around You* premiered in London at the Institute of Contemporary Arts (Figure 2.1). Being part of a large funding program, *Uncle Roy All Around You* required extensive documentation. Because they had to work and communicate with different collaborators from various fields on different levels, the documentation strategies were also diverse. This project is interesting because the different angles demonstrate the various aspects of documentation problems that occur in relation to artworks. What this example will show above all is how documentation functions in the work of artists: in the conceptual and production phases as well as in the presentation, archival and possible future conservation phases. As such, the case could further complicate the issue of documentation in conservation, necessitating a broadening of the term to include different types and the different phases in which documentation of these different types occurs.

Uncle Roy All Around You is a mixed reality game – played by players on a street in an actual city, and online by players in a virtual city. The city in the online environment is an exact copy of the real city space. Finding Uncle Roy is

Figure 2.1 Blast Theory, *Uncle Roy All Around You*, 2003.

Uncle Roy at ICA London, 2003.

the mission of the game. Using handheld computers, the street players are sent on a quest around the city, and receive directions from Uncle Roy via the devices. When the street players start they identify their location using the handheld computer, and an avatar of them is displayed in the virtual world. Online players can select street players, enabling them to send private messages to them including assistance, and street players can choose whether or not to send audio messages back. At the end of the game after street players have been led to various locations through messages from Uncle Roy, the online and street players are asked a series of questions regarding trusting strangers and whether or not they would make a commitment to someone they don't know. Online and street players who agree to make a commitment are then matched up and offered the opportunity to meet face-to-face.[17]

Blast Theory has a rather extensive and meticulous documentation process both during the period of creating the work and presenting it. As one of its founding members, Matt Adams, states, 'those bits of documentation have to do multiple jobs for us – they are marketing things, explanatory tools, and appendices to the research, they act as records'.[18] As such, the documents outlive the work and testify to the group's creative process and practice. Considering documentation as both testimony and a tool for making decisions about the nature of the work, I am following the assumption that what is documented and how it is documented reveal the framework within which artists understand, conceive and develop their work. Part of Blast Theory's practice and creative working process is to be constantly inventive and flexible in terms of techniques and strategies. They sometimes start from a thematic or narrative perspective and other times from a set of

questions or issues that they would like to tackle, or a particular kind of experience they would like to explore. Blast Theory employs a number of methods in the conceptualization and development of their projects. While they have stated a number of times that they would not claim to have any coherent methodology – that working methods are contingent on the project at hand – a common thread is that the methods they do use (although varied) work within a process that attempts to maintain the creative fluidity of a project's development. I discerned three different phases in which documents played an important role. I define these, often parallel, stages as follows: *documentation as process*, in which documents are seen as a tool in decision-making processes during the development of the work; *documentation as presentation*, or, the creation of audiovisual material about the work; and *documentation for re-creation* in the future.

Documentation as process

Documentation as process refers to the notion of documentation as a tool for making decisions about the nature of the work. Blast Theory places the malleability of a work's development centre-stage in their creative process: any 'method' that appears too static – that could hinder the expansion and growth of ideas in any direction – is a territory hardly ventured into by the group. Even up until the moment of presentation, Blast Theory is highly reliant on oral communication as a creative medium, using conversation as a way to develop and flesh out ideas with one another. As Adams outlined, oral storytelling is used as a way to find the core elements of a project on which they are working. Referring to the conceptual development process of scriptwriter Paul Schrader, Adams states that never writing anything down and just telling people the story allows a space for things that are extraneous, or 'superfluous' to a story, to naturally be removed or 'fall away' over time, leaving the core elements. Furthermore, by abstaining from writing too much down, they all gained equal access to the work. In Adams' words: 'It means that it stays mobile'.[19] While the creative flexibility afforded by development through conversation is integral to Blast Theory's way of working, they often find it necessary to textually communicate complex ideas to one another, particularly when dealing with a project like *Uncle Roy All Around You* that involves both online players and players in the physical world. They have increasingly turned to using whiteboards for this purpose. The whiteboard allows them to write down ideas and issues they are working with that day, photograph it for documentation, then wipe it clean for the next session and start again from scratch. They also use private notebooks to jot down ideas, and then type them up and share those they feel are important.

In the development process Blast Theory uses a number of creative strategies to develop their works including creating questionnaires, interviews, role-playing exercises for each other, paper tests and trails through the city. During a residency at Banff New Media Institute just over a year before the release of *Uncle Roy*, the three core members of the group each designed different questionnaires, interviews and exercises for each other. For example, Ju Row Farr designed a

questionnaire and interview for the other Blast Theory members that explored their relationship to the city, with questions like: Where do you walk? How close to the building do you walk? Where do you put your arms when you're walking? Do you look at other people? How do you feel on city streets? Through these 'role-playing exercises' they realized they shared a similar sense of detachment in the spaces they often frequent. These exercises thus led to further conceptualization of the piece. They also conducted interviews with people who were not involved with the project to develop different aspects of the project. These exercises and the group's reflection on them enable the group to try and consider what people in the gameplay would and would not do, whilst aiming to create a process that is mentally stimulating but not too complicated. Testing is another documentation method in the process and development of the technological aspects of their projects. Blast Theory tests the characteristics and possibilities of mobile devices by creating a series of interface prototypes to gauge whether or not they corresponded to the concept of the specific project. They also tested if these technologies were understood and accessible to a broad public. Members of Blast Theory are often the first testers, and at varying stages during the development people from outside are brought in to test the setup devices. Sometimes they invite testers with a deep knowledge of the technology who can provide them with precise feedback.

It is interesting to see that the emphasis on oral communication is reflected in their internal working process. Their ambivalence towards written documents, which according to them often leads to a hierarchical structure with the person in charge of the writing having more power and control over the process, shows the importance of having an equal share in decision-making and conceptual and design development within the group. This working process of creating a non-hierarchical and decentralized internal structure is thus informed by a desire for openness and fluidity within the conceptual development of a work. As such, *documentation as process* gives insight into the development of the work, which could guide or at least offer clues to which factors are important in decision-making.

Documentation as presentation

By referring to *documentation as presentation* I focus on the material that is made by Blast Theory to explain and communicate their work. Such documents can be a manifestation of a registered event and can take on many forms: notation, mapping, written description, photography, film or video.[20] Audiovisual recordings provide us with a unique perspective on the history of art, a perspective that moves beyond images in a book, words on paper, or abstract notations. They provide a fuller sense of what it was like to be there or offer a version for future development. Creating these types of recordings is a popular practice with artists. This is not to say that there is a standard way of doing this. Practices vary greatly, focusing on specific elements of the artwork that are the most important to the people making the recordings. The endless styles range from screen-capture videos and documentary-style videos, to subjective video that only shows some

of the experience of the work, a practice, as I will show, that is pursued by Blast Theory, and instruction videos that mimic popular videos on YouTube, for example, Aram Bartoll's *How to . . .* video series (2009–11). Others go beyond capturing their own work and instead invite other people to record as many artworks as possible, for example, the work by Robert Sakrowski and Constant Dullaart on *netartdatabase.org* (since 1999).[21] The latter example is an attempt to capture a 'cultural and historical aesthetics' and not only a work (Dekker 2011b). Needless to say, with net art consisting of multiple objects, interactive components or the use of multiple spaces (real and virtual), video can be extremely valuable, especially when trying to capture the working of a piece or show the experience it evokes in the audience. Nevertheless, as Adams remarked, it is not something that is easy to do. Referring to the video that was produced for their interactive virtual reality-based piece *Desert Rain* he explains:

> The problem here was to register the non-linear character of the piece. Therefore, the crucial question was how to bring together examples of different types of footage (and not so much which 'bits' to use) so that the non-linear character of the piece would be sufficiently 'represented'.
>
> (Lycouris 2000)

Nor are (audio)visual recordings uncontested. Especially in case of live performance art and dance, these are seen as betraying the vivacity of the art form. The prospect of experiencing a mediated performance, even in written words, has disturbed many performance art scholars.[22] Obviously any form of documentation will be a substitute for the original, but perhaps there are other ways of thinking about such documents. For example, can or should documents evoke its absent object or event, or would it be enough to provide an impression or translate the atmosphere? Is it possible to think of an expanded understanding of *documentation as presentation*?

When it comes to capturing the final result, the live event, Blast Theory does their best to show people the atmosphere of the experience (Figure 2.2); as Adams states: 'It's about getting that atmosphere correct where you can imaginatively engage with what it must have felt like to do that or be there'.[23] The audiovisual recording is partly directed, taking the point of view of one player and following that person while s/he is playing the game – at times asking the player to repeat a movement, but at the same time trying to be as unobtrusive as possible. Emphasizing the subjective experience, Becky Edmunds, a 'specialist dance videographer', tries 'to enjoy the gap' between the live and the recorded by 'providing small pieces of information through which a viewer might be able to actively reconstruct an imagined version, myth or memory of what the event might have been' (Edmunds 2006). Edmunds is not interested in providing the viewer with an 'authentic' recording, and by showing restricted views of the body or small glimpses of the action; she even draws attention to the gaps that documentation creates. Moreover, she is not trying to convey how the artist wants her to document the work; Edmunds engages with the work as being inside and part of it,

Figure 2.2 Blast Theory, *Uncle Roy All Around You*, 2003.

Uncle Roy Orchestration.

instead of being a neutral outsider. This approach reveals a new way of think-ing about documentation that reflects the process of the event while at the same time informing the work and serving as a way to conserve 'tacit' knowledge. The notion of tacit knowledge refers to the range of conceptual and sensory information, including all forms of knowledge that cannot be represented, fully articulated, expressed in formulas or described in documents (Polanyi 1966). The notion of tacit knowledge is not uncontested and is often viewed as subjective in conservation, referring to the artist's intent and the social and cultural context in which a work is presented or performed. Documenting is thus regarded as an important aspect of the process, which can be as creative and as challenging as the live event (Edmunds 2006). In this way, it can be thought of as a form of dialogue, reflection and response which can be used both as a tool in the creative process and as a document containing tacit knowledge.

This way of looking at audiovisual recordings is also taken up by Fiona Wilkie. She proposed that these videos could disclose alternative dimensions of the work (Wilkie 2004). She considered the meaning of the video documents of Blast Theory's performance installation *Desert Rain* and compared it to participating in the installation. By looking at the videos from a framework of site specificity, she treats the work through a discourse of spatial engagement, in which the work operates between different spaces and contexts – in the case of *Desert Rain*, real (the physical installation) and virtual space (the online participants, as well as the context of the Gulf War on which the work reflects). More importantly, when viewed in a new context, a video can evoke different connotations, which, Wilkie suggests, could add other layers to the work. This way the object, the video document, can also be regarded as a boundary object, passing between communities where it faces different interpretive strategies in each one.[24] As such, it implies that Blast Theory's videos add new layers of meaning to their performances, which could potentially deepen the conceptual idea in new – and perhaps unforeseen – ways. Blast Theory's *documentation as presentation* follows their 'open-ended' strategy in which hierarchy, or in this case one pivotal perspective, is avoided as much as possible. Rather, they embrace ambiguity and subjectivity as a strategy to communicate their work. This potentially allows documentation to develop as a critical space in its own right where the issues and concerns of the work are addressed through appropriate forms without necessarily becoming reproduction (Lycouris 2000). From this perspective, *documentation as presentation* is understood as a mode of production as well as a mode of critical interpretation, which helps to overcome the fragmentation inherent in documentation.

Documentation for re-creation

Blast Theory also emphasizes archiving their documents.[25] As a performance group working and communicating directly with the audience, they see the voice of the audience as a central element of their archival practice.[26] One goal for keeping an archive is to conserve the potential and importance of live art, which is often marginalized due to the ephemeral nature of the work and, in the case of Blast Theory, technically complex, collaborative and conceptually heterogeneous. Besides, for Blast Theory making documentation and building an archive is a means to show that artistic creativity is open to everyone. As they state:

> We want to create an intellectually coherent powerful argument for diverse practices that refuse the reification of the object, that ignore the speculative economies of the art market and that treat their public generously as equals in a dialogue. [. . .] We have always sought to distance ourselves from views of the artists as sacred or exceptional and from biographical or psychological readings. The archive can serve as residue of sainted artifacts and a touchstone of this approach.[27]

By using *documentation as process* and making specific documentation that reflects the intention, concept and atmosphere of the live performance, *documentation as*

presentation, and combining these in an archive, at first sight Blast Theory seems to be focused on future *re-creation*. But what are the chances that such a technically complex work consisting of obsolete equipment could be re-created? When asking them if it would be possible to re-create the work, they replied that it would probably take a few weeks but would certainly be possible. But digging a bit deeper and asking if it would also be possible in 50 years, exposed obstacles. Not only because of the obvious obsolescence of technical hardware or network dependencies, but foremost because changes in software configurations, notation or commenting on version updates happened at irregular intervals, would make it hard to decipher all the code and decisions involved.[28] Similarly, one needs to know the historical context of the technology because it could have (un)willingly influenced the aesthetic and the functioning of the work. A lot of the technical issues around re-creation also come down to the availability and rights-free use of the information. In the case of Blast Theory, because they work with the Mixed Reality Lab (MRL) of the University of Nottingham on the development of code, this could present problems in the future. Although a lot has been said in academic papers about code and programming, this does not necessarily mean they are freely available.

In addition to the technical difficulty there is of course the performativity of the work that needs to be re-created, as Nick Tandavanitj remarks:

> There is all sorts of specific learning about how you manage people in a specific situation. The front-of-house is probably well documented. But the scenography – the managing of getting people into a car without them noticing it, the way you give directions to people, the minutiae of dealing with people in those experiences – is probably not documented very well.[29]

To understand what this 'performativity' means, it is helpful to make a short detour past other disciplines like gaming or contemporary dance and music that struggle with similar problems, where a score, notation or rules are easy to conserve but the interpretation of these becomes more difficult. In gaming, the rules of the game can be kept and the gameplay can be recorded to a certain extent. Furthermore, because of its digital nature, it is easy to capture all kinds of data about the game. But what do these recordings and saved data reveal about the types of experiences the players had (Figure 2.3)? With the aid of information technology like sensors more data *about* performances can be saved, but not the performance itself. Similarly, a contemporary dance performance is a living system that continues developing, and because it is passed on through body movements it is always in a state of development. Sometimes strategies from the field of oral history or ethnographic 'in-game' research (following developer's processes or participant behaviours in games) are used to capture the participants' experience or to shed light on the development process, the design choices that underlie the work, or the relationship between design decisions and the experience players had while interacting with it. The idea is that this will shed light on the process and hence involve transferring knowledge about the design, process and experience, which will help

Figure 2.3 Blast Theory, *Uncle Roy All Around You*, 2003.
Uncle Roy Online Player Interface.

to sustain or re-create the work (Winget 2008b; Dekker 2010:7.1). Although Blast Theory thinks it would be possible to re-create the work, not everything is written down, annotated or documented in a way that it is easily traceable. A documentation model might help to document the work in a systematic way in order to re-create it. Of course the issue of desirability should be addressed, but more importantly the question of whether and in what way such a strategy will change the work is important to take into consideration.

Documentation in conservation practices

When discussing and comparing documentation strategies, it is often well-established organizations that take the lead; however, it is important to note that these large initiatives use extremely standardized procedures which, especially for smaller organizations or artists' initiatives, are often difficult to follow. Criteria for selection and standardization are often based on assumptions that are not always made explicit. To circumvent standardization it is imperative to analyze and experiment with different database interfaces and their underlying systems.[30] There are two types of management systems. The first is the more general Collection (or Content) Management Systems (CMS), also known as Information Retrieval Systems. These systems are an integral part of managing and documenting collections and they allow users to search for documents, information within documents and metadata about documents within the database, as well as its relational databases. OAIS, CASPAR, INCCA, 2IDM, among others, are examples of these documentation managers in conservation research.[31] The second is the documentation models that describe the different components of artworks. There are several accepted standards, particularly for the handling, installation and care of a work. For more complex contemporary installation and time-based media works, these standards have only recently been drawn up.[32] Most systems use the Dublin Core Schema, a small set of metadata terms, as a reference to describe their resources, which are then adapted to fit specific artworks.[33] The advantages are that it facilitates a better understanding of the kinds of descriptions used as well as the development of better mappings and translations between different syntaxes. However, such comparisons are more difficult to make when handling specific artworks like net art, installation art or performance art, whose documents do not easily fit into prescribed taxonomies.

As mentioned, conservation as a practice is not as fixed as one might assume and hence documentation strategies vary widely.[34] In 2004, Inside Installations, a large-scale international research study, was set up to challenge prevailing views on conservation.[35] In this extensive three-year project, 33 complex installations (many multimedia) were re-installed, investigated and documented. By sharing their experience, project participants were able to develop guidelines and tools within various research themes. Case studies on artists' installations resulted in specific practical guidelines. At the same time, new questions arose while investigating computer-based installations. These ranged from technical and theoretical

questions to artists' intentions relating to issues of hardware and software storage and maintenance. What is the lifespan of computer-based installations? How should sound and image quality be compared? How is authenticity and artist's intent maintained? Will reconstruction become retro-kitsch due to technical components? Will guidelines that are written now be legible in 50 years? Should historical changes be noted, and if so should the date of the work or the work's technical progress be recorded? What is the role and responsibility of the artist, conservator and curator?[36]

Many of these questions inform and overlap with my research into net art. However, the questions multiply when discussing documentation methods for its conservation.[37] The documentation of net art is an especially demanding field, because it requires representation of heterogeneous aspects of a particular work – from hardware, networked software and context to human and mechanical, physical and virtual interaction. Due to technical variability, it makes sense to state that it is not possible to conserve actual net artworks. However, there are people who argue and show that emulation is possible and even a desirable solution, but at what expense?[38] Emulation is a process in which a work is transferred onto a new system without losing its original aesthetics or functions. It is a method that is often used in the conservation of contemporary artworks, but it falls outside conventional conservation methods. Some have said it is not conservation at all (Jones and Stringari 2008). Conservator Jeff Rothenberg (1999) has been a resilient defender of emulation. Indeed, his examples and those of others prove the value of emulation. However, all these projects struggle with networked executions (Rechert et al. 2016). In other words, no matter how faithful the emulator may be, since many of today's programs execute in a context of network services (which also execute in network services, and so on *ad infinitum*), simply conserving the code and the ability to re-execute it is not enough if the network services they depend on are no longer available, or return different results. Thus, while emulation is an important conservation strategy for contained artworks, it is at the moment not an ideal solution for network-dependent works or works made in commercial platforms.

Another example that has been praised for its archival qualities is the Internet Archive's Wayback Machine. The mission of the non-profit organization Internet Archive, founded in 1996 by Brewster Kahle, is to provide free access to all kinds of digitized and digital materials, including websites, software, games, music, moving images and books.[39] On 24 October 2001 the organization launched the Wayback Machine, a free service allowing people to access and use archived versions of past Web pages, because as they argue:

> Most societies place importance on preserving artifacts of their culture and heritage. Without such artifacts, civilization has no memory and no mechanism to learn from its successes and failures. Our culture now produces more and more artifacts in digital form. The Archive's mission is to help preserve those artifacts and create an Internet library for researchers, historians, and scholars.[40]

Looking more closely to the Wayback Machine shows they only capture time-stamped snapshots of websites. As such, it foregrounds 'single-site histories', which means that one can study single pages in a website over time (Rogers 2013:66). In some cases, this works fine, as for example Jill Lepore, reporter for *The New Yorker*, shows in her article 'The Cobweb. Can the Internet be Archived', about how to archive the Internet. She describes the usefulness of the Internet Archive with the example of the case of the Malaysian Airlines flight crash in the Ukraine in June 2014. Merely two weeks before the crash, a curator of the Russia and Eurasia collection at the Hoover Institution, at Stanford, had submitted to the Internet Archive, a list of Ukrainian and Russian websites and blogs that ought to be recorded as part of the archive's Ukraine Conflict collection. They did, and they managed to intercept and record a screenshot of a VKontakte (a social network) post by Strelkov (the field commander in Slaviansk) that says they put down a plane. The original post was removed within two and a half hours after the 'incident'. The evidence of the original claim can still be traced in the Wayback Machine (Lepore 2015). However, in other cases the Wayback Machine proves to be less reliable. For example, to overcome a single-page history the Wayback Machine introduced Memento, an API that allows you to move back in time. The application allows you, for example, to see the page around the time it was made rather than the present time. In 2011 the Internet Archive began to use Memento, which makes it possible to use the Wayback Machine in an 'interactive' mode. This interactivity means that you get redirected to other captures of that moment either in the Wayback Machine or one of the partner archives. However, in some cases you are redirected to the present project page. Even in the past earlier instances of a work cannot be revisited, stuck in a circular present, memento offers no past no memories, just a never-ending present. Moreover, as also argued by Web historian Niels Brügger, an archiving process actively shapes and determines how a website is archived and thus what kind of reconstruction or analysis is possible (Brügger 2009:126).

Not only do websites, and their copies, often suffer from temporal or technical inconsistencies, but as Brügger argues 'the archived website is not an exact copy of the one on the live web but a *unique version* as the result of the archival process' (Brügger 2008:156). This happens because of what Brügger refers to as the 'dynamic of updating', which means that during a capture some parts of the site might already have changed before the capture is complete. Not only is it difficult to compare the changes, it is also difficult to determine where and when the change happened since there is no other version to compare with. Moreover, due to the various time-captures in one crawl session, the archived website may have become something it never was (Brügger 2005:23). In these cases it may be better to opt for creating interactive recordings, using, for example, the Webrecorder.[41] With the Webrecorder any website (also proprietary ones) can be interactively recorded. This is particular useful in cases when interaction with a website is just one instance of a unique experience; meaning that works are relevant only during a specific time or in a specific context. For example, after Google changed their API it did not make sense to continue the work *The Global Anxiety Monitor*

(2006–11) by De Geuzen, and the artists chose to make a video recording about the work while it was still functioning in the right context. While it could only be done as a static video, the webrecording could have emphasized a unique and interactive experience, which is very hard to repeat or emulate with the fidelity Rothenberg envisages. Likewise, even though the Webrecorder presents a time-based experience of the Web, the recording is more faithful, or authentic, than a Web crawl that essentially creates new versions. In general, curators and conservators try to show artworks in the most authentic way. And where possible, decisions are guided by the artistic intent that is documented in writing, photos, video or in a dedicated model. Whereas little thought is given to the way videos or photos can be created,[42] several attempts have been made since the turn of the century to capture software-based art in a documentation model. For many years, the information captured consisted of the name(s) of the artist(s), type of object, materials used, dimensions of the work and space, and its presentation history, but how flexible are these models for net art? How do these models deal with change, process and ambiguity?

Because of the complex, variable and interactive nature of net art, it comes as no surprise that most museums and institutes have not taken up the challenge to collect it, or started to think of ways to document projects like *Uncle Roy All Around You*. But in the past decennia, some attempts have been made to see the documentation of these variable works in another light. The best known is the work by Forging the Future (FtF), formerly known as the Variable Media Network (VMN).[43] With an interest in the conservation of contemporary artworks, the strategy of the VMN is very much focused on methods of documentation. The VMN proposed a strategy where artists are encouraged to define their work independent of the medium so that it can be translated after its current medium becomes obsolete. The approach is centred on the content of the work rather than its medium or physical manifestation. In addition, they concentrate less on the individual technical components that an artwork comprises, and focus instead on what one of its founders, Jon Ippolito, has coined the 'medium-independent behaviours' of the work (Depocas 2003:48). By using the performative term 'behaviours' the VMN tried to come up with a methodology that would work across mediums and therefore could still be recognized in the far future – when someone might not understand the term 'U-matic' (a videocassette format used in the 1970s/1980s), but will still recognize the meaning of the term 'installed'. Whereas traditional methods for describing an artwork consist of object-dependent terminology – name(s) of the artist(s), date of the work, medium used, the dimensions (height, width and depth) and the collection – shifting the focus to a work's behaviour reveals something about the presentation and perception of the work, such as that works can be installed, performed, reproduced, duplicated, interactive, encoded, networked or contained. To distil the most desirable approach for future presentations, the VMN developed a questionnaire, the Variable Media Questionnaire (VMQ), to get at the core or, as Ippolito calls it, the *kernel* of the work (Depocas 2003:47).[44]

The emphasis on artists' interviews is a relatively new phenomenon in documentation practices. Although the first examples of artist's consultation for

conservation purposes is traced back to 1939 when the Committee of Paintings of the Community of Amsterdam sent a questionnaire to a number of artists who sold their paintings to the Stedelijk Museum in Amsterdam (Hummelen and Scholte 2012), it is only from the late 1990s onwards that semi-structured interviews directed towards the conservation of contemporary art have become more popular. These face-to-face, in-depth interviews allowed for more flexibility by stimulating open conversation, as opposed to the more restricting questionnaires (Mancusi-Ungaro 1999). Even though these days the artist's interview is considered an indispensable tool in conservation practices, there are of course some theoretical and practical problems to be considered. In conservation theory today, the interview format is no longer treated as a one-way, straightforward, value-free tool, but rather as a topic in itself that is increasingly met with methodological reflection (Van Saaze et al. 2010; Beerkens et al. 2012; Cangià 2013). It is beyond the scope of this book to deal with these aspects in depth, but it is important to note that the concept of a questionnaire suggests a one-way transfer of knowledge (predefined questions are answered by the artist). On the other hand, the interview format inherently implies a two-way knowledge process where artist and interviewer construct knowledge together through their interaction. In the social sciences, a vast amount of literature is dedicated to interview practices and how to conduct interviews effectively by enhancing the quality of the interaction. In studies on the interaction between interviewer and interviewee, particular attention is given to issues of self-awareness, integrity, openness, context and building trust.[45]

The questionnaire prompts questions for each behaviour that requires conservation. However, it is not intended to be exhaustive. The VMQ is foremost a vehicle to prompt questions that should be answered to record artists' desires about how to translate their work into new mediums after the work's original medium expires. By bringing perspectives from conservators and curators together with those of artists, and if possible their technicians, programmers and engineers, the VMN approach tries to establish a better understanding of how the work should evolve and be handled over time in order to conserve its 'ephemeral character':

> A questionnaire [stimulates] responses that will help to understand the artists' intent. The questionnaire is not a sociological survey, but an instrument for determining how artists would like their work to be re-created in the future – if at all. [. . .] The results of the questionnaire, the variable media kernel, enter a multi-institutional database that enables collecting institutions to share and compare data across artworks and genres.
>
> (Depocas 2003:47)

The VMQ is an invaluable guide for conducting artist interviews, as the medium-independent line of questioning often elicits highly descriptive responses to questions about a work's past and future incarnations.[46]

The VMN approach was highly praised and welcomed by both practitioners and scholars in contemporary art conservation science. The VMQ is very valuable as a tool for interview practices because it takes into account both the concept of

the work and the context in which it evolves. It confirms the necessity to let go of traditional conservation methods that focus on the re-creation of the work as it originally appeared and instead tries to think of new ways to document and re-install obsolete artworks. Whereas the VMQ certainly encouraged new ways of thinking about the conservation of variable artworks, many questions remain: Is a questionnaire sufficient to understand the working of the artwork? Does it provide enough insight into the creative and working process? Does it reflect the interaction and experience the artwork invokes, both in relation to and between the participants and the context in which it is enacted? These and other questions were taken up and further developed in new models and methods by other organizations that share the concern for the documentation practice of obsolete artworks. In order to discuss the advantages and limits of the different models I will elaborate on three different approaches that have been highly acclaimed over the past years mostly because of their unconventional approach, and which have therefore been adapted and used by other organizations in various ways.

V2_: Capturing Unstable Media Conceptual Model (CMCM), 2003

One of the first new approaches came from V2_Organisation, Institute for the Unstable Media in Rotterdam, the Netherlands. The Capturing Unstable Media Conceptual Model (CMCM) was developed in 2003 as a conceptual model for documenting and describing newly created electronic art installations, rather than re-creating or conserving existing works.[47] Notwithstanding, it provides multiple potential applications for documenting every aspect of a design process, which could influence conservation. V2_ distinguishes three phases in the development of a work that all require different documentation strategies: first, the research phase, in which the draft concept of a project, the researching of required know-how, the design and the first conceptual developments of the project take place; second, the development phase, in which the actual hardware and software development occurs and the outcomes are tested and assembled in a specific configuration or setup, and third, the implementation phase, in which the results of research and development are implemented in a specific environment. Each of these phases is associated with different types of documentation. More than any of the other documentation models, V2_'s perspective balances the intersections of art, science and technology. Their strategy is to document the environment in which electronic art functions. This notion of capturing details about a work is considered complementary to traditional conservation methods. V2_ re-used the set of attributes, components and behaviours of variable media, as distinguished in the VMQ. They complemented the VMQ with missing components and essential aspects that they identified as: definition of concepts; focus on several manifestations in a line of work, rather than on the reconstruction and display of a finalized artwork; and all possible components of these manifestations and the interplay of these components. Unfortunately, due to lack of funding and available time, the model was only used for a brief period, albeit successfully.[48]

MoMA, New Art Trust, SFMOMA, Tate: Matters in Media Art (MMA), 2004-present

Matters in Media Art is a multiphase project designed to provide guidelines for taking care of time-based media works of art (e.g., video, film, audio and computer-based installations).[49] The project was created in 2003 by a consortium of curators, conservators, registrars and media technical managers from MoMA, New Art Trust, SFMOMA and Tate. In 2004 the consortium launched its first phase: loaning time-based media works; and in 2007 its second phase: acquiring time-based media works. In 2009, MMA entered its third phase, specifically examining challenges surrounding digital media. The aim is to blend traditional museum practices with new modes of operation that derive from and respond to the complex nature of media art installations. MMA provides a practical response to the need for internationally agreed-upon standards for the handling, installation and care of time-based media artworks. The research resulted in templates that can be used in the acquisition process of a work, which is divided into three overlapping phases: pre-acquisition, accessioning and post-acquisition. As such it is a basic framework to prepare the artwork for long-term conservation and future installation. To mark the processes in the three phases, a 'process diagram' was developed to visualize the often non-linear acquisition process. It shows how the different stages involve concurrent activities and feedback, and thus may overlap. Moreover, they 'convey the sense of a snowball effect – where information was gathered throughout the process'.[50] The attempts to include and depart from the process of the work are very valuable. Likewise, the open structure of the template invites users to add to and configure the template as they see fit. Most of the information that is asked for in the model is based on metadata, but the open structure could ideally lead to more detailed responses. Overall, the templates resemble the approach of the VMQ, but whereas VMQ specifically focuses on behaviours of the artwork's materials, MMA follows a more established line of questioning.

Richard Rinehart: the Media Art Notation System (MANS), 2005

The Media Art Notation System is the result of research by Richard Rinehart in which he proposes a new approach to the conceptualization of digital and media art forms.[51] His research is an outgrowth and continuation of two earlier projects: Archiving the Avant Garde and the Variable Media Network. Rinehart intends to inform a better understanding of media artforms and to provide a descriptive practice for conservation. MANS has three levels of implementation that progress from simple to more complex. The layers consist of the *conceptual model of documentation*, the *preferred expression format* (vocabulary) for the model (the interpretation of DIDL XML) and the *score*, which serves as a record of the work that is database-processable (Rinehart 2005). The core concepts form a 'broad strokes' description of the work. The artist or museum could use this broad description when the work is created or collected. Further details, alternate accounts and audience annotations can be filled in later. MANS provides a framework for reflection

on the logical arrangement of collected elements, which can be distributed and archived through a website simply by broad type or general categories (for example, interviews, installation views, technical details and hardware, exhibition context, other installations and audience interviews). This way, any structure can be applied to it and connections can be made through tags, keywords or other visualization tools. The theoretical approach was explored through issues raised in the process of creating a formal 'declarative model' (also known as a metadata framework, notation system or ontology) for digital and media art. Rinehart used the metaphor of the musical score because media art follows a similar compositional process in which the essential concept or score is more important than the instruments or hardware that are used to perform or install a piece: 'As long as the essential score performed is the same, the musical work itself will be recognizable and retain its integrity' (2005:2). The MANS score represents a logical media-independent backbone for the work that relies on the original files to provide detailed functionality and appearance. By taking the musical score as a metaphor and method, the model has 'a flexible yet robust structure and incorporates the passage of time and the possibility of change' (MacDonald 2009:63). The conceptual idea of a score, as a fixed form yet variable in its execution, is interesting. However, using the musical score as an example is questionable because nowhere is the difference between the written score and the performance so contested as in musicology (Cook 1999), and as I explained in the previous chapter, the notion of score is problematic because in its execution code can change, unlike musical notation. Besides, MANS is presented as a metadata framework. As such, it does not overcome the problems inherent in text-based representational frameworks that describe non-textual information.

To briefly summarize, it is extremely difficult to describe and translate an artwork into a formal system, also (or even more so) for an artist. For example, emotions and symbolism are hard to communicate and at times an artwork by intention negates such interpretation (Svenonius 1994). Nevertheless, some kind of standardization is needed when trying to conserve an artwork. In the following section I compare the different strategies and propose a direction for the development and extension of this 'impasse'.

Comparing methods

The models of MMA and MANS allow for levels of description related to the work as a whole (in its final presentation phase) as well as more detailed descriptions of specific iterations/occurrences of a work. This immediately highlights the most urgent problem, which is the emphasis on the final work – the end product. Whereas in archival literature there is a recognition that 'conservation begins with creation', these models hold on to traditional ways of dealing with objects and documents, and are resistant to moving towards a more holistic approach (Waters and Garrett 1996).[52] Important to note in this respect is the observation by people who have conducted case studies that it is easier to document a work when it is presented. When a work is in storage, it is much harder to talk about

specific issues. The installation of a work facilitates the detection of problems and provides a better view of the decisions taken or methods used in the creation of the work.[53] It is for this reason that some people argue for more presentations to enhance the visibility and understanding of the way art *works* (Dekker 2010). It could be said that presentation leads to conservation. From this point of view the CMCM model is more interesting, as it highlights the creative and production process of the work by focusing on the interaction between the work and the stakeholders. Next to a detailed description of the resources, it focuses on the relationships between entities in the construction and the execution of the work. It is unfortunate that this part of the model is also the least described. For example, the complex elements of interaction are left to 'well-chosen documentation'. V2_ acknowledges that more research needs to be done in this field and suggests looking at appropriate models in the social sciences, where methods or standards for registering social behaviour and intercommunication between humans and machines are under development. Even though the CMCM model is not intended for conservation, it provides interesting opportunities for a form of documentation that moves beyond mere descriptive, comparative or mapping exercises. Although attempts are made to expand and elaborate on the model, these are currently still under development.[54]

Compared to the other systems, the CMCM and MMA models prove to be the most relevant to the context of net art because they focus on the process of production and creation (CMCM) and on the artists' intent (MMA). However, the artists' intent is not easy to extract, formulate or even comprehend for either the creator or the interviewer and as such it can be a difficult and problematic strategy.[55] It is important to realize that an interview is always a reflection of a specific moment in time. It is never value-free and always influenced by the background, expertise and personality, of the interviewer and the artist as well as the interaction between them (Van Saaze et al. 2010; Beerkens et al. 2012). Nevertheless, a slow movement in this direction can be seen, especially concerning contemporary artworks where the artist's involvement in conservation practice is regarded as a necessity, and where the artist becomes *the* stakeholder in the perpetuation of the work (Van Saaze 2009: 106–111).[56] A related phenomenon is the concept of group creation, a widespread practice in net art but new for many museums, conservators, and curators. This new form of working in artistic practice manifests itself through people from multiple disciplines and can lead to unstable, networked, variable or different versions of an 'end' project (that again can be influenced by the participants), which in turn has implications for collection, documentation and conservation. The notion of variable or different versions is not new and can also be found with physical and 'stable' objects or installations. For museums and galleries it is not uncommon to have exhibition copies of a work that they have acquired (Van Saaze 2009). In other words, most net art practices deal with multiple creation practices and contexts that are uncertain. At the moment this is partly reflected in the models as the ideal state, the past state and the present state, but these different parameters might not be sufficient to account for the level of or need for variation that is inherent in the work. As Megan Winget suggests, a

deeper understanding of the general creation behaviours and methods used by new media artists in general will augment the discussion regarding the challenges of digital art collection and conservation (2008a).

Notwithstanding the high value of their theoretical underpinnings, one of the pitfalls of all the models discussed, especially those of VMQ, MANS and CMCM, is their highly prescribed structures which, as said before, makes it difficult to implement a realistic and easily repeatable documentation project in conservation practice, especially outside the field of installation art. These findings show that in any documentation process a multilevel approach is preferred. Such a structure should emphasize the tension between the 'ideal' notion of the artwork (as a composite, theoretical idea constructed from artists' statements, technical schemas and the accumulation of many iterations) and the 'real' individual experiences of the audience and/or experts (curators, archivists, etc.) (Jones 2007). Most of the models are established by the conventions of information classification with which they are familiar. This is not only important to realize from an ideological point of view but, on a more practical note, it means that once classifications, tags or expressions change, so will the usability of these models.[57] Therefore, the re-creation of a work requires a thorough understanding of the context in which the information about and organization of the work was made – there is a need to document the context of documentation creation, as it were. The vocabulary initially suggested by the VMN is exemplary in this respect. The third-generation VMQ that was presented at the DOCAM Summit in Montreal (March 2010) looks at artworks as ensembles of components, instead of behaviours as discussed in the earlier version, because this would be more intuitive for registrars, conservators and other arts specialists. As Ippolito explained:

> The purpose is to understand the key elements of a work that are critical to its function, such as source code or media display. Acknowledging the relational character of much contemporary art, these parts extend beyond hardware to include environments, user interactions, motivating ideas, and external references. Structuring the Questionnaire in this way makes it easier to compare different artworks created with similar parts.[58]

The relational character of artworks, and also the relation between different institutes that collect similar works, is extended to a 'metaserver', which automatically creates links between records in questionnaires (Sanchez and Eckert 2013). This means that, visibly within the system and alongside one's records are other records that have similar criteria. Arguably, this could increase the invisibility of the system's structure, obscuring underlying criteria and categorization. Although beyond the aims of this research, one way to overcome this, as also suggested by Bowker and Star (1999), is to follow a contentious classification system, which also means gaining a deeper understanding of how different classification systems lead to various understandings of cultural forms and encounters. Important as these systems may be, as many people working with conservation and documentation case studies have argued, to be able to document an artwork, it needs to

be presented (Dekker 2010). The installation of a work facilitates the detection of problems and provides a better view of the specific decisions undertaken or methods used in the creation of the work.[59]

Despite the obvious classification and system challenges, the VMN questionnaire remains a valuable tool for discussing the work and discovering the core intentions. Even though the VMN approach to documentation and its emphasis on behavioural elements might not prove successful, it certainly provoked new ways of thinking about the conservation of an artwork. More specifically, it confirmed the necessity to relinquish traditional conservation methods that focus on the re-creation of works regardless of artists' intent, and think of new ways to document technically obsolete artworks. Nevertheless, questions remain. Can documentation potentially become an actual experience? A description and photo can provide some insights into the work, but these are far removed from actually experiencing it.

Information scientist Piotr D. Adamczyk explored the working of the VMQ and CMCM for describing human–computer interaction in new media installations (2008). His analysis showed that the models work on the level of documentation or accession in a museum context, but that they often fail when recounting the participatory context. Where Adamczyk suggests using human–computer interaction (HCI) ethnographic methods, others are more inclined to using strategies from the field of oral history (Muller 2010). The two strategies meet in the belief that accounts of participants' experiences 'would offer rich and varied portraits of how the artworks existed in experience and would necessarily widen our understanding of the relationship of media art to its social and cultural context' (Muller 2010). Attention to audience experience and contextual information is still not included in any of the models.[60]

It can be concluded that a multilevel approach is preferred in all documentation processes. Such a structure should emphasize the tension between the 'ideal' notion of the artwork (as a composite, theoretical idea constructed from artists' statements, technical schemas and the accumulation of many iterations) and 'real' audience and/or expert member experiences (curators, archivists, etc.) (Jones 2007). It can also be concluded that existing models are not ideal when dealing with technical specifications that are connected to the experience of the work, nor do they provide much information about the experience as such. But are these elements more visible in, or can they be extracted from, artists' documentation?

Uncle Roy All Around You in a model

Uncle Roy All Around You is a participatory multiplayer, multilayered (combining virtual and real worlds) game and, as the title suggests, the participants' surroundings play an important role. The conceptual idea, the technical interface and the gameplay and its locations are defined, but they are all susceptible to change (Figure 2.4). With so many variable parameters, it is no surprise that the participants also experience the working of GPS, WiFi and the interfaces in very different

Each Local Player collaborates with an Online Player.

Tracked by GPS, their locations are sent
to the game host via a wireless network.

Each Local Player is equipped
with a handheld scanner
which shows Ingrid's location
once they're within range.

on the street

area of wireless network

The target: e.g. Ingrid

internet connection

The game host
plots Ingrid's path and delivers clues
to the Online Player. It also relays
voice and text between the players.

online

A web interface places you in the virtual city,
letting you move around, see and hear the Players
and chat to everyone else logged on.

The Online Players receive clues about Ingrid's
location. By using these hints, webcams, other
web sites and chat with other players, they
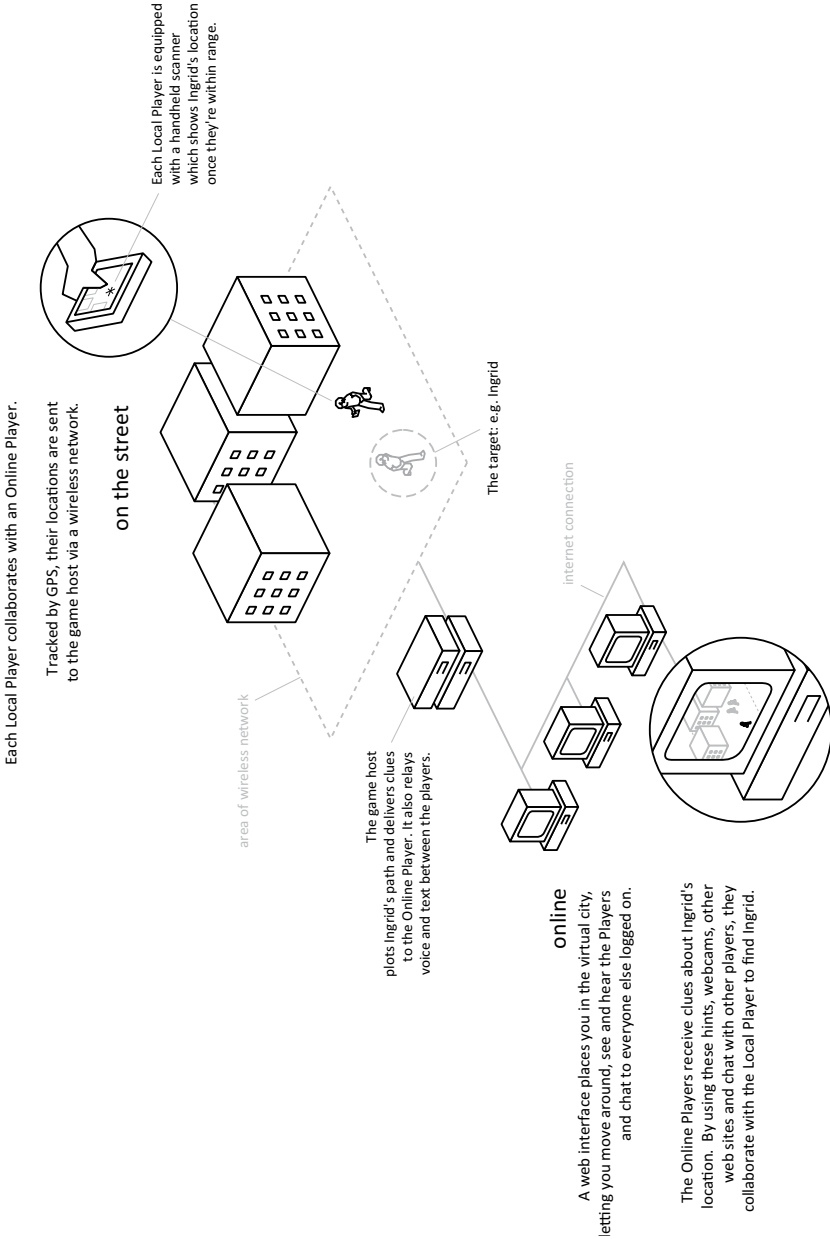collaborate with the Local Player to find Ingrid.

Figure 2.4 Blast Theory, *Uncle Roy All Around You*, 2003.
Uncle Roy Set Up Diagram.

ways. As Steve Benford, one of the technical collaborators in Blast Theory's projects, noted:

> Our study reveals the diverse ways in which online players experienced the uncertainties inherent in GPS and WiFi, including being mostly unaware of them, but sometimes seeing them as problems, or treating them as a designed feature of the game, and even occasionally exploiting them within gameplay.
>
> (Benford et al. 2006a:100)

It is precisely such subtle differences that are not taken into account in the previously described models, and they are also hard to pin down in an interview.

Moreover, Blast Theory used these circumstances as tactics and elements in the game as well; anticipating but never knowing for sure when, for example, technical failures might occur and a corresponding action should be taken:

> Throughout URAY, various tactics are used to blur the boundaries between the digital and the physical, and the fictional and the real, including implicating otherwise uninvolved members of the public via ambiguous text clues, using physical props and locations and live actors, all of which are set against a backdrop of conspiracy, isolation and surveillance that is deliberately engineered to create dramatic tension and question the boundaries of where the game ends and the everyday world begins.
>
> (Benford et al. 2006b:429)

The (technical) failures were used to enhance the dramatic narrative of the story. This did not mean, however, that the actual occurrences were planned. Although the gameplay was extensively and carefully orchestrated, there were many moments of uncertainty and these were hard to pin down. For example, a player on the street could lose the GPS signal. A member of Blast Theory, in the role of a casual bystander, would then walk up to the player and explain that he noticed their hesitation before pointing her/him in the right direction. Instead of discarding the limitations of the technology, they became integral to the performativity of the work. As such, an error was seen as productive rather than as an obstacle to good functioning. In other words, the technical dependencies of the art form emphasize the meaning and experience of the work. This ambiguity and uncertainty in the work do not have a place in models like CMCM or questionnaires like VMQ. This became apparent when asking Blast Theory if the GPS interface system could be replaced in the future by another technology (one of the key questions in the VMQ); the answer was simply yes. However, the discussions about their working process, their way of creating documents and their attitude towards technology showed that the working of the technology, its current failures and inherent uncertainties, had influenced both the concept and performativity of the work. As such, they were integral to the experience of the work. Replacing the technology at any time in the future may thus prove to be problematic at the experiential and conceptual levels.

These examples show that for some specific yet integral information, the models as described do not suffice. One of the main problems is that the documentation models are often (with the exception of CMCM) extracted from earlier dominant discourses (paintings, sculpture) and mapped onto a marginalized one (net art, performance, games), imposing a model according to which meaning is reproduced through the end result and does not emerge from the interaction of the multiple agencies that create the experience.[61] Especially projects like *Uncle Roy* need a multilayered approach that takes into account relationships between objects in the construction and the execution of the work and also provides insight into participants' interaction and experience. In other words: the documentation of such a work requires insight into the conceptual, creative, and working process from a technical, relational, and experiential perspective. All these elements are connected and only have meaning when seen as interrelated. At the same time, they can change depending on the context. As such, the work is an assemblage, or an inter-document, that can be understood by approaching it from a media ecological perspective.[62] In this respect, Van Mastrigt (Dekker 2010:8.0) talks about the conservation of 'an ecosystem instead of an object'. Similarly, Takhteyev and DuPont refer to retrocomputing in which an ecosystem is kept alive: a system of cultural, social and economic relationships in which material, artefacts and knowledge circulates. At times antiquated elements are integrated into ongoing activities creating a living practice allowing for 'maintenance (and sometimes recovery) of tacit knowledge' (2013:362). A framework of a documentation model for net art should therefore address the creative process, reflect the work's variability, relate to the context and take into account the participants' experience. Moreover, these are not stable elements. Ideally, the structure and interface of the model should reflect such variability. What this could mean was tested during the research project *Inside Movement Knowledge*, which aimed to see in what way analyses of artists' documentation methods could be useful for conservation.

Inside Movement Knowledge was a two-year (2008–10) collaborative, interdisciplinary research study into new methods for the documentation, transmission and conservation of contemporary choreographic and dance knowledge.[63] Together with Gaby Wijers and Vivian van Saaze, I tried to develop a documentation model for contemporary dance practices, based on the dance performance *Extra Dry* (1999) by EG|PC.[64] Coming from different backgrounds, we combined experience and knowledge of artists' documentation practices, which included media art reconstruction, interview strategies and museums' documentation models. Although it is beyond the scope of this book to describe our decisions in depth, in the end what surfaced could be relevant as a documentation model for net art.

The aim of the research was to create a documentation model for contemporary dance that would identify the following aspects: the creative process, the concepts, and on the recurring performances instead of a finalized piece. Based on discussions with choreographers, dancers, teachers and researchers, we wanted the model to acknowledge the variability of a dynamic art form and the significance of interdisciplinary collaboration, and to focus on the creative process rather than the end product. We used interviews as a knowledge production tool, informed

by methodology developed in contemporary art conservation. The documentation model was structured in two ways: information and categories. The information consisted of four layers: from interviews by the research team with core members of the group; from ICKamsterdam sources; from interviews with the choreographers, conducted by others; and from secondary literature. We structured the second part of the model into several categories based on the content of the information. The structure included context, work, staging/scenography, phases and parameters (which recorded decisive moments during the creative process and in reconstruction), and prerequisites for reconstruction. A written score with notations of movement and time framing, technical plans, cues, and a playlist were added as appendices to the model.[65] In retrospect, the development of the model was an active, interrogative tool for knowledge construction. The model created a situation in which different forms of knowledge could be discussed. In this sense, it could be regarded as a tool that instigated communication, or as a format that allowed for further discussion, encouragement and deepened mutual inquiries. As such, the model shared the features of a boundary object, as understood by Star and Griesemer as:

> objects which are both plastic enough to adapt to local needs and constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual-site use. They may be abstract or concrete. They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable means of translation. The creation and management of boundary objects is key in developing and maintaining coherence across intersecting social worlds.
>
> (1989:393)

From the outset, the model was designed for the purpose of reconstruction. During its development, our goal changed to documenting artistic reasoning and capturing the basic parameters of a work by defining what could or would not change, thereby stressing the variability of the work. Ultimately, our intention turned towards the creation of an online resource that would allow for a flexible use of the model while mimicking the work's changes and variability. In other words, the resource enabled a means of accessing different layers of information, preferably through semi-transparent layers simultaneously. This way, different things were visible to several people at the same time, while making their own connections. Being able to add new information and save specific routes through the website would have been preferable. This was not possible due to time and money constraints, but a next step in the model's development could be to design an interface that is linked to different software and embedded in a multimedia environment so that it can function as an online layered tool that can be used and adapted by several users. Such a system would primarily encourage dialogue and discussion, which could lead to a 'new space of knowledge' (Leach 2017:152) in an attempt to further the understanding of contemporary dance and documentation.

The model, embedded in ICKamsterdam, was used in diverse ways: in work-shops on reconstruction it was used to work with and learn the company's repertoire, and also to create something new from the information provided. The text materials – the kind of information that the model allows users to capture – is used as a point of departure, providing contextual and conceptual information to other performers that mere video registrations would not offer. We tried to develop a model that could be applied in different ways depending on the needs and interests of those using it. As such, it could be argued that the form of the model would depend not on the result of technical possibilities but could be seen as the outcome of social relations.[66] In conclusion, the documentation model did serve multiple purposes, as explained by Bertha Bermúdez Pascual, dance researcher at ICKamsterdam:

> One is knowledge; to let people know the kind of experiential knowledge that is embedded in dance. And for that we are developing different tools and communicating through different media. On the other side it is also interesting to 'get rid' of your work and see what else can generate from it. What does this particular piece inspire you to do? And for that these documents are important because it allows that kind of communication.[67]

This statement reflects the variable nature of net art, and turns its documentation model into a variable entity that can be shared, used and developed. The documentation model is a reflection of the context and network in which is it developed and used; moving beyond the traditional usage it can be seen as an extension of the original performance.

The way the information is selected, repurposed and contextualized reflects the characteristics of Briet's notion of an auxiliary document. At the same time, analyzing how Blast Theory's documents evolve over time, and how some may become artworks, challenges the distinction between primary, secondary and even tertiary documents. Seen together, as also concluded by Giannachi's research on the work *Roberta Breitmore* (1972–8) by Lynn Hershman Leeson (Dekker et al. 2017), such works show a complex and organic aesthetic that moves beyond existing debates about documents and documentation which tend to identify documents as distinct from the 'original' work or performance. Obviously 'gaps' will exist, but by seeing these documents as interrelated the primary, secondary and auxiliary documents move beyond mere representation and become the 'work'. While different documents within the work can be distinguished, shifting the understanding of a document as a single component, or documentation as a set of instructions or guidelines, to a conceptual method from which new interpretations can be made, provides new ways to understand the meaning and value of documentation.

Looking into the future: net art in a museum collection

Briet stated that, 'the forms that documentary work assumes are as numerous as the needs from which they are born' (2006:36), and coming to the end of this

chapter, this statement is as relevant as ever. It is important to know the meaning and value of documents and documentation, but it is just as important to know their relationships, the context, and, in addition to Briet's statement, the process of their creation. Analysis of artists' documentation methods and comparing these to the information that is given or asked for in traditional museum documentation models showed that specific and inherent qualities of media artworks are not taken into account in the models up until now. Closer analysis of Blast Theory's creative processes indicated that crucial information on details of the project and the experience it yielded, most importantly the behaviour of the technology and the influence this had on the performativity of the work, might be lost when using standard questionnaires or applying emulation methods that transfer the gameplay to new platforms. It is clear that net artworks are technically complex, not only in their final presentation but also in their production phase. For a re-creation of the work it is therefore important to understand the technical choices that were made in the context of the time they were made (see also Lurk and Enge 2013, and Winget 2008b). As such, it is important to recognize that meaning is often constituted *through* an object and is not solely held *within* the object (Clavir 2002).

Taking into account what I have termed *documentation as process* will yield a better understanding of the inherent qualities of the work. It is important to be aware of decisions that are made and their consequences the development of the work and accurately describe or record them. Theoretically, it is possible to re-create net artworks like *Uncle Roy All Around You*, but the level of success would increase if artists' strategies are integrated into museum practices or by adapting existing models by giving more attention to the creative process. But would it be possible for *Uncle Roy* to end up in a museum collection? This is of course a difficult question with multiple answers, but aside from the issue of money or artistic value, what would be needed of the museum staff to conserve the work? What are the possible implications for them when it comes to caring for and re-creating the work in the future? But, even more importantly: would it be desirable at all? Would not the documentation that is gathered, made, and collected communicate more about a work, and how it is experienced, than its physical manifestation? Referring to the documentation videos by Blast Theory I argued for an expanded understanding of *documentation as presentation*. This treats video documentation, or other ways of capture, not merely as a way to capture live events, but also as a form of dialogue, response, and reflection. Furthermore, when brought into new presentation contexts, documentation has the potential to deepen the conceptual idea in new ways, adding new layers to the work. In other words, documentation becomes a critical space in its own right, enabling elaboration on the original work.

It seems an obvious statement: documentation might guide the decision-making process in conservation, but gaps or blind spots will influence the work. To make the most of the 'cracks in the wall', more emphasis should be placed on the roles and responsibilities of conservators and curators. A first step would be to recognize the need for an extended conception of documents and documentation, distinguishing between different types of documents, seeing their interrelations, and

phasing their role and function into the dynamic practice of net art. Whereas more and more collaborative approaches are undertaken to develop documentation models, the practical implementation of the work often remains with individual curators or conservators. A more collaborative practice of knowledge production and documentation, that also includes artists, information scientists, and programmers, could overcome this situation.[68] This will also lead to a better understanding of the work and potentially also to opportunities for creating new versions, thus building, elaborating, and commenting on a previous state. If this approach were followed it would not only opens new ways of thinking about what conservation means but it could evoke new ways of dealing with the structure and the function of the museum (Krämer 2007; Van Mastrigt 2009; Frieling 2014). A museum could shift from being a custodian of 'dead objects' to a 'living space' where presentation, conservation, discussion, and active exploration go hand in hand.

Notes

1 See Oxford Dictionary of Latin.
2 The term 'documentation', and 'documentalist' was mostly used in Belgium, the Netherlands and Germany and, to a lesser extent, in France and Great Britain. The United States started to use the term 'information science', A full account on the meaning and implication of the different terminologies goes beyond the scope of this research; instead, I focus on the use of documentation in as far as it is relevant to conservation. For more information on the history of the term 'documentation' see, among others, Woledge (1983).
3 The monographic principle and the decimal classification system allowed Otlet to manage a vast amount of data and run a knowledge information centre in the Palais du Monde or Mundaneum. It goes beyond the scope of this book to elaborate on Otlet's importance to information science. But it is interesting to note that with the discussions around hypertext that started in the early 1990s, and more recently relating to the semantic Web and the social Web, a renewed interest in Otlet is visible. See, for example, the numerous articles about Otlet by, among others, Boyd Rayward (1991, and http://people.lis.illinois.edu/~wrayward/otlet/otletpage.htm, Buckland (1991) and Wright (2007 and 2008).
4 The notion of object as sign is of course reminiscent of semiotics as developed by Roland Barthes, for example, in his book The Semiotic Challenge (1994[1988]), where he describes the object as a vehicle of meaning and as a communicator of information.
5 See, for example, Caple 2000, Clavir 2002, Muñoz Viñas 2005. The same goes for information studies, in which the term 'relevance' is used as a central concept. This is generally considered to be situational and as being ascribed to by the viewer (Buckland 1997). Windfeld Lund, for example, has taken Briet's notion a step further by emphasizing the activity involved in creating a document so that the activity itself becomes a document, regardless of whether the result is a tangible object or not, for instance, dance performance or a game of chess (Windfeld Lund 2003).
6 Interestingly, Day (2008) notes the rhetorical similarity with Latour's ANT, 50 years later, especially in his article about libraries (Latour 1996b).
7 The distinction between primary and secondary documents or sources is a common practice in the field of information science but also in other areas of research, for example in historiography and journalism. In most cases, the difference between a primary and secondary document is determined by how the documents are originally created and in what ways they are used. The discussion between primary and

secondary documents is important because it involves the notion of trust, which is and has been an important factor in determining the validity of results in research practices. An interesting case in this sense is the open online encyclopaedia Wikipedia (Dekker 2009:85–92).

8 Comments, or annotations, in code are also referred to as 'secondary notation', in reference to the more privileged primary notation of the machine. For more information about the use, benefits and challenges of graphical secondary notation, see Petre (1995).

9 For a clear explanation of the terminology see, Duranti and Franks (2015:183–5; 192–4).

10 See Ippolito (2008:127–30) and www.turbulence.org/Works/apartment/#.

11 See also Van Saaze (2009) about the different versions of Nam June Paik's One Candle and the way museums deal with these 'different' works. It could be argued that editioned artworks are the exception. Although this expresses the status of the work, such a distinction does not say anything about other versions of the work.

12 Analyzing the use of documents in the museum context, in their article 'Expanding Documentation' Dekker et al. (2017) focus on the growing popularity of the creation and management of documents in presentation and conservation practices.

13 In the arts little research has been conducted into the notion and implication of the artists' intent. Conservator Dykstra (1996) is one of the few conservators who attempted to develop a clear understanding of the notion of the artists' intent in art conservation.

14 For an elaborate account, see among others: Muñoz Viñas (2005), Laurenson (2006), and the recent anthology by Richmond and Bracker (2009).

15 Choices are inherently subjective, but the consequences of this subjective stance have only recently been addressed and acknowledged, most noticeably in the writings of Clavir (2002).

16 Matt Adams, interview Brighton, 5 February 2010.

17 For more information about *Uncle Roy All Around You*: www.blasttheory.co.uk/bt/work_uncleroy.html.

18 Matt Adams, interview Brighton, 5 February 2010.

19 Ibid.

20 The word 'capture' means that something has been seized or taken control of. However, when applied to video, nothing really gets 'captured' or seized, as Edmunds states: 'Video merely makes marks on a magnetic tape – marks which offer no guarantee of knowledge of the object that it is representing' (Edmunds 2006, n.p.). Nevertheless, the term is now widely used for the process of creating documents: 'To record or make a lasting representation of (sound or images); as, to capture an event on videotape', glossary, Inside Installations www.inside-installations.org/onlinecoursevideodocumentation/module1/glos01.htm.

21 Some publications were published that focus on documenting complex installations or performances, see, for example, Spreeuwenberg (2011), Dekker et al. (2017), which both explore artists initiatives, or how artists and museums value documents, see, for example, Buskirk (2003), and Giannachi and Westerman (2018) who trace the ways in which museums have documented performance art.

22 See, for example, Alberro and Norvell (2001) who interviewed artists about the function of documentation of their conceptual artworks. Scholar Peggy Phelan is probably one of the most cited with her quote 'Performance cannot be saved, recorded, documented, or otherwise participate in the circulation of representations of representations: once it does so it becomes something other than performance' (1993:146). More nuanced perspectives can be read in, among others, Reason (2003), Jones and Heathfield (2012) and Remes et al. (2014).

23 Matt Adams, interview Brighton, 5 February 2010.

24 Bench explores this suggestion in relation to the documentation and the pedagogy of contemporary dance. Her research shows how documentation circulates on the Web

and invites new and re-performances of documented choreographies. Rather than via bodily transference, documentation becomes a site of performance (Bench 2017). For further reading, see Star and Griesemer (1989) on the boundary object. Latour (1996a[1990]) and Leach (2010, 2017) take the notion of the object further, claiming that it has its own agency besides being merely a mediation tool, similarly to Bench, the object (or documentation) becomes the locus of knowledge production.

25 An impression of the size of their archive: 'Over the last 16 years we have meticulously archived every aspect of each project: creative notes, correspondence, publicity materials, press, design work, software, production manuals. The archive held by us includes 90 box files, 20 virtual models of cities and 900GB stored on servers. Because we work in collaboration so frequently archival materials relating to our work are held elsewhere (such as the University of Nottingham), usually for technical or intellectual property reasons. These include logs, messages sent and received, audio recordings, etc..' Notes taken from a proposal that was used for Legacy, a one-off initiative developed in collaboration between the Live Art Development Agency and Tate Research, 2008. For more information: www.tate.org.uk/about/pressoffice/press releases/2009/17509.htm (accessed April 2010). Also other artists make statements about the importance of archiving and conservation of their work and media art more generally; see, for example, Raphael Lozano-Hemmer (https://github.com/antimodular/Best-practices-for-conservation-of-media-art) and Casey Reas (https://github.com/REAS/studio/wiki/Conservation).

26 There are a range of methods to document users' experiences, to provide multiple perspectives and layers of information, which could be used to create a dialogue between the ideal conceptual existence of the artwork and its actual existence (Jones and Muller 2008), or to guide further study and the design of artworks (Benford and Giannachi 2011). The notion of the artists' art archives and archiving as such is much discussed but goes beyond the scope of this research. For further reading see, for example, Giannachi et al. (2010), who propose how various ways of documentation may be used to change archival structures.

27 Notes taken from a proposal that was used for Legacy, see n. 25.

28 Nick Tandavanitj, interview Brighton, 5 February 2010.

29 Ibid.

30 Bowker and Star (1999) review the status of classification and shed light on the centrality of classification systems. They provide insight into their construction and our relation to them, as well as the associated issues. At the same time they also provide important questions about the nature of classification and its relevance to information systems.

31 OAIS, Open Archival Information System (https://public.ccsds.org/pubs/650x0m2.pdf); INCCA, International Network for the Conservation of Contemporary Art (www.incca.org); CASPAR, Cultural, Artistic and Scientific Knowledge for Preservation, Access and Retrieval (www.casparpreserves.eu); 2IDM, Inside Installations Documentation Model (www.inside-installations.org), 2IDM emerged from the project group 'Documentation of Contemporary Art' within the German Conservators Association – Verband der Restauratoren). Similar initiatives have also been taken up in other disciplines. For example, in dance an important role is played by the Dance Heritage Coalition (DHC) in the US, and UK-based PARIP, the latter focused mostly on the pursuit of practice as research / practice-based research (www.danceheritage.org). PARIP, Practice as Research in Performance (www.bris.ac.uk/parip) was a five-year project by the Department of Drama: Theatre, Film, Television at the University of Bristol. After the five years, the Arts Council did not continue its funding. As such, it is a 'sleeping archive'.

32 It was soon acknowledged that the best way to conserve time-based media is collaboratively. In 2003, a consortium of curators, conservators, registrars and media

technical managers from New Art Trust, MoMA, SFMOMA and Tate organized 'Matters in Media Art', a multiphase project designed to provide guidelines for the care of time-based media works of art (http://mattersinmediaart.org). Similar research projects and follow-ups were initiated by Inside Installation (2004–07), the Ludwig Boltzmann Institute (http://media.lbg.ac.at/en/), and the Daniel Langlois Foundation (www.fondation-langlois.org). The initiatives depend on private and public funding, which jeopardizes their existence and research because they are not very sustainable in the long run. Many small-scale research studies were undertaken next to these large-scale initiatives. They also learned from other disciplines. For example, 'An Architecture of Interaction' (www.rhiz.eu/artefact-17010-en.html) developed a toolbox to talk about and compare the processes, meanings and effects of interactive work, especially the stages of interactive work where no outcomes or precise outlines can be defined beforehand. For more information on the issue of the sustainability of these initiatives, see Dekker (2010).

33 See, http://dublincore.org/.

34 Bracker and Richmond ascribe these differences to various factors: conservation emerged from within specialist practices dealing with varied materials and object types from within different contexts. These origins and their evolution have led to different conservation practices, even within the same museum (Bracker and Richmond 2009:xiv–v).

35 See, www.inside-installations.org.

36 The lessons learned from Inside Installation are taken up by PRACTICs of Contemporary Art: The Future (Practices, Research, Access, Collaboration, Teaching In Conservation). In this two-year research project (2009–11), 34 leading European museums, institutions and universities joined hands in giving direction to the assessment and implementation of knowledge gained through European projects of the last decade, as well as set the course for the future in key issues of conservation, preservation, education and public access to conservation. For more information, see www.incca.org/projects/64-current-projects/475-practics.

37 A poignant comparison between the issues involved in conserving a nineteenth-century oil painting and a twenty-first-century computer-based artwork is made by Sterling (2003).

38 See, for example, the work done in the context of the exhibition *Seeing Double* (www.variablemedia.net/e/seeingdouble/), the research by bwFLA – *Emulation as a Service* (http://bw-fla.uni-freiburg.de/), and, in particular, the emulation process of the artworks that are part of Olia Lialina's project *My Boyfriend Came Back From The War* (Dekker 2016).

39 For more information see, for example, www.uibk.ac.at/voeb/texte/kahle.html.

40 https://archive.org/about/faqs.php#21.

41 Kreymer and Espenschied developed the Webrecorder tool for Rhizome. It is used to create a high-fidelity, interactive recording of a website, which can be annotated, and a platform to make those recordings accessible. It provides a time-based capture of a website(s); however, it cannot be viewed separately from the site (the 'player'), and it requires a lot of work to click on all the links within a site. To overcome this laborious work, the developers' aim is to create networks of different people who capture their own versions of the site. Resembling a 'network of care', as I will explain in the next chapter, in the end this will provide a fuller picture of the site as a whole. For more information, see https://webrecorder.io.

42 Even though the need for new strategies to document artworks has played an important role since conceptual art, performance art and other ephemeral artforms (Buskirk 2003), the various ways websites, installations or performances can be recorded have been given little attention.

43 The Variable Media Initiative was initiated in 1998 by Jon Ippolito, at the time an associate curator at the Guggenheim Museum in New York. In 2002, the Daniel Langlois

Foundation teamed up with the Guggenheim Museum to develop and further promote the variable media concept. One aim of this partnership is to forge an international network of organizations with a shared goal of devising useful methods and tools (www.fondation-langlois.org/html/e/page.php?NumPage=98). In 2007, building on the work of the VMN, a broader coalition 'Forging the Future' was announced, which further refined and distributed free and open-source products that boost access and aid in conservation. See http://forging-the-future.com/.

44 The term 'kernel' is interesting because it signifies a program in computing that manages input/output requests from software and translates them into data processing instructions for the central processing unit. However interesting the term, during several private discussions I noticed that conservators, curators or researchers with little knowledge of computing found it confusing.

45 See for more information: Aunger (2004), Chirban (1996), Hammersley and Atkinson (1983), Walsh (1998) and Beerkens et al. (2012).

46 Or in case the artist has passed away, the ones closest to the artist or artwork, for example the collector, programmer or technician.

47 http://capturing.projects.v2.nl.

48 Personal conversation with one of the researchers, Sandra Fauconnier, December 2009, Rotterdam.

49 http://mattersinmediaart.org/.

50 Ibid.

51 www.bampfa.berkeley.edu/about/formalnotation.pdf.

52 See also: DeLahunta and Shaw (2006), Winget (2008b) and Dekker (2010).

53 See, among others, Fauconnier and Fromme (2003), Jones (2007) and Van Saaze (2009).

54 The idea of providing relations between different components (technical specifications) and occurrences (various situations and presentations: the ideal situation and minimal requirements) is further developed in the context of Inside Movement Knowledge. Elements of different models are adapted to the specific needs of contemporary dance documentation;see Van Saaze (2010). A model that focuses on how participatory art and design projects develop using different boundary objects is currently being developed by Huybrechts (2009).

55 See, among others, Van de Wetering (1996[1989]), Sloggett (1998) and Beerkens et al. (2012).

56 For a more detailed analysis of the tension in the relationship between artist (intent) and museum conservators, see Van Saaze (2009). The integration of the artist in the conservation practice has led, of course, to many discussions about the extent of the artist's involvement. See, among others, Buskirk (2003) and Kwon (2002), who describe the interlocking relationship between artist-artwork-process, especially in site-specific work. On the role of the artists in museum practice (conservation and presentation), see Davenport (1995), Sturman (1999) and others. And on the issue of the 'final artwork', see Becker et al. (2006:1–20) and Stringari (1999).

57 See also Taylor (2014) on the challenges for collecting media art in terms of defining the work in collection management systems, which often do not recognize the terminology or lack the space to elaborate on specific details. However, with the accumulation of information the challenge of traditional storing systems are likely to become less relevant; ways of accessing information will become important instead (Bowker 2007).

58 Private e-mail correspondence (22 February 2010).

59 See, among others, Jones (2007), Fauconnier and Fromme (2003) and Van Saaze (2009).

60 A method to capture different audience experiences was conducted by the research group during the Creator project (in which Blast Theory's *Rider Spoke* project was developed). The 'digital replay system' shows an interactive juxtaposition of materials

generated by different communities over time. 'The system allows for new and unexpected discoveries, as the work could be viewed through growing numbers of disciplinary lenses' (Chamberlain et al. 2010: 90). See also Benford and Giannacchi (2011), who offer a theoretical framework for understanding what they term 'mixed reality' performances. In addition, they document a series of these performances (including Blast Theory's *Rider Spoke*) using their tool CloudPad, which documents individual user replay of an artwork.

61 This happens regularly in the museum context, even with more traditional artforms. For example, Van Saaze describes how a registrar is bound by the existing protocols of a registration system, leading to a situation where a work consisting of multiple works cannot be properly archived. They are either filed under one name (neglecting the individual works) or the different works are filed separately, denying their interrelationship (Van Saaze 2009:150–3).

62 Van Saaze comes to a similar conclusion in her research into the work *No Ghost Just a Shell*. In analyzing the work in term of a 'collective' (in reference to ANT), she argues that 'the contingent processes in which artworks are done [. . .] play a formative role in what the artwork is and what it can be made into' (2009:162). See also Dekker et al. (2017), who come to a similar conclusion.

63 For more information, see http://insidemovementknowledge.net.

64 EG|PC (Emio Greco and Pieter C. Scholten) are the founding members of the International Choreographic Arts Centre Amsterdam (ICKamsterdam). See www.ickamsterdam.com/.

65 For a detailed overview and analyses, see Wijers et al. (2010) and Van Saaze and Dekker (2013).

66 Anthropologist James Leach – who argues that form is an extended set of relations depending on the information that is sent – also makes this suggestion. For more, see Leach (2010).

67 Bertha Bermudez, interview ICKamsterdam, Amsterdam, 11 February 2012.

68 Similarly, Van Saaze (2009) and Irvin (2006) both stress the active role of museums within the process of information gathering and documenting.

3   Networks of care

In 2011, I curated *NetArtWorks*, a series of small thematic online net art exhibitions on the theme of Identity Works for SKOR (Foundation for Art and Public Domain) in Amsterdam. Each presentation consisted of two newly commissioned artworks in combination with an existing iconic artwork. *mouchette.org* (1996) by Martine Neddam fit the theme perfectly.[1] *mouchette.org* is an interactive website that started in 1996 and has evolved over the years. The exhibition on SKOR's website raised several issues that I discussed with Neddam. Would *mouchette.org* be mirrored or embedded in SKOR, or should screen capture videos of different people navigating the site be shown? How should the biography of the work be presented? Many of these discussions were directed toward the old aesthetics of the site, and consequently developed into discussions on the conservation of *mouchette.org*. For example, features that were largely unknown in 1996 are widely used today, which makes many of the aesthetics seem outdated. The most obvious example is the entry page, which has early HTML checkboxes that are no longer used. Another example is the 'blog'-like structure used in some of the projects. Whereas in 1996 the site would be referred to as a diary or personal website, today it is understood as a blog even though it is quite different from one. Nonetheless, will people 30 years from now understand the meaning of the word 'blog', or for that matter a 'personal website'? Similarly, some of the interactive elements on the website are antiquated and difficult to explain without becoming overly technical or historical.

Instead of incorporating the old artwork into SKOR, Neddam proposed to concentrate on making a new work, a physical translation of the online project, focusing on the identity, or the brand, of *mouchette.org*. This led to the creation of the *Guerrilla Fanshop*. The shop sold some objects that were part of old projects, but allowed for a distinctive appearance: mimicking typical fan gear and paraphernalia such as stickers, T-shirts and bracelets. The *Guerrilla Fanshop* could be visited in SKOR's exhibition space, a small semi-detached building with its own entrance and two large windows overlooking the street. The exhibition space shared many of the characteristics of *mouchette.org* – a single entity in a larger infrastructure that could be changed according to specific 'rules' – and it became an interesting metaphor for the work. Similarly, the *Guerrilla Fanshop* was symbolic: on the one hand it reflected the desires of 13-year-old girls, while

on the other, in light of our discussions, Neddam would like the conservation of a work of art to become a new work of art.[2] The suggestion to conserve *mouchette. org* by creating a new work required Neddam to re-use and re-stage specific parts of the collection that consists of both online and offline artworks. In this way, an 'archive is never the "freezing" of something'.[3] Rather it surpasses the documented – or still existing – works to produce and proliferate new works.

Neddam's suggestions seem far removed from conventional conservation practices. The theory and practice of conservation usually starts with addressing the issue of how culturally significant works can be conserved to their authentic state or as close as possible? Or, if needed, how can artefacts, like art, be restored to their authentic states by means of intervention? When considering the notion of variability, *mouchette.org* is an interesting case to explore, because it is presented in various constellations and forms while maintaining many of its existing elements. In other words, in order for *mouchette.org* to 'survive FOREVER' as a mix of new and existing parts, it is necessary to find a way to conserve at least parts of the work for future re-creation. In this chapter I focus on the possibility of conserving *mouchette.org* by assessing if and how a net artwork can be conserved. I also take into consideration the specific knowledge that is needed to conserve artworks that continually change. First of all, what does authenticity mean in conservation, and what is its value and meaning in relation to variability?

Authenticity

The question of authenticity is a recurring topic and one of the key concepts in conservation theory. Nevertheless, for many decades the meaning of authenticity did not receive critical attention. The concept of authenticity was first given credence in the Venice Charter of 1964, which stated in part that 'the common responsibility to safeguard [ancient monuments] for future generations is recognized. It is our duty to hand them on in the full richness of their authenticity' (ICOMOS 1965). Most likely due to the homogenous group of discussants the term itself was taken for granted (Stovel 1995). Thirty years later, the International Council on Monuments and Sites (ICOMOS), together with the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) and the United Nations Educational, Scientific and Cultural Organization (UNESCO), organized 'The Nara Conference on Authenticity' in Japan. Representatives from 28 countries discussed the many complex issues associated with defining and assessing authenticity. The outcome was the *Nara Document on Authenticity* (Larsen 1995), which built on the Venice Charter. This time the concept stressed the particular importance and application of authenticity as it relates to cultural heritage, as well as how authenticity is rooted in specific cultural contexts and thus should be considered accordingly (Larsen 1995). Yet, over the years the exact meaning of authenticity has been contested and it is still subject to critical revision, reinvestment and redirection. This makes authenticity a variable concept.[4]

In art conservation, authenticity is generally used to measure the originality of materials and an artwork's completeness (Laurenson 2006). For museums,

the quest for authenticity is important because it represents 'the real objects, the actual evidence, the true data as we should say, upon which in the last analysis the materialistic meta-narratives depend for their verification' (Pearce 1992:4). This means that measuring authenticity allows for a distinction between 'real' works and forgeries. Elizabeth Pye, Professor of Archaeological & Museum Conservation, proposed a working definition that has been adopted by many conservators:

> Authenticity has been generally considered to mean genuine in terms of materials, workmanship and date, and processes used to authenticate objects concentrated on the identification of raw materials, the examination of tool marks and other aspects of construction, and, where possible, the use of scientific dating techniques.

> (2001:59)

In conservation theory this type of authenticity is also referred to as *nominal authenticity*, which defines empirical data, or 'the correct identification of the origins, authorship, or provenance of an object, ensuring, as the term implies, that an object of aesthetic experience is properly named' (Dutton 2003:259). Philosopher Dennis Dutton distinguishes *nominal authenticity* from *expressive authenticity*, which is seen as a 'committed, personal expression' in which the artist (or performer) is faithful to his/her own artistic style and creative process, rather than to a historical tradition (Dutton 2003:267). Whereas *nominal authenticity* enables an understanding of the practice and history of art through material analysis, *expressive authenticity* manifests itself through individual and/or collective values, beliefs and ideals. These are merely two types; essentially, authenticity has been approached and defined in multiple ways, particularly under the influence of less stable artworks and an increasing understanding of technical artworks in the last two decades.[5]

It could be argued that the ease and tolerance of replication, appropriation and versioning in the World Wide Web further complicates authenticity. Although artists have employed these strategies for many decades, the speed and accessibility of the network means that visuals, videos and sounds can be readily transferred and copied within seconds. Walter Benjamin's influential article 'The Work of Art in the Age of Mechanical Reproduction' (1969[1936]) is still the most cited when discussing the question of authenticity in relation to art produced by technical means. He asserts that reproducibility cannot be authentic because the 'aura' of the original work is lost. According to Benjamin, the manipulability or malleability of the photographic or phonographic copy diminishes what is at the crux of authenticity, 'the authority of the object'. This is due to the loss of its presence in time and space (Benjamin 1969:521). Net artworks are for the most part inherently variable and oftentimes multiple versions of the artwork exist. However, this does not equal reproduction; these are different versions, hence they can still be authentic. *mouchette.org* is exemplary in this sense. The work is rooted in specific art historical and technical contexts. The different projects act like an assemblage that evolves; in addition, the deliberately ambiguous wordplays and references

influence authenticity in a way that questions both nominal (material) and expressive qualities (conceptual ideas).

mouchette.org

mouchette.org is an interactive website created in 1996 by a pseudonymous character initially known as Mouchette. The project developed and evolved over the years. Additional pages were added and other physical offline projects and events were organized. In 2010, after many years of well-kept secrecy, Martine Neddam revealed herself as the author behind Mouchette.[6] However, most people doubted her real identity since Neddam had performed role-plays several times before. For example, when asked to present *mouchette.org* at an event, she asked other people to stand in as Mouchette (Dekker 2011a).[7] Nevertheless, even today the visitor is welcomed on the homepage by a large bright flower, with a few red drops, a fly buzzing, some ants squirting around and a small stamp-size photo in the upper left-hand corner of a young girl looking down, presumably Mouchette (Figure 3.1). There are several checkboxes and a drop-down menu from which several projects can be accessed, and unexpectedly one can stumble upon invisible links that direct to a project or present a pop-up text. In the background one can hear the howling sound of a wolf, or, when revisiting the site, the soft sobbing, giggling or yawning of a girl, or merely a brief 'bonjour'. Mouchette claims to be almost 13 years old, an artist and living in Amsterdam. What initially appears to be the personal website, in English and French, of a female teenager evolves into darker themes in subsequent pages.

The name Mouchette derives from the novel *Nouvelle histoire de Mouchette* (1937) by French author Georges Bernanos, and the film *Mouchette* (1967) by Robert Bresson, a free adaptation of the novel. In both accounts, Mouchette is a girl between childhood and adolescence. She leads a harsh life: rejected by society (family, school and friends), raped by a trusted older man, and the death of her mother. These events leave her disheartened, and although never made explicit, the story ends with her suicide. Bernanos claims that the story was inspired by his first-hand accounts of the atrocities of the Spanish Civil War while he was exiled in Majorca. Bresson wanted viewers to understand how humans negotiate their own redemption (Hudson 2009). *mouchette.org* takes many of the themes that play out in the book and film and re-performs them in a contemporary setting, namely as an online diary with several project pages. Neddam uses some Web characteristics in intricate ways to emphasize the drama and enigma of the story. For example, hyperlinks create confusing circulation; interactive possibilities produce several layers of information and identity play is performed in various ways. The latter is best visible in the wordplay of 'mouchette', the website's domain name, the girl's name and the French word for 'little fly', but is differently shaped in subsequent projects. The equivocal use of these characteristics makes it difficult to comprehend and identify important and less relevant aspects of the project. Moreover, the themes and concepts used in *mouchette.org* amplify this sense of ambiguity.
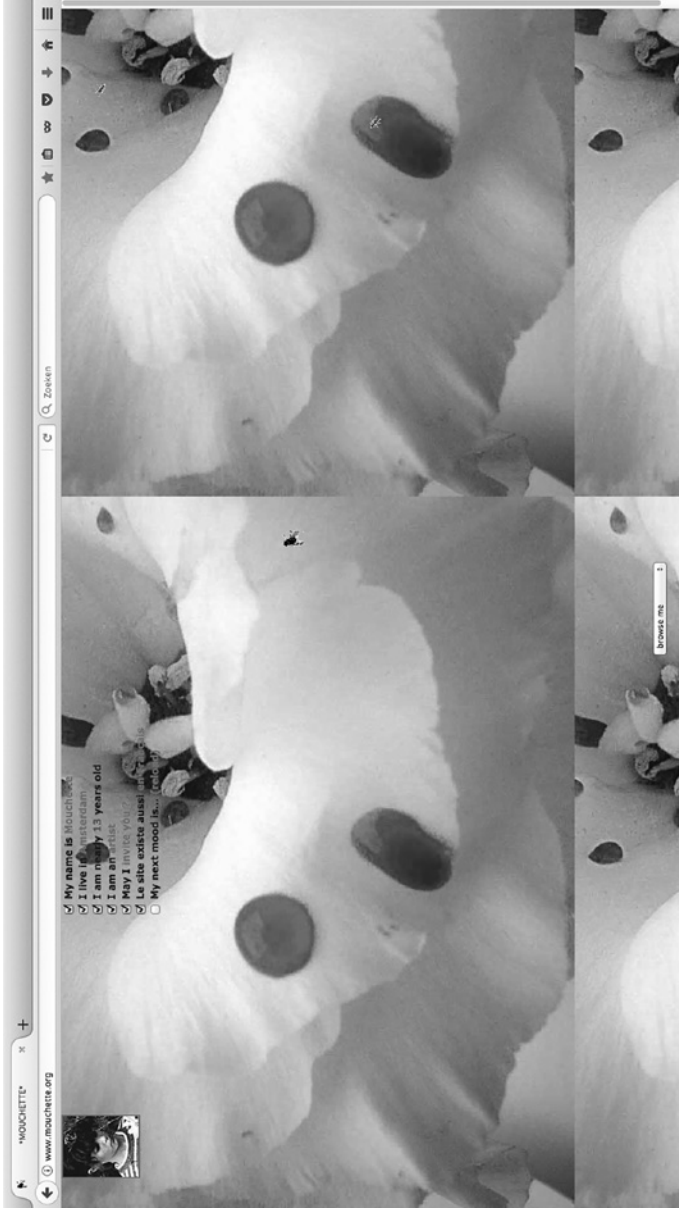
Figure 3.1 Martine Neddam, *mouchette.org*, 1997.
Screenshot homepage, 11 October 2017

For example, the website's most prominent themes evolve around metaphors of violence and death, more specifically suicide.[8] On the opening page, a large flower with several small drops of blood on its petals accompanies the photo of Mouchette. An animated GIF[9] of a fly moves slowly in the centre of the page, while two animated GIFs of ants move frantically to-and-fro at the edge of the screen.[10] This somewhat weird scene is enhanced by a female moaning softly, almost sexually. When clicking on the fly, the visitor enters a page where Mouchette points to a sentence with the meaning of her name. Another click on the fly opens a new page with a half-finished meal on a dinner plate. The image is abstract and shows a hand pecking at the remains.[11] Another hand becomes visible when scrolling down. This project can also be accessed by clicking on 'dead fly' in the drop-down menu on the homepage. A grey square with the words 'it's me' circles above the plate, accompanied by the sound of a buzzing fly. Clicking on the square proves rather difficult. It is either through determination or smart thinking that the button is 'caught'. If successful, a black page opens. Green letters appear after a few seconds, as if typed live. They accuse the visitor of killing the fly when he/she pressed the button on the previous page. The fun of play on the previous page is turned into dark humour. The story continues when the fly – or the girl? – asks the visitor to tell her why she's dead. An e-mail entry opens, and when clicked again (either by ignoring or sending a message), another page opens with *Lullaby for a Dead Fly*. The dark, almost melancholic, tonal music accompanies fragments of text that pass across the screen from all sides. The text consists of changing e-mails sent by people who have answered the question.

As mentioned, over the years Neddam was invited to present the project at exhibitions and events, but instead of showing up herself she asked other people to impersonate Mouchette. In some instances a 13-year-old girl presented the project's website, in others, a male in his 30s. Neddam also used various objects in exhibitions, from videos to cheap and colourful soft toys, post cards and compact discs (Figure 3.2). She also organized several events around the website, for example, a Last Birthday Party (14 December 2001) and the Guerrilla Fanshop (6 July – 26 August 2011) (Figure 3.3). Neddam considers all of these outputs to be integral elements of *mouchette.org*. As such, Mouchette can be seen as an identity through which various projects are presented, or as Neddam calls it a 'brand' (Dekker 2011a). Use of the terms 'brand/branding' are interesting when considered in the light of the readings of sociologist Celia Lury, who argues that a brand is 'a platform for the patterning of activity, a mode of organizing activities in time and space' (2004:1).[12] This means that a brand emerges in parts. Therefore, as she argues, it is an open system that extends into, or implicates, social relations. Furthermore, 'it is some-thing that is identifiable in its doing' (ibid.).[13] This notion of 'brand' affirms the construction of *mouchette.org* as an assemblage that varies over time and is composed of different parts and projects. The suggestion of an assemblage is reinforced by the intricate navigation of the website, which changes with each visit. The multiple projects both signify and give meaning to Neddam's Mouchette. Arguably, these characteristics are the website's greatest appeal, but also prove to be the most challenging elements for the conservation of the project.

Figure 3.2 Martine Neddam, *Guerrilla Fanshop*, 2011–present.

Photo by Lisa Elsenburg

Figure 3.3 Martine Neddam, *Guerrilla Fanshop*, 2011. Presentation at SKOR, Amsterdam July 2011.

Photo by Hennings Backer

What are the limits of such variability and to what extent does its code and infrastructures change?

These two questions relate to another challenge: the time-consuming technical maintenance of the website. According to Neddam, because of the ongoing software updates and changes to the Web, she spends several hours a day fixing bugs and making small changes to *mouchette.org*'s code.[14] Although this may be overstated, and would certainly not be the case for every net artwork, the problem remains: What does this mean for the practice of conservation? How can such an involvement be implemented in existing workflows? More importantly, how much should a conservator know about a work? Knowledge is a necessary condition for authenticity. Various kinds of knowledge are involved in this case study, from material to art historical and social behaviours. In other words, in *mouchette. org*, nominal and expressive authenticity go hand in hand, and at times influence each other.

To summarize, *mouchette.org* is heterogeneous and continually re-negotiates its own conceptual structures. The development and maintenance involve incompatibilities, constraints, rules and a certain amount of improvisation. It poses several challenges for conservation. For instance, it consists of some old-fashioned material aesthetics; some of the outdated code and software can be difficult to read; maintenance can be very time consuming; participating users might change the work; and it evolves into other projects. It could be argued that these problems are not unique to *mouchette.org*, or net art for that matter; however, the combination is rarely found in other artforms.[15] Moreover, the speed of developments, and consequently the depth and breadth of different knowledge fields, are major concerns. What knowledge and practical support is needed for a website to remain accessible?

(Re)constructing net art

The distinction between software and code is often blurred in common parlance, but understanding the difference between the terms often helps to identify authenticity. In general terms, software consists of the instructions that are entered into the memory of the computer, and is referred to as 'soft' because it is more malleable than the hardware (Petzold 2000). Software is the computer program that end users perceive and/or interact with, while code is what constructs that software; each software can consist of layers of code. Software and code are often hidden and not always directly visible. The hardware shields the programming and functionality beneath. Nevertheless, in most software the back-end code has a specific aesthetic that is easily recognized by those familiar with the programming language, and its 'front-end' aesthetics can also be discerned through historical comparison. Arguably, software itself does not have a specific aesthetic. Software aesthetics are largely adopted from other media and conventions. For example, desktop files and documents are clearly metaphors for office environments. However, computer functionality does produce distinct aesthetics, for example,

low-tech aesthetics that, as explained by Goriunova and Shulgin, reveal themselves through the limitations of the technology:

> Bottlenecks, such as processor speed, screen resolution, color depth, or network bandwidth – 4-bit, 8-bit music, 16-color pixelized visuals, slow rendering, compressed image and video with artifacts – create an authentic computer aesthetics, that is, the aesthetics of low-tech today.
>
> (2008:113)[16]

Similarly, computer (hardware) displays also have certain aesthetics, mostly through their limitations; for example, screen resolutions, processor speeds and network bandwidth. A combination of these aesthetics, both hardware and software, can be traced in *mouchette.org*, which Neddam tries to conserve as much as possible to create a 'witness' to a specific time. The distinction between hardware and software can also be seen as the difference between front-end aesthetics and back-end aesthetics. The front-end is the Web browser, the interface of the website and the screen to view the work.

When opening *mouchette.org*, an immediate mid-1990s hardware and software aesthetic is recognized. The homepage shows a close-up of a flower covering two-thirds of the frame. The rest of the frame is tiled with the same image. The size of the larger image refers to the original width of a typical browser screen in 1996, with a resolution of 800 x 600 pixels (width x height). Similarly, the checkboxes next to the photo and the drop-down menu with the title 'browse me' at the bottom of the page signal the aesthetics of its language, HTML (HyperText Markup Language). In the early days of the Web HTML elements formed the building blocks of websites. The extensive use of these old features in *mouchette.org* can be seen as a longing for the past, a technical fetish. But to Neddam, there is more to it. By holding on to the old aesthetics and functions, she wants to highlight a time when the user controlled things more easily. As Neddam explains, the game of the 'dead fly' described earlier is a good example of how functions have changed and affected people's behaviour. When she programmed the 'dead fly', visitors could resize the screen manually. It was not programmed to a fixed size, unlike some websites. Although the 'it's me' button was extremely difficult to catch as it spun around the screen, the screen could be resized to make a small cage to trap it. This resizing also affected the Javascript program, which slowed down the movement of the button. Nowadays, resizing happens automatically, and since some sites protect their layouts, people tend to forget, or ignore, that it is possible. According to Neddam, this has led to a loss of user freedom and interaction.[17] In a similar way, Neddam dramatized the limitations of long image loading times due to slow network connections. Short groans, howling dogs and a sobbing female voice played on repeat until the image was loaded. These could be adjusted with faster loading times, but the limitation of slowness and the repeating sounds proved good methods to heighten the tension of the narrative.

These aesthetic references are important elements that reveal aspects of the author's creative process and artistic intent. Neddam works within the constraints of a past that bears witness to earlier Web aesthetics. She uses these early aesthetics to enforce this past. They also allow her to emphasize the theme of the website and its literary style. To put it more explicitly, just the idea that a 13-year-old made a bilingual and intricate website is already implausible. This narrative of misconception and false expectation runs through the website and is emphasized by hidden links and the deliberate (mis)use of tools. An example of the latter is the HTML checkboxes that lack customary functionality. Firstly, they are already checked, not to mention mere static graphic elements with text that links to other pages. As stated by art historian Matthias Weiss,

> [t]hese are all hints towards the literary possibilities of the net, of moving within fictional trails within the texture of the Internet, and of inventing a separate and different identity. However, the site transcends the application of these and leads to a reflection of the mechanisms of self-construction.
>
> (2009:170)[18]

Neddam is persistent in conserving the old aesthetics; however, this is not to say the website is static. On the contrary, *mouchette.org* is very dynamic, not only because external updates require the project to be adjusted, but visitors to the website also play an important role. They can comment on specific projects. They can also 'be' Mouchette by signing up to the Mouchette Network or by creating their own Mouchette page.[19] Seemingly, these interactive elements make it easy to take control of *mouchette.org*. This use of commenting on issues and questions raised by Mouchette establishes the interactive side of the website. However, none of these actions influence the back-end: the software and code that is used. At first sight, the use of software seems limited to its functionality.

A functional use of software does not mean that software, or programming, can be easily migrated onto a new platform. For example, to make everything work properly after migration it would be easier, in theory, to rebuild *mouchette.org* in a PHP5 environment rather than adjusting the code in its current language (PHP4). Rewriting is easier than reworking existing software. Fixing outdated versions takes a lot of time and most programmers are not interested in, or capable of, doing this. Although the logic might be the same, the language of a new version may be different from the older versions. This is not to say the aesthetics, or the work itself, changes. Although they may, it primarily signals the existence of several parallel executions or reworkings of the artwork. Variations between versions are made in order to improve on or prolong the experience of the artwork. Moreover, even the best programmers forget exactly how older systems work. This is not necessarily a problem of remembering. Very simple programmes built two years ago might be difficult to fix, simply because the environment around them has changed. As mentioned by programmer Ellen Ullman:

> By the time a computer system becomes old, no one completely understands it. A system made out of old junky technology becomes, paradoxically,

precious. It is kept running but as if in a velvet box: open it carefully, just look, don't touch.

The preciousness of an old system is axiomatic. The longer the system has been running, the greater the number of programmers who have worked on it, the less any person understands it. As years pass and untold numbers of programmer and analysts come and go, the system takes on a life of its own. It runs. That is its claim to existence: it does useful work. However badly, however buggy, however obsolete – it runs. And no one individual completely understands how. Its very functioning demands we stop treating it as some mechanism we've created like, say, a toaster, and start to recognize it as a being with a life of its own. We have little choice anyway: we no longer control it. We have two choices: respect it or kill it.

(2013[1997]:117)

So, it is not the memory of a single detail, but the whole ecology of both hardware and software that needs to be taken into account, as one minor detail is linked to or is dependent on another. This becomes clear in the following example.

As mentioned, Neddam is quite specific in her efforts to conserve the old software for as long as possible. However, instead of emulating or migrating old pieces to new software, she prefers to make the old ones function again by adding new patches to circumvent problems. For example, at the time they were made, some of the projects resulted from specific ideas, but the limitations in hardware formats prevented Neddam from realizing them. Neddam states that she created 'Lullaby for a fly', including its soothing and repetitive music, with the idea that one day a person would take a computer to bed.[20] Although the possibility of taking computers to bed is very real now, Neddam's feature runs on a specific version of Flash that does not function properly with current technology. Neddam thought of redoing the piece, emulating it. But, during the attempt, programming mistakes were made. The text would not run in the preferred order and eventually blocked the flow. Neddam accepted this at the time. And now, while considering the possibility of a new version, she is unsure whether to fix earlier mistakes or leave them as a record of earlier programming. As she explains:

I like that Mouchette's back-end is a bit 'dirty'. I like to compare programming to painting. Just as Mondriaan's brushstrokes are very important, there is an authorial 'hand' to a website. All the compressions for example are on purpose. This hand speaks directly to the emotion and shows the intention of the work. I strongly believe that there's a programming style which relates to the goal you want to reach.[21]

It could be argued that Neddam, in this case, prefers the material (nominal qualities) to her conceptual ideas (expressive qualities). However, taking into account the kind of materiality that I described in the introduction (i.e., highlighting technical and social relations of network culture from which materiality emerges), the relation between nominal and expressive qualities is more complicated, which makes a stringent division incongruous. While Neddam could not execute her

initial concept due to technical limitations, these restrictions had a primary influence on her work.

To return to the importance of programming styles, computer programmer Paul Graham (2004) takes the comparison between painting and programming one step further. While advocating for their similarities, he suggests that hacking and painting involve the same creative process.[22] Both of them are 'learnt by doing', meaning that most paintings have a history of sketches and consist of different layers on a canvas. These layers slowly lead to the final painting, in which every detail has been carefully chosen. Painters also copy and learn from existing works. Similar to literature, versions of paintings develop by copying the methods and styles of earlier masters, not necessarily in an attempt to make faithful reproductions. The artist wants to improve a skill and bring the history of painting (or literature) to new levels. A similar strategy can be found in open source practices, where one studies the source code and learns to program. In short, a painting evolves through sketches, layers and experimentation. Such a dynamic process is also visible in coding. This demonstrates why it is important to read the back-end of net art, not only to be able to restore the code, but to also see why and how certain decisions were made. As in the case of *mouchette.org*, technical limitations serve a conceptual goal. To quote Graham: 'Great software, [like painting], requires a fanatical devotion to beauty. If you look inside good software, you find that parts no one is ever supposed to see are beautiful too' (2004:29).

Personal programming is also a topic among programmers. Some even claim to recognize someone else's training as, for example, originating from computer science or biology.[23] Without moving into detail, the importance of human and cultural factors in programming, and thus computing, is demonstrated by the condition of 'Turing completeness'. Named after Alan Turing, 'Turing completeness' signifies that a universal Turing machine can simulate every other computing device. This means that a machine, which acts as a universal Turing machine, can, in principle, perform any calculation that any other programmable computer is capable of.[24] As researcher Florian Cramer points out, while machine functions might be interchangeable, 'their different structures – semantic descriptors, grammar and style in which algorithms can be expressed – lend themselves not only to different problem sets, but also to different styles of thinking' (2008:170). Similarly, media theorist Wendy Hui Kyong Chun shows that there are many myths around the dichotomy between the computer and its 'all-powerful programmer who magically transforms words into things' (2011:19).[25] She counters the belief that source code automatically does what it says. Such mystification of computing neglects the complexity of the execution. As she explains: 'Code does not always or automatically does what it says, but it does so in a crafty, speculative manner in which meaning and action are both created' (2011:24). This is to say that software is layered and shows itself most clearly in the execution of code. For instance, a programmer writes source code that consists of instructions in a certain language (for example, the commonly used C or FORTRAN).[26] Computers can only execute instructions that are written in machine language (known

as a low-level language). As such, compilers transform programs by producing intermediary forms or object codes that are similar to machine language. It may be that only lines of code that are necessary during particular moments or for specific programs may be executed (Chun 2011:24). Recalling Graham's words earlier, source code can reveal more than what is executed.

This situation was demonstrated when programmer Mark Hellar looked into the work *Agent Ruby* (1999–2002) by Lynn Hershmann and found a 3D model and code that resembled a text-to-speech program. These were never used in *Agent Ruby*. As he describes: 'It looked like they had been trying to create a 3D model that would convert text from the artificial intelligence program into speech, but that never happened'.[27] This leads to the observation that not only do the writing styles differ, but also that the source code is not mere repetition. Some things are left out when the code compiles. Thus, the original source code may contain more information than what is seen after the compilation. In this case, the code could be said to contain contextual information about the technical constraints at the time, and possibly the artist's ambitions (in 2004, Lynn Hershmann used a text-into-speech system in her project *DiNA*).[28] It is important to understand source code as something ambiguous and not as generalized writing. As Chun also argues, when dealing with computer languages it is a myth to think that there are no mis-readings or misunderstandings and only transparent information (2011:79). The extent to which code is ambiguous, and hence what can or cannot be altered, is crucial to the practice of conservation, particularly when considering which approach to take in re-creating or conserving a work. Furthermore, if software is the behaviour of the machine or a process in action, then how can a historically significant compiler, operating system or database be conserved?

To briefly summarize, so far I have emphasized the following points in identifying the relevancy of authenticity in software-based art. Firstly, conceptual ideas are influenced by the restrictions of hardware and software, but these limitations can become driving forces. Secondly, the act of programming, programmers and the code are part of an artwork's style and aesthetics. Thirdly, code often contains contextual information that is not necessarily used, but can clarify as well as cloud meaning. I will explore the relevance of these points in more detail in the following by analyzing a media-archaeological reconstruction of the computer-based artwork *LoveLetters* by David Link, and compare it to Neddam's endeavours.

Reconstructing front-end and back-end

Neddam explores the aesthetics of software and code in profound and intricate ways. With prominent moving GIFs, a mix of different language styles (from literary poetry and invented language to audience comments), the insistence of dealing with the limitations and technical aesthetics of early computing, and the use and misuse of interactivity, *mouchette.org* combines elements of artistic, linguistic, computational and social cultures. *mouchette.org* reinforces their interdependence, pushing the aesthetic boundaries of art, while opening up societal taboos like incest, pornography and suicide. With a firm background in the arts,

Neddam started as a novice on the Web. She entered a new world without a clear model of how to make art in this environment. This attitude of working without a plan, building from scratch and recycling, is very much reflected in the programming style of *mouchette.org*:

> HTML code, in the beginning, was also something you could pick up and recycle, in a very humble, un-technical way, like *Facteur Cheval* picking up stones to build a palace. The knowledge came by doing. In the end the interface is totally custom made. [. . .] I resisted CMS because of the excessive standard functions, but for the website about.mouchette.org I'm using a common CMS and it gives me a high sense of frustration, like being in a prison, having to use all kinds of predesigned boxes. [. . .] I dream of having a software that lets me create by archiving. I am trying to find a programmer to compose an archival system within a spatial environment, an archival system that will suit Mouchette's needs and nothing else.[29]

Can the attitudes reflected in the work be conserved? Over the years Neddam has continuously updated and maintained *mouchette.org* (Neddam 2010). The website's success shows that her conservation strategies are effective, but is it possible to rebuild software after years have passed or an artist has died? In the past decade several successful attempts have been undertaken to restore, emulate or reconstruct software-based art. In most of these cases this was in close collaboration with the artist/programmer, but this has not led to best practices that could be used to find solutions for the conservation of these works.[30] Moreover, what happens when there is no guidance from the artist/programmer? David Link's rebuilding of *LoveLetters* shows that it is possible to reconstruct previously made software-based works.

LoveLetters was programmed in 1952 on a Manchester Mark I by Christopher Strachey, a fellow Cambridge student and later a working colleague of Alan Turing's at Manchester University. The Manchester Mark I was one of the earliest electronic, programmable and universal calculating machines. The machine used Williams tubes as means of volatile storage. Strachey's software used the Ferranti Mark I's built-in random generator to generate over 318 billion unique love letters (Example 3.1) (Link 2006).[31] Although the letters are fun,[32] it is in the process of working, in other words, the context of the generator's processes, that makes them interesting and gives additional meaning to the data.[33]

In 2009, David Link presented his reconstructed *LoveLetters_1.0. MUC= Resurrection. A Memorial* at ZKM in Karlsruhe. To build a functional replica of the Ferranti Mark I, Link worked from two archival photographs and several other documents found on the Internet, and deciphered the software from Strachey's handwritten notes.[34] As part of the travelling exhibition *Fun in Software*, Link's installation was presented in 2010 at the Arnolfini in Bristol and MU in Eindhoven. The installation consisted of a Ferranti Mark I replica and some of the original working components, like the old teleprinter, the original Williams

tubes, Stracey's digitized notes and the projected love letters. Visitors could use the Ferranti Mark I by following the instructions. By toggling switches on the reconstructed interface, the user could execute Strachey's software through its rewritten code. If someone managed to type his or her name in Baudot code on the computer's typewriter, the resulting love letter would carry his or her signature. The new letter was then projected at the entrance to the space or somewhere on the building's exterior. At the same time, the letter was recited through an old speakerphone placed outside the exhibition space. Stracey's digitized notes were displayed on two vertical LCD screens near the installation. These revealed his intricate ways of thinking. The visitor was given unique insights into Link's reconstruction process by sifting through and deciphering this information.

MY LIKING ANXIOUSLY ADORS YOUR ADOUR. MY FELLOW FEELING IMPATIENTLY LONGS FOR YOUR AMOROUS ENTUSIASME. YOU ARE MY BURNING DEVOTION. MY SYMPATHETIC HUNGER. MY DEAR INFATUATION CLINGS TO YOUR APPETITE.

YOURS AFFECTIONATE

MUC.

Example 3.1: DARLING JEWEL[35]

This is not to say that reconstructing software is an easy undertaking. Link confirms it took many years of arduous work because tracing the original equipment also turned out to be more difficult than expected. The hardware was often found by accident through university libraries or, in one instance, discovered in a dark corner of a farmer's barn.[36] Because some parts were extremely hard to find, it was necessary to emulate them. It can be argued that because the original paper notes could be accessed, reconstructing then re-executing the code was simpler. This kind of material evidence is easier to keep and read than code stored on obsolete hardware. However, as Kirschenbaum has shown, information (stored on a hard drive) leaves a trace that can be forensically reconstructed, 'given sufficient resources – that is, elite technical and financial backing – data can be recovered from media even under the most extraordinary conditions' (2008:xii). Those trying to re-create gaming experiences make similar statements.[37] Next to reconstructing technical parts, specialized systems are devised to annotate and capture user data during the development process. This simplifies the reconstruction of the code.

As Neddam also experienced throughout the years, the reconstruction or restoration of software is possible (Neddam 2010). Nevertheless, the success of a restoration depends very much on the programmer doing it. Whereas most

programmers fix problems by replacing or rewriting code into new versions – something of which Neddam is not in favour – only a few programmers take the trouble to work from the old code. For these programmers, software is not just a tool that can be adapted, emulated or used to make the work easier. For them, the fun is in the mental process of doing code that influences how they structure and think about information. As described by Niek Reus (one of Neddam's programmers):

> Before you start with the actual coding work, you visualise the results in your mind. In a sense it is close to playing chess. You try to figure out all the moves and the consequences before making the move. The actual work, the writing of code or programming, is merely typing in the final result. Sometimes a problem is technically visible, but more often there is a certain sensibility that you need to have in order to solve a specific problem.[38]

Even though Neddam insists on keeping the 'original' code, additional code is written to enable it to function properly. Although it could be argued as being variable, in most cases the 'original' code will change. On a practical level, an element that no longer functions because of browser settings could be made to work by adding a patch that translates the code into the new settings. This means that instead of being variable, the work is always in process, i.e., any transformation of the code gives it a different meaning.[39] By translating the code, the language changes, as does the acquired meaning. Furthermore, it follows that code attains meaning in relation to specific contexts; for instance, when combined with that which lies outside of the code, or as Matthew Fuller states,

> [Software] gains its power as a social or cultural artefact and process by means of a better and better accommodation to behaviours and bodies which happen on its outside.

> (2008:5)

It is in light of social and contextual relations that Link's attempt is less 'successful'. Although he restored the functionality of the work, the historical context, meaning and function of the love letters were lost on most visitors. These could only be traced through written accounts, or in other cases, through video documentation. Furthermore, by disconnecting the various components, such as placing the typewriter on a pedestal covered by a protective glass case and shielding off the space around the Williams Tubes, a work that was once whole (defined as different elements that produce a result by working together) is now disconnected. The playful *LoveLetters_1.0* still functions, but by separating and shielding some objects, it is seemingly in a state of 'freeze'.[40] As such, the material (nominal) authenticity of the machine is conserved at the expense of the conceptual (expressive) and experiential authenticity of the work. An emphasis on the physical object fits traditional conservation strategies, but shifts the focus

away from setting up a system that could, for example, work with a wide variety of documents and operating systems. Such a strategy, as Ippolito also argues, would establish the rules necessary to evolve an ecosystem capable of withstanding unpredictable changes in technology. It is a future vision of self-evolving artefacts: 'The organisms on the landscape – variations on word processors – might be interbred to produce new variations, and those judged best able to display various documents would pass their code onto the next generation of word processors' (Rinehart and Ippolito 2014:202–3). However interesting this may be, a claim for the conceptual and the experiential over the material overlooks the importance of a media-archaeological approach that tries to open up historical paths that are themselves easily overlooked. Certainly in art, stepping away from conventional examples as well as from the endorsement of consensus is an important step.

To briefly summarize, the notion of variability is more complicated when used with software-based artworks than, say, analogue installation art. Although variability in the true sense of the word (i.e., instantiations based on the same score/code) might not be possible, digital documents contain remarkable amounts of historical information through which saved metadata can be accessed. As concluded by Kirschenbaum, 'computer operating systems are characterized less by their supposedly ephemeral nature than by the exquisite precision of their internal environments' (2008:204). I will return to this seemingly paradoxical situation as being both 'variable' and 'processual' in Chapter 6, where I discuss the difference between 'fixed' versus 'fluid' and 'performative' versus 'processual' processes. For the moment, it can be concluded that software is not necessarily a problem that cannot be overcome in conservation. As long as the susceptibility of specific code is comprehended, inclusive of software and the cultures around it, a website can survive for many years. However, it is important to note that the use of open standards increases the chances of survival. While it is acknowledged that using open source software in artworks benefits conservation (e.g., Kirschenbaum et al. 2009; Dekker 2010), questions around the standardization of software-based art in terms of conservation (for both open source as well as proprietary hardware and software) will likely be the greatest challenge in the (near) future.

A related issue that is often overlooked within digital data collection systems is that they often 'assume ideal circumstances and a homogeneous data set, not the messy world of proprietary and mutually incompatible formats one gets from an individual user's hard drive' (Kirschenbaum et al. 2009:110). Present strategies such as cloud computing or other third-party back-up services will further complicate these matters. Another characteristic of many net artworks, and certainly of *mouchette.org*, is their processual nature. Websites change over time, sometimes as a result of technical changes (ranging from new browsers to screen size adjustments), or through visitor inputs. Technical variations can be traced in code, but a conservator must choose which version(s) to save (either by freezing, restoring or documenting) or with which to work (in the sense of keeping the website alive as a point of departure). Moreover, visitor input and user experience

Figure 3.4 Martine Neddam, *mouchette.net*.

Screenshot homepage, 11 October 2017

are much more difficult to trace. At the moment, this kind of information is often neglected and hard to capture. In other words, there is often only content without context.

Network of care

In the case of *mouchette.org*, users play an important part in the evolution of the work. They are invited to utilize specific elements and create their own (version of the) website. They are also interesting to consider in terms of conservation strategies. To start with the former: how can users 'become' Mouchette? At a certain point in the website visitors are invited to enter Mouchette's network (Figure 3.4). They can obtain a password that enables them to act like Mouchette. With this password, texts and photographs can be uploaded to *mouchette. org*. E-mails sent to Mouchette may also be answered by the new inlogee. For Neddam, *mouchette.org* is primarily a tool for communication: a social platform that branches into several directions. First of all, *mouchette.org* is a playful interface, as Neddam explains, a way to express herself about issues that she as a non-native English-speaking person would find difficult to articulate (Dekker 2011a). Secondly, *mouchette.org* as a social platform is a space where people can communicate with or help each other. And thirdly, it allows visitors to use the website for their own projects, or to build on or re-use in their own webspaces. The latter testifies to the project's success, as several Mouchettes have been created over the years. Moreover, the work was promoted by a close but dispersed community of followers. This could be part of the solution for its future conservation.

   The term 'network' is used in different ways to characterize current social formations (especially within technological cultures). My intention here is not to

focus on a theory of networks, but to indicate the potential of networks as collaborative practices that work towards the realization of projects. As such, the networks I'm referring to are closest to what media researchers Geert Lovink and Ned Rossiter have termed 'orgnets' (Lovink and Rossiter 2005; Lovink 2008:239–55). Orgnets are organized networks that should be seen in opposition to commercial social networking websites. These network formations are based on people who come together for a common purpose by building strong ties among dispersed individuals, thereby bringing goal-driven organization to the Internet. The emphasis is placed on collective intelligence (Levy 1999), or the idea of a knowledge community (Jenkins 2006), in which everyone knows something, but no one knows everything. However, I do not want to confine my use of the term 'networks' to technology. And following researchers Yuk Hui and Harry Halpin (2013), who lean on philosopher Gilbert Simondon's collective individuation (1989), I want to stress collectivity in networks. Simondon's notion of collective individuation (1989) is an interesting point of departure to analyze the underlying structures of networks. It helps to see the individual and the group not as opposing but as entities that influence each other and together constitute a constant process of individuation. As stressed by Hui and Halpin:

> Psychic individuation to Simondon is more a simple individualization, which is also the condition of individuation, while collective individualisation is the process that brings the individual into a state of constant transformation [. . .], each individual is at the same time both an agent and a milieu.
>
> (2013:111)

A networked, community-driven conservation strategy is not unlikely to happen for *mouchette.org*. For instance, a situation presented itself on 23 July 2002. A few months after Neddam launched a quiz comparing characters from the film *Mouchette* with the website, she received a summons from Bresson's widow to remove any reference to the film.[41] Shortly afterwards, Neddam posted the letter on her website and through her e-mail lists. In response, several independent organizations took it upon themselves to mirror the project on other websites.

Similar initiatives are becoming more widespread. Instead of traditional institutions, a collection of individuals and small organizations gather to form foundations that look after an artist's legacy. In such examples, a network of different people gathers around an initiative and starts working together. It is not uncommon for such networks to form around artworks that are not collected by museums, large institutes or private collectors: either to protect the work from censorship (as was the case with *mouchette.org*), or to safeguard and protect it, often after an artist dies. With different stakeholders and caretakers who do not have a centralized system or organization to manage archival information, the relationship between conservation or documentation practices and knowledge transfer becomes inherently political. In her article, 'The Ethics and Politics of Documentation' (2012), Van Saaze examines how collaborative knowledge production takes shape in discussions about the continued existence of an artwork, and what

role documentation plays in such a process. Analyzing the documentation of Robert Smithson's land art project *Spiral Hill/Broken Circle* (1971-present) shows that several stakeholders became involved in the discussions around the project's conservation, but that reaching a solution was difficult 'partly due to the fact that the relevant information was distributed over a wide range of archives' (2012:81), which complicated the decision-making process. Nevertheless, the most recent restoration (in 2012) was completed as a result of individual and collective efforts by a network of caretakers. Van Saaze concludes that:

> in the absence of a common heritage framework, the decision to keep this work for the future cannot be traced to one single moment in time; the history of the work shows that its prolongation had to be negotiated again and again.
>
> (2012:82)

The distributed network of caretakers functioned through a combination of experts and non-specialists who brought in knowledge from different fields and backgrounds.[42] As acknowledged by Van Saaze, a thorough investigation of the different roles and motivations of the stakeholders, or caretakers, might provide a lot of insight into the political dimensions around the artwork, as well as into the art world at the time. Moreover, analyzing the underlying structures could show how sustainable such a network can be. This shows that 'users' not only influence and assume ownership of the work, but that they also take care of it – at least to a certain extent. The degree to which this happens will most likely shift in time and through different networks, because the process is ever evolving, like the work itself. Nevertheless, the formation of a 'network of care' adds to the importance of *mouchette.org*.[43] Besides reflecting on its own artificial conditions, it uses these conditions to set unintended, emergent and distributed events in motion. These conditions add to the work's original ambition. Such distribution and dispersion of events is not uncommon in net art and is often what it thrives on. Similar works are, for example, Olia Lialina's *My Boyfriend Came Back From the War* (1996), a unique and fascinating example of net art that keeps inspiring artists to create remakes and remixes. The outcomes are all archived in Lialina's online *Last Real Net Art Museum* (1996-present).[44] Or, *oμ4×* a 'performative action' by Igor Štromajer who over a period of four years (from 2016 to 2020) asks a group of people to keep safe several encrypted files, which he randomly selected from his earlier project *Expunction* (2011) in which he deleted many of his net artworks from his server. Looking for other modes of distributing, sharing and experiencing the potential art which is stuck and compressed in those removed files, Štromajer is organising his own 'network of care'.[45] These works afford new modes of active engagement and creative use, and demonstrate a more recent way of dealing with circulation, in which the distributive effects are intentional if not foreseeable.

Although important questions remain – for example, how shifting constellations and power relations will affect future prolongation efforts of the artwork, or who will be leading or even responsible for safekeeping and tracking the documentation that is distributed across several caretakers – it is clear that these networks can operate without the structures of centralized archives and authorized

custodians, which are present in most museums. For a 'network of care' to succeed outside of an institutional framework, or to become effective as a tool for transformation, it ideally has to consist of several characteristics. These can be traced by looking at how a network gives agency to individuals, instead of answering the question of how individuals create networks.[46] A 'network of care' is based on a transdisciplinary attitude and a combination of professionals and non-experts who manage or work on a shared project. To enable the creation and administration of a project, the transmission of information is helped by a common mode of sharing where everyone in the group has access to all the documents or archives. Ideally, it would be an open system, or a dynamic set of tools that is used and cared for, where people could add, edit and manage information and track changes that are made. Such a system can be monitored by the network. An added bonus is that if someone leaves, the project can continue because the content and information is always accessible and part of a larger network. Such a structure allows people to take control of a shared project, thus obtaining meaning from their 'investments'. To be able to share information and benefit from experience and insight gained elsewhere, for example, in other networks dealing with similar issues, a network should be dynamic such that individuals can easily move between networks and projects can be merged or split into separate smaller or more specialized groups.

Similarly, as mentioned, in addition to user contributions Neddam has also created several objects, performances and presentations that she considers part of *mouchette.org* (Dekker 2011a). When I asked her about the 'collection' of *mouchette.org*, she replied

> It's hard to say what constitutes *mouchette.org*. Over the years I have lost track of all the performances, projects and objects that I made. But for sure, *mouchette.org* is more than just a website.[47]

Although Neddam's loss of memory could be questioned, it highlights that, for her, the concept of the work is the most important aspect of *mouchette.org*. Neddam stated:

> Mouchette was about creating a form. When I started Mouchette I wanted to use the notion of a character as something that transcends media, I saw the character as something that can be used as a form, or a container, this allowed me to gather and structure information. I have always believed that a character, a person or an identity is a good metaphor. They can assume the identity of an institution without actually existing. In this sense, I see characters as containers that carry units of meaning.
>
> (Dekker 2011a:22)

Knowledge about Neddam's project is distributed across different (groups of) people, where each person knows something, but not everything. In other words, no single element contains the 'whole' story. Neddam uses relationships and situations as means to produce and distribute *mouchette.org*, as well as exemplify her message. This 'social life' of the project is important for conservators.[48] It is

something they will have to take into account and can benefit from. As Kathleen Fitzpatrick argues, a future conservation of digital objects may be less about:

> new *tools* than new *socially-organized systems*, systems that take advantage of the number of individuals and institutions facing the same challenges and seeking the same goals. [. . .] Context is equally important, and equally volatile, in shaping our understanding of the production, circulation, and preservation of digital texts.
>
> (2011:126)

A dispersed network of knowledge with a non-hierarchical structure emphasizes localized knowledge, avoiding standardization and ensuring variability rather than creating a freeze state. Whereas several networks around artworks or between organizations and museums already exist, and some of them such as Inside Installations, Matters in Media Art, Variable Media Network and INCCA are, or have been, very successful, none of them have explicitly recognized or framed their work as 'using' the potential of 'collective individuation'. To briefly return to Simondon (1992), in collective individuation, relations to others, to self and to technical ensembles are knotted together through processes of individuation. In other words, something becomes in relation; it 'emerges' from processes of becoming that are instantiated by differences. This also means that something, a technology for example, is never final or complete – it is contingent, depending on variables such as personal backgrounds, intentions, competencies or other contextual restrictions.

   As for *mouchette.org*, I have not been able to trace every element of the website, nor will a future conservator be able to do so. However, this might not be necessary. One scenario could be that a community takes control of *mouchette. org* and ensures its continuation through different versions. Some parts could be physically archived or digitally stored in archives and museums; others could linger and evolve between various networks. Some of it will be automatically cached through crawlers.[49] Stories could continue to be told through multiple authors and caretakers. Because Neddam does not want to control its growth, *mouchette.org* could keep generating more objects, events and comments. Together with communities that are growing around the website, *mouchette.org* is a circulation of stuff, experiences and sharing that started at some point and progresses without a fixed plan.

Collecting *mouchette.org*

In 2016, two decades after *mouchette.org* was first presented, MOTI Museum in Breda and the Stedelijk Museum Amsterdam asked Neddam if they could acquire *mouchette.org*. Neddam's ideal of 'conservation becomes creation of something new' was put to the test. In December of that year I had several discussions with Neddam and Ward Janssen, the initiator of the acquisition and curator at MOTI. The usual questions came up: what is the work, how can it be maintained, stored,

etc. However, the sheer number of projects that make up the website, and the fact that it is a 20-year-long project – and continuing, exceeded the budget by far. So Janssen suggested buying a specific project or part of the website, something that could be shown by itself and offline. Neddam did not agree. Although it was possible to sell parts of the work, as she had done in the past, this time she wanted the acquisition to be on the terms of *mouchette.org*. As mentioned, the website is developed in a way that all the projects interlink. However, they all connect to the database, which to Neddam forms the core of the work: the point where all the actions come together, and more importantly where the communication and information about the work is stored. It was difficult to explain that it is not merely the aesthetics, form or media, but the underlying database that needs to be conserved. Moreover, as Neddam argued, the conservation had to be done in the sense of a living database, or as 'generative preservation' as she came to call it: a method that acknowledges the human input (in creation and maintenance) and stresses notions of growth and expansion instead of repetition or replication.[50]

With the museums unable to acquire the whole work or parts of it, Neddam suggested approaching the acquisition process in different phases. For the first phase she proposed selling the museums a version of the website *mouchette.org – Version 01*. The concept of 'version' rather than 'edition' was important, because it signalled the time and the variability of the work, as well as its ongoing development.[51] As such, Version 01 would be a 'date-stamped' mirror site of *mouchette.org*, together with documentation of the work at various times and in different ways (for instance, historical imagery and a screen capture video of the working of the site). In preparation for the second phase, supported by the museums, Neddam will investigate how the participatory aspect of the work can be transferred to others, potentially in the form of a network of care and/or by teaching someone else how to maintain the database. Also, by examining methods used by performance artists, for example, the ways Tino Sehgal transfers the knowledge about a performance to the museum; how to involve the larger community around the website – questioning and testing the value of a network of care; investigating new methods such as the blockchain and version control system for tracking changes over time – addressing the consequences of adhering to the method of versioning, while at the same time being open for other acquisitions to happen. The discussions showed the willingness of museums to follow the wishes of the artist, trying to conserve the work by allowing it to continue and change, and relinquishing the idea of a fixed version.

This chapter has shown that the resilience of net art is built and distributed through a complex and interrelated system of networks that present an assemblage of artistic, technological, political, and social relations which merge to form a variable entity. Information is produced, presented and distributed differently. Such changes impact knowledge and power relations. A focus on variability, different types of authenticities and processes opens different paths and options. Guattari (2009[1966]) proposes a paradigm in which areas that were previously not concerned with aesthetic interests have proliferated into or exploited aesthetic modes of operation. These trajectories, following Guattari, can expose and reform

traditional conservation strategies by exploring various paths uncovered during the process. Consequently, a conservator should look for different strategies. Some elements of a work can be easily conserved, like posters, code, videos and music; other more ephemeral or performative elements can be documented. In conservation, multiple trails have to be followed, not single paths. Inevitably, this raises the question of whether conservators (and it could be argued conservation practices as a whole) should shift their focus from the conservation of materials to the conservation of social information and relations. And if so, would s/he still be the right person to do this? Is this still considered conservation? Does conservation need to be re-thought?

Notes

1 For more information, see www.skor.nl/eng/site/item/identity-works.
2 Martine Neddam, personal conversation, 14 August 2011, Amsterdam.
3 The notion of 'freezing' refers to conventional conservation theory where objects and materials are halted, 'frozen' in time, signifying a particular state of an object.
4 Despite varying definitions, to be eligible for inclusion in the UNESCO World Heritage List, an object or building needs to meet certain 'conditions' of authenticity; see the Operational Guidelines for the Implementation of the World Heritage Convention (November 2011). The guidelines for authenticity are based on the Nara Document on Authenticity and can be read in sections 79–86. (Website http://whc.unesco.org/archive/opguide11-en.pdf).
5 For an elaborate account of the different 'authenticities', see Ex (1993). For more information about the challenges of authenticity, see, for example, Pye (2001:57–76). A more critical note on the principle of authenticity is given by, among others, Cosgrove (1994) and Phillips (1997).
6 For more information about why Neddam decided to announce herself as the author of *mouchette.org*, see Connor (2016).
7 In the early days of public access to the Internet there was a lot of play around identity formations. This historical framework already gives the first clues as to the dating of mouchette.org. For more information, see, for example, Turkle (1995), who studied the way people interact on so-called MUDs and role-playing games on the Internet; or Hershmann (1996), who assembled provocative voices of the Digital Age that grapple with the direction of digital technology and its concomitant issues, including virtual identities and the relationship to the physical self. Hershmann is known for her identity artworks, from the early *The Dante Hotel* (1973–74) and *Roberta Breitmore* (1974–78) to *Agent Ruby* (2002-) and *DiNA* (2004-); her investigations and exploration of identity include performances, film and net artworks. Such identity play was far less common in the 2000s where being online revolved around having a real identity. This is not to say, however, that online identity is reliable. People often mask their identities (see Wiszniewski and Coyne 2002).
8 Computers are well-known metaphor machines. The interface is especially dominated by metaphors. Just think of the desktop, trash bin and file folders. But computer metaphors also affect the way the computer is experienced and conceived. This was the case with mouchette.org when the French police accused Neddam of providing suicide kits for children. In response, she removed the French version of the project (www.digitalarti.com/en/video/wj_spots1_42_martine_neddam_aka_mouchette). For further analyses on the use and influence of metaphors, see among others Weizenbaum (1976), Lakoff and Johnson (1980) and Chun (2011:55–95).

 9 GIF is short for Graphics Interchange Format, a standard for the storage and transmission of raster-based graphics information. The format supports up to 8 bits per pixel for each image, allowing a single image to reference its own palette of up to 256 different colours chosen from the 24-bit RGB colour space. It also supports animations and allows a separate palette of up to 256 colours for each frame. It was created in 1987 and widely used on the Web because of its wide support and easy portability. For more information, see www.w3.org/Graphics/GIF/spec-gif87.txt.

10 Similar to the flowers, the fly and ants are obvious references to phenomenological symbols used in art. In Western traditions ants are symbolic for arduous workers, humility, good organizers and regarded as having access to secrets. Flies on the other hand signify death, and therefore are also symbols of the soul. For more information, see Werness (2006[2003]:8–10, 181–3), and Impelluso (2004) on the use of flowers in art.

11 According to the page information, the image has been scaled from 357 x 340 (the original size) to 1280 x 1024, enforcing the pixellated abstraction of the image. This is also done with other images. For example, the 'cat' image or the pornographic images render the action on the original images almost invisible. This way of abstracting images, if well used, is also a means to make people less recognizable in random images – a strategy that is used in Google Streetview.

12 Although the term 'brand' is mostly seen as a market modality and is used in economics, the way a brand mediates through organization, co-ordination and integration of information closely connects to the way mouchette.org (and other net artworks) operates. Lury understands branding from the perspective of a 'culture of circulation', a process coined by Lee and LiPuma (2004). In Chapter 6, I explore the usefulness of this term and its approaches in relation to net art.

13 By emphasizing the use of information to organize relations between products, Lury relies on Latour and Woolgar (1986) when stating that it is those relations that comprise the object of the brand (2004:3).

14 Martine Neddam, personal conversation, 14 August 2011, Amsterdam. For more information about her maintenance struggles, see Neddam (2010).

15 Some of these challenges are also encountered in contemporary art such as installation art, video art or gaming. For more information, see Depocas et al. (2003), who argue for 'variable artworks'; Van Saaze (2009), who describes how installation art influences traditional museum collection and conservation practices; the three-year research project Inside Installations (2004–7) www.inside-installations.org, which provides practical and theoretical guidelines for the conservation and presentation of installation art; Winget (2008b), who analyzes the conservation of games; and Richmond and Bracker (2009), who argue for an examination of the 'principles, dilemmas and uncomfortable truths' of contemporary conservation.

16 Another example is Glitch art. A glitch originates from a technical error, which may be planned or the result of an accident. Although Glitch art is not confined to software, it has become a prominent software aesthetic. For more information, see, among others, Menkman (2011).

17 Martine Neddam, personal conversation, 14 August 2011, Amsterdam.

18 Author's translation from German: 'Dies alles sind bereits Hinweise auf die literarischen Möglichkeiten des Netzes, sich im Gewebe des Internets in den Bahnen der Fiktionalen zu bewegen und sich im Spiel der Geschichten eine eigene, andere Identität zu erfinden. Nur übersteigt die Site die Anwendung derselben bis hin zur Reflexion über diese "Mechaniken" der Selbst-Konstruktion.'

19 It needs to be said that the level to which someone can become Mouchette, in other words the extent of Neddam's editorial influence, is not transparent.

20 Martine Neddam, personal conversation, 14 August 2011, Amsterdam.

21 Ibid. It may not seem obvious to name Mondriaan in this respect, especially since his later work is so abstract. Nevertheless, even in those paintings, his 'hand' is extremely important. This is explained in detail in Van Bommel et al. (2012).

22 See also Montfort et al. (2013), who highlights the similarities between coding and movements like op-art and minimalism (2013:78–103).

23 Jürgen Enge and Tabea Lurk, personal conversation, Amsterdam, 25 February 2011. See also Ullman (2013), who offers great insight into understanding software as culture by describing her work as a programmer.

24 See Turing (1936). It needs to be noted that Turing completeness is often loosely attributed to physical machines or programming languages that would be universal if they had unlimited storage.

25 In addition to a whole body of work around the relation between the human and the machine, the gendering of computers and computing is interesting. In this respect, Plant argues that 'women have been the simulators, assemblers, and programmers of the digital machines' (1997:37). Chun, in describing the role of women in relation to early day computing, concludes that women were important in that they (the women working on the 1946 ENIAC – the Electronic Numerical Integrator And Computer, the first functional electronic digital computer) helped shape the functionality of the computer. Still, there was a clear hierarchy present, where women were coders and men programmers (2011:29–46).

26 These languages are more or less independent of a particular type of computer. They are also known as high-level languages because they are easy to read, write and maintain (unlike machine-languages) and are therefore seen as closer to human languages (www.webopedia.com/TERM/H/high_level_language.html).

27 Interview Mark Hellar, Smithsonian Institution Time-Based and Digital Art Working Group: Interview Project, 14 June 2013, www.si.edu/content/tbma/documents/transcripts/MarkHellar_130614.pdf.

28 DiNA is an Artificially Intelligent character; capable of evaluating current news events on the Internet and relaying them immediately to users, and recognizing users' names, questions and even voices. Ultimately she could change her mood to correspond with whether she liked a user or not (www.lynnhershman.com).

29 Martine Neddam, e-mail correspondence, 12 August 2012.

30 As confirmed by Joanna Phillips, conservator at the Guggenheim: 'within the conservation community, and the larger museum world, there is no consensus on what components and information to request when acquiring a computer-based work into a collection; how to create complete copies of artworks while considering their software and hardware dependencies; how to identify and describe these dependencies; what metadata to create and save, how to document the functions and behaviours of a work; and what those workflows should ideally look like' (Dover 2016).

31 Why Strachey experimented first of all with love letters is unknown. Although, it is speculated that they are parodies of normative expressions of desire, given he and Turing's then forbidden sexuality (Wardrip-Fruin 2011). They are also thought to be unbound from a sense of 'appropriateness'. These are 'fun' acts that offer insight into a history of curious and free exploration (Goriunova 2014). For more information on Alan Turing, see Hodges (1983).

32 This type of fun is often seen in official or formal settings; i.e., the fun of exploring, trying things out and playing jokes on fellow developers (Goriunova 2014).

33 Wardrip-Fruin (2011) provides a detailed analysis of the generator processes of LoveLetters in relation to the meaning of the data.

34 The abbreviation MUC refers to Manchester University Computer.

35 Strachey's notes and papers are conserved in the Special Collections and Western Manuscripts section of the Bodleian Library, Oxford University. The emulator can be found on Link's website at http://alpha60.de/research/muc/.

36 Link recounts that one of the latest finds was an original switch board in a chicken farm, unused for many years but still in good shape (personal conversation, Bristol, September 2010).

37 See, among others, Dekker (2010:7.0), Winget (2008b) and Benford and Giannachi (2011).

38 Personal conversation with Martine Neddam and Niek Reus, one of the programmers of mouchette.org, Amsterdam, 14 August 2011.

39 This process is perfectly exemplified by experiments on a single line of vintage computer code, the 10 PRINT, or the extremely concise BASIC program for the Commodore 64 (Montfort et al. 2013).

40 It is important to note that Link tried to re-create the social part of the installation. During the production talks, he proposed to look for an original desk setting that could be used in the presentation. However, neither the budget nor the exhibition setting allowed for these variations.

41 Bresson's wife didn't see the work as an adaptation, but as a contradiction to the film's narrative. More surprising, the letter was addressed directly to Mouchette, believing she was a real person. By replacing the quiz (in its French version) with the letter, Bresson's wife became part of the experience and the narrative of Mouchette. For more information, see Mackrous (2011[2009]) and www.mouchette.org/film/.

42 Van Saaze describes the network as consisting of 'temporary and active communities comprised of practitioners, academics and non-experts operating on different, though at times connected, levels: locally (municipal officials, contractors, land owners, cultural entrepreneurs) as well as nationally and internationally (artists, museum directors, curators, governmental officials, collectors, the estate)' (2012:82–3).

43 By using the term 'care', or 'caretakers', I am referring to care as described by Mol (2008) in her ethnography of health care. In this sense care as a practice involves political, economic and institutional power relations, but more importantly care is not a matter of making well-argued individual choices, it is something that grows out of collaborative and continuing attempts to attune knowledge and technologies to diseased bodies and complex lives. Mol makes explicit what it is that motivates care: an intriguing combination of adaptability and perseverance.

44 http://myboyfriendcamebackfromth.ewar.ru/.

45 For more information see Sakrowski and Štromajer (2017).

46 I am following the method proposed by Hui and Halpin (2013) who analyzed online collective social networks like Facebook and made suggestions for alternatives that would allow people to work together towards common goals.

47 Martine Neddam, personal conversation, 14 August 2011, Amsterdam.

48 I borrow the term 'social life' from Seely Brown and Duguid. In *The Social Life of Information* (2000), they argue for a stronger emphasis on the context of social networks around information. Information, they argue, only acquires meaning through social context. Similarly, Kirschenbaum advocates the importance of social dimensions in conservation of digital media, which is 'at least as important as purely technical considerations' (2008:240–1). Conservator Glenn Wharton (2011) examines professional authority and community involvement with a civic monument that shows the benefits of involving public participation in conservation. Also Laurenson and Van Saaze (2014) conclude with reference to the conservation of performance art that the live-ness or non-materiality of performance art is not the main challenge; rather, what these works require is to maintain their memory, i.e., the maintenance of the networks that support the work. Moreover, they mention that such 'increasing dependency on social and political context, people, resources and other transitory circumstances outside the museum goes against the museum's tendency of containment and control, this shift may cause a certain uneasiness and raises new questions' (2014:29).

49 This new situation affirms the need to adjust the way an archive is set up. As mentioned in the previous chapter, archiving is no longer about collecting and selecting, but structuring information. Notions of categorization, metatagging and classification, as Bowker (2007) states, are withering. To keep track of data and information, they will become the prime subject for archiving in the years to come.

50 For more information, see http://about.mouchette.org/preservation-generative/.

51 As clarified in the contract: 'The Version is as such a momentary copy, as archival definition and clarification of the interactive and artistic integrity of the source work, in a specific time frame, dated.'

4   Following process and openness

The major characteristic of today's art is no longer the articulation of space but of human activity; the activity of the artist has become the dominant theme and content.
Harald Szeemann, *Live in Your Head. When Attitudes Become Form. Works – Concepts – Processes – Situations – Information* (1969).

Naked on Pluto is a multiplayer text adventure created in 2010 by Dave Griffiths, Aymeric Mansoux and Marloes de Valk that uses data available on Facebook.[1] *Naked on Pluto* presents a playful yet disturbing online game world of a city under the rule of 'Elastic Versailles revision 14 (EVr14)'. EVr14 operates through the idiosyncratic logic of 57 AI bots that scavenge Facebook data from the players of the game. Issuing a constant stream of provocations to click, declare, poke and buy, the bots create chaos with one's personal and one's friends' data. Familiar faces and information from different profiles blend together, suggesting an evanescent landscape that, like the original Versailles, is designed for promotional parades of inseparable personal and ideological attributes. The players' only way to override the game's restrictions is by teaming up to finally crash and escape from the confines of EVr14. Mimicking the proliferation of invisible bots that scrape and cunningly re-use data for other (commercial) purposes on social networks, *Naked on Pluto* explores and exposes the hidden mechanisms of social networks.

In 1969 curator Harald Szeemann described a 'new' group of artists who were less interested in making final objects and more concerned in showing the artistic processes in an 'exhibition'; their attitude determined the form of the work.[2] The fragile artworks by Eva Hesse or the land art projects of Robert Smithson seem far removed from the game *Naked on Pluto*. However, the artists express a very similar attitude: favouring the creative process over the end result, in which an open source mentality is key. Similar to many 'process artists', *Naked on Pluto* wants to move beyond the idea of a final object, but whereas – consequently – most process artists did not provide instructions regarding the conservation of their work, the artists of *Naked on Pluto* are explicit about the future of theirs.[3] Stating that *Naked on Pluto* is not meant to last more than five years, since it is a context-specific commentary on social media,[4] their emphasis is on the open distribution and re-use of the core of the work: the game engine. As such, they want the

museum to follow the process and practice of openness involved in the creation of the work. But what are the consequences of conserving such open practices for museums and conservators? What challenges arise when a work, or parts of it, can be copied, used, presented and distributed freely and by everyone? Exploring the ideology of open source, this chapter describes a conservation practice that builds on the idea of the 'processual' and stresses the value of sharing and development through which knowledge and practices survive.

Naked on Pluto

Naked on Pluto sits midway between old-fashioned text-based gaming and dystopian science fiction (Figure 4.1). It takes direct inspiration from *The Landlord's Game* (Monopoly's forerunner) patented in 1904 by Elizabeth Magie that was based on the economic principles of Georgism and a protest against monopolist economies. By fostering understanding of these principles through experience rather than explanation, Magie wanted to reach as many people as possible.[5] Having the same goal of reaching those who are immediately affected, and because of the impossibility of playing the game inside Facebook, the artists imitated the
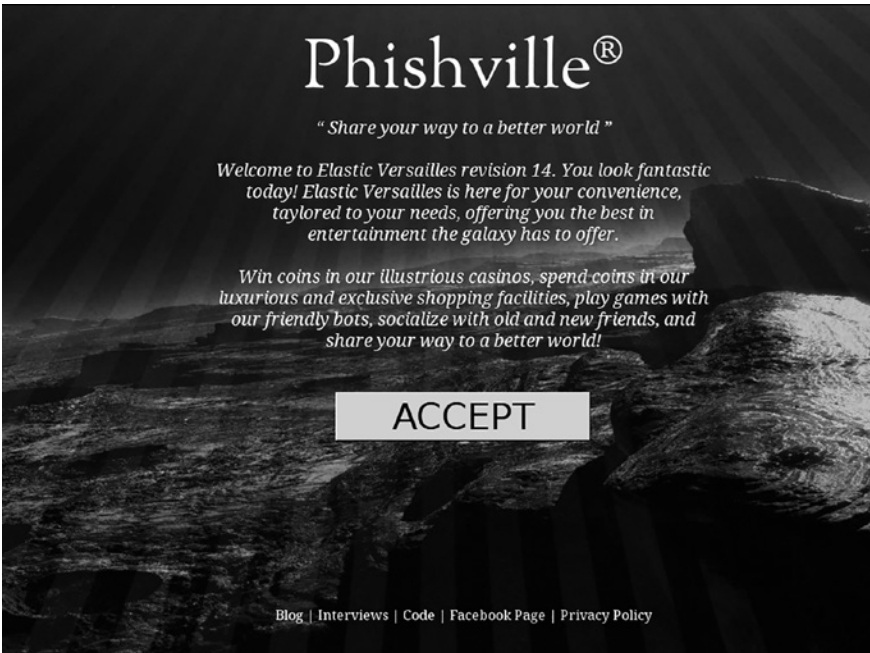
Figure 4.1 Dave Griffiths, Aymeric Mansoux, Marloes de Valk, *Naked on Pluto*, 2010–present.

Screenshot Phishville. Image by Plutonian Corp., licensed CC0

aesthetic interfaces and corporate design formats as closely as possible, while still retaining their own Plutonian brand. As De Valk explains:

> The design builds on the idea of overwhelming amounts of information, making it a challenge to find important information in a 'tweet-like' aggregation of feeds that seems both familiar and confusing at the same time.
>
> (2011)

Once logged into the game, via one's Facebook name and password, the user is immersed in a story about surviving in and exploring the entertainment capital of the Solar System: EVr14, a city on planet Pluto, resembling the Versailles in Paris, which functions as a corrupt artificial intelligence system. Immediately after logging in, the game uses the information available on the Facebook account, and indiscriminately mixes everything with the EVr14 landscape. The real time information flow is divided into three columns that can be monitored simultaneously (Figure 4.2): the right column, the *Mass Syndication*, shows communications that are happening on the Facebook account. The *Self Syndication*, or the middle column, keeps track of player actions in EVr14, and the *Targetted Syndication* on the left is a personal feed that displays messages directed at the player.[6] The design follows the almost generic interface of Facebook and Twitter. Players have a constant overview of their options as well as those of the other players. The familiar faces and texts from the user's Facebook page and its associated profiles strengthen the resemblance to Facebook. Each action by a player, or by another person in the same location, is translated into a narrative element and all the scraped data become elements of a satirical, interactive fiction.

Naked on Pluto is directly inspired by the role social networks play in feeding the explosive market for personal data.[7] As De Valk explains:

> The game questions the way social media shape our friendships and the way social relations have become a commodity through targeted advertising, based on the phenomenal quantities of information we supply these databases with, literally exposing ourselves.
>
> (2011)

Data on the Internet is often collected, without people knowing, through scrapers and trackers that easily, but often in non-transparent ways, follow, direct and extract information. This kind of invisibility obfuscates privacy settings. *Naked on Pluto* addresses the privacy policy of Facebook by exposing the nature and limits of the social network, while slowly pushing the boundaries of what is tolerated by the company. *Naked on Pluto* accomplishes this without violating Facebook's terms of use. The artists' extensive research into how users are exposed on social networks, how their data is used, and what having another life in a database means, can be found on a dedicated research blog, alongside the various phases of *Naked on Pluto's* development. *Naked on Pluto* can be seen as a caricature of the explosion of insidious online harvesting mechanisms that highlight
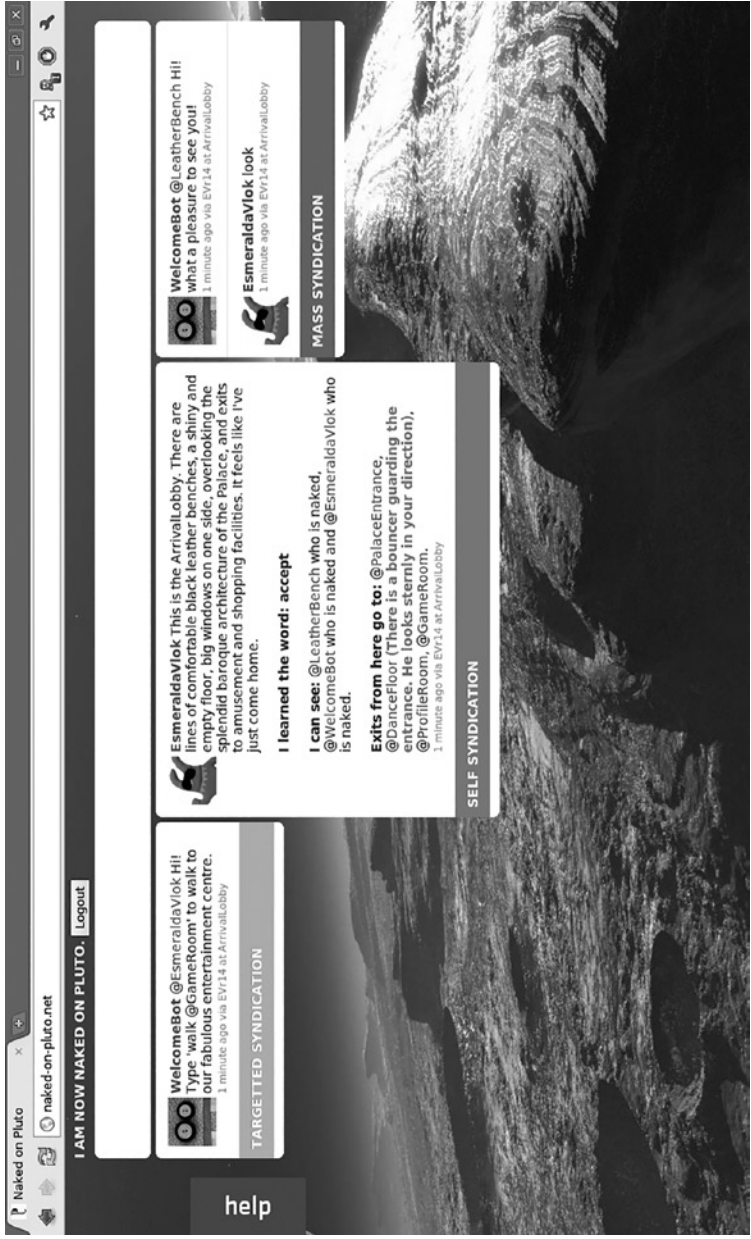
Figure 4.2 Dave Griffiths, Aymeric Mansoux, Marloes de Valk, *Naked on Pluto*, 2010–present. Screenshot. Image by Plutonian Corp., licensed CC0

the ambiguous character of social networks (personal intimacy versus 'friends' as quantifiable assets). The goal of the game is to escape.

The structure, or architecture, of *Naked on Pluto* is built in the same way that traditional games are built: the player starts with a fixed path, which opens up into problems with less rigidly defined solutions.[8] Although the game has no defined levels, the architecture consists of different spaces that can be entered – for example, the *DanceRoom*, the *PalaceCourtyard* or the *Casino* – provided that the player has collected the correct objects or successfully answered a question. The game begins with a prolific textual exchange between the player and the computer, in which bots (a computer program that performs automated tasks) mix and muddle up data, faces and profiles, and generate a framework of strangely familiar relationships. The complexity of the exchange increases as the game progresses. This intricate use of exchanges relates to the specifics of sandbox games. Gaming is generally understood as 'a type of play activity, conducted in the context of a pretended reality, in which the participant(s) try to achieve at least one arbitrary, nontrivial goal by acting in accordance with rules' (Adams 2009:3).[9] However, sandbox games are less goal oriented and do not follow strict rule sets. The term 'sandbox' refers more to the mechanics of play and how, as in a physical sand pit, the user is able to play creatively without specific goals. Other terms that are used are 'open-end games', 'non-linear games' or 'freeform creative play' (Adams 2009). Each of these names demonstrates that the player creates her/his own path in the game. With little plot development, complex situations emerge from the interaction of relatively simple game mechanics.

In the case of *Naked on Pluto*, the gameplay is facilitated by using bots, which help players to navigate. Sometimes they provide clues, but they also re-use information from the player. Often disguised, their job is to make players feel comfortable. For example, the 'red velvet chatterbot', or 'love-bot', tries to make 'visitors feel loved, attractive and confident'.[10] Love-bots are part of Elastic Versailles' intricate way of entertaining visitors and seducing them into sharing personal Facebook information freely with its agents, 'soak up mountains of advertisements, and spend coins like there's no tomorrow'.[11] In addition to receiving messages from bots, players are triggered by new and old information from people they know on Facebook. Players can only free themselves from the bots' 'harassment' by ignoring them and waiting until their resources run out, or until the plot becomes so illogical that it no longer makes sense.

Naked on Pluto is a multiplayer game. Creative input can be shared with friends, and players can contribute to the story by adding elements to the game, which can potentially lead to other games within the game. In other words, parts of the game world can be explored, built upon and developed collaboratively. This ensures that players do not become completely lost in the game or become bored. And it also gives players a sense of appropriation and control over the game. Moreover, it resembles the collaborative approach discussed in the 'Mouchette network'. There I argued that such a network could evolve into a 'network of care' that maintains or conserves parts of the work. However, *Naked on Pluto* handles conservation issues differently. Their interest in conservation is focused on the core

of the game: the game engine, which they believe should be re-used. This interest is reflected in the way the *Naked on Pluto* is presented and distributed. *Naked on Pluto* can be experienced in different ways: as an online game with a dedicated website; as an installation, also known as 'the surveillance library' that tries to mimic a dark library with light-emitting books on shelves, marketing slogans from the game world printed on the shelves, a collection of printed books with log files of objects in the game, peepholes in the walls, a projection of the game world on the floor showing all the bots and players moving through the different spaces in the game, and a few terminals where visitors could play the game; as a research blog authored by the artists and full of event information, updates on the game's development, and a series of interviews, the 'Plutonian Striptease', with experts, users and haters of social media which map the different views on the topic of social media platforms, steered away from existing discussions surrounding privacy; as a five-minute video documentation in which the artists explain the project;[12] through workshops, 'FaceSponge', where the artists teach people who have never programmed before to hack the Facebook API to unlock new understandings of privacy and online personal data. Similar to *mouchette.org*, *Naked on Pluto* can be seen as an assemblage of all kinds of different elements and projects that circle around the core of the work: the game engine. However, this assemblage is less dedicated to creating a coherent entity; instead, the different parts can evolve into new projects. Their only connection is being linked to the principles of the game engine. To comprehend and situate a potential future of *Naked on Pluto*, it is important to understand its relation to Facebook and open source ideologies.

Facebook

Facebook, the 'freely' accessible social networking service, was launched in February 2004.[13] On its website it states that, 'Facebook's mission is to give people the power to share and make the world more open and connected'.[14] Facebook is owned and operated by Facebook Inc. Anyone aged 13 years and older can register and use the site by providing Facebook with their name, date of birth and e-mail address. After registering, users can create a personal profile to which they can add other users and post and exchange messages: publicly, privately or through a text-based chat function. They can join 'common interest user groups' and categorize their Facebook friends into lists, such as 'Close Friends' or 'People From Work'. There is limited possibility to design a page, but there are multiple applications that can be used to 'personalize' one's profile page. Facebook's message system is chronologically organized. Incoming messages arrive at the top of the page. The messages cannot be searched easily. To improve this, Facebook introduced Timeline in December 2011, making it easier to categorize posts, images and videos by providing a more intuitive and simpler way to navigate through the information. A user's Timeline begins with the date they entered Facebook and ends in the present. Users can choose and modify the time period assigned to any of their content, as well as the audience or group(s) that can see each piece of information.[15] The popularity of Facebook was still growing while *Naked on Pluto* was being developed.

Social networking sites started to attract users *en masse* at the end of the 1990s. Since then, several art projects have commented on the hype.[16] Most of these are ironic about the social or networking aspect of the new platforms. To name a few:[17] *Sinister Social Network* (2005)[18] by Annina Rüst is a project that uses online chat bots and automated 'scoundrels' (artificially intelligent characters) to infiltrate chat networks that discuss seemingly commonplace topics such as gardening or finances and the occasional illegal topic. A social network diagram is drawn while the conversations are underway. The online conversations are mapped and interpreted and then compared to a database to determine possible unfriendly uses some might have for the online social network. *MyFrienemies* (2007) by Angie Waller[19] is a networking site modelled after secret societies, where anonymous users cannot browse other user profiles. Instead, they are connected to those who share a dislike of the same people. *El Friendo* (2008) by Govcom.org promotes a service that upgrades user profiles on MySpace.[20] Other projects are more aggressive, like Cory Arcangel's *Live In Person* (2005) where he announced his intention to delete his account performatively and in public;[21] *Seppukoo* (2009)[22] by Les Liens Invisible and *Web2.0 Suicide Machine* (2009) by moddr_lab. Whereas Arcangel's website deactivates the user's Facebook account, the Web2.0 Suicide Machine deletes all of the user's information, leaving 'zombie accounts'.[23] What most of these projects have in common is their persistent attitude towards social media platforms. They address or attack them from outside. Only a few explore these platforms from the inside, which is what makes *Naked on Pluto* especially interesting.

Like most of the examples above, the artists behind *Naked on Pluto* are concerned with certain aspects of social networking sites, in particular online privacy issues. Although it is not the goal of the game to resolve any of these issues, by addressing often unseen tactics the artists seek to make the back-end more tangible. This happens by making profile content and connected user data visible by using it in a different context. The game uses the 'Facebook Connect' application (a free service from Facebook)[24] and asks players for permission to access the following information (Dekker et al. 2011:240):

- Basic information: name, profile picture, gender, networks, user ID, list of friends, and any other information that is shared with others;
- Profile information: likes, music, TV, films, books, quotes, 'about me' details, activities, interests, groups, events, notes, birthday, home town, current city, website, religious and political views, education history, work history and Facebook status;
- Photos and videos: photos uploaded, videos uploaded and photos and videos of the user;
- Friends' information: birthdays, religious and political views, home towns, current cities, likes, music, TV, films, books, quotes, activities, interests, education history, work history, groups, events, notes, photos and videos of them, 'about me' details, and Facebook statuses;
- Posts in a user's news feed.

Although Facebook's privacy terms are known to be diffuse,[25] there are many ways to 'safeguard' information on a profile page by making sure data can only be viewed with permission. When the artists developed *Naked on Pluto*, Facebook did not guarantee that only authorized persons could view information.[26] As the artists discovered, it was rather easy to create an application to access non-public data (Dekker et al. 2011:239). Maybe not surprisingly, the artists also noticed that during presentations of *Naked on Pluto*, participants in the test workshops and visitors to the exhibitions were often reluctant to immediately sign in with their Facebook account, even though how their data would be handled was made explicit before the game started.

There were several reasons to choose Facebook as a platform instead of other social networking sites. Foremost, it was used because of its size and reach. With billions of active users worldwide, Facebook is now the most popular social networking service. At the same time, it has also fuelled discussions about online privacy with its dubious policy changes, data leaks and the discrepancies between the way it markets itself as open and self-regulatory and how it actually functions as a multi-billion dollar business that answers to its investors (Olsthoorn 2012). Another appealing and practical aspect of using the platform is that Facebook makes it easy for anyone to access its users' information, without checking who is doing it or why. This is possible with the Facebook API. This application does not run on the Facebook platform and is beyond Facebook's control, but it authorizes access to users' data (De Valk 2011). *Naked on Pluto* uses the availability and manifestations of commercial applications to question the inner workings. It is through infiltration that the workings of the system(s) are exposed. This is also one of the reasons why the artists do not want to violate Facebook's regulations, because that would mean the end of the game and effectively halt their efforts to make the system more visible from within.

In the earlier chapters, I concluded that net art can be technically restored, and thus made accessible through conservation strategies, however (un)desirable they might be. But what happens when a commercial platform such as Facebook is used, particularly when its regulations and terms of use continually change? Some solutions could be found in unconventional ways, for example, by mimicking or replicating Facebook friends once they are not available anymore. In this sense, bots and algorithms could become alternative conservation tools.[27] If it were up to the artists, a reconstruction of the work would be possible. As mentioned, they document their entire process and all the steps of *Naked on Pluto's* development are freely available. However, within five years Facebook changed the 'Friends data API'; preventing (most) third party access to friends data.[28] When working within a closed environment, one always has to deal with technical problems that cannot be controlled. Changes to the Facebook API might change data feeds, and in the worst case could lead to the game breaking down or data disappearing. For example, the bots that rely on data from your Facebook friends might not have access to the same data anymore, which affects the content and goal of the work since it loses the connections. For conservators, this is of course a problem that is hard to overcome. However, this is not the concern of the artists. As they

see it, *Naked on Pluto* is a specific comment on Facebook and the state of social media at the time it was developed. The game loses all meaning when that context changes. As De Valk remarks: 'Probably in five years time people will not get the work anyway because there will be different issues that are important'.[29] Next to technical obsolescence, *Naked on Pluto* suffers from historical and social obsolescence.

   This is not to say that *Naked on Pluto* is not an important artwork. On the one hand, it is a remarkable and specific time-based commentary on social media. At the same time, the artists are not interested in the game itself; they are concerned about the development of the game engine. This is the core of the work that they want to conserve for the future. They see the game engine as a conceptual tool, which others can continue using, as described by Griffiths:

> I always have problems with these distinctions between art 'content' and 'tool' where software is concerned – but in this case I think there is a continuum ranging from the bits of the code that are entirely 'nuts and bolts' – the saving of game data, the client/server communication protocol. Other parts are built in a certain way that fits with the artistic themes of the project, inspired by what we were doing and talking about at the time.[30]

In Chapter 6 I return to an analysis of the technical and conceptual function and meaning of the game engine in more detail. For now, it is important to note that this attitude signals the processual part of *Naked on Pluto*, which ensures its longevity – albeit in different forms – by following the ideology of open source. What does an open source ideology mean, and how can this way of working affect and benefit conservation?

Pros and cons of open source

In Chapter 3 I explained the difference between software and code – code being written instructions by a programmer in a computer programming language that is converted into machine language. This process of 'compiling' is at the core of open source practices. In other words, open source is used as an engineering principle in which the software, code, instructions and/or tools on how to work the code are open for anyone to use, change or distribute. In the 2000s, the use of 'open concepts' has exploded to the point where the meaning of the word 'open' can vary greatly.[31] It is beyond the scope of this book to investigate in more detail the history and different voices that surround open source, but one of the main challenges concerns the ideology that underlies the definition of 'open'.

   From 1950s until the early 1970s, those who used software also wrote it and exchanged it freely with their colleagues. Computer science academics and corporate researchers worked in collaboration, albeit out of necessity, to easily fix bugs or add new functionalities. From the 1970s and 1980s companies started restricting the use of software through copyright laws.[32] Since 1983, the free software movement has campaigned to regain the rights of free use and sharing for

computer users. The movement launched the first GNU free operating system in 1984.[33] The initial intention was to standardize a way of working, mostly to facilitate sharing and enhance knowledge.[34] But in 1998, part of the community splintered off into the 'open source' movement. Although the function of software did not change, its meaning – in an ethical and political sense – did. As Richard Stallman describes poignantly: 'Open source is a development methodology; free software is a social movement' (2010[2002]:84). To circumvent the dispute, Rishab Aiyer Ghosh coined the term FLOSS (Free/Libre Open Source Software) in 2001, emphasizing the essential value of the terms 'free' (as in gratis) and 'libre' (meaning with few or no restrictions). In this book I use the term 'open source' for practical reasons, but also because the notion of 'free' and 'freedom' are in and of themselves problematic and not easily defined.[35] Furthermore, the challenge regarding 'open' in relation to conservation practices concerns both open source and free software practices. Nevertheless, when dealing with 'open' practices, it is extremely important to be aware of these subtle, but important (even emotional) differences. So, how is 'open' used in *Naked on Pluto*? What makes it possible, and what are the challenges in relation to conservation?

Naked on Pluto is developed in Free/Libre Open Source Software (FLOSS), and made available under a GNU Affero General Public License (AGPLv3).[36] All of the software is documented on Gitorious, a free and open source Web service for managing, sharing and viewing git repositories (the data structures).[37] Gitorious was a way of archiving code and is also available as an installable Web application so that third parties can use the interface in their own installations.[38] Other features of Gitorious were the ability to host/clone repositories, view changes and leave comments. Using Gitorious allowed each of the artists to work independently, experiment within their clone and push the changes to the main repository once they were ready (Dekker et al. 2011:240). In short, anyone, including museum staff, can use the material on the git repository as they see fit. A downside of open source is that (external) expertise might be required to understand and use the software. A related challenge (as discussed in the previous chapter) is that it can be hard to decipher and is not always properly documented or annotated, making it difficult to understand why choices were made.[39] As such, the learning curve of open source can be an obstacle, especially for those unfamiliar with the practice and ideology. This is a problem underlying many open practices (see, e.g., Mansoux and De Valk 2008). It is not easy to learn a completely new system, especially one that is often tweaked or changed to the point where multiple versions can lead to compatibility problems. As Mansoux and De Valk explain, this is because, unlike many proprietary systems, open systems approach their users differently: 'Its design is based on the assumption that users are capable of learning to master the system, instead of the assumptions that users are helpless' (2008:11).

These challenges do not necessarily pose problems for conservators. For one, as open source code allows access, it increases possibilities for maintenance that can keep the work operational. Furthermore, the challenges posed by learning to programme or use open source software are countered by a lively community of users and developers who are active in helping others with their problems

via mailing lists, forums and IRC (Internet Relay Chat) channels. Another reason why open source sometimes poses problems is its incompatibility with some proprietary hardware or software systems.[40] However, this is also an issue with much proprietary hardware and software. In addition, most proprietary systems use the concept of planned obsolescence, which means that a piece of software or technology has a limited inbuilt lifespan (Bulow 1986). Moreover, whereas the incompatibility in open source practices encourages out-of-the-box thinking, i.e., looking for other solutions if something does not work, the freedom of choice in many proprietary systems evaporates rapidly when technology stops functioning, or worse, companies shut down. Without access to source codes, a program cannot be developed further or adjusted to new needs. In conclusion, the use of open source strategies makes it easier for conservators to access the work, and thus maintain or re-create it.

However, one of the main parts of *Naked on Pluto* is not documented on Gitorious: the platform that the game works with, i.e., the Facebook data. This means that if Facebook closes or changes its APIs, the game can no longer be played since there is no more input data.[41] Again this signals the disinterest of the artists in the game's conservation, in favour of the ongoing development of its core. This connects to the value (and excitement) of openness that is linked to its practice through engagement in the development, its extension into the future and the re-use (of parts) of the work.[42] At the beginning of this chapter I stated that *Naked on Pluto* is paradigmatic of contemporary artworks, in which processes and objects are handled in ways that move beyond the object. But what does this mean?

Process and versioning

The idea of process in art, process as paradigm, is not new to art history. As mentioned, process art originated as an art movement in the mid-1960s. For artists like Eva Hesse, Robert Smithson and Robert Morris, concepts of change and transience are important elements, which they explored through investigating the properties of the materials they used.[43] The artists set processes in motion and over time (un)expected results would show themselves.[44] Such a concern with the material was also intended to encourage reflection upon the 'containers', i.e., the gallery and museum space, which gave form to the material, and consequentially the work.[45] Although artists debate ways to best achieve their goals, inside and outside of institutional walls, they agree that process art is about the making of a work of art as subject and content in its own right and not about a final object.[46] As such, the processual in process art is concerned with the actual *doing* and creating, and how these actions could be defined as the actual work of art.[47]

In Chapter 1, I described process as one of the characteristics of net art, signifying the creation or development of the work, which may or may not lead to a specific outcome. Secondly, I explained how processes are formal and contingent at the same time, meaning that they can be seen as expressive actants that function through systems, designs and histories. Processes are influenced by and executed through other processes and/or users. In short, this means that an artwork can

continue evolving in different ways after it has been exhibited. Processuality in process art is mostly defined and confined by material qualities (e.g., its deterioration over time) or the ephemerality of performances and happenings. Closely connected to open source ideologies, particularly the insistence on sharing, distribution and re-use, these qualities can also be traced in the processuality of software and code (as I will show in more detail in Chapter 6); in the presentations of the work; and, additionally, in social interactions with other artists/users.

Naked on Pluto was presented several times and in various ways. The first presentation was part of the exhibition *Funware* at MU (2010), the same show in which JODI's *Jet Set Willy FOREVER* was presented. The artists wanted to create an installation that would show the context of *Naked on Pluto*, including excerpts from the interviews they conducted with several stakeholders about privacy on social networks, particularly Facebook. The installation included an introductory video explaining the work, a research blog and the game for visitors to play on either a projector or a computer screen. In the end, due to lack of time and the restrictions of the overall exhibition design, *Naked on Pluto* was presented on two computer monitors. One screen showed the research blog on a Styrofoam pedestal. Visitors could play the game on the other. Scattered throughout the room were round stickers with the *Naked on Pluto* logo and Internet address. Within a year, it was presented as part of the FILE São Paulo 2011 festival. Because it was part of a series of net artworks shown on computers, the artists decided to create a newspaper-style front page with reports by SpyBots, ReporterBots and InterviewBots from inside the game. The idea was that if people were unwilling to login on a public computer, they would still be able to see news from the game world. A year later, after *Naked on Pluto* had won the prestigious international VIDA13.2 prize, the artists decided to build a new installation (Figure 4.3). This time they focused less on the overall documentation of the project and more on specific aspects of the game, or what they referred to as the core of the game.

> The installation is a 'zoom' inside a specific part of the game and reveals information that the players do not have access to when they play. In a way, it is the other side of the mirror, the control room of the wizard of Oz. More particularly a room that has a key role in the story: the library. The library is the final room where the players must find a way to access to, it is the central point of Elastic Versailles, where everything is tracked, recorded and controlled. It is the ultimate metaphor for Facebook's databases and surveillance systems.[48]

Each of the installations focuses on specific parts of the online game. The changes in the installations move beyond the more conventional concept of variability discussed in conservation literature, e.g., different locations and changes in display or playback equipment (Ippolito 2008; Noël de Tilly 2009). The presentations of *Naked on Pluto* do not change solely in relation to space or equipment; rather, they are part of a process in which different aspects of the work are highlighted whenever it is exhibited. This process is closer to 'versioning', as discussed in

Figure 4.3 Dave Griffiths, Aymeric Mansoux, Marloes de Valk, *Naked on Pluto*, 2010–
present. Installation shot ARCO/VIDA13 Madrid, 2013.

Image by Plutonian Corp., licensed CC0

Chapter 3; to briefly reiterate: versioning is about reconceptualization and altera-
tion; it is a critical construct and because it is culturally induced, it is not neces-
sarily linked to authorization. Essentially, versioning becomes evident through
multiplicity, enumeration and evolvement. In addition to these material and con-
ceptual changes, versioning can be identified in social relations.[49]

The strategy of versioning can be said to be emblematic of the medium used
and is thus most evident in artworks that were created in the late 2000s.[50] These
artworks reflect a kind of 'automatic Internet state of mind' that is often referred
to as the 'post-Internet era' (Olson 2008). Exemplary is the work *19:30* (2010)

by Aleksandra Domanović.[51] Domanović grew up in Serbia when it was still part of Yugoslavia. Surprisingly, the strict regime that ran the country allowed its national television stations a lot of creative freedom, which resulted in stable and high-quality entertainment and information programmes. The evening news was broadcast every evening at *19:30* (hence the title of Domanović's work) and was watched by many. When ethnic tensions intensified in the late 1980s, it became the focal point of the day. Watching the news was part of a routine and a shared experience, which contributed to the omnipresent and long-lasting memory of the musical and graphic news intros. Although the fall of Yugoslavia marked the end of this collective memory, it was music in the mid-1990s, and in particular raves, that created a new shared memory. For a large group of people, raves provided a sense of belonging to a community. In 2009, Domanović returned to Serbia in an attempt to connect these different time periods and stress the importance of collective memory. Domanović learned that many well-known composers had worked on the experimental scores for the early news intros. She uploaded her assembled archive and encouraged DJs to use them in their music tracks. In the gallery, the work is presented as an audiovisual installation consisting of two screens: one screen shows documentation of techno parties and the DJs using the tracks and the other shows the compilation of news jingles. The research and documentation of the events can be viewed online, where the old jingles and new tracks can also be heard and downloaded.

Old memories are triggered through the process of creating different versions that are (potentially) continuously distributed. At the same time, it should be asked whether the video installation is the work, or if the video is just documentation of something that happened (and perhaps continues) elsewhere? For an exhibition in 2011, Domanović further abstracted the memories by adding stacks of paper with fragments of images from raves printed on the sides. Although the stacks of paper, the video installation and the website can be presented separately, for a 'true' understanding of the work it is important to see the connections between the different parts. One way to more easily grasp these links is to move beyond conventional art aesthetics and concentrate on network aesthetics. Instead of the material promise of a medium, or its substantial form, such aesthetics should be seen as 'a method and a force that, through rules, constraints, and capacities for expression, continually renegotiates its own structures of existence' (Fazi and Fuller 2016:282). In other words, an aesthetic derived from the design of networks and distribution.

Another example that reinforces the practice of versioning is Constant Dullaart's work *Youtube as a Sculpture* (2009). The work is based on his previous work *Youtube as a Subject* (2008), a series of animated videos with the YouTube play button as its subject. Positioned against the black background of a loading YouTube video, the play button image starts shuddering as if in an earthquake, bouncing from side to side, changing colours, strobing like a mini disco lightshow and falling down off the screen. Lastly, the image slowly blurs. Within the spirit of comment culture that was prominent with 'surf clubs',[52] Ben Coonley was one of the first to respond with a series of videos that featured the dots that

signal loading time as his subject. In 2009, I co-curated the exhibition *Versions* at the Netherlands Media Art Institute in Amsterdam. We asked Dullaart to translate his work to the physical space.[53] He decided to version the online discussion by creating a physical copy of the loading dots, *Youtube as a Sculpture*. This time, eight Styrofoam balls were hung in a circle against a black background, lit one after the other by eight spotlights controlled by a simple disco light mixer. Visitors felt as if they were entering a loading YouTube video, and they filmed the balls and uploaded them to YouTube, 'thereby completing the circle of production and reproduction', as Dullaart observed (Thalmair 2011). The dialogue first occurred online, then offline and returned again to the virtual, where yet again new versions of 'loading ball' videos were made. The process continues. According to Dullaart:

> The success of the sculpture meant that audience members documented the sculpture and finally became the uploading medium for my participation in the visual discussion set in motion by *Youtube as a Subject* a few years earlier.
> (Thalmair 2011)

The idea of making Internet processes material can be seen as a means of grasping a complex and continually changing world that shows its fragility and fleeting nature. It can be argued that, by creating physical objects, artists are attempting to transform the processual into a 'poetic' time freeze. However, this neglects the notion that these artworks arise from collective processes situated in a continuum with other works, references and commentaries.[54] Similar to *Naked on Pluto*, these assemblages are characterized by the processes of distribution and re-use of concepts and ideas. This is an important issue for conservation, as it could have many consequences for the perception of the artwork (and consequently, also its economic value).[55] Conservation thus faces two challenges: Firstly, in what way can conservation work within the confines of a restricted system such as Facebook? And secondly, what are the consequences of dealing with such a process, where parts can be copied, used, presented and distributed freely and by everyone?[56]

To summarize, versioning through presentations makes it difficult to determine what the work is. In the previous case study, *mouchette.org*, I said that the work *acted as* an assemblage of relations that merged to form a variable entity because of the different projects and events that are still closely connected to *mouchette. org*. This is not the case with versioning. Although it can be argued that the projects are linked conceptually, it is likely that the parts move into new directions that are not necessarily regarded as connected anymore. Versioning signals a recombination, in which parts of the work can disappear in a brief time span. Whereas the notion of incompleteness is not new and is reminiscent of conceptual art,[57] the way material is compiled, found, changed and distributed has changed. The result is that these works are heterogeneous processes of creation, which act beyond the object in the gallery. To achieve any significance, these works rely on an understanding of computational aesthetics. In other words, a physical realization of the process, a work in a gallery, is a derivative of the main core of these works, which are the social interactions that determine their process. A great deal

gets lost by neglecting to take this into account, especially the energy, surprise effect, fragility of the illusion and the transience of the moment.

Seeing process as the core of the work seems to clash with conservation strategies that concentrate on conserving objects. Whereas some museums have become accustomed to the idea that an artwork can no longer be presented with the original material or equipment, how should versioning be dealt with? Who or what will be responsible for artworks that are open (freely available for everyone to use, share, document, collect, conserve), dispersed, distributed and dependent on people outside the scope of the museum?

Openness and museums

In the previous chapters I have shown that although museums are traditionally closed institutions, particularly in relation to conservation, there are many collaborative research projects in which case studies are more openly discussed and information about methodology is shared. Despite this openness, in 2005 Dietz argued for museums to be more accommodating to the artists' desire that their work continues to be freely and easily accessible after acquisition (Dietz 2005:88). Alluding to the openness of a museum, Dietz does not specify what an open museum means. Rinehart and Ippolito make a more affirmative statement about 'the open museum' (Rinehart and Ippolito 2014:106–11). They define the criteria for such a museum, or media art collection, in the form of a thought experiment. Of particular interest is their suggestion to re-use artworks via an adapted 'Open Art License', and that museums should compensate artists early on and commission more artworks, rather than pay for them after artists have gained a reputation (ibid.:110). Departing from the object-oriented way of thinking or a final work, and including a processual approach from open practices, where the authorial role is addressed differently, seems to counter conservation practices.[58] What does it mean when an institute acquires a work-in-development – and possibly an evolving – process? More specifically, what consequences would this reversed practice have for conservators?

An important point, as acknowledged by Rinehart and Ippolito, is that the way a work develops is informed by the 'license' that applies to it. However, from a licensing point of view, the issue of ownership is irrelevant because if someone else modifies the work, it is no longer the same work, since one of the underlying rules of some open software licenses is that changes are credited. Modifications can be made, but they would have to be credited as 'based on *Naked on Pluto*'. In cases that are less related to licensing, such as Domanović's or Dullaart's work, this is not even necessary.[59] The act of versioning or commenting and re-using are what count. This does not mean that the artists mentioned do not have a preferred way of exhibiting or documenting the work; it means that there are no fixed rules. As such, anyone can present, exhibit, conserve, document or do as they see fit with the project without the artists' permission. Potentially, even an acquisition could happen just as easily, where a gallerist or distributor could sell a work to anyone. More importantly, the artists see the acquisition process in reverse: the

process and the development is what they are paid for, and the outcome is for everyone else to use. This means that purchased 'acquisitions' at institutions are related to an engagement with the practice, and not to the outcome of that process. Put into practice, this would extend the role of the museum to one of producer, or facilitator, of artworks. It also extends the proposition of 'proliferate preservation' – a method that allows copies of the work to circulate and mutate to better ensure their survival, which happens through crowdsourcing (Rinehart and Ippolito 2014). By giving access to the public, the linear chain of conservation, which moves from version to version to overcome technical obsolescence, is broken in an attempt to offset new versions of the collection's data or artworks. These ideas are very fruitful and, as also mentioned by Rinehart and Ippolito, can also be seen in many non-Western and 'amateur' examples, but the approach still departs from a final work that is acquired by the museum. The 'final' work is circulated, rather than proposing to reverse the acquisition process.

The production of artworks by museums is not necessarily new; museums already have a tradition in commissioning artworks. However, in most cases these works have a different status. Often, they are not part of the collection archive, which means that the museum is not required to take care of, or conserve these works.[60] Rudolf Frieling, curator at SFMOMA, describes a position where the museum as a 'producer' is able to re-exhibit works via performative strategies, including commissioning other artists to conceive new installations for collected artworks (Frieling 2014). Thus, determining what and how an artwork continues, or at least is presented, is more important than what parts could be conserved and how it is done. In these cases, documentation may guide a process, and a museum moves from being a custodian of 'dead objects' to a place where conservation of the old goes hand in hand with production of the new. At the same time, conservators often engage in re-creation processes to understand the decisions the artist made and consequently how a work can be conserved. A good example of such an exploration of the creation process is the replication of Eva Hesse's *Sans II* (1968), a sculpture consisting of a double row of joined fibreglass boxes. In 2002 a comprehensive exhibition of Hesse's work opened at SFMOMA. To prepare for the exhibition and to understand the properties of the work and the techniques Hesse used, mock-ups of the original polyurethane moulds were made to fabricate the work. Although this was part of an educational setting, the artist's way of dealing with processes was closely followed by the conservator. The final results were startling, as conservator Michelle Barger describes: 'learning about process was certainly achieved, yet the greater function for the mock-up proved to be the transformative experiential role' (Barger 2007). She recounts that although the ephemerality of the material, and thus the changes over time of the work was recognized, the shock after seeing the resulting contrast between the two pieces startled many (Barger 2007). Even though it brought out Hesse's insistence and interest in repetition through process, as Hesse explains: 'The wrapping and binding and layering process is also repetitive and makes the viewer relive the intensity of the making in a manner far from the abstract or didactic way in which process is used by most men' (in Lippard 1979:209). While it raised the question

of the value of re-creation, at the same time, Hesse was known to be very adamant about who she worked with. She – and museum conservators after her – stuck with the expertise and help of people whom she specifically assigned. Similarly, Hesse 'did not to predict or document any final arrangement' (Siegel 2002). Even though she always foregrounded the process, and expected the material she used to deteriorate over time, being conflicted about the permanence of her work, after her death, most of her works were frozen in time and preserved in an arbitrarily selected state (Sussman 2002). Whereas these examples are more akin to proliferative preservation, the notion of 'open' as developed in software and hardware practices can pave the way towards working *through* process that can change the idea of a final object and authorial roles. In this sense, an 'open conservation method' means engaging with process *and* creation.

To summarize, even though it may be possible to conserve the technical aspects of net artworks, it becomes almost impossible to conserve works that rely on third parties that use proprietary hardware or software. In these cases, the value of open source seems not to matter as much. This is because alternative solutions need to be conceived that are more likely found in the collaborative efforts of artists, curators and conservators. Secondly, in cases where a project is part of a larger continuum of other online or offline projects, the question of what constitutes a work is not always easy to answer. A process such as this is more about selection, organization and mediation – curation – than conservation. It could be argued that this closely resembles the practice of a conservator. Whereas I do not deny this, in cases of versioning the next instance of the artwork relates to the facilitation and production of something else, rather than the treatment of what it was before. Thirdly, an open approach expands conversation practice by actively taking part in commissioning or (co-)producing artworks that are automatically part of the collection and are treated in the sense of proliferative preservation. In these cases, re-installation is less of an obstacle. It would have to be acknowledged that multiple versions – or even parts of a work – exist and are scattered around different platforms. Freedom of choice is possible and likely leads to interesting results.

It can be argued that this statement implies an endorsement of loss and forgetting (or an argument to not include net art in museum collections). Instead of seeing this as a negative statement, I would like to embrace the 'art of forgetting'. Such an art of forgetting is beautifully demonstrated in the work *Composting the Net* (2012) by Shu Lea Cheang. Whereas most art projects that deal with waste and trash paint a rather negative picture of the present or future,[61] *Composting the Net* takes all the content of a website or e-mail list and shreds the words and images into 'compost', turning the archives into forgotten instances of history. Like seeds from a tree, the actions of digital worms generate fresh sprouts that refuse to be trashed and buried. Seemingly dead data is fertile and open to new perspectives. It could be argued that allowing things to be forgotten is not a bad thing. The question highlights an often (deliberately) ignored issue – that of historical representation, which Boris Groys (2002) calls the 'museum taboo'. The modern museum's strategy of presenting and collecting prevents repetition because once historicized in a museum collection, a work cannot be replicated. As

Groys argues, 'If the past is collected and preserved in museums, the replication of old styles, forms, conventions and traditions becomes unnecessary. Further, the repetition of the old and traditional becomes a socially forbidden, or at least unrewarding practice' (2002). What Cheang proposes is a cycle,

> Which is durational, generative and repetitive. A cycle is a natural process, while 'recycle' implies 'the making of something else', which inevitably generates more waste.
>
> (Dekker 2012)

As such, a cycle represents a more natural approach to conserving the past, departing from the assumption that without repetition there is no learning, and without learning what remains is a fleeting yet endless desire to get to the next new thing. Importantly, the idea of circulation does not necessarily include constant progress. Rather, it emphasizes that development time also allows for return and revision. This also shifts the perception from representations of objects to interpretation of their forms, flows and flaws.

Let's dig a little deeper into the meaning of waste. Staying with the example of Cheang, the subjects of compost and trash are recurring aesthetics in her work. Diehard open source coders and circuit benders scramble through utterances of code, trace dead links, build something from scattered parts and try out endless emulations. This is the scenario of *I.K.U.* (2000), Cheang's film (which later was cycled into *U.K.I.* (2009), a game and performance about an Internet porn enterprise, GENOM Corp., which introduces orgasms-on-the-go for a mobile phone chip: dumped into an e-trash environment, coders, tweeters and networkers are forced to scavenge through techno-waste to collect old and forgotten human orgasm data. It is also a (future) scenario that may well resemble the work of net art conservators. If a net artwork breaks, the software might be repaired or adapted once or twice, or emulated, but in time and after attention fades it will be neglected, discarded and/or replaced with a new version. What remains is waste, digital litter and hardware junk. It has been argued that garbage and waste belong to the domain of forgetting, and archaeology is the prime field that thrives on scattered fragments and perpetuates through assemblages. The approach of archaeologists is to focus on past artefacts, behaviours, attitudes and beliefs, but according to Shanks et al. (2004), 99% of archaeology involves examining waste or refuse.[62] A condition of waste is common to all things, and it is through examining and arranging waste that meaning is created (Shanks et al. 2004). Although it can be argued that this is also an archaeological trope, what is interesting is that both of these notions regard waste as the end state of objects. However, emphasizing waste as redundant, a residue, a remainder, obscures the ongoing and continuous status of the object itself. In other words, it denies what objects are yet to become.

Jill Sterrett, head of conservation at SFMOMA, suggests applying the concept of the 'archaeological find' in reverse by using the mechanism as a method to trace the engagement with an artwork and to reveal its life over time (2009:227). Instead of rigid solutions or records she advocates 'planting finds' (documents

with information value), which account for the variables that are present in the presentation and conservation of many contemporary artworks. This could lead to a new situation where museums would have to re-assess their finds each time from a new context, or as Sterrett says, it will adjust

> the burdensome tone of authority museums inherit as sources of objective truth by actively committing to seeing and seeing anew over time, [and it will] cultivate, among other things, ways of manoeuvring with variable speed.
> (2009:227)[63]

By following such a position, re-installation or conservation will be a mode of iteration that is underwritten by absence and loss.[64] It shows an intention to reframe discourses and opens up alternative possibilities. Instead of asking what to save, keep or conserve, the first question becomes what to give up, erase or abandon. Rather than relying on a past, the notion of traces relates to a future, the function of a trace being that of a 'carrier' of information whose significance is more appropriately valued in a 'not yet' context. Such a less permanent and more insecure approach takes into account a future perspective, and leads towards a propensity for change and development.

Shifting roles

When following an open approach to conserving artworks, the conventional roles of artists and (museum) professionals change. Whereas the artist may still present the initial idea, and at times even guide the development of the work after its launch, in many cases and at a certain point(s) the artwork is distributed in a way that gives various parties control over it. Besides challenging accepted concepts and strategies in presentation and conservation, these artworks also show that conventional roles are shifting. In open and proliferate conservation artists are not necessarily the main actors anymore. Working as a team, artists, curators and conservators contribute to the development of a work. As well, the public can take over parts of the work. If the work itself is distributed in various versions, forms and platforms, broader-based knowledge is needed to consider development, presentation and possibly conservation of what has become part of the work. Van Saaze concludes that due to the nature of these types of works – in this case the project *No Ghost Just a Shell* (1999–2002) by Phillip Parreno and Pierre Huyghe, where multiple actants are involved and co-determine the process – when considering conservation

> accomplished knowledge and existing practices in different areas (vocabularies, the work itself, the artist's intent, professional roles, economic models) [need] to be revised. The notion of ownership as defined as freezing the art object in a singular state is in need of a new conception; one that acknowledges a more tactile, practice-based, and interventive kind of engagement of the museum professional.
> (2009:162)

While my analysis supports this conclusion, I would like to suggest that this engagement should focus on the involvement of experts as well as users from outside the museum.[65] This could lead to what I have called in Chapter 3 a 'network of care', i.e., a group of people that forms around an artwork to take care of it by sustaining (parts of) its continuation. This does not diminish the role of artists. Throughout the research for this book, I benefitted greatly from discussions with artists who provided insights that would have been hard to obtain without them. They are important aids to understanding the intentions of the work, but their perspectives should not be limited to restoring the past. Equally, their knowledge should be used to enable an open future. In this sense, Frieling (2014) signals a new role for the museum as a producer of artworks that are validated by the artist(s). However, artists do not want to be involved in all cases. Unlike Frieling's suggestion of 'an "expanded performance" where the artist, the institution and the public are co-producers' (Frieling 2014:156), the open museum is more of a facilitator of development and processes. Following the process and openness of these practices, Szeemann's adagium that 'the activity of the artist has become the dominant theme and content' in which the artistic process should remain visible in the end product and the exhibition, can be expanded to: the activity of the artist is the method of the open museum. It would be easy to say that net artworks will change the structure of the museum. Although this may be true, I think it is more fruitful to see how a new *modus operandi* will affect other, more traditional, works of art. Such a change in perspective will bring insight into practices that are inherently processual. At the same time, this will generate new knowledge within traditional approaches and methods. In the next chapters, I explore several recurring issues to present new perspectives on old disputes, specifically the value of authenticity and the behaviour of computational documents.

Notes

1 The Web address is: http://naked-on-pluto.net.
2 In his catalogue text, Szeemann puts the word exhibition between quotes to emphasize its distinction from previous exhibition formats (Szeemann 1969:5). The exhibition history of this show is particularly interesting. Not only did it attract a lot of attention at the time, it is still referenced; see, for example, the 'original' restaging during the 2013 Venice Bienniale (Celant 2013). A similar exhibition at the time was *Op Losse Schroeven* curated by Wim Beeren and concurrently presented at Stedelijk Museum in Amsterdam. Beeren's emphasis was different to Szeeman who regarded the artworks as outcomes of a process of intuition and deliberation by the artists (their attitude became form), while Beeren focused more on 'change as a formative principle': he saw the artworks as disrupting static and seemingly coherent social and political relationships (Beeren 1969). Although these restagings are very interesting and deserve more attention, the focus of this book is not on exhibition histories. For a critical reflection on restaging exhibitions from the 1960s, see, for example, Fotiadi (2013). And for a comparison between the two exhibitions, see Rattemeyer (2010).
3 This is not to say that artworks by process artists were not conserved; many were – see, for example, the elaborate restaging of Eva Hesse's *Sans II* at SFMOMA in 2002 (Barger 2007).
4 Social media is a very broad term and can encompass many perspectives: 'user-generated-content', 'convergence culture' (Jenkins 2006), 'peer-production' (Benkler

2006) and 'Web2.0' (O'Reilly 2005), to name but a few. In all, it signifies a trend that started in the first decade of the twenty-first century of addressing and describing the blurring lines of production and distribution between traditional media producers and consumers.

5 For more information, see Pilon (2015).

6 For more information, see the Help section *Naked on Pluto*, http://evr14.naked-on-pluto.net/#Look%20in%20the%20Sky (accessed May 2012).

7 Many authors have reflected on this growth, either by emphasizing the positive (through terms like 'wisdom of the masses', 'many minds' and 'produsage') or the negative side effects. To name two sides of the coin, first, the heralded and extremely positive book about the advantages of social media, *Here Comes Everybody: The Power of Organising Without Organisations* (2008) by Shirky focuses mainly on the advantages of social media platforms for users, leaving aside the implications of copyright, privacy and ownership. On the other side of the coin, Stadler clearly points at the important differences and 'growing tension between the dynamics on the front-end (where users interact) and on the back-end (where users have no access)' (2008)

8 A detailed account of the structure of the game is beyond the scope of this book. Therefore in this section I will confine myself to a general description of the structure to explain the basic functioning of the game.

9 In their publication *The Study of Games* (1971), Avedon and Sutton-Smith already pointed out that games are defined differently depending on the background of the researcher. See also Salen and Zimmerman (2004), who examined several of these definitions.

10 See blog entry *Naked on Pluto*: http://pluto.kuri.mu/2010/08/26/bots-bots-bots/ (accessed May 2012).

11 From the game: see http://naked-on-pluto.net/.

12 See www.youtube.com/watch?v=pbOnKqF9SLE (accessed June 2014).

13 The 'free' means that it is free for users to update their profiles. In exchange for this free access, users provide Facebook with their data.

14 http://facebook.com (accessed May 2012).

15 Timeline is an example of automation, which Manovich (2001) names as one of the five key trends in new media. In a Facebook post he commented that the introduction of Timeline represents another step towards the future of automatic algorithmic visual mass communication: 'Exactly 50 years after Ivan Sutherland introduced automatic design operations in his Sketchpad, algorithmic design rules over social media'. (www.facebook.com/permalink.php?story_fbid=329936163736882&id=295694073827758, accessed 1 April 2012).

16 Social networking methods were developed by the end of the 1990s. They offered advanced features for users to find and manage friends. For a history of social networking sites and their development, see, for example, boyd and Ellison (2007).

17 An interesting list of projects is shared on the repository *antisocial notworking* (2008-present). The selected projects explore the pseudo-agency of online social platforms and critique the social media canon (www.antisocial-notworking.net).

18 This project is no longer available online. Documentation can be found on: www.anninaruest.com/a/sinister-network.

19 The site www.myfrienemies.com/ is not online anymore, but versions can be viewed with the WayBackMachine: https://waybackmachine.org/web/*/www.myfrienemies.com/.

20 www.elfriendo.com/.

21 These suicide notes and performances are not uncommon (see also *mouchette.org*), and can be traced in various forms and for various formats. For an extensive analysis, see Cox (2012).

22 Seppukoo has been offline since February 2011 'due to the paradoxical controversy between the giant Facebook and Seppukoo, our suicidal services are now useless'.

Documentation of the project and the virtual memorial pages can be found at www.seppukoo.com.

23 It is effectively impossible to delete an account, because Facebook does not delete any data on its servers. Therefore, the Suicide Machine dismantles an account by changing the password, removing friends, groups and wall posts, hence the term 'zombie account'. By following this deletion, it is hoped that data will in time be cached out from back-up servers. For more information: http://suicidemachine.org.

24 Facebook Connect launched in December 2008 and is a set of APIs from Facebook that enable Facebook members to log onto third-party websites, applications, mobile devices and gaming systems with their Facebook identity. While logged in, users can connect with friends via these media and post information and updates to their Facebook profiles. Developers can use these services to help their users connect and share with their Facebook friends on and off of Facebook and increase engagement with their website or application (http://en.wikipedia.org/wiki/Facebook_connect#Facebook_Connect, accessed May 2012).

25 In 2012 Olsthoorn published *De Macht van Facebook* [translation: *The Power of Facebook*]. It describes Facebook's innovative force as well as its excesses, making the book one of the first thorough analyses of Facebook. In his dissertation, Stumpel clearly shows the strategies Facebook uses to circumvent its own privacy terms: http://marcstumpel.files.wordpress.com/2010/09/stumpel_ma_thesis_the-politics-of-social-media_facebook_control-and-resistance.pdf. Such diffuse strategies are particularly easy to obscure through interfaces, because complex interactions are not always easy to decipher or track. This is one of the reasons why Langlois et al. (2009) insist on a so-called code politics approach to critically examine user-generated content in relation to software used by Web2.0 commercial businesses. Such an approach 'seeks to understand the connections that enable and shape the traffic and trafficking of information, data, immaterial labour and subjectivities online'.

26 In February 2011, the Facebook Privacy Policy page stated: 'We cannot guarantee that only authorized persons will view your information. We cannot ensure that information you share on Facebook will not become publicly available. We are not responsible for third party circumvention of any privacy settings or security measures on Facebook'. This entire disclaimer was removed in the revision of the 'data use policy' on 23 September 2011 and Facebook does not guarantee anything anymore.

27 The suggestion to use bots to replicate human experiences is not far fetched; already large numbers of bots are used to communicate with people. A good example is the Ashley Madison case; a Canadian online dating service who created an army of 75.000 female chatbots to draw men into costly conversations. For more information, see for example, the artpoject *Are You Online Now?* (2017) by !Mediengruppe Bitnik that is based on the case and further pushes the usage of bots: http://www.annkakultys.com/exhibitions/are-you-online-now/.

28 For more information see, https://techcrunch.com/2015/04/28/facebook-api-shut-down/ and https://developers.facebook.com/bugs/1502515636638396/. While some argue that this returns control of personal data to its owners, it also means that Facebook now controls all that data and can move towards becoming a main information and analytical omniscience. As for *Naked on Pluto* there are a few ways around this problem. Firstly, as a player you can invite friends to join the game, and if they also install *Naked on Pluto* than some of their information can be used. However, this means giving up on the strange and confusing mixing of strangers' and personal data, as a recursive crawling of data from friends' friends is no longer possible. Secondly, the original API could be simulated with fabricated data, but this would mean giving up the game's critical aspect: exposing how accumulated, private, knowledge is used and commodified by a single platform. Instead, the artists emphasize the importance of documentation sprints to push the re-use of all the existing information about the game.

29 Marloes de Valk, interview Hoorn, 31 October 2012.

30 David Griffiths, e-mail correspondence, 28 December 2012. This also recalls Ned-dam's wish mentioned in Chapter 3, to have a software that lets her create by archiving, which likewise alludes to the idea of an artistic tool, i.e., a tool deriving from the work as well as being the work.

31 The amount of information on the meaning and use of open source is overwhelming. See, among many others, Kelty (2008) on the history and cultural significance of Free Software. For some outstanding publications regarding the use of open concepts in art, see Ippolito (2002a) and the edited volume by Mansoux and De Valk (2008) on why art must be free (as in free speech). It describes practical ways to make this happen; and Mansoux (2017), in which he analyzes the creative misunderstandings between art, politics and the law within free culture.

32 See among others Weber (2004:20–53) and Kelty (2008).

33 GNU is a recursive acronym for 'GNU's Not Unix' (Unix was an operating system based on certain restrictions). It was also chosen because it is a real word (referring to the wildebeest) and because it sounded nice. For more information, see: www.gnu.org/gnu/gnu-history.en.html. For a detailed analysis of Unix and the need for other (free) operating systems, see Kelty (2008:118–42). Due to delays of the kernel, it was only in 1992 that the first free operating system became a reality (Linus Torveld changed the license into the GNU General Public License). For more information, see Mansoux and De Valk (2008:6–13); Stallman (2010[2002]:83–8).

34 In computing, standardization was especially necessary to enable software to move between different machines. In this sense, it could be said that this exertion for stand-ardization is similar to the goals and needs of natural history museums in the nine-teenth century. However, in many practices, standardization, or stabilization, is used to turn a project into a fixed or regulatory product or object to fit other systems in which ideas and ownership are not debatable (Kelty (2008:131).

35 Mansoux (2017) analyzes and reflects upon the plurality of, sometimes overlap-ping, sometimes contradicting, ideological and ethical interpretations of free culture practices.

36 This Copyleft license is aimed at server side applications and they specifically choose it to highlight and contrast the closed nature of Facebook's source code (Waelder 2014). For more information about this license, see www.gnu.org/licenses/agpl-3.0.html.

37 Gitorious was a platform for collaborative open-source software development projects that use the Git version control system. In 2015 GitLab acquired Gitorious. At the same time, gitorious.org was 'saved' by the Archive Team and has been made available as a read-only git archive; the original code repository links of *Naked on Pluto* are still working. Other copies are currently hosted on GitLab and the artists' own git reposi-tory, https://git.bleu255.com/.

38 This is one of the main differences from GitHub, another popular online Web service with similar features that appeared around the same time (both 2008). Another differ-ence is that GitHub consists of mostly convenience features, while Gitorious focused on community-based features that help to build a community around a project.

39 There are exceptions, of course. For example, the 3D software Blender follows a very consistent documentation history and archive for every project, where it is easy to find and track developments. This is foremost due to the specificity of the software (focused solely on 3D design), a devoted community and the dedicated attention of the organi-zation. For more information, see www.blender.org/.

40 Another blind spot in open source is licensing, i.e., intellectual property. This has led to the writing of novel, unconventional copyright licenses. *Naked on Pluto* is licensed as Copyleft, which gives others the freedom to run, copy, distribute, study, change and improve the work, and requires all modified versions of a work to grant the same rights (www.gnu.org/copyleft). For more information about the discussions on open licenses in relation to the civil law tradition of moral rights, see Vetter (2004). Coleman (2013)

describes in detail how a cultural critique of intellectual property rights arises, and Mansoux (2013) analyses the creative misunderstandings between art, politics and the law within free culture.

41 See also footnote 28.

42 In other cases that use online data streams, this data is sometimes captured to allow re-use once the original settings are no longer functioning. For more information, see, for example, Dekker and Falcão (2017).

43 Process art was also a movement against the hyper-formalism of Minimalism, turning the Minimalist object into anti-form. Robert Morris makes this especially explicit in his article 'Notes on Sculpture 4: Beyond Objects' (1969).

44 The influential publication *The Open Work* (1989[1962]) by Eco also echoes these developments. In this book Eco undertakes the attempt to understand modern artworks that are left open by their author, to be further completed by a performer or visitor. Whereas Eco recognizes the importance of doing – the creation process of the artist – he focuses on the various interpretations of the viewer who, according to Eco, completes the work. 'Open' here means unfinished, not completed; however, what I am interested in is open practices, and the processes that evolve from such a way of working. This doesn't exclude Eco's 'open' but emphasizes a different notion of open. As I will explain, this means that viewers do not necessarily complete a work (although this may also be the case), but that they can use elements of the work (or even the finished work) as they see fit. As such, this understanding of open is not necessarily a semiotic interpretation of the work, but an exploration of practice and process.

45 For more information, see Harrison and Wood (2003:813–15).

46 For example, whereas Morris' work was situated within the confines of museum and gallery spaces, other artists wanted to completely escape these cultural confinements. Most notably, Kaprow (1996[1968]) and Smithson (1972) declared their disappointment with process art that was happening in galleries. Their goal was to problematize the art world and its formative conditions.

47 Once presented in an exhibition, most artworks are quickly commodified by the art market, museums or by artists themselves. See also Buskirk (2012) and Ferriani and Pugliese (2013:59–60).

48 Aymeric Mansoux, e-mail correspondence, 4 November 2011. For more information, see also Waelder (2014).

49 This can be read in relation to Bourriaud's 'relational aesthetics' (2002[1988]), in which he shifts the status of the art object from a self-contained aesthetic to a socially relational model or field. However, and although he references computational metaphors and strategies, artworks that actually use such systems are deliberately omitted from his analysis. This is not necessarily problematic. More problematic is that he does not describe the types of relations that are created, for whom or why. Moreover, his analysis considers these relations primarily as tools by which artworks are produced. This is contrary to my analysis, in which I emphasize the interrelations between different components or systems. From the 'processual' point of view, it is closer to Burnham's 'systems aesthetics' (1968), but whereas Burnham was foremost interested in purely machinic relations, and kinetic and cybernetic arts, my focus also includes non-machinic relations. For a critical analysis of Bourriaud's relational aesthetics in the context of media art, see, for example, Shanken (2011), who also discusses Burnham's ideas in this context.

50 This is not to say that the concept of versions or versioning is restricted to these artworks. There are many other artists working with more conventional media who strongly believe in this practice, as, for example, Abramović says about her work: 'I like to finish my pieces. And maybe I like to do another version later as a kind of continuum, a process of recreating works' (Huys 2012:63). Abramović is interested in the conservation of her work, and she mentions in relation to her practice of versions, 'if

your work will change, then the entire structure of the museum should change as well' (ibid.: 63). In the case of versions and versioning this distinction is easier to make since (parts of) a work are used, by the artist or others, to develop the work into something else.

51 For more information, see http://nineteenthirty.net.

52 Surf clubs can be seen as a response to the rise of the Web2.0 (Troemel 2011:38–9; and Olson 2008). Whereas an earlier Internet generation communicated mainly through mailing lists, the 'digital natives' set up their own clubs. This new generation of artists tries to define and maintain a shared aesthetic and a group identity and uses devices such as continuous postings, real-time involvement and commenting. They use existing social network platforms, such as YouTube, Flickr or Facebook, or create their own websites which often mimic blog structures; for the latter see, for instance, Nasty Nets, Super Central and Loshadka. It can be argued that the changing function of the Internet caused a decline of interest in software as medium. Today the Web2.0 and its social structure have become commonplace. Next to providing information, its main goal is to shape consumer behaviour; the social has moved the technology into the background. Not surprisingly, artists are also more concerned with the social Web phenomenon: as a structure, a concept and as a practice to form relationships.

53 The other curators were Petra Heck and Constant Dullaart. We invited a number of artists, for whom online reaction from one person to another influenced their work process. We challenged them to temporarily exchange the Internet for the static space of the gallery. Questions about the significance of appropriation, authenticity and agency in the era of 'comment culture' ran like a thread through the exhibition (http://nimk.nl/eng/versions and http://aaaan.net/versions-and-the-comment-as-medium-three-interviews/).

54 For more information about these processes on social platforms, see Burgess who described these videos as 'carriers for ideas' that relate to 'a "copy the instructions', rather than "copy the product" model of replication and variation' (2008:108).

55 See, for instance, Abbing (2002), Velthuis (2005) and Buskirk (2012), who describe how contemporary art prices are determined, taking into account the financial and symbolic meanings of art. Or Thornton's (2008) ethnography of the contemporary art world and the art market in particular.

56 Some solutions may be found in the conservation of games. The challenges of conserving games have attracted some attention among scholars and researchers. See, for example, Kirschenbaum et al. (2009), Winget (2008b) and Lurk et al. (2012). The former two focus specifically on approaches to emulation that are developed in digital communities that enrich the object-centred method of institutions with additional layers of information, from anecdotal narratives to contextual descriptions. Lurk et al. (2012) focus on (mass) content conservation through emulation instead of the selection of discrete aspects. However, there are no case studies yet of the conservation of processes.

57 For such approaches in conceptual art, see, for example, Alberro and Stimson (1999).

58 Proposing that a work is open, and can be shared among many, challenges the museum's traditional focus on authenticity, thus also questioning authority.

59 Even if licenses are not mentioned, further distribution and the future of the work could be influenced. Consequently, it is crucial to first understand the meaning and function of the 'licenses' used and versioning methods before trying to describe and document a work. For more information, see Mansoux (2013).

60 For more information about these kinds of contracts and the difference between a collection and a commissioned work in relation to the Whitney Artport, see Verschooren (2007:5–6). This is not to imply that museums are not trying to change this situation. For example, after several years Whitney Artport (curated by Christiane Paul) brought previously commissioned net artworks into the collection in 2015 (Olson 2015).

61 See, for example, Kroker and Weinstein (1994), and Mark Napier's project *digital landfill* (1998), which anticipates an exploded digital superhighway that is littered with road kill and overtaken by spam.

62 The connection between archaeology and garbage (archaeologists studying garbage) was made in the 1970s when Rathje started the science of Garbology at the University of Arizona. For more information, see Rathje and Murphy (2001), and Shanks et al. (2004). 'Waste' as a scientific topic has boomed for about a decade. See, among many others, Scanlan (2005), who examined the language and symbolism of waste as the background to the predominant culture of novelty that is brought to life as the monstrous, the sublime or simply the eclipse of human endeavour.

63 Similarly, Clavir suggests from the position of conservators in anthropological museums and ethnographic studies that 'by accepting that cultural meanings change, conservators are being asked not only to value the less tangible attributes of an object but also to realize the acceptability of continuing process and the validity of a more abstract, shifting context than is usually found in conservation' (1996:103).

64 When referring to conservation, Bosma talks about the importance of 'losing control' over digital objects. Such loss of control could lead to unpredictable outcomes, and involves the engagement and collaboration of audience members who are part of an ever-growing network that enables the extension of the lifespan and scope of a project (2011:164–91).

65 Similar statements are made by Rinehart and Ippolito (2014) when describing 'proliferative preservation', and by Wharton (2011) in relation to community-based conservation.

5   Authentic alliances

Over the years the exact meaning of authenticity has been contested and it is still subject to critical revision, reinvestment and redirection. This makes authenticity a variable concept. As, for example, historian David Lowenthal (2008) mentions, authenticity will always be variable and – due to the insistence on the value of cultural and geographical differences in determining authenticity – will become even more challenging, if not contradictory to pursue.[1] Taking advantage of the 'variable nature' of describing authenticity, I advocate the adoption of 'authentic alliances'. Alliance stems from the old French word *aliance* – from *alier* (modern: allier), to *ally* in English – and is used to define 'anything akin to another by structure, etc.' (Webster's 1913). In his analysis of Proust, Gilles Deleuze describes several sets of 'machines' that, through learning and process, produce collections of incomplete parts (fragments):

> A One and a Whole that would not be the principle but, on the contrary, the 'effect' of the multiplicity and of its disconnected parts. One and Whole that would function as effect, effect of machines, instead of as principles. A communication that would not be posited in principle but would result from the operation of the machines and their detached parts, their noncommunicating fragments.
>
> (2000[1964]:163)

Following Deleuze, I connect the concept of alliances to authenticity to stress the importance of seeing seemingly different parts as a whole. These alliances function as 'effects' that show the deeper reality underlying a well-formed whole constructed from parts. From this perspective, I emphasize the inherently intertwined structures through which net art is created. This approach implies that artworks reveal themselves through fragments and that such fragments are likely to change over time, creating not a nicely narrated story of events amounting to a plot, but conjunctures that, through relations, attain meaning. In other words, net art acts like, and at times is, an assemblage. This capacity to develop and unfold, or to be in a dynamic state of becoming, allows for a new logic of authenticity

to be identified. In the following I suggest that the different components of net art are not necessarily authentic; rather it is in their alliances that the authenticity of net art can be identified. As such, it is still valuable to use the notion of authenticity to gain a better understanding of net art's inherent qualities. The notion of authentic alliances opens a path leading to new directions for conservators, by suggesting ways for dealing with forms of (in)visible structures that exist everywhere.

The discussion of authenticity in the arts is often a battle of the original versus the fake, the forgery or the copy. In the framework of art the original was, at least for a long time, considered as nostalgia for an old reality, a nostalgia so intense that it has twisted or obfuscated the possibility of seeing the new in the copy. In other words, the copy should be regarded as a method to open a new space, and as affirming difference instead of similarity.[2] This process is what Deleuze has described as the simulacrum (Deleuze 2004[1968]). The simulacrum undermines the distinction between copy and original, meaning that, for example, the production of a photograph has no relation to that of the object photographed. It is not the obvious resemblance that is important. It does not stand in for the original, but instead turns against it to open a new space. Following Deleuze on the 'power of the copy' as the real simulacrum against the failing world of representation, I propose, by connecting alliances to authenticity, for the opening of a possibility that goes beyond old dichotomies of copy and reproduction versus original. As described by Deleuze, 'by simulacrum we should not understand a simple imitation but rather the act by which the very idea of a model or privileged position is challenged and overturned' (2004[1968]:82). By recognizing technical reproducibility as an important characteristic of net art (and not solely as a copy but as something that mutates), a new logic of authenticity can be identified.

As a thinking exercise to grasp the discussion around the notion of authenticity in the arts, I analyze Nelson Goodman's distinction between *autographic* and *allographic* artworks and discuss how these notions can be accounted for in net art (Goodman 1976), and Walter Benjamin's critique of mechanical reproduction in his essay 'The Work of Art in the Age of Mechanical Reproducibility' (1969[1936]). These two references bring out specificities of authenticity in relation to the 'copy' and 'reproduction': characteristics, or qualities, that are (still) important subjects in the discussion of net art and thus could be helpful for identifying authenticity in net art.[3] In the process I hint at the parallel between Goodman's notion of the 'history of production' and Benjamin's argumentation of the 'original'.

Goodman and Benjamin

Goodman's writing on a systematic general analysis of modes of reference and of types of symbol systems has been particularly influential to determining authenticity. He addresses several fundamental questions in the philosophy of

art, one of which relates especially to the ontology of identity that for Good-man is conveyed in authenticity, and helps to define artistic value (Goodman 1976). According to Goodman, the issue of the identity of artworks relates to whether a work's *history of production* – meaning by whom and how the work was made – is integral to the work or not (1976:122). In short, his assertions are based on the discussion of copies and the differences between forgeries and original works.[4] To distinguish between the two, he introduces the concepts of *autographic* (those works of art that are created and made by the artist, i.e., painting) and *allographic* artworks (works of art that are created by someone and executed by someone else, i.e., a musical performance of an existing nota-tion). For Goodman, authenticity is only relevant for *autographic* artworks, because there is no notation from which to depart. In music the performance is always executed. Each performance may vary but will not affect the status of any subsequent performance as a genuine instance of the work (1976:237). Therefore, it is not important whether the work is performed from the original score or a similar copy.

In his classic essay 'The Work of Art in the Age of Mechanical Reproduction' (1969[1936]), Benjamin discussed the reproduction qualities of photography and film, and challenged the concept of originality in artworks that use these media. He stated that technical reproduction threatened the aura – and authenticity – of a work. In the reproduction, the link to the moment of creation, its creator, the evidence of and connection to all that the artwork has endured, is lost. He claims that a debate about authenticity could only take place outside reproduction tech-niques: 'the whole sphere of authenticity eludes technical [. . .] reproducibility' (1969[1936]:220). The emphasis is thereby placed on the artists' 'touch' and the artworks' presence in time and place, whereas technical copies can be seen (or heard) in any place or time. Benjamin connected authenticity to the 'aura' of the artwork. He explains that is not merely a matter of who made it, when or where, but the purpose of the object's existence in the world. It includes many elements, such as the provenance, publicized authenticity, cultural values, and religious and secular history. In other words, aura signifies the artwork's relationship to its external context. The aura of an artwork is tied to its authenticity, which is defined through a series of effects on the artwork. Authenticity is associated with the physical changes the unique object has suffered throughout history, its changes in ownership, the particular authority of the work (there can only be one original), the actual site of its performance and the domain of tradition. As he wrote, authen-ticity is 'the essence of all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history which it has experienced' (1969[1936]:221).[5]

Like Goodman, Benjamin distinguished between an original and a reproduc-tion, but whereas Goodman was mainly interested in distinguishing a forgery from an original, Benjamin was more focused on whether the invention of photography has transformed the nature of art (Benjamin 1969[1936]:227). He emphasized that with the loss of 'aura', aesthetic experiences pervaded popular culture and even politics, making it impossible to distinguish art from non-art.[6] This is not

to say that art made through reproduction machines could not be emancipatory. Benjamin did not deny the continuing importance of aesthetic experience, only its romantic conceptualization that is inherently meaningful and isolated from the rest of life (Shusterman 1997:31). In line with Benjamin, I recognize technical reproductions as important processes in net art. In effect, these processes are one of the defining characteristics in the creation of net art, as such extending the question of aura, and authenticity. In his analysis, Benjamin ignored the possibility for change and mutation in reproduction processes.[7] This neglect is probably due to Benjamin's focus on the reproduction of singular works of art. He overlooked attempts by artists like Marcel Duchamp who, with his *readymades* and *multiples*, made (political) statements against the authenticity of an artwork and the monetization of art (Naumann 1999a).[8] As I will emphasize in the following, this is where the singularity of the object and site explode, but where the aura, and thus authenticity, can be identified.[9]

   Something similar happens with Goodman's notion of authenticity. While refraining from denoting identity to political or economic issues, in Goodman's *allographic* works, every example or performance is an original work made by the artist, and in the case of *autographic* works – which can include mechanical reproductions – originality can be defined in terms of relevant originals (photo negatives, etching plates, plaster models). This can be achieved, if needed, by distinguishing them with 'printed by the artist', 'printed under the artist's supervision', 'signed by the artist', etc. This practice is widespread in the commercial trading of reproducible artworks (Mattick 1993). Whereas authorship is also important in net art, it is now dispersed rather than confined to a single author. Similar to object and site, net art dissolves the notion of single authorship. Paradoxically, the dissolution of existing categories provides the basis for an extension of authenticity. In short, trying to identify the activity of variability, change and mutation in net art, Goodman's distinction between *autographic* and *allographic* artworks, combined with Benjamin's political and economic concerns relating to reproduction, can be helpful in showing the aura of net art. In the process, net art is brought into relation with existing art discourses. Through an exploration of different net artworks, authenticity in net art can be identified by its 'nominal' qualities that ensure that an artwork is properly defined simply as the identification of the object (material), authorship (author) and the origins (time).

Material – materiality

What are the different material components of net art, or, what is the materiality of net art? Looking at the previous case studies, this question is preceded by another: what is 'the work'? Whereas the common conception of an artwork (the conservation object) is as 'a unique object', and the 'notion of authenticity is based on physical integrity', which guides decisions about the changes that can be made to a work (Laurenson 2006), the analysis of, for example, *mouchette.org* has shown that 'the work' consists of a set of different outputs, or projects, which relate to a core identity, that are presented and distributed separately. Although such

a network of projects and events reflects what Laurenson refers to as 'authentic instances' (2006), instead of departing from one form and presenting slight variations, *mouchette.org* is a (still growing) ecology of different projects. So, which project or what parts should be examined to define the materiality of the work?

Dealing with a dispersed network of projects is a challenge that is found in other works of art as well, for example, the project *No Ghost Just A Shell* (1999–2002), initiated by Philippe Parreno and Pierre Huyghe. Interestingly, Parreno refers to *No Ghost Just A Shell* as 'an "aesthetic of alliances", an aesthetic that questions artistic signatures and conventional art presentation models and makes it possible to address current exhibition, authorship and narration models'.[10] *No Ghost . . .* consists of about 25 artworks made by more than a dozen artists. Each work revolves around the fictional character Annlee. All of them have been exhibited separately but were brought together in an exhibition in Kunsthalle Zurich in 2002. The project was intended to continue for a number of years. A selection of artists, who were commissioned by the initiators, was offered the manga character Annlee free of charge. Unlike *mouchette.org*, the artists transferred Annlee's copyright to the Annlee Association, a legal entity that belongs solely to the character. The contract stipulated that artists were not allowed to create any additional works with Annlee as a digital model. According to the artists, the contract liberated Annlee from circulation and from economic and artistic exploitation.[11] It also cleared the path for museums to acquire the work, because the conditions and the work's components had been set. Nevertheless, as it turned out, the work was editioned and different examples of the work now exist in several museum collections. Although this raises interesting questions, for example, what constitutes the work and what is an edition, it is relatively easy to trace all the works (Van Saaze 2009:159).[12] To the contrary, locating the different traces in *mouchette.org* might prove to be more challenging, due to the lack of contracts, an exhibition unifying the separate projects, a project end date or other parameters that determine the project.[13] Following Hayles' (2002) analysis of materiality, in which she argues that materiality emerges from technical, political and social relations of network culture, could be helpful when discussing the importance of materiality of net art. This does not exclude a medium-based approach but shows how historical research is embedded in socio-technical ensembles, while paying attention to the specificity of practices that emerge through networks and processes. It follows that rather than talking about 'authentic instances', which outlines an object-based materiality, authentic alliances emphasize the development or the ecology that is the artwork.

Similarly, for many years, a distinction has been made between those stressing the material conditions of an artwork and those who argue for the conservation of its conceptual part. However, the case studies in this book invert this binary position and point to the intricate relation between the two. For example, for many years the emphasis on identity issues was important for Neddam because of the meaning of online identity on the Internet. Over several years, she witnessed a change in Web practices. People gave up fake identities and revealed their 'true' identities. This could be traced to the influence of social network platforms like

Facebook and LinkedIn, where a real life identity is preferred, or perhaps enforced, over a fictional one.[14] When these identity issues became less important, she not only revealed her identity as the artist behind *mouchette.org*, but also started to stress the importance of language in the work, which is still closely related to identity, but moreover to coding as the building blocks of Mouchette.

> One can be reborn on the Net as a new entity, in a form that one would choose and fabricate, as a living being with no teeth, no saliva, no skin, no smile. Instead, this being would have pixels, code, and text characters. Here is my portrait, my spitting image: All I am is words and pixels put together by means of codes and viewed on a monitor.
>
> (Mouchette 2005:205)

In a similar way, Neddam, as well as Mansoux and Griffiths, emphasize the importance of personal coding or the hand of the author/artist, expressed through silly jokes, comments and particular styles of coding that influence the outcome of a project. Whereas I emphasized the differences in programming styles and their execution in Chapter 3, in their analysis of the role of code, researcher of digital aesthetics and curator Geoff Cox and artist/programmer Alex McLean propose that there is a need to understand 'programming as a performative speech act' (2013:38).[15] In other words, they stress a specificity that can be interpreted as human-machine writing. This understanding of code underscores the distinction between the written code and its execution, while seeing them as not operationally independent but as deeply intertwined. One influences the other – and, in the case of live coding, mutually influences each other.[16] Recalling Chun's remark, that software is layered and can execute unexpected results, Cox and McLean similarly mention, 'Saying words or running code or simply understanding how they work is not enough in itself. What is important is the relation to the consequences of that action' (2013:38). There are many levels of interpretation, compiling and linking that take place in the execution of written code that can be understood only in the context of the overall structure and processes of the computer. In this sense, the authenticity of a work has to be considered as the relation between the material and conceptual. In its writing and thus in its execution, code is conceptual and material at the same time. This is not to say that the conceptual and material are identical. Code as an entity is fixed and static, a language that is interpreted by the program that runs it. As Cramer and Gabriel suggest, 'software is machine control code, it follows that digital media are, literally, written' (2001). Following this line, software may be read and executed as a mental act. Code could therefore exist without a computer (Cramer 2002). At the same time, code can also be machine generated, not requiring any human writing. Just as any other interpretation, the meaning of code depends on context. Therefore, a distinction needs to be made between code and its execution.

For many net artworks, hardware is considered less important than software, even though the aesthetics of the hardware on which the work is presented may influence the appearance of the project itself. From the use of colours to the size

and resolution of the computer screen, important hardware elements (co)establish the aesthetics of artworks. Nevertheless, hardware remains less important in the sense that audiences can experience net-based works on all kinds of equipment (from CRT monitors and laptop screens to smartphones and touch screens), and in very diverse environments (at home or the office, on a table, in bed, on the train, in the park, etc.). This is not to say that presentation of net art projects outside of their 'natural habitat' – an exhibition, for example – might not require specific hardware, but in some cases a fixation on hardware issues distracts from the concept of the work, turning it into an object, or even a material fetish. Authenticity in a net artwork is foremost traced by examining software, or the programming and the code.[17] At the same time, code is not a standalone feature, or material, because of the strong relation between writing and execution, and vice versa. Referring to *authentic alliances* affirms the aesthetic intertwining of several actions.

Author – authorship

Identity play thrives on the Web. This makes it difficult to identify an author as 'authentic', because anyone can assume a virtual identity. Whereas there are several tools to trace the owner of a website, this does not guarantee that the owner is also the artist behind the work.[18] Since the start of *mouchette.org*, the question 'who is Mouchette?' has kept many people busy. In 2009, the artist behind the website revealed Mouchette's identity. However, the ongoing identity play, its persistence over the years and the fact that anyone could become Mouchette, ensured that people still doubted who the real person was behind Mouchette. The questions surrounding what is real and what is fictional, what is tangible and what is virtual, are almost synonymous with those raised in the Web as an environment where people frequently take on different or modified identities.[19] By allowing others to become Mouchette, Neddam emphasizes that different stakeholders can claim authorship of Mouchette.[20] Moreover, she regards the building of Mouchette's identity as a collective process facilitated by exchanging information with visitors to the site.

> Mouchette is already a collective creation, even if it was the work of only one person originally, because my personality was built little by little through exchange and dialogue with visitors. It's quite the same thing as with real human beings: each personality is built in relation to its environment, against it or with it.[21]

The copyright or ownership of these identities is never clarified on the website, or through the login membership. Nevertheless, Neddam can de-activate the different Mouchettes whenever she likes.

> It is important that the limit between my Mouchette and the alternative Mouchettes remains blurred. The creations of the interface users are as legitimate as my own, and if their works get broken, I would fix them. Practically

speaking, there is an admin login to the identity-sharing interface (the mouchette.net), so I have a list of the different Mouchettes and I can de-activate them if I want, and I still login regularly to allow access to the new subscribers.[22]

An interesting situation presents itself where singular authorship is queried by relinquishing control of the work to others. In return, the other 'Mouchettes' may give the project a degree of realism, even though it is still an authored situation and the precise outcome is unknown. Authenticity is invoked, but then criticized and reformulated through the presence of others who are 'individuated and meto-nymic, live and mediated, determined and autonomous' (Bishop 2012a:237). In 2006 Bishop coined the term 'social turn', to describe a return to socially engaged and collaborative art practices, which was occurring outside the traditional art-worlds. Although this 'return' can be questioned, more importantly Bishop stresses the importance of the artist to remain committed to the aesthetics of the project. This central focus on the 'artist as author' is certainly the case with *mou-chette.org*; however, in other examples this is less relevant and authorship is much more loosely defined – if at all.

 Naked on Pluto is in this sense exemplary. Part of the work is based on algo-rithms that operate bots in the game. The anthropomorphized bots prompt the user for responses and give continuous feedback on the game world. In other words, they generate the stories in the game based on the contexts in which they find themselves (De Valk 2011). The bots therefore are not just mere aids, but actually have agency in creating the work. Cramer (2005) notes that conventional software companies promote the idea that software functions mostly as a tool, an aid for the artist, thereby denying the larger function and authorship of algorithms. *Naked on Pluto* – as well as other digital artworks discussed by Cramer, such as Cornelia Sollfrank's *net.art generator* (1999) – invert this idea by 'redefining authorship as the artistic design of an algorithmic process' (Cramer 2005:84). Cramer asks who or what creates the work. One also needs to establish, who is, or better, are the authors? Is it the artists who developed the concept, the artists who programmed the bots, the users who play the game or the program itself? These questions are often at the core of many net artworks. Sollfrank's approach is exemplary since the *net.art generator* is not a collaborative work; rather it is a network of relations between different net artworks and multiple authors (Lillemose 2009:41). Soll-frank asked computer programmers (there are currently five different versions) to write a program in PERL-script, which can be used by anyone on the Web. After inserting a title and a name it looks for images and texts to remix into a new text or image. The question of who is the author has become ambiguous and is replaced by 'what is an author'; or rather what is the relation between the author(s), the software and the execution of the work. In other words, the method and process of net art need to be analyzed to answer the question of authorship. As the authentic-ity of the author(s) is not fixed, the notion of *authentic alliances* is useful, since it highlights that no single author is more important than any others in the creation

of a work, and that each 'author' can only function in relation to other 'authors': it is their alliance that makes the project function and valuable.

Different stakeholders could pose a problem for conservators when it comes to determining authenticity, especially if they are non-human, but artists can also be ambiguous about the status of (their) authorship(s). As mentioned, ambiguity is an important characteristic of net artworks and, although it may not be easily found or traced in either the presentation or back-end of the work (as mentioned when discussing Blast Theory's strategies), it can be an extremely important element that, to a large extent, helps a work to thrive. Ambiguity signals a process of exploring a shifting labyrinth of possibilities set in play by the work. Such practices are not confined to net art and can be found in the practice of many artists from all disciplines. As artist Lynn Hershman puts it, the truth 'is always apparent in the flaws, [. . .] it's in the crack in the wall, not the replication of it' (Giannachi et al. 2012:228). This process of concealment and ambiguity also complicates interviews with artists about their work. They might be genuinely unaware of the importance of certain aspects of their work (that therefore remain hidden). Or they might very well know the answers, but decide not to provide them. Other issues regarding authorship relate to copyright, for example, when acquiring a networked artwork that relies on others than merely 'an author', who qualifies for a share of the purchase price: the artist(s), the audience who contributed parts of the work or other parties in the network structure, such as a commercial platform that is used 'for free' in the presentation or distribution of the piece? Could an acquisition itself be seen as an intervention and become part the artwork? These are important issues that have, at times, prevented museums and private collectors from acquiring net artworks (Dekker 2013). The acquisition process of *mouchette.org-Version 01* by MOTI and Stedelijk Museum Amsterdam became part of *mouchette.org*. As Neddam mentioned, it was a reason to write a manifesto by Mouchette and it provided a possibility to find a new way to trace the value of *mouchette.org*. While currently developing a 'MouchetteCoin' Neddam is not necessarily interested in the monetary value of *mouchette.org*, foremostly she wants to emphasize the value of the participatory and performative qualities of the work. This means guaranteeing the interactivity of the site, which subsequently – for her – would influence the financial value, and at the same time would question traditional concepts of ownership and authorship.[23] With regard to installation art, Van Saaze argues that concerns about ownership, authorship and copyright are replacing traditional questions about the materiality of the object (2009:162). Indeed it is clear that these concepts have to become the subject of critical discussion in net art as well. However, it is difficult to separate one from the other, as the materiality inherently questions these concepts. Thus, instead of one replacing the other, these concepts are intertwined and need to be looked at in alliance.

Time – temporality

Conservator Barbara Appelbaum has advocated for conservators to include non-material information in their research and practice, such as the value the object

holds for its custodians or stakeholders. Reconstruction of such a 'full' history of the object would lead to the ideal state of the object (Appelbaum 2007:171–236). She continues, 'an ideal state is defined by time, not by physical description' (Appelbaum 2007:176). However, in the case of net art it is often difficult, if not impossible to define an ideal state since one of the characteristics is their continuous process. In this context, Clavir talks about what museums believe to be an 'authentic moment', which by implication turns them into static entities.

> Freezing a culture's history at one moment in time in museum displays, the 'ethnographic present' (as it has been termed in anthropology) creates an understanding of indigenous cultures' history as being important only within a constructed, fixed period in the past.
>
> (2002:32)

This attitude signals one of the biggest differences between museums and artists in the way they regard their legacy. Although this may not apply to all (net) artists, many of them alter the presentation of a work according to the respective space, finances or context each time it is presented (Ippolito 2008; Noël de Tilly 2009). Museum conservators and curators often point out that a presentation is always shaped over time, through talks with the artist, until a final presentation is chosen. Such a practice can be seen with JODI, who frequently made changes to presentations of their works, and Neddam, who believes that the conservation of a work of art ideally becomes a new work. Similarly, the artists behind *Naked on Pluto* put a lot of emphasis on re-using a game engine, providing a platform for making new works. However, these artworks could continue to develop indefinitely by building on the existing work to create new versions. It is by looking for and comparing relations in time, and by connecting different projects to each other where authenticity can be found: not as a singular moment or ideal state, but as a developing process that can be traced through various elements.

Such a variable approach is very difficult to accommodate within contemporary museum conservation practices, from challenges with regard to their registration – how to enter the work into standardized databases – to decisions on what exactly to conserve. Although it is possible in theory to create a database that can handle all of these data elements and relate them to each other in various ways that trace different histories and variations, the question remains whether it would be desirable to implement such an organization of data. Rather than promoting advanced database models, using them in different ways – not necessarily as 'enforcers of truth' but as boundary objects that trigger a dialogue, or as resources can function as departure points for creating new stories (Van Saaze and Dekker 2013; Dekker and Falcão 2017). It is important to acknowledge that net artworks are never stable, since technical changes and updates continually shape the work, and to see them as localized and specialized entities 'in time',[24] both in the sense that they can be time-based and that their appearance may vary over time.[25] One implication of taking an approach of 'localized knowledge' is the realization that conservation of net artworks will always be based on case studies. This will make

it hard to implement and pursue standardization. Knowledge dependent on time and context can become contradictory. When 'local' solutions are crucial, what happens to the authority of a conservator, or a museum? Whose voice(s) will prevail in issues of conservation or, who will control knowledge? Knowledge may reside with the artists, the users, the programmer, the curator, the 'network of care' and perhaps others. While this condition may balance out knowledge hierarchies, it also calls for education and critical thinking about technical and social systems, as well as their function, possibilities and limitations, to confront political and ethical challenges.[26] In other words, it requires paying attention to elements that are not directly visible but still determining factors. Furthermore, this approach calls for changes within the institutions that are currently dealing with cultural heritage to enable them to take maximum advantage of new knowledge systems and collaborative ways of working.

Is *alliances* the keyword?

Taking advantage of the 'variable nature' of describing authenticity, I coined the notion of *authentic alliances* to come to terms with the characteristics of net art. With this notion, I am not attempting to recover a past to better understand the present. By emphasizing 'alliances', I want to uncover the core of net art, which is not always immediately visible, and address its implications. Identifying authenticity by looking at the traditional definition used in conservation of material, author and time will not necessarily give a good understanding of authenticity, since some identifiers are more present than others. Moreover, such analyses would not do justice to the dynamics of the work. Net art is not a stable entity that can be examined by static means.[27] What determines net art as authentic is found in its alliances. This also implies that rather than asking *what* is authentic one should question *where* authenticity is and what it *does*. The notion of alliances offers a layered way of looking at artworks. This means that different elements of an artwork should not be identified as singular entities, but should be seen as influencing each other. Net art is a process, where different properties of the work, materiality, authorship and temporality are in alliance with each other. This does not mean that questions about material, author and time are irrelevant. There is, however, a shift of focus to ownership, authorship and copyright. These concepts should be further analyzed in the light of human and non-human (machinic) relations.

To return to Goodman it would seem logical to speak of net art as *allographic* artworks, since net art is based on code, or 'notation', that enables the work to be re-performed. Unfortunately, not all artworks are very precise in their 'notation'. Due to constant software upgrades, changes need to be made to the code, but changes are not always specified or annotated, let alone recorded in a standardized way that facilitates comparisons. Nor is the specific interactivity or the performativity made explicit in descriptions; the former already makes it difficult to re-perform an artwork, especially since the often built-in ambiguity in artworks present in the latter will be lost. In this sense, Goodman's concept

of allographic artworks seems inadequate to account for all the nuances in net art. Since the artwork's identity (as in Goodman's 'history of production') is so specific it might make more sense to refer to them as autographic artworks, or at least partly so. Although code (as notation) can be defined as allographic, it can become autographic in its use or execution. It follows that notation as such does not identify an artwork as allographic; it depends on the kind of notation. In other words, it should first be asked how straightforward it is to standardize or interpret and re-perform the code, notation or score. The ease with which this is done depends on the skills of the person looking at the code. But more importantly, it shows how relevant the 'history of production' is to the identification of the work.[28]

Another difficulty is that Goodman focuses on singular artworks. With regard to multiple, or reproduction media, like print, photography or etching, he notes that 'the only way of ascertaining whether a print is genuine is by finding out whether it was taken from a certain plate' (1986:119). In a footnote (p. 119, n.12) he adds that the execution of an artwork does not need to be done by the 'original' artist but can be done by others. The issue needs to be addressed: Where and in what way does an 'original' exist in net art? Looking at the examples I described, it seems there always is a first instance from which other projects, versions or variations are made that can also be identified as part of the 'history of production'. Nevertheless, in the case of commenting and versioning, it is questionable if such a distinction would make sense, as the process as a whole defines the work. On the other hand, acknowledging 'original' author(s) is particularly relevant to the ideology of open source practices, and even ethical. At the same time, the original author(s) may be more difficult to trace in other practices, especially if they are anonymous and work on commercial platforms, or from difficult-to-trace servers. The identity might get lost in the process of linking, commenting and versioning.

The quest for the original leads to Benjamin's statement that in mechanical reproduction the artwork loses its 'aura'. Following the above, it would make sense to discard his argument, since reproduction, in the context of net art, does not equal a copy.[29] However, the discussion between real and copy continues to this day, although it is often talked about in economic terms, i.e., when a 'copy' is sold instead of the 'original'.[30] What is often forgotten in these discussions is that the whole idea of forgeries stems from a time when it was technically difficult to make replicas of a work. Often, long periods passed before copies were produced (Irvin 2005). A stronger argument is that reproduction in relation to net art (looking closely at the process of production) is tied to networks and not to singular artworks. Moreover, it is often explicitly emphasized and practiced. Thus, the use of copies is not only due to the ease of reproduction, as Benjamin assumes – especially in the sense of appropriation which, like the intentional borrowing, copying and alteration of pre-existing images and objects, has a much longer history in the arts.[31] In the mid-twentieth-century, appropriation took on new significance due to the rise of consumerism and the proliferation of popular images through mass

media outlets like magazines and television. Artists challenged notions of originality, as well as what it meant to be an artist.[32]

In discussing current practices of net art, a link to appropriation art makes the value of the copy more clear. As mentioned, artists who work in the Web, or with other easily reproducible media, conceive of the original versus the copy in a different way to those working with traditional media. Their work deals with iteration, versioning and repetition. Interesting examples of this way of working are the *surf clubs* that emerged around 2005, like Nasty Nets, Spirit Surfers, or Super Central: loose networks of people around collaborative platforms that focused on *Internet surfing*. People would upload all kinds of visuals they had found online and others would sometimes comment on them by posting changes to the post, other images or text. This is not necessarily about copying or appropriation, as explained by Fuller:

> As the image and text are supplemented by computational forms such as code, algorithm, database, data structure and others as fundamental cultural elements, the question of the copy in relation to an original becomes of less significance than the kinds of context, the media ecology, at multiple scales and kinds, that text, image and computational elements operate in and as part of and how they in turn change, shape, agglomerate with and repeat other repetitions.
>
> (2013)

This is not to say that the quest for originality is not important, but it is achieved in a different way. For example, being the first to comment with a brilliant or funny idea. Commenting can be seen as a mechanism for establishing individuality, as participants combine shared meanings and play with the shared parameters of the group in idiosyncratic ways. The attitude towards re-using material has become widespread. Instead of seeing it as akin to forgery and enforcing a binary opposition, it is more interesting to position it in relation to versioning by putting existing content in new contexts and thereby creating new potential. As Parikka describes: 'copying is not merely reproducing the same as discrete objects, but coding cultural products into discrete data and communicating such coded copies across networks: seeding and culturing' (2008:76). As such, in a computer age the term 'copy' has a distinct meaning, which is more than 'reproduction' because in a network culture it is entwined with communication and distribution. These artworks are instances in a line of other works. They derive part of their meaning and value from this network. Originality and control over (re)use is not associated with traditional notions of intellectual property, but it is based on the desire to be part of the network. Authorship, or identity, is also not attached solely to the person who creates the initial work, but in how others comment on it. It is through circulation that creativity, value and recognition result. In this process, these practices blur the border between originality and production. As Latour and Lowe mention, 'once there is no huge gap in the process of production between version n and version $n + 1$, the clear-cut distinction between the original and

its reproduction becomes less crucial' (2010:283). Following Latour and Lowe, accepting that a reproduction is valuable and could even have 'aura', opens the way to more stimulating discussions about what makes an interesting reproduction and what does not. Such a discussion will have to consider other aspects of a work, while asking what the work is, where it is taking place and who is doing it? Also, how does it function, who is paying for it, how long is it meant to last, and how is it marketed and distributed?

To conclude, an artwork's authenticity is not found in its singularity, but rather is identified in the ongoing dialogue between the open-ended work and its multiple producers. The degree to which an element cannot only be duplicated but also mutates becomes of central importance to this discussion. While the construction of the different elements can change, thus changing the overall form, the relationships between the individual components remains and can be identified by comparing different versions in time. Categories such as the author, human and machine agencies, the singularity of the object and the functionality of time explode in net art, but they also open to new ways of looking at authenticity.

Notes

1 By emphasizing that any culture can decide on its own heritage as described in the Nara Documentation (Larsen 1995), Lowenthal argues that every culture is therefore 'entitled to do just as it chooses with its own heritage, which need not be shown to, let alone shared with, others' (2008:8).

2 One of the main drivers of this 'nostalgia clinging' is based in economics, taking advantage of human's inclination to binary thinking: comparing the new with the old, the copy with the fake, the reproduction with the original, etc., and thereby attaching higher values to the original.

3 Despite the often quoted 'easy' duplication of code, discussions of net art in relation to authenticity, forgery, copies and appropriation thrive. To name some examples, Davis (1995) argues that there is no longer a clear conceptual distinction between original and reproduction in any digital medium. Scaff (2002) similarly dismisses the possibility for authenticity or authorship in digital art. Thomas (2002) argues that authenticity can only be asserted through authority. Quaranta (2012) interviewed some victims whose work was appropriated by Eva and Franco Mattes: http://artpulsemaga zine.com/eva-franco-mattes (accessed 26 August 2013).

4 According to some, this binary also existed in art and philosophy discourses for many years, leading to the 'jargon of authenticity' (Adorno 1973[1964]). To quote Adorno: 'While the jargon overflows with the pretence of deep human emotion, it is just as standardized as the world that it officially negates; the reason for this lies partly in its mass success, partly in the fact that it posits its message automatically, through its mere nature' (3), thereby criticizing existentialism, according to Schroyer, because it 'mystified the actual relation between language and its objective content' (1973:xii) – making authenticity into a binary term for judging 'good' and 'bad', or as Goodman mentions 'genuine' art (1976:99–122).

5 Benjamin is not very clear in his use of the term 'reproduction' as he refers to both copies of original works of art and works that are multiples by nature, such as bronzes, terracottas, coins or more contemporary materials like woodcuts, lithographs and photographs (Benjamin 1969[1936]:218). Mattick (1993:128) attributes this to Benjamin's 'aphoristic and associative, as opposed to carefully analytic, character of his writing'. Benjamin's interest is not in making these distinctions, but rather 'specifically

in photography as a means for the production of images of the world in general and of artworks in particular' (Mattick 1993:129); also see Baas (1987).

6 The influence of political context is important to note in this regard. Benjamin made his statements during the rise of Fascism in Germany. Along with advocates (and close friends) Brecht and Adorno, Benjamin claimed that art had to be serviceable to political ends; it seems that Benjamin's argument was mostly motivated by polemics rather than historical goals. See Wolin's study of Benjamin's aesthetics (1982).

7 Benjamin presented flaws in his own theories simply by making mistakes or misleading assumptions about the history of mechanical reproduction, as well as its influence (or the crisis that Benjamin envisioned for traditional forms of artistic expression) on the art market where the original became more important rather than less (Baas 1987). There is another paradox in Benjamin's argument of authenticity, which relates explicitly to the practice of conservators. As Benjamin explained, 'The authenticity of a thing is the essence of all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history which it has experienced' (1969[1936]:221). In other words, the authenticity of an artwork consists of the identity of the piece, and its particular context and history, i.e., it is 'its presence in time and space' (1969[1936]:220). According to Benjamin, a conservator should be both faithful to the original intentions of the artist and the passage of time. But how then can the artwork's 'aura' be conserved? In order to restore an artwork one needs to change its passage of time. But when conserving the historical context, the artwork's origins, and thereby the artist's intentions, are obscured. Several others had already pointed out this paradox. See, for example, Lowenthal (1985), Dykstra (1996) and Dutton (2003).

8 Naumann acknowledges that Benjamin probably did not know about Duchamp's *readymades*, even though they met once, a year after Benjamin published his essay. The meeting was noted in Benjamin's diary, where he also referred to Duchamp's pochoir (a refined stencil technique) *Nude Descending a Staircase* (1937) as 'breathtakingly beautiful, maybe mention'. It is of course tempting to speculate, as Naumann does, that based on this encounter Benjamin wanted (or had to) revise his earlier statements about reproduction, but to date there is no evidence that this happened. For more information, see Naumann (1999b).

9 See also Berry (2001), who discusses the changing function of Benjamin's aura in relation to the Internet, especially concerning its site specificity.

10 See www.mmparis.com/noghost.html.

11 For more information, see www.mmparis.com/noghost.html. Nevertheless, projects dealing with the legacy of Annlee continued. See, for example, the exhibition *Yes, we're OPEN* (2011) at Netherlands Media Art Institute (Amsterdam), in which the curator Petra Heck asked artists to react to the legacy of Annlee. See also www.nimk.nl/eng/yes-were-open.

12 Interestingly, Van Saaze (2009) also raises the issue of competition between museums to create unique collections by which museums are branded.

13 For some, the website's address, the URI (Uniform Resource Identifier) or its most common subset the URL (Uniform Resource Locator), has become a way to ensure the uniqueness of the work, a place where aura can be traced (Quaranta 2011). As argued by artist Olia Lialina, it is 'the only parameter which protects copyright' (Lialina 1999). In the project *Location=Yes* (1999) she explains the uniqueness and importance of the URL by showing several net art examples that use the address bar as a crucial element of the work. The inherent connection between location and content has become an important argument that is used by some as one of the main elements in their sales contract; see, for example, Rafaël Rozendaal's www.artwebsitesalescontract.com/.

14 As mentioned in Chapter 4, this shift was also the reason the artists behind *Naked on Pluto* say that the work is only valuable to play actively for a few years. The concept of the work would be outdated as soon as people started to realize the working behind

identity or, more specifically for their case, the rights and uses of privacy by organizations behind social network platform.

15 It is important to note that Speech Acts (Austin and Searle) are generally concerned with the function of language, not its aesthetic aspects, pleasures or silliness. For more information, see, for example, Cox and McLean (2013) on the importance of recognizing code as speech, and for linguistic analogies between code and natural languages; and drawing on Barthes' *S/Z*, Cramer (2003), who has made the distinction between 'readerly' and 'writerly' texts and claims that the command line encourages the reader to become an active producer by stating the difference between the act of writing and tool with which writing occurs.

16 For more information about live coding in connection to conservation, see Yuill (2008).

17 I do not talk about the visual effects of hardware here, because as mentioned, hardware is often of lesser significance for many artists (see Chapter 3). This is not to say that hardware issues are not important. For more information and research on hardware conservation, see Depocas et al. (2003), Serexhe (2013) and the project Obsolete Equipment http://scart.be/?q=en/content/obsolete-equipment.

18 For example, the service WhoIs, a free query and response protocol widely used for querying databases that store the registered users or assignees of an Internet resource, such as a domain name or an IP address. Another tool is blockchain, which enables the tracing of digital documents; for more information, see, for example, Zeilinger (2016).

19 See, among others, Turkle (1995, 2009), whose research focuses on the psychology of human relationships with technology and on how people relate to computational objects, or Butler (1990) on the performative qualities of identity.

20 Several different names can be traced on the website, and several 'copies' exist such as Emilie Gervais' *Parked Domain Girl Tombstone* (2013), in which Gervais uses *mouchette.org* as source material. But these authors have not made an authorship claim to Mouchette. This suggests that they are more commentators or participants than authors.

21 See Mouchette (2005).

22 Martine Neddam, e-mail correspondence, 12 August 2012.

23 Martine Neddam, personal conversation December 2016.

24 In the use of the term 'localized' I follow Deleuze (2000[1964]), who distinguishes the localized from the totalizing notion of standardization. Latour (1987) has also emphasized that universal knowledge is bound by localized time and space, and, moreover, that such specialized knowledge tends to move through sparsely populated networks before it affects other (external) alliances. See also Bowker and his thorough analysis of the importance of and need for local knowledge (2005:201–21).

25 Conservator Hanna Hölling describes how small changes to artworks, especially media artworks, are frequently made in museum collections, notably if they are taken out of storage to be re-installed in a different place (2013:199). Similarly, artist Paul DeMarinis states that to conserve analogue media is to refrain from playing them: 'each replay is a partial erasure and a new recording – an overlay' (2011:223). However, these changes are different from the ones I am referring to in net artworks where change is sometimes made at the expense of the current artwork.

26 I am not suggesting here that everyone will be equal. In most decision-making processes this will not be the case. What I am emphasizing is that there are people with different kinds of knowledge around the table. To put it simply: everyone has a piece of a puzzle. Together they complete the image. However, those in charge most often decide what the image will be. Foremost this raises questions of moderation.

27 Similarly, from the context of archival science, MacNeil and Mak argue that any digital resource is in a 'continuous state of becoming and their authenticity is contingent and changeable' (2007:26). In her analyses of multiple screen installations, Noël de Tilly (2009) concludes that the production and the presentation process is never complete

due to the medium used and the intentions of the author(s). Whereas Noël de Tilly argues for 'authenticity to be seen as a process through which the work is continuously constructed and modelled' (2009:215), I use the notion of authentic alliances to emphasize the relation between different elements that change and influence each other.

28 The crossing from allographic to autographic can also take place in other types of artworks. As Pillow shows in his analyses of architecture: some works of architecture 'have a historic specificity, and a site specificity that makes production history essential to their identification: they are autographic when built' (2003:367).

29 Even if reproduction equals copy, the 'anxiety' by Benjamin that reproduction will diminish the aura of original works does not hold. Painters like Mantegna, Raphael and Rubens already recognized 'the advantage of the fame that reproduction of their images brought' (Lambert 1987:147). See also Currie (1989), who argues that under certain conditions a reproduction of the original is as valuable and useful, aesthetically speaking, as the original. Also, the past decades have proven the added value that reproductions give to original artworks. As Hillel Schwartz argues, 'only in a culture of the copy do we assign such motive force to the original' (1996:141).

30 See, for example, Abbing (2002) and Thornton (2008). Moreover, the quest for deciphering the original is turned into a quest. Probably the most famous to date is the Da Vinci Code, but smaller organizations and museums are also taking part by organizing lectures, workshops and games around discovering 'the fake from the original'.

31 A famous example is Marcel Duchamp's *L.H.O.O.Q.* (1919), a cheap postcard-size reproduction of the Mona Lisa, upon which Duchamp added a small moustache and goatee. The letters are a pun – when pronounced in French it translates to 'she has a hot ass'. For an elaborate account on Duchamp's *readymades*, their distinction to a copy, and connection to appropriation art, see Naumann (1999a).

32 See, among others, Chilvers and Glaves-Smith (2009).

6   What is a document?

Discussing and comparing several documentation strategies requires a reconsideration of conservation practice and theory in favour of documentation. Looking at net artworks, the different roles and functions of documents became clear: documents can either be part of the artwork, replace the artwork or even be regarded as the artwork. How does this shift in what constitutes a document affect theories that depend on this concept? In her seminal text *Qu'est-ce que la documentation* (1951) Suzanne Briet expanded the notion of the document to also include natural objects (the antelope), works of arts and oral discussions (a professor discussing subject matter while teaching). Thus described, a document has the function to inform. Furthermore, by regarding documents as examples, or grouping, of things, she concludes that documents derive meaning from their context. This approach is still valid today but it needs to be redefined and clarified, because what happens when the context, for example a distributed network, is the work? Can software and algorithms be considered as documents? Translated into digital culture, would Briet's assumption suggest that anything is a document, thereby stripping the term document of its meaning? Is something immaterial, such as a process or a network, a document? If not, then what are they? Offering a way to identify how a document is shaped and functions facilitates an understanding of a treatment of net art for conservation. In this section I focus on the specific properties of a computational document that, according to Lev Manovich (2013), should be termed as 'software performances' instead of documents.

Manovich suggests that software culture is moving beyond the twentieth century terminology of document, work, message or recording:

> Instead of fixed documents whose contents and meaning could be determined by examining their structure and content (a typical move of the 20th century cultural analysis and theory, from Russian Formalism to Literary Darwinism) we now interact with dynamic 'software performances'.
>
> (2013:33)

He continues,

> Computer programs can use a variety of components to create these performances: design templates, files stored on a local machine, media from the

databases on the network server, the real-time input from a mouse, touch screen, joystick, our moving bodies, or another interface, etc. Therefore, although some static documents may be involved, the final *media experience constructed by software usually does not correspond to any single static document stored in some media*. In other words, in contrast to paintings, literary works, music scores, films, industrial designs, or buildings, a critic can't simply consult a single 'file' containing all of work's content.

(2013:34, emphasis in original)

Following in the footsteps of Manovich, I agree that a work's content cannot be defined by a single file or document. In effect, net arts' networked and processual characteristics can only be defined by looking at their alliances. However, his emphasis on the real-time construction of software that leads to dynamic outputs instead of static documents may be less sustainable. In other words, how dynamic, or fluid, is software and in what way do these characteristics move beyond existing terminology?

The discussion between fixed and dynamic documents, and the stability of digital media have been present for many decades, but with the ease of editing digital documents it has moved into the realm of 'the fluid world of digital documents'.[1] At first sight, it makes sense to see a string of bits as being unstable or performative. But, as pointed out by David Levy (1994) notions like 'fluid' and 'performative' are not only characteristics of digital documents, they also occur in non-digital documents. Paper notes, receipts and even photocopies can also be characterized as fluid. Although fixed at a certain time and for a certain period, oftentimes annotations are made on an existing document, so it changes as it is distributed. The Bible is probably one of the best-known examples. The text has been adapted over time due to changing social contexts, different translations and new printing and distribution techniques. Throughout history, specific parts have been interpreted and used to justify different things. In other words, paper documents are both fixed *and* fluid. Furthermore, Levy stresses that the meaning and value of the properties of a document are context-dependent. Thus, a document is defined as an *artefact* (a focus on documents as physical and social constructs) in relation to a *technology*, by which documents are created, manipulated and distributed. A document is also embedded in *work*, which means that documents are social artefacts and should be understood in respect to their use (Levy 1994:25). This brings to mind Briet's example of the antelope: an antelope in the wild is not a document but one in a zoo becomes evidence and is thus transformed into a document. More than Briet, Levy stresses the importance of seeing documents in relation to their social use. This is not to say that an emphasis on technical particularities is not important, but for Levy the nature and working of documents is often overshadowed by a focus on the tools with which and how documents are made. Levy goes on to say that not only are physical documents stable and fluid, but digital documents, like his example of hypertext, can and should be characterized as fluid *and* fixed.

Although digital documents can more easily be changed, according to Levy this does not oppose its fixity:

> The very notion of editing realized by current text and graphics editors is based on fixity, for when one edits a document, one changes only and exactly those portions one wants to change, and the rest remains unchanged (fixed).
>
> (1994:26)

Thus, fixity is still a central property of digital documents. One of the clearest examples in this sense is the Web application Wiki. Wiki software is a type of collaborative software that runs a wiki system, allowing Web pages to be created and edited using a common browser. It may be implemented as a series of scripts behind an existing server, or as a standalone application that runs on one or more Web servers. The content is stored in a file system, and changes to the content are stored in a relational database management system.[2] Changes that are made are traceable and accessible. New additions add to this historical record. Whereas the front-end changes, the back-end is fixed, logging all the entries that are made. Similarly, Neddam insists on fixing certain aspects of *mouchette.org*. For example, the formal language of HTML that showed itself in the checkboxes and drop-down menus on the homepage, and the size of the screen images (by tiling the images instead of enlarging them when screen resolutions became larger). With the introduction of computerized actions, changes are made easily and quickly. But according to Levy, there is a basic need for fixity even in the digital age, to create stabilities in an ever-changing world, but also to share things and create common understanding. As Levy explains, 'written forms provide stable reference points that help us orient ourselves in social space' (2001:37). In archival practices, the fixity of documents is necessary (even laid down in law) as a means of verification, but stability also plays an important role in e-commerce, security, privacy, digital rights management or defence. Particularly in the field of digital forensics, secure digital design solutions are a thriving business (Kirschenbaum 2008:56–8).

In today's networked and distributed environments, where multimedia documents are more the rule than the exception, fixity is still present in the display of Web pages (the presentation). But it is more difficult to trace in the back-end of the computer (the carrier). This becomes clear when considering the 'save' function in computer programs. When opening a document, instead of the saved version, a copy of the document opens. This copy can be saved as a different document or replace the previous version of the changed copy. However, the 'save' function can act differently when multiple types of information are added to a document and it is saved in a separate location from the working computer, for example, in a distributed network – at times also referred to as the Cloud.[3] As explained by Richard Harper et al. from Microsoft Research (2011), when a document consisting of various media elements (text, images, sounds) like Microsoft OneNote, is saved in the Cloud, the document is not seen as a single document but

as a collection of different documents. If changes are made to the document while trying to upload it to the Cloud, the transfer might fail because the system sees two versions of the same document, a situation that its filing system cannot cope with. In a similar vein, a digital document can never be accessed twice, because every time a document is opened, a copy is made that is a distinct instance of the document and which is stored in a unique location in computer memory (Kirschenbaum 2013). These actions certainly seem far removed from a document as a physical form, and even though the division between carrier and presentation has existed for many centuries (e.g., printing blocks, plaster moulds, audiotape, film and video), it is clear that the gap between the presentation and the carrier is continuously widening. Speed, dependencies, flexibility and multiplicity challenge and offer opportunities to renegotiate fixity. In a world of intangible bits, largely invisible storage and multiple ways to easily move around in and quickly edit documents, Manovich's term 'software performances' could make sense, but what is meant by 'performances' needs to be further clarified. How do such performances function? And when acknowledging that a digital document is both fluid and fixed, has the term 'document' really become obsolete?

Document as performance or performative

Similar to Briet and Levy, Manovich contends that it is not enough to examine the 'final' presentation to understand contemporary media; social, historical and technological contexts should be considered when talking about or identifying documents. Manovich uses the term 'software performances' instead of documents because 'it is software which defines the options for navigating, editing, and sharing the document, rather than the document itself' (2013:34), thereby stressing the construction of software experiences. Whether the term document is still useful in a digital age is also raised by Levy (1994, 2001), and others like information scientist Michael Buckland (1998). Although they do not come up with a solution, they propose following the path of the earlier documentalists (among others Otlet and Briet) by focusing on defining a document in terms of function rather than physical format. Although it is striking that Manovich does not refer to documentalist practices, his descriptions and analyses follow a similar approach to define what constitutes a 'document', or in Manovich's terms, to understand media software. So, in what way is the notion of 'software performances' useful, and should it replace the term document? What does performance mean in relation to software? Which aspects perform? For what purpose? For whom?

Net art can be understood as performative in terms of the meanings ascribed to it as well as in terms of the effects of its performance on the movements of data and information in communication networks. The verb 'perform' here means to act, to carry out an action or pattern of behaviour.[4] In the context of art, perform or the noun 'performance' is mostly associated with performance art. However, the term performance art is a contested concept, because it encompasses and combines diverse disciplines and media to express ideas (Carlson 1996; Goldberg 1998). In general it involves the following elements: time, space, the performer(s)' body,

and is often done in the presence of an audience. The case studies I have described can be said to incorporate these elements: they are time-based; take place in specific spaces; there are performers (humans and bots); and visitors who perform actions. Phillip Auslander (2005) emphasizes that in traditional terms it may be problematic to see bots (or technical tools in general) as performers, because such definitions generally see the performer as someone who executes, and in that process makes interpretations that lead to specific aesthetic effects. Auslander distinguishes between technical and interpretive skills. When analyzing the installation *Listening Post* (2002) by Mark Hansen and Ben Rubin, he argues that the installation is an example of technical performativity because it 'constructs its performances by sampling [live] conversations on the Internet' (2005:8). He continues that 'the particular technical skills possessed by *Listening Post* could not be found in a human performer, for no human being could scour the Internet, gather data, sort it and display it in real time with the speed and accuracy of the machine', thereby stressing the speed and accuracy of the technical capacities of the computer. The use of digital artworks as examples of performance art and in performance studies is becoming more widespread, and the distinction between technical and interpretative skills is supported in most cases. Although computers are incapable of human interpretation in the sense of reading between the lines or making assumptions, I argue that software programs can perform in complex ways that go beyond a technical narrative as emphasized by Auslander. Such a description of performance is closer to what Sarah Bay-Cheng suggests, following Manovich, to frame a performance not as an event, but 'to adopt performance *as the mode* through which we assess phenomena' (2012:35). She continues:

> performance itself functions not as a discrete event but as a network of inter-related components, both on-and offline, both overtly mediated and immediate to various and dispersed recipients. What we encounter in performance (and what we may seek to historicize later) is a network of constitutive parts.
> (Ibid.)

Such 'performativity' enacts what it represents or describes, furthermore by connecting performativity with 'cultures of circulation', as discussed by Benjamin Lee and Edward LiPuma (2002), I propose to see software performances as creators of the act to which they refer.

The term performativity derives from British language philosopher J. L. Austin. In his publication, *How to Do Things With Words* (1962), he describes performative utterances as statements that perform an action: a Speech Act. Rather than describe or report what is being done, they do (Austin 1962:5). Austin identifies three different Speech Acts: (1) a *locution* is the act of saying something without it being true or false, for example posing a question, passing information, announcing an event; (2) an *illocutionary act* is what a person does in saying something else, for example promising, or ordering someone something, the message and action come together; and (3) a *perlocution* is an act that involves a certain consequence, but the utterance and the consequence do not occur simultaneously.

Especially, the illocutionary act fits the model of computation, which generally breaks down in three stages: input, processing and output, and is essentially about doing and saying something at the same time.[5] An input into the system does something, physically in the voltages and mechanics of the machine, and computationally in the abstract mathematics of processing.[6] According to Austin, not all illocutionary acts are automatically successful; certain conditions need to be met. These conditions are also important in programming – and not always met. There is often uncertainty and ambiguity in processing. As, for example, Arnold Michelson and Allen Levesque say:

> It is clear from the outset that with any real communication system we cannot expect to receive exactly what is transmitted. At the very least, we can expect noise to be added to the transmission, causing random errors.
>
> (1985:4)[7]

Moreover, leaning on Claude Shannon's communication model, Susan Ballard explains that information cannot happen if there is no noise in the process (2007).[8] This means that performativity always has a certain level of unpredictability, uncertainty and ambiguity; in other words, the input and output are not necessarily coherent. As exemplified by the case studies in this book, artists use 'failed' performativity such as this, either actively as in the case of Blast Theory by making failing hardware and or software part of the overall performance, or as artefacts of historical instances in the case of *mouchette.org* by retaining some errors instead of fixing them.

Such performativity of code also means that code is not one-to-one reversible, nor can it be seen as pre-set instructions for execution. As such, computational acts in art can be ineffective in the sense that doing and saying are incompatible, which of course (as also stressed by Austin) does not make the performative act less effective or successful. In short, performativity of code indicates that execution takes place by thinking *through* the material. However, it is important to recognize, as pointed out by Jacques Derrida (1988[1972]), that the meaning, and context, of a text cannot be defined in its entirety, as in Austin's 'total situation' (1962:52). A performative utterance is always intertwined with structures of power.[9] To recognize such contextual dependencies, I propose extending Austin's performative acts with the notion of circulation as described by Lee and LiPuma (2002).

In their article 'Cultures of Circulation: The Imaginations of Modernity' (2002) Lee and LiPuma propose an alternative version of the concept of a speech act-based notion of performativity. They try to extend performativity to other discursively mediated practices, and by seeing performativity as an aspect of circulation, they want to move beyond reference and description (2002:193).

> Performativity has been considered a quintessentially cultural phenomenon that is tied to the creation of meaning, whereas circulation and exchange have been seen as processes that transmit meanings, rather than as constitutive

acts in themselves. [. . .] Cultures of circulation are created and animated by the cultural forms that circulate through them, including – critically – the abstract nature of the forms that underwrite and propel the process of circulation itself.

(2002:192–3)[10]

What would the consequences be of such an approach for net art? The 'act' of *mouchette.org* is often associated with identity play, Blast Theory with game adventures, and *Naked on Pluto* with addressing privacy issues. One of the main problems facing the conservation of these kinds of works has been their networked nature. Would circulatory practices make these networked structures more visible and understandable in which networked is not only understood as a facilitator, enabling the artform, but as a constitutive act itself? In the following section I trace the function of circulation in net art by looking at how movement performs in the code, specifically by looking at the hyperlink; in the interaction between code, programmer and context; and, in its distribution process. But what is the 'act' of net art and how does it enact the act that it represents? At the same time, such circulation and exchange of code involved in the infrastructure of communication will reveal certain power structures.

Performativity of a hyperlink

One of the main tools that Neddam uses in *mouchette.org* is the hyperlink. A hyperlink connects to specific data in the same text or to information outside it. The first hyperlinks were technically implemented in 1965, by a team led by Douglas Engelbart, and became the core function to interact on the Web in the 1990s after HTTP (HyperText Transfer Protocol) became the standard to control pages. Although the concept was already thought of many decades before, in the 1990s HTML (HyperText Markup Language), the text format for HTTP became the main language to organize content in a document.[11] Whereas most critics have approached HTML as a tool devised by humans in which visitors follow prescribed paths designed by programmers, Donna Haraway argues that 'as any good technology does, hypertext "realizes" its subjects and objects. In short: hypertext is an ordinary bit of the material-discursive apparatus for the production of technoscientific culture' (1997:125). She continues that hypertext should incite an inquiry into how and for whom connections are made (1997:128–9). Such connections are always interrelated and shared, complicating the agency of hypertext, as it is no longer independent or held by individuals. As also suggested by Christopher Paul, 'this opens the possibility of recognizing technology and the circulation it encourages as a form' (2005).

This circulation is one of the main reasons why Neddam works on the Web, as she explains:

Something I still preserve as precious was the invention of navigation in a text by means of 'links', and in that way going from a web page to another

web page. 'Hypertext' was a word people often used at that time. It showed how much the web was perceived as a modification inside the structure of a text, breaking its linearity. After a while more features were introduced, for example 'frames'. This made it possible to organise circulation in several pages. I wanted to get the viewer lost in a very complex navigation, where the placement of the links was invisible or unexpected.

(Dekker 2008:66–7)

As previously mentioned, *mouchette.org* consists of several pages that can be accessed from the homepage. The homepage is built in HTML frames. There are checkboxes that visitors can click on, a drop-down menu, and several invisible links that are revealed when moving the mouse over the page. Instead of the default arrow, a pointer (the icon for a hyperlink, which depending on the software could also be a small hand with an outstretched finger) appears. The checkboxes, drop-down menu and the use of pointers are typical form elements of early hypertext, and in this case all function in similar ways. The use of form elements was one of the first developments in HTML3, and was used to submit data into a database or trigger an interactive sequence. Placing interactive forms on an HTML website is most easily done with Common Gateway Interface (CGI) scripting. This allows the Web server to recognize and handle the site as dynamic, which means that the server understands that any file requested from the special CGI-bin directory should not simply be read and sent, but instead should be executed. Each time the script executes, the output is different.[12] Most of the hyperlinks in *mouchette. org* are a means to move between locations, but because of the CGI scripting you never end up in the same place twice after clicking the link. Nevertheless, most of the connections occur within the site, and there are some links to the outside. For example, the links in the *International Fanpage* page, http://mouchette.org/fan/fanpage.html, are all embedded within *mouchette.org*. Similarly, the *About me* page, http://about.mouchette.org/, set up in 2011 to collect all the news that is posted on the Web about Mouchette, redirects to a namespace site, and from there every link opens in a new window.

There are some exceptions. The *Trademark* is a page that directly links to another website, http://drivedrive.com/mouchette/trademarking.html. This website draws attention to fake Mouchette sites, or those who did not have Neddam's (or Mouchette's) permission to use the name or identity.[13] By trying to trademark Mouchette, an appeal is made to 'protect her brand from hate-mongers and imitators'.[14] A dynamic movement is created that asks the visitors to either use the back button, the browser history, or re-type the address in order to return to the site. This openness of the site allows visitors to move away from it to other locations. A more intricate use of circulation can be found in Mouchette's network, the place where everyone can assume Mouchette's identity and add content to the site, which initially links to another site http://mouchette.net. Clicking 'members site' returns the visitor to the *mouchette.org* domain, and it turns out that *mouchette. net* is merely a frameset. However, clicking on the 'non-members' link, opens a random website in a new window that relates in some way to Mouchette, for

example, a blog post, other net artworks by Neddam, an article, or what seems to be someone's homepage which has the same aesthetics as *mouchette.org*. However, even though these links connect to other websites, when clicking on a link, visitors might be redirected to *mouchette.org*. The external circulation can be found in places where Mouchette really wants people to talk to each other. This happens with the project *Suicide Kit*. In this sensitive topic, Mouchette asks people advice on the best ways to commit suicide. Visitors can react by typing their comment after the question: *What is the best way to kill yourself when you're under 13?* If they leave a name and e-mail address and click the send button, Neddam receives the message and can decide whether or not to post the feedback on the site. Although the discussion list is moderated, according to Neddam, this is mainly to block spam-related content. Once the comment is on the site, http://mouchette.org/suicide/answers.php3, the name of the sender is also visible. Clicking on the name opens the visitor's own e-mail account, ready to send the commentator a personal e-mail.[15] This way Neddam encourages direct and 'off-site' communication between visitors.

By allowing very little external circulation, emphasis is placed on the Mouchette community. Each time someone tries to go 'outside', the branding of Mouchette is amplified. This way of hyperlinking is also used in many commercial sites to keep visitors within the 'brand-environment' (Paul 2005). In other words, technology, reinforced by the intricate and disorienting use of hyperlinks, is used to control movement and prevent visitors from going 'outside'. Although it is of course possible to decipher the hyperlinked structure, the extensive and abundant use of hyperlinking at times creates the feeling of being in a labyrinth from which it is difficult to escape or derive meaning. In many cases, each time a visitor returns to a previously visited site, it seems to contain new links that lead to different information than before. By asking opinions or advice from visitors and posting their answers in the website, *mouchette.org* actively tries to communicate with and between visitors. Similarly, by allowing people to become members and start their own Mouchette pages on the site, visitors can engage in the creation and circulation of the site, to a certain extent. *mouchette.org* allows people to reshape content, turning the site into a place for continual reinterpretation. The behaviour and use of hyperlinks shape *mouchette.org* such that its circulation enacts the work. The hyperlink is effective, or 'succeeds' as a performative act, as it takes the visitor into endless circulation, into an *internal* labyrinth, which is difficult to decipher. The type of circulation also provides information about the kind of control the author, owner or Web editor wants to exercise over the content in the website. This information is important for conservators, as it says something about the intentions of the artist.

Performativity of a game engine

Naked on Pluto can provide more insight in the effects of external circulation. In the following I focus on the game engine as a supporter and driving force that enacts the performative circulation of the work. As mentioned, the game engine

is one of the core elements of the work, an artistic and conceptual tool that is actively distributed so others can build on it and use it in different contexts. Mackenzie (2005) advances the idea that the free and open source software Linux is enacted through an ongoing collective and collaborative working process. In the following I explain how such a process can also be detected in the production and working processes of *Naked on Pluto*, especially in relation to the development of the game engine, the use of bots and the function of the game engine.

Naked on Pluto is built as a client/server online game, which typically means that various gamers connect to a server and play. They can only communicate indirectly, through the server, enabling them to play online simultaneously. The server runs all the time and records the changes people make. It is the place where all the game logic happens, where the bots run and where the data is stored and processed, and where all the Web pages and Javascript comes from. A *servlet* was written in Racket to manage the gameplay, run the AI for the in-game bots, and manage user accounts and the messages between them all.[16] Although it is more usual to use PHP or Java for this type of management, the artists wanted to write a large game engine using a simple and functional programming language.[17] Racket is based on Scheme, a communication infrastructure for programming language research. Scheme is a functional programming language that follows a minimalist design philosophy and is now one of the two main dialects of the programming language Lisp. The developers of Scheme, Gerald Jay Sussman and Guy L. Steele, based their concepts on Carl Hewitt's theory of actors. This model of computation was object-oriented and seen as a communication device between objects:

> Every object was a computationally active entity capable of receiving and reacting to messages. The objects were called actors, and the messages themselves were also actors. Every computational entity was an actor and message-passing was the only means of interaction. An actor could have arbitrarily many acquaintances; that is, it could 'know about' other actors and send them messages or send acquaintances as (parts of) messages.
>
> (1998:400)

Inspired by these ideas they built Scheme in 1973, and after revisions in 1978 it became very popular because of its small size and simple programming. Due to the free and open distribution of the source code, local implementation and dialects quickly started to emerge that led to overall improvements to Scheme, or to derivatives like Racket.

The propensity to share and distribute are important features of open source practices that are also followed in the development of *Naked on Pluto*. One of the consequences is that the project and the code become part of a larger historical development cycle, and at the same time these projects are seen as ongoing and distributed works.[18] This is certainly the case with the game engine of *Naked on Pluto* that circulates through workshops, where distribution and further

development are prioritized. It could be said that the game engine generates new creativity, thus producing numerous other manifestations. Although this can happen, it downgrades the game engine to a tool, whereas the way the game engine develops and how it functions *is* the artwork. As stressed by the artists, the game engine is the element of *Naked on Pluto* where 'intention', authenticity and originality can be found. Mackenzie (2005) concludes that Linux circulates through repetition and citation (due to constant changes made by numerous programmers that are implemented in successive releases). It could be said that this is the default of all open source projects. It is the type of collaborative programming that repeats itself across platforms whilst it is also taken up in different contexts. It demonstrates collective social action. This means that power structures (of commercial software producers) are challenged. Although it is (rightly) argued that in practice such challenges often result in many people working for free, focusing on the distributive site shows a more positive side: that of sharing and bringing people together.[19] While *Naked on Pluto's* success in opening up issues of privacy on social networking sites is debatable, it is harder to contest the performativity of the game engine, which has the ability to enact what it represents and describes through circulating processes.

   Another characteristic of circulation can be found in the behaviour of the bots. In the game, the bots are the personification of some algorithms that are used in social networks:

> They prompt the user for responses and they give continuous feedback on the gameworld so that everyone in the game can see that for example the barman is talking to a player, because it automatically shows up in the newsfeed, the front-end of the game.[20]

One of the main differences of *Naked on Pluto* from other online games is the use of bots for nearly all the autonomous activity needed in a massive multiplayer game. The bots perform in very similar ways as agents (or actors).[21] I am referring to Hewitt's concept of agents. He presented his actor's theory as a new model of computation, which means that in response to a message an actor can make local decisions, create more actors, send more messages and determine how to respond to the next message that it receives (Hewitt and Baker 1977). Thus, they are self-contained, interactive and concurrently executing objects that possess an internal state and communication capabilities (Wooldridge and Jennings 1995).[22] Essentially, bots are examples of computational aesthetics: their behaviour follows a method that through rules, constraints, and capacities for expression, continually re-negotiates their structure and existence (Fazi and Fuller 2016). Their performative behaviour is obvious because they constantly do things, they act on each encounter they have.

   The bots are conceptually very important for the game because they mimic the behaviour in social networks, where algorithms feed on information and feed information to visitors in mysterious (or at least obfuscated) ways. In the game,

there are several bots that all have specific tasks. For example, as explained by Griffiths:

> The dancebot just stands around liking objects that pass through the dance floor and telling people about it, and the job of the bot is to apply changes to the room (includes talking to people, picking up things or putting items of clothing on players) based on what is going on around it.[23]

Naked on Pluto, the actions of dance bot,
code commented by Dave Griffiths

```
(define (likebot-action entity graph node)
  ;; flip a coin
  (if (< (random 10) 5)
     ;; either – pick any object currently in the room
     ;; – it could be the bot itself
     (let ((obj (choose (pluto-node-entities node))))
      (pluto-say-to-random ;; we want to talk to anyone present
       ;; register our "like" for the object first
       (pluto-node-like node entity obj)
       entity
       ;; tell people we like it
       (string-append "I like" (entity-name obj) "!")))
    ;; or – ask a random player what they like
    (pluto-say-to-random node entity "Hey – What do you like?")))
```

The erratic behaviour of the bots is meant to confuse the player. At the same time, the player and his/her friends on Facebook influence the gameplay, and thus the behaviour of the bots. Moreover, players can also team up and help each other to 'outsmart' the bots so they can move through the game more quickly. This entanglement, or circulation, of human and technical behaviour, is an example of performative cultures. In other words, the purposely followed logic of (perceived) loss of control, uncertainty and invisibility – as a reflection of how many algorithms function – are a result of the performativity of circulation. The bot system translates some of the (intentionally) invisible power structures, and through the gameplay it provides the players with a renewed sense of control. It very quickly becomes apparent how Facebook's algorithms (and other platforms like it) function, how they use different data sets by relating them to other data and systems. Although in the case of Facebook the specific use of most algorithms remains a mystery, this type of analysis of coding mechanisms exposes power relations by showing, for example, how easily all kinds of information can be retrieved, linked and circulated. It also has the potential to develop a critique of how code on the Web works.

Another important difference from other online games is that the game construction tools of *Naked on Pluto* are implemented in the game interface. As Griffiths says, the way the game engine functions is basically like live coding the game, as demonstrated in the project *Slub World* (2013), a live coding performance. In this instance, more live coding elements and sound are added to the game engine and brought into a new context. Live coding (also known as 'on-the-fly coding') is particularly prevalent in computer music combining algorithmic composition with improvisation. Live coding is performed by a defined group of people, and audience members are sometimes invited to participate. The process of writing is made visible by projecting the computer screen onto the audience space.[24] So, how does live coding relate to performativity of circulation? Although it is beyond the scope of this book to elaborate on the practice of live coding, to understand the relation to circulation it is necessary to understand the performativity of live coding. A difference between conventional music and live coding is that with the latter the music is written in real time in response to other members of the team.[25] As McLean notes, a conventional music performance is structured as having a chorus and verse structures that begin and end with silence. Although the latter is also present in live coding performances, code can also end where it started, with nothing (2011:148). This means that in most cases the outcome is less important than the process. In a sense, it follows conventional software processes that 'are characterized in terms of cycles of development, with repeating patterns between milestones' (ibid.), the difference being that software development is usually goal oriented. Experiments with non-linear timelines are still in their infancy. Generally, having timelines feedback on themselves (a process called backporting) is avoided, and only applied to security fixes in old software. Until now timelines have been linear but they are 'twisted, knotted and transformed by patterning structures' (McLean 2013:84). In other words, in the practice of live coding, the activities are unstable and change continuously, depending on the performers, the input of audience members or the actions of the code itself. Moreover, the writing, compiling and running of code is a set of interconnected actions. Or, as stated by Cox and McLean, 'saying words or running code or simply understanding how they work is not enough in itself. What is important is the relation to the consequences of that action' (2013:38). Thus, live coding is very much a circular process: 'the programme performs the music with the performer and vice versa, both relaying instructions and acting upon them' (Cox and McLean 2013:63). The practice of live coding coalesces the embodied skills of different programmers (in some cases also audience members) and the abstract specifications of the programming language.

This connection is strengthened by the visualization/the presentation of the live code in front of the audience. On the screen the audience sees the interface the performers are working with; as McLean says, 'it's an opportunity for people to get a feel for the movement and complexity of what is happening inside our laptops at that moment' (Shulgin 2003:35–6). By projecting the interaction of bots in the installation version of *Naked on Pluto*, the artists also want to stimulate the connection between software (the bots) and what is experienced on the front-end of *Naked on Pluto*. It is an attempt to take the game externalization to another level. These 'translations' of the code and the process make the relations and

interactions comprehensible. At the same time, they make material sensitive. By sensitive, I mean that software also deals with sensations and perceptions, in the sense, as described by Mackenzie, that it affects the way we read, look and hear (2006:172–3). To briefly summarize, circulation happens between programmers/performers and code, and then moves to the audience who can influence the code or the performers, to which they and/or the code responds.

In conclusion, it can be said that the game engine becomes a complex circulating form from which other projects and contexts constantly issue. A game engine is code that performs, so could it be called a document? If it is a document, it is a document with performative qualities. It executes, acts and reacts. But it is a complex document with kinks, folds, hiccups and slippages, and it twists and folds in various directions, creating uncertainty and unpredictable behaviour. Moreover, the code is intertwined with the programmer(s), and/or the visitors' actions. Thus, performativity of code should be seen and understood in relations (or perhaps, the previously discussed 'alliances'). At the same time, the game engine is also a formally specifiable entity, a program, so it has a dual nature. In other words, making sense of code as 'document' cannot be done without contextualization. As the understanding of such contexts evolves, thus actually changing the documents, it changes their meanings. Fuller notes, leaning on Deleuze's concept of 'casuistry of relation' (2001:51), that 'objects, processes, and media address themselves to other elements and dynamics. They are made graspable, nameable, and useable by certain forms of relation in which an understanding of their nature and their powers is inherent' (2005:86–7). Software is part of a process that moves beyond mere execution. Cultural and social forms circulate through code and software, which in turn produce new forms and forces. More than performative (something that executes), it would be better to use the term processual, which in computing is described as a program *in* execution. A process can be made up of multiple threads that execute instructions concurrently. It involves interactions between multiple paths that can branch out in different directions, which can be uncertain and ambiguous. A further advantage of the term 'software processes' over 'software performances' is that it also moves away from the close connection to Speech Act theory and its quest for meaning and representation by means of semantics and psychology. Performativity as an enactment of material has a potential to produce meaning, but fails in seeing material as a conveyer of information. In short, being part of, generating and affecting an ecology (for lack of a better term), 'software processes' account for material as an ideological and political space that grows, contracts or mutates as circumstances change.

Document as process, or process as document

In what way is it helpful to define processes as documents? From the above, it can be concluded that the function of a document needs to be stressed above its physical form or medium. As Buckland suggests:

> The algorithm for generating logarithms, like a mechanical educational toy, can be seen as a dynamic kind of document unlike ordinary paper documents,

but still consistent with the etymological origins of 'docu-ment', a means of teaching – or, in effect, evidence, something from which one learns.

(1998:230)

Others have also argued that digital processes can be viewed as documents. For example, Windfeld Lund, continuing from Buckland, says that:

> Within a conceptual framework of document and documentation process in which all agents, media, and modes involved in human communication are recognized on equal terms in principle, it may be possible to study how the complexes of agents, media, and modes in practice are interacting with each other and thus how material, social, and cultural options and conditions have an impact on the resulting documents.

(2010:746)

All of these attempts depart from the idea that there is a final document. But what happens if there is no end or outcome, when the process is the start, the middle, the end and the unknown future? How do you define a document that may have fixed properties but is also constituted through technical, social and cultural matters and processes? To further define the characteristics of documents and in particular their relation to processes requires more research and deliberation. Such discussions are far from fixed and as time goes by will continue to change. To paraphrase Fuller and Goriunova (2012:170), such deliberations must enable a close reading, a way of working with things that are materially rich but not cumbersomely materialized, a proximity that requires the taking of a distance sufficient enough to allow for the document to form and give itself over without turning itself in.

Finally, how could the concepts of performative circulation and processes help with the conservation of net art? There is a growing understanding in conservation that conservators are 'doing' work: they execute a work based on a comparison of the original presentation and its successions, thus emphasizing the performative and interpretive roles conservators play. At the same time, the notion that digital data is persistently and fundamentally material is recognized. Both of these approaches are useful in that they point to the basic characteristics of (the handling of) computational material, but they still depart from the question of what the material is, instead of addressing what it *does* or how it *functions*. My emphasis on the processual dimensions of materiality is meant to extend, rather than replace, these understandings. This means that what something *is* has to be understood in terms of what it *does*: how it functions *within* and *through* machinic, systemic, social and cultural domains. A thorough understanding of these relations is important, especially because computation is often invisible, and, as anthropologist Daniel Miller notes:

> The less we are aware of [objects], the more powerfully they can determine our expectations by setting the scene and ensuring normative behaviour,

without being open to challenge. They determine what takes place to the extent that we are unconscious of their capacity to do so.

(2005:5)

With processes being the work, or seeing the work as a process, Van de Vall suggests a third paradigm in conservation. The first is centred on scientific conservation (or the autographic paradigm), and the second, leaning on Laurenson (2006), on performance and performative behaviour (Van de Vall 2015). According to Van de Vall, in this third processual paradigm,

> the process, is assumed to be the core of the work. [. . .] the main aim of conservation is support of the work's continuation through transmission of the required information, skills and procedures to the designated participants or stakeholders.

(2015:8)

Artworks in this category are characterized as open-ended, in continuous development or part of the development of the work is outsourced (either by technical or natural processes, or users). Van de Vall positions this against the performative paradigm, which she applies to artworks that are based on a set of instructions, or notations, in which,

> the core of the work is considered to consist in its concept, which should be realized through the faithful performance of a set of instructions stipulating the features defining the works identity.

(2015:8)

She elaborates that for artworks that fall into the performance paradigm a conservator would be required to return to the instructions, whereas a processual artwork evolves from one stage to the next. For the latter, Van de Vall uses the analogy of improvised music and stresses that it is not a matter of one paradigm substituting for another, but that these approaches can be seen to work in parallel and even at times intermingle. Most importantly, the different paradigms require different approaches. Whereas performative artworks are based on detailed instructions that can be executed by (museum) professionals, processual artworks are meant to continue, develop or just disappear, rather than be conserved or re-created, which according to Van de Vall can also take place outside the museum.

It is important to distinguish between performative and processual artworks, as well as the consequences they entail. However, as Van de Vall also concludes, it remains to be seen if such a clear separation is tenable when discussing conservation or documentation strategies. For example, are the 'rules of the games' (sending something out into the world and letting it evolve) the same as a 'set of instructions' (there is a margin of variability, but not everything is lost)? In most cases, there will always be some kind of restriction. For example, through the

set-up of the artwork, as in the case of *mouchette.org*, most parts are linked or kept together by the main website, and the participants are encouraged to remain within the domain. The game engine of *Naked on Pluto* acts in such a way that it is processual, because the game engine is generative. But the game itself is only partly so. The rules of the game are pretty fixed and not everything goes. The performances of *Slub World* are probably the closest to the characteristics of a processual paradigm. As McLean describes:

> In live coding the performance is the process of software development, rather than its outcome. The work is not generated by a finished program, but through its journey of development from nothing to a complex algorithm, generating continuously changing musical or visual form along the way.
>
> (2011:130)

Nevertheless, the software program that is used is a formally specifiable entity. In other words, as mentioned earlier, these works are dual in nature: some elements are fixed, while others are processual. Likewise, most biological materials are processual, causing artworks that use these materials to evolve due to the weather, microbes or mould, without it being intentional or part of the concept. For example, for many of the previously mentioned examples of process art, land art or the well-known example of Joseph Beuys who used a fabric that deteriorated over time, the conservation strategy has been far from processual. There are, of course, many reasons for trying to conserve these artworks. Whereas the concept of a processual paradigm is not necessarily new, more importantly through naming and defining a new paradigm, a conservation practice may start changing course.

In summary, the logics in artworks can be analytically different, which is important for understanding and analyzing a work, but most artworks have a dual nature: they consist of performative and processual elements. It seems obvious that with processual works, conservation in the strictest sense will not be possible. The same could be said for many performative artworks. In both cases, documentation plays a more important role than the reconstruction, including documentation of the development process, presentations and for re-creation. To come to terms with the mechanisms of computation, a critical reflection has to include analyzing historical and contextual information. To understand and reflect on the evolution and the political dimensions inherent in computation, it is important to study those processes, their behaviour, how they function and how they are embedded in, and influenced by, social, cultural and technical contexts. Such an approach guides conservators – or others involved in the longevity of an artwork – when seeking to answer what the materiality is, what the intention of the artist(s) was, and find ways to register, restore, document or continue net art. Moreover, facilitating ethical discussions opens up decision-making processes. Such transparency simultaneously creates a body of professional experiences that can guide future practices. Instead of standardization, such a practice centres on variability and leads to multiplicity.

Notes

1 The list of references is very extensive, but the main advocates of the fluid state of documents are from the 'Hypertext era': Landow (1997) and Bolter (1991), who both declare and more or less emphasize that with the introduction of the computer, the author is dead, the reader reigns supreme, the book is doomed and linear thinking passed. However, the relation between author and user is more nuanced as interplay.

2 https://en.wikipedia.org/wiki/Wiki (accessed 18 July 2013).

3 Cloud computing is an ambiguous term without scientific or technical definition, and mostly used in marketing strategies that sell hosting services. In general, cloud computing is a synonym for distributed computing over a network and means the ability to run a program on many connected computers at the same time.

4 www.merriam-webster.com/dictionary/perform (accessed 18 July 2013).

5 For more information about the model of computation, see, among others, Petzold (2000) and Englander (1996).

6 I am referring here to formal executions; it is not a social performance based on human conventions (as in Austin's theory). Technologies, in and of themselves, do not bring about cultural or social change.

7 In modern computers many processes and redundancies are built in to reduce the effects of noise, making it unlikely that a computational error will occur. Nevertheless, the more complex processes become, the more noise comes in which can lead to unexpected or unnoticed events. However even in 'simple' systems, like CRT and LED monitors, 'single transmitted voltage might simultaneously perform the one or zero of binary code, disrupt adjacent data with its electromagnetic noise, and be received as radio waves by an external antenna' (Van Orden 2010:58).

8 Arns (2005) describes many examples of artworks that use non-executable code. Similarly, many artists use errors (also referred to as Glitch) to make artwork (Goriunova and Shulgin 2008; Menkman 2011).

9 See also Butler (1997) on the power of hate speech and censorship, and the influence of these language acts in cultural sites. Butler argues that it is impossible to adequately define the performative meanings of words, since a context in which an utterance is made can vary.

10 In network theories the new forms of access, understanding and engagement with circulatory networks are explored (Benkler 2006; Castells 1996; Wittel 2001), but little attention has been paid to the dynamics of circulation itself as force of change. Similarly, in information theory and archival studies, documents become meaningful once they are used and become part of other documents, as for example, Day argues: 'In their circulation in such networks and uses [documents] both point to signs, both in and outside of their networks of circulations, and they trace their social and practical networks as a whole' (Day, 2014: 6–7).

11 For more information on the history of HTTP and HTML, see www.w3.org/People/ Raggett/book4/ch02.html.

12 For more information, see www.w3.org/CGI/. It is remarkable that the website allows you to access the CGI-bin, where normally one would see a message: 'You don't have permission to access /cgi-bin/ on this server'. Mouchette plays on by giving an 'Error 0 -'. After clicking the stone in the middle of the page, another form element comes in which after clicking generates an automatic e-mail reply from one's e-mail server to 404@mouchette.org with a ? in the subject line. Depending on where you click in the site, in the body of the e-mail a message is shown, asking for a 'password=', or asking 'what are you doing here?='. Another click in the website returns you to the website with a 'Blind Jump'.

13 It is ambiguous whether this is a genuine appeal or it is set up by Neddam, in collaboration with Drivedrive.com, to attract attention to the www.ihatemouchette.org/ website (which connects directly to the Drivedrive.com website) and the issue of trademarking on the Web in general.

14 Drivedrive.com is a Web-based art group that has been developing and disseminating new media art and design projects in Canada, the Netherlands and Germany since 1999.

15 There is one more exception, which is the CV page of mouchette.org – http://mouchette.org/cv. This page has several links to articles or events that took place and all of the links open in another window. However, the CV page cannot be found on mouchette.org, and Neddam only gives the address when she is asked about it.

16 A servlet is used to extend the capabilities of a server. Although servlets can respond to any type of requests, they are commonly used to extend the applications hosted by Web servers. For more information, see http://docs.racket-lang.org/web-server/. For more information on the early technical infrastructure of *Naked on Pluto*, see http://pluto.kuri.mu/2010/06/27/web-games-tech-for-beginners/#more-146.

17 This choice also attests to their bottom-up approach, as referenced by Griffiths. There are two design philosophies, wonderfully described by Alan J. Perlis in the foreword of the book The Structure and Interpretation of Computer Programs, by Abelson, Sussman and Sussman (1996:ii): 'Pascal is for building pyramids – imposing, breathtaking, static structures built by armies pushing heavy blocks into place. Lisp is for building organisms – imposing, breathtaking, dynamic structures built by squads fitting fluctuating myriads of simpler organisms into place' (e-mail conversation with Dave Griffiths, 30 July 2013).

18 In response to the question if or by whom the project was taken up, Mansoux answered that they did not actively track the further use, but that they sometimes got feedback (Aymeric Mansoux and Marloes de Valk, interview, 31 October 2012, Hoorn). Similarly Sussman and Steele express that they do not follow exactly where the development goes, foremost they are excited about the progress. 'We knew Scheme had really made it when researchers no longer cited our papers, but simply took Scheme for granted as part of the communication infrastructure for programming language research. The most gratifying thing to us about Scheme is that it no longer belongs to us. We are happy to have made a discovery that many other people have found useful' (1998:403–4).

19 In his article 'From Participation to Power' Kelty scrutinizes the concept of participation in relation to power structures, arguing that 'participation is about power, and no matter how "open" a platform is, participation will reach a limit circumscribing power and its distribution' (2013:30).

20 Aymeric Mansoux and Marloes de Valk, interview, 31 October 2012, Hoorn.

21 With the advances in bot technology, the distinction between agents and bots is not very clear and the terms are often used interchangeably (Proffitt 2013).

22 Hewitt wrote that 'actors rise to the level of "Agenthood" when they competently use expressions of commitments expressing intention, dedication, judgment, decision, proposal, plan, contract, purpose, belief, policy, method, procedure, practice, backing, questioning, etc.' (2007:293). Although the term agent is widely used by many people working in closely related areas, there is no single accepted definition (Wooldridge and Jennings 1995).

23 Dave Griffiths, e-mail correspondence, 28 December 2012.

24 See, among others, Collins et al. (2003), Wang and Cook (2004) and Alexander et al. (2004).

25 The link to improvisational music is the closest to live coding, but the difference is that audience members are also watching the writing of the code in real time.

7   Conclusion

Throughout this book I have examined whether net art should be part of mainstream artworlds, which are typified by art historian and critic Claire Bishop as 'commercial galleries, the Turner Prize, national pavilions at Venice' (2012b:436). It could be said that similar to earlier disciplines like photography, video and film, net art will become part of established art systems, in one form or another. As Bishop affirms, 'no exhibition is complete without some form of bulky, obsolete technology' (2012b:436). Indeed, sales of net art at art fairs are increasing, and slowly net art is acquired by museums. However, if the amount of attention from different audiences is an indication, then net art does not depend on this mainstream. As stated by Ippolito (2002b:486), the audience for net art far exceeds the visitor numbers of any contemporary art museum. Next to their online presence, net artworks are regularly presented and exhibited at festivals, at small art organizations or by artists themselves in specific contexts and places. Over the years net art has created its own mainstream. So, what would happen if net art remains as it is? As I have shown, several initiatives and structures have been developed to come up with solutions to safeguard or care for net art. Some of these examples think *through* the material and arise from the inherent characteristics of net art, including its production (usually based on open source principles), a presentation that relies on participation, and a distribution system that evolves through linking and networks. To take another step into an uncertain future that departs from this scenario, if net art is collected on its own terms it will bring about a change in existing structures that is unforeseen in the history of art museums. Perhaps more than anything else this is a reason why net art has been able to hold its *status aparte* for so long.

A future of net art conservation

I began this book by describing three of the main characteristics of net art, i.e., that it is networked, processual and ambiguous. These terms are used throughout the book, constantly affirming their power and their potential for discussing the futures of net art. Whereas this book attempts to carefully construct what such futures might be and in the process analyzed the construction of net art by

critically reflecting on specific assumptions, such as the value of authenticity and documents in a computational age, net artists are not necessarily interested in such a future perspective. Many artists want to create a set of relationships and processes, from the mode of production via distribution to reception and back again. A cycle emerges that could potentially continue forever. Importantly, the idea of cycles does not necessarily include constant progress. Rather, it emphasizes that development time also allows for revision. This shifts the perception from representations of objects to interpretations of their forms, flows and flaws. Working with relations and processes also emphasizes the end of a single author, in favour of a collaborative process, which, by allowing hybridity and complexity to play out within new aesthetic practices, allows for new social structures, tactical behaviours and perhaps even non-human authors. However, in some cases, such as *communal* authorship, it does not suffice to describe a process that favours development and (dis)continuation over collaboration. Here, one author is dependent on another, not for collaboration but to continue a process. Instead of claiming single or collaborative authorship, such practices signal that questions of authorship are less relevant than the drive to continue a process.

Dissolving notions of single authorship, (final) objects and continuous time, net art challenges – albeit not always on purpose – the current, canonized foundations of art: the identity of the artists and their work, the meaning and significance of the work, and its interpretation. This is not to say that such foundations are no longer important. Paradoxically, the dissolution of existing categories and foundations provide the basis to expand notions such as authenticity. With a growing understanding that conservators are 'doing' work, emphasizing the performative and interpretive roles conservators play, and the recognition that the computational is persistently and fundamentally material, the question of what net art is and how it influences conservation can be answered by looking at what it *does*: how it functions *within* and *through* machinic, systemic, social and cultural domains. Such understanding demands knowledge and expertise from diverse backgrounds. For a conservator, this means becoming part of a 'network of care' in which a collaborative approach is important to comprehend the complexities of net art. Whereas this will affect the role of the conservator, the direction and the kind of change depends on the situation and project. An important question remains: When taking these changes into account, can one still talk about conservation? The answer to this question lies in the future – but surely with regard to net art – conservation needs to be re-thought. In this book I have worked around a particular set of case studies. Clearly not all net artworks, or artists for that matter, present the same challenges or share the same perspectives. While I chose the case studies based on their paradigmatic challenges, it was not my intention to universalize the outcomes. More research needs to follow that compares case studies so that more general recommendations can be made. Alongside a call for a more case study-based approach, several other lines of thinking and research would be worthwhile developing in light of a changing conservation practice.

A rethinking of authorship, ownership and copyright

I reconsidered the notion of authenticity to provide insight into the intertwined elements of net art, which may help to inform the conservation of net artworks. While I concluded that common identifiers of authenticity such as the material, the author and the dating of a work explode in net art, they also open to new ways of looking at authenticity. It is not unusual that with the introduction of new (technical) inventions established ways of understanding previous practices are reappraised. At the same time, revisiting some of the identifiers of authenticity enables an exploration of other traditional notions such as authorship, ownership and copyright, which, in the context of the computational, likewise need to be re-thought. For example, in the case of ownership, the emphasis shifts from the traditional economic entanglement between museums and the art market, to what it means to own something that can be owned by everyone. Similarly, what are the implications of multiple (sometimes difficult to define) authors? How should evolving processes that 'create' new authors time and again be handled? These strategies have the potential to defy the power of the art market and its traditional economic models. However, unlike some previous artists' attempts to distort existing hegemonies, not all net artists are intentionally subversive; their attitudes and methods are often driven by their practice and by the technology they use. Seen in this way, these changes may entail wider implications that move beyond cultural practices and extend to social practices and economic models.

Networks of care, theory and practice

Similarly, the proposition of 'networks of care' calls for additional research into the construction, functioning and effects of care and networks. It could be argued that a conservator is primarily a caretaker, not solely as in taking care of precious objects, but also of the skills and techniques of caring. Such caring is influenced by material conditions and occurs through alliances and being part of socially organized systems. In the context of net art, these different facets of care coincide and perhaps can be extended to include non-human agents such as bots to aid in the process. However, in conservation such practices are currently not explicitly recognized or framed as such. To emphasize the value of the technical culture of net art in other practices, a better understanding is needed of the underlying, but omnipresent, structures that support networks of care. Such research expands beyond art and culture into other practices (from social sciences to information science and network studies), to examine how different elements and entities influence each other, how networks are articulated and evolve, what the different stages of (technical) development are, what the impact is of changes from inside and outside influences, whether networks are dependent on specific structures or formations, and what kind of systems support or obstruct the evolution of networks? Moreover, in what way could a theory of networks benefit from the concept of the assemblage through which, for example, the structures and alliances of, and between, (emergent) properties can be analyzed? These and similar

questions can benefit from insights in network theories, philosophy and software studies. The outcomes are helpful for conservation (as well as the museum) when deciding which methods to use and how to handle seemingly fragmented artworks. Examples of such 'networks of care' can already be found around some (public) art projects, but they are more developed within gaming, experimental sound art and underground film cultures. In particular, gaming communities have been one of the first to collectively conserve analogue and digital games. These 'amateur' practices have already led to excellent effects and can serve as rich points of departure for further research.

The role of the museum

This book addresses net art's survival and whether it requires a specific kind of conservation practice. Among others, I maintain that net art's conservation should focus on the development and maintenance of the future of the work, rather than on conserving past events. This may entail both a loss in the sense of losing parts of the works, as well as a loss of authority and control by giving agency to, and creating alliances with others, most likely those (from humans to non-humans) outside the museum's structures and reach. Although the outcome is that a reconsideration of conservation is needed, and that such a change will impact traditional methods and practices, this book does not address the implications of such potential changes for museum practices, nor their organization, in much detail. It seems obvious that ways of collecting, presenting or simply registering an artwork in a database will change when net artworks and similar artworks are acquired; however, the impact of these changes calls for more research. For example, how will such a new *modus operandi* affect other more traditional works of art? One of my propositions is that the relationship between the conservation and the curatorial departments will be particularly affected. I propose that conservation of net art could become a curatorial challenge, and that the conservation department might become a facilitator of processes and development. While this may sound futuristic, small shifts in practices are already taking place: from commissioning artists to re-interpreting existing works, to openly discussing the limitations of current conservation strategies, and by inviting communities from other fields into the museum. These changes deserve close attention, as they will undoubtedly have wider implications for the role, the organization, and potentially the function, of the museum.

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