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The Origins of Electronic Literature as Net/Web Art

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Readers of this chapter might benefit from the knowledge that 'electronic literature' (or e-lit) refers to born-digital works which embrace the creative, as opposed to just the disseminative, potential of computation. As defined by Hayles: 'Electronic literature, generally considered to exclude print literature that has been digitized, is by contrast "digital born," a first-generation digital object created on a computer and (usually) meant to be read on a computer' (2008: 3). A useful primer for those looking to develop some perquisite understanding might be 'Electronic Literature: Contexts & Poetics', wherein Heckman and O'Sullivan argue that e-lit can take many forms, but 'could only exist in that space for which it was developed/written/coded' (2018). Electronic literature (or e-lit) did not start with the Web – works of art merging the literary with the digital had found their way into circulation long before the Net had permeated public consciousness and consumptive habits to the extent that we know it in contemporary contexts. It is difficult to point with any certainty to *the first* work of electronic literature, though many commentators attribute this accolade to Christopher Strachey, who, in 1952, designed an algorithm on the University of Manchester's Ferranti Mark I capable of generating love letters (Wardrip-Fruin, 2008: 163). Literary experiments like Strachey's predate what we now consider 'the Internet' by some 30 years, and indeed even conceptual precursors like Ted Nelson's Project Xanadu, introduced in 1960, and computer poetry like Alison Knowles and James Tenney's *The House of Dust*, produced on a Siemens 4004 computer with Fortran in 1967, by the better part of a decade. Judy Malloy's *Uncle Roger*, largely considered to be one of the first commercial works of electronic literature in the United States, was published between 1987 and 1988 and set the stage for stand-alone software that marks the early period of e-lit development (Grigar and Moulthrop, 2015). While the circulation of electronic literature is now largely confined

to Web-based platforms, the early history of this domain is one of floppies, diskettes, and compact discs.

We can see the reality of this history in the material emphasis of resources like the Electronic Literature Lab (ELL) at Washington State University Vancouver, where scholars and practitioners can get a sense of the field's earliest incarnations through interaction with those pieces. The central mission of this initiative is to preserve pieces in their release state, so that the literary experience is not modified by migration to more current technologies or emulation on contemporary software. How does one capture the experience of first-generation e-lit works as objects, replicating the smell of the plastic, the computer's loading screen, the learning curve attached to the traversal method? The electronic literary experience is bound to the quirks of intended platforms, the peculiarities of the technology, and the variety of glitches that such configurations offer. The ELL then, resembles something of a Mac museum,[1] where vintage machines are used as reading devices for outmoded formats. It is difficult to provide any precise periodisation of the field – electronic literature is inherently *literary*, and with any literary movement, genres and modes are comprised of further genres and modes. It might be useful, however, to think of 'first-generation' e-lit as largely hypertextual, that is to say, screen-based works whose digital aesthetics were largely drawn out of the idea of links, and how narrative can be constructed and disrupted in a fragmentary manner. Second generation might be considered to be more algorithmic or computationally 'sophisticated', as is the case with generative literature. The most contemporary of electronic literary works might be seen as inherently ludo-literary, availing of the affordances of technologies made popular by the video game industry, though (usually) privileging language over play.

But while the history of electronic literature is not exclusively Web-based, the significance of the Net as a means of sharing – which is what publishing, an activity so central to literature, is all about – needs to be recognised, as does the influence of hypertextuality, which again, while arguably predating the Internet as a *literary* concept, certainly became more pronounced once authors recognised the potential syntheses between the world of writing and the World Wide Web. In treating the history of electronic literature in the context of the history of the Web, this chapter will detail the form as both a pre- and post-Web practice, drawing particular attention to the Net art movement and contemporary e-lit situation, while arguing for a more comprehensive electronic literary history.

Many of the first-generation hypertextual works that dominated the field in its earliest days were published by Eastgate Systems, Inc., founded in Watertown, Massachusetts by Mark Bernstein. With some notable exceptions, like Sarah Smith's *King of Space* (1991), written in HyperGate, Deena Larsen's *Marble Springs* (1993), created in HyperCard, and M. D. Coverley's *Califia* (2000), produced with ToolBook, works for stand-alone systems were mostly written with Storyspace, an intuitive hypertext authoring system created by Jay David Bolter, Michael Joyce, and John B. Smith (Landow, 1992: 40) that is now maintained by Bernstein under his imprint. 'The Eastgate School', or as Hayles calls it, the 'Storyspace school' (2008: 6), is synonymous with the origins of the movement, incorporating many of the electronic hypertexts to first garner significant critical attention: Michael Joyce's *afternoon, a story* (1990),[2] Stuart Moulthrop's *Victory Garden* (1992), Jane Yellowlees Douglas' 'I Have Said Nothing' (1994), and Shelley Jackson's *Patchwork Girl* (1995).

The earliest works of electronic literature were disseminated as floppy disks (Fig 29.1), and later, as CDs – as noted, e-lit had a life before the Web. But the influence of the Web is not entirely absent from the origins of the field. As mentioned, one of the earliest examples of commercially available electronic literature, Malloy's *Uncle Roger*, first emerged in 1986 as a serialised novel on The WELL, an

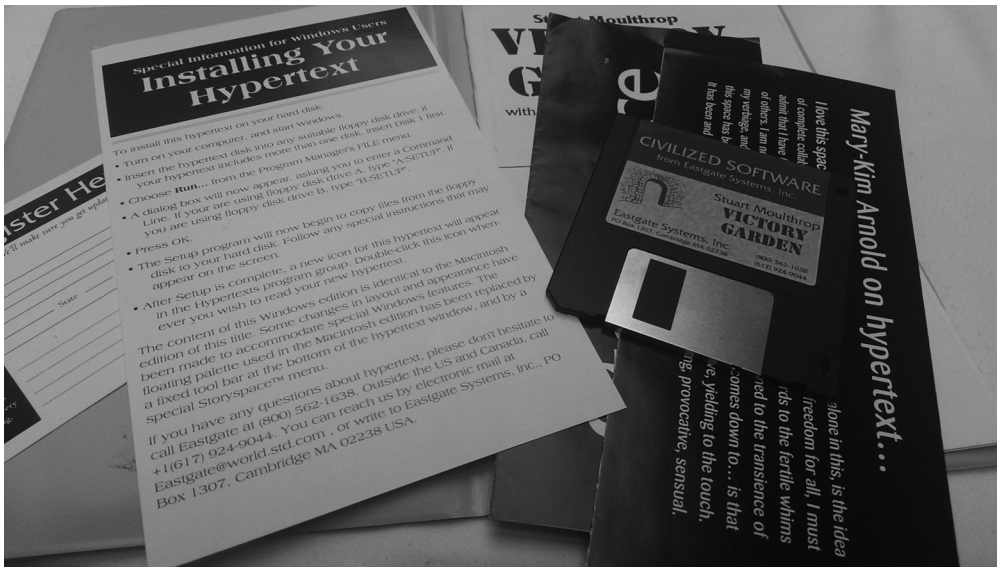


Figure 29.1 Stuart Moulthrop's *Victory Garden* (1992), published by Eastgate Systems.

online community started in 1985 by Stewart Brand and Larry Brilliant.[3] Research by the seminal *Pathfinders*[4] project shows an advert from an 1988 *Art Com* catalogue (Fig 29.2), advertising copies of *Uncle Roger* packaged as floppy disks (Grigar and Moulthrop, 2015).

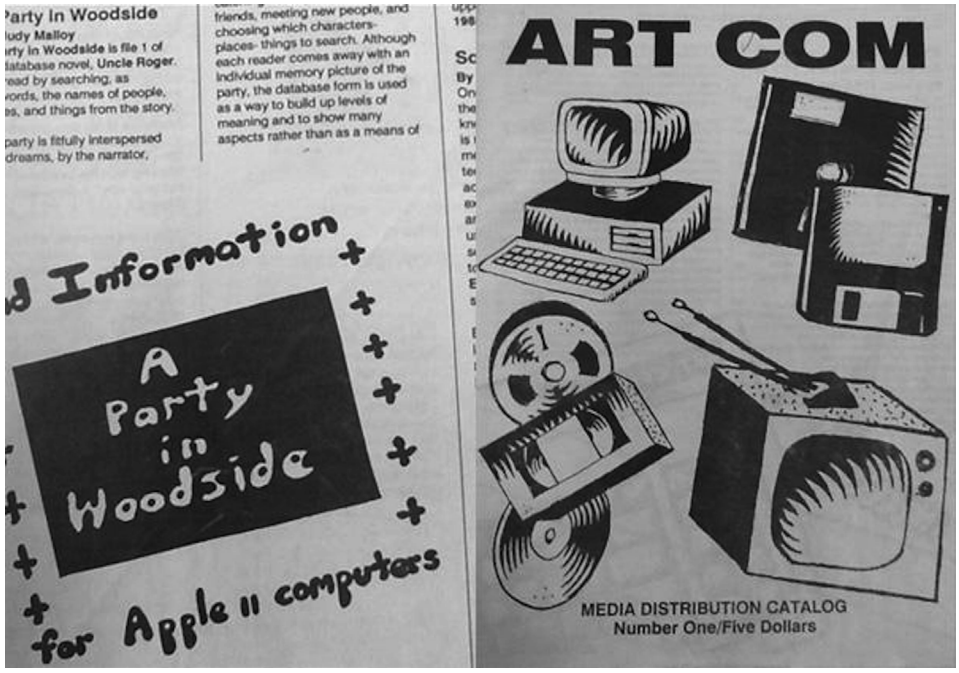


Figure 29.2 Advert for Judy Malloy's 'Uncle Roger: A Party in Woodside', from *Pathfinders*.

There are six digital versions of *Uncle Roger*; the first began, as already noted, as a serial novel for the net published on The WELL's Art Com Electronic Network (ACEN). The second version was an interactive narrative also published by ACEN. The third version, created as a database narrative on Malloy's own authoring software, Narrabase, however, constitutes the 1987–8 commercial packaging on three 5.25-inch floppy disks. Often described as a trilogy, the segregation between discs was more of a consequence of storage constraints rather than any narrative construction. Version 4.0 was produced in 1988 for galleries and other venues that used PCs instead of Macintosh computers. These four early versions were produced almost simultaneously with Malloy starting one version and developing another alongside it. The fifth version – the one produced for the Web – came seven years later in 1995 and recompiles the work into one environment (Grigar, 2015). This version, according to Malloy, is the authorised version and reflects Malloy's awareness of the changing audience from that of the intellectually elite one of The WELL and the more mainstream one of the Web (Moulthrop and Grigar, 2017: 93–106). The final digital version is the emulation of Version 4 with edited content of Version 5, produced for the DOSBox Emulator. It creates, to a certain extent, some of the unique features of the pre-Web experience. This trend, re-releasing first-generation Web-based e-lit, as Eastgate Systems, Inc. has done with *afternoon: a story* and *Patchwork Girl*, both on flash drive, may become a trend as interest in early digital literary work continues to grow. Thus, as we have pointed out, not all e-lit started on the Web, but like most cultural artefacts influenced by the migration to cloud technology, this is where it is ending up, and that has profound repercussions for the ways in which renovated pieces are received, and indeed, how the movement is conceived.

A Case for Electronic Literary History

Lev Manovich traces the origins of digital art to the post-WWII era, citing co-occurring shifts in technology and artistry as the motivating factors: 'In the last few decades of the twentieth century, modern computing and network technology materialized certain key projects of modern art developed approximately at the same time' (2003: 15). For Manovich, the creative potential offered by emerging technologies 'actualized the ideas behind projects by artists, they have also extended them much further than the artists originally imagined' (2003: 15). Manovich, like many other theorists and critics operating in this domain, recognises the difficulty in isolating, with any certainty, the exact origins of the field.[5] In many respects, this is to be expected, as most artistic movements do not result from a Big Bang-like reaction, instantly materialising out of a collision between aesthetic forces. Artistic and literary movements are the product of slow, and sometimes unintentional, exchanges with the changeable affordances of form and content – the same fluctuations are usually happening in multiple places at once, situated in varying contexts, but all contributing to the emergence of something other than what has gone before.

But there is a second, more explicit reason as to why it is difficult to identify the origins of electronic literature – the lack of a deliberate historical account of the field:

> …future theorists and historians of computer media will be left with not much more than the equivalents of the newspaper reports and film programs from cinema's first decades. They will find that analytical texts from our era recognize the significance of the computer's take-over of culture yet, by and large, contain speculations about the future rather than a record and theory of the present. (Manovich, 2001: 6–7)

The paucity of deliberate historical accounts of this field has been alleviated in recent

years,[6] but considering the long history of the field, and its explosion since the introduction of the browser, more historical accounts are needed. Projects like *Pathfinders*, which provides a concerted effort to develop the methodology for a detailed documentation of works that strives to capture their multimedia and interactive features, follows in the footsteps of other digital literary histories in contributing to the future of electronic literature by documenting its past. Literature has many pasts, and the past that Grigar and Moulthrop are documenting in *Pathfinders* focuses on the digital literary experiments that emerged in the late eighties to mid nineties, and continued to grow and develop into what we now call 'e-lit'. *Pathfinders* takes an unusual approach to its research methodology in that it asks authors of early digital literature to perform their work on a computer and with software with which the work was originally intended to be read at the time of its publication. Grigar and Moulthrop videotape this performance, as well as record an interview with the author. They also bring in two additional readers to interact with and share the experiences of the work, which is also recorded. Much has been gleaned from these interactions, the materials ensuring that future generations will be able to appreciate the origins of the field, achieving a sense of the historical and cultural framework of which one must be aware if they are to critique a work within the contexts of its precursors. While *Pathfinders* has undertaken in-depth research into a select few works, the fact remains that there are countless more which are yet to be documented and written about, and as a result, preserved. Without this work, knowledge about these precursors, and the expression they sought in the digital, would be lost.

The vital work being accomplished by initiatives like *Pathfinders* should serve as a warning to the current generation, who have mistaken the ease by which the digital can be disseminated for protection against obsolescence. Even when one cannot experience a work, we should at least know that it existed – the sad reality of this field is that many of those literary experiments that contributed to its emergence have undoubtedly been lost, and it is the fault of the academy that they cannot be recovered. The contemporary situation is worsening in a marketplace where authors are distributing their work on proprietary cloud-based architectures maintained by profit-motivated organisations like Google and Apple. It may well be that the issue to which Manovich points will only amplify, to the point where we will only ever have an awareness of popular – and thus preserved – first-generation and contemporary electronic literature, with nothing in between.

This has ramifications beyond this particular community. Take issues around gender, for example. Malloy programmed and coded *Uncle Roger* by hand with UNIX Shell Scripts (Version 2), AppleSoft BASIC (Version 3), GW-BASIC (Version 4), and HTML (Version 5). As notable was the authoring software she created for e-lit, Narrabase developed at approximately the same time as Storyspace and George Landow's Intermedia. These achievements are significant from a feminist perspective in that it shows that women were among the pioneers of this creative and technological movement, a reality that is often neglected (Walker Rettberg, 2012a). The history of electronic literature is not just a history of computational art, it is a social and cultural history that has relevance far beyond the literary. Such a lack of visibility may well be one of the chief contributors to the ambiguity that surrounds our discipline. Electronic literature is increasingly piquing the interest of literary scholars, and indeed, finding its way into the third-level curriculum, but, in many respects, it remains esoteric. This may well be due to the inherent computational element, which puts its critique beyond the expertise, and perhaps interest, of many scholars, but it may also be owing to this historical blind spot.

The Rise of E-lit as Net Art

A definite milestone in the advent of digital literature as something more than merely hypertextual was the publication of the ELO's first *Electronic Literature Collection* in October 2006 (Fig. 29.3), described as 'the first major anthology of contemporary digital writing' (Funkhouser, 2007b). Edited by Hayles, Nick Montfort, Scott Rettberg, and Stephanie Strickland, the collection marks the progression towards increasingly multimodal forms.

But the anthology was more than just a demonstration of the 'the perpetual metamorphosis of electronic literature' (Marino, 2008); it also heralded a new era for e-lit – an era in which literatures of the Web would come to prominence in an increasingly paperless world.

Manovich is acutely aware of the symbiosis that exists between computation and culture, noting that their effects are commutative in essence – the computer is being shaped by culture, as much as culture is being transformed by the computer:

> To use another concept from new media, we can say that they are being composited together. The result of this composite is a new computer culture – a blend of human and computer meanings, of traditional ways in which human culture modeled the world and the computer's own means of representing it. (2001: 46)

This bi-directional exchange between culture and computation is key to the evolution of electronic literature. The Web transformed the ways in which artists looked at composition – quite simply, authors recognised where their audiences were going, and started writing for the Web. Such a conscious decision had profound repercussions for the history of the form, as it determined the technologies



Figure 29.3 Electronic literature Collection: Volume 1, from collection.eliterature.org.

and literary techniques available to e-lit practitioners. To say that the Web had a profound influence on the field might seem like an obvious statement – the Internet was a game changer, there is nothing revelatory in this – but the extent of this influence far outweighs that felt by e-lit's counterparts. The broader publishing industry, for example, recognised the disseminative potential of e-books and sought to remediate print literature in a bid to capture a share of the emerging e-reader market. But print has retained its dominance of this industry, and while the Web has undoubtedly transformed the ways in which publishers operate, the codex is thriving. The same cannot be said of electronic literature, which has undergone more complex transformations in the age of the Web, with most e-lit now, as already noted, *written for*, not just disseminated via, Web technologies – editions circulated as hardware are now seen as collector items, or intentional acts of artistry and preservation.

When exploring the history of the Web in the context of artistry, there is a danger of conflating channel with constituent. Historicising digital art, Manovich asserts that the 'greatest hypertext is the Web itself', contending that it is even 'more complex, unpredictable and dynamic than any novel that could have been written by a single human writer, even James Joyce' (2003: 15). This is an arbitrary comparison in many respects; a fresh example of the old dichotomy: the Internet as hypertext is an act of communication, whereas writing in the context of art is an act of literature – one transaction is about the clear exchange of information, the other about unrestrained expression. The latter may well have connections to the former, but they are not interchangeable in a sense that one criticism can be readily applied to any technology intended for broader social utility. The Web is undoubtedly the zenith of hypertextuality, but it is a social hypertext, socially complex and irresolute; a vessel, not an artwork in itself. Perhaps Manovich is right to treat the Web as one great work of art, as a great anthology of fact and fiction, open to uninhibited human intervention, the hallmark of creativity. But if we are to trace the emergence of electronic literature in the context of Net art in a manner that is useful to this volume's readership, we must do so in a slightly more conservative manner, primarily so that we avoid confusing technological innovation with literary developments – they are related, but not quite an amalgam.

On October 27th, 2016, *Rhizome* premiered its *Net Art Anthology*,[7] an iterative online exhibition that is seeking to retell the history of Net art from the 1980s through the present day, restaging 100 artworks across four pre-determined periods: 1984–98, 1999–2005, 2006–11, and 2012–18. The series aims to 'take on the complex task of identifying, preserving, and presenting exemplary works in a field characterized by broad participation, diverse practices, promiscuous collaboration, and rapidly shifting formal and aesthetic standards, sketching a possible net art canon' (Connor, 2016). The Anthology also includes a useful definition of Net art 'as an expansive, hybrid set of artistic practices that overlap with many media and disciplines' (Connor, 2016), but our examination revolves largely around works which might be considered literary in the sense that, while incorporating the ludic,[8] the visual, and aural, they privilege language.[9] While unfinished at the time of writing, the 1984–98 section of the *Rhizome* collection is live, and thus represents an ideal snapshot of the era in which the Web emerged from its academic beginnings to become a greater part of the public sphere. Entries in this period reveal how early interactions with the Web reshaped key literary notions around language, space, and ideology.

The advent of the Web heralded deep sociocultural progression, but, in a more pragmatic sense, it was also the realisation of HTML as the principal standard through which text was to be semantically structured – authors who wished to create text-based Net art would be writing in HTML. The relationship between

form and content is such that the structural semantics imposed by HTML would have forced authors to think about their writing in different ways, adapting their creative processes to a pre-defined system of elements and sub-elements, embedding, and selective rendering. It is in this sense interesting that we use the term 'Net' art, when the Net was a largely linear underlying technical structure that would go on to facilitate the 'Web' as a more omnidirectional means of ordering information as a constellation – the net influenced the dissemination of art, true, but it was the Web, the idea of hypertextuality, that arguably brought about the greater cultural and artistic repercussions. One could quite readily argue that electronic literature's origins are not as Net art, but as Web art. Furthermore, authors had to re-think how to transact with the readers – HTML structures literary content, but its appearance to an audience is determined by Web technologies like CSS and JavaScript. All writing is subject to constraint, but authorial media selections are about the recognition of affordance; what it is that a particular medium can do in the service of an author's aesthetic vision. The Web's earliest authors traded the constraints of the page for those of the screen, and that meant writing differently, adapting their processes to allow for such constraint so as to avail of the potentialities.

Authors had already recognised the aesthetic possibilities of hypertextual narratives by the time artists began writing for the Web – there is little structural difference between the work of the Eastgate School and that of Net art's earliest writers. Nonetheless, the rise of the Net had a profound effect, drawing authors towards a public space composed of a language designed to facilitate multimodality – the transaction between creator and audience had fundamentally changed, and would continue to change as the Web advanced towards more participatory principles, collapsing, in some cases, the distinction between producer and consumer. HTML is a textual system, and so it is unsurprising that the 1990s were dominated by literary Net art that privileged the word. But the decade also witnessed considerable advances across other screen media, particularly cinema and video gaming, and so many of these works were situated within a progressively visual culture. We see the foundations of this convergence between language, the visual, and the ludic in the work of authors like Olia Lialina. Rhizome's *Net Art Anthology* describes the former's 'My Boyfriend Came from the War' (1996) as a piece which 'highlights the parallels and divergences between cinema and the web as artistic and mass mediums, and explores the then-emerging language of the net' (2016). Lialina herself remarked: 'If something is in the net, it should speak in net. language' (Lialina, 2016), accentuating the demarcation between the Web as a platform for dissemination, and the Web as an authorial instrument.

Beyond the multimodality of HTML, artists saw the Net as a space for the renewed politicisation of art, a space in which they could better immerse their audiences within ideological frameworks. Art had always been political, but now it could be truly public, and somewhat participatory. Martine Neddam used her fictional 'Mouchette' (1997) to tackle the issue of suicide, inviting participants to contribute to the topic, thus rendering her adolescent persona 'a character who doubles as a platform of exchange' (Neddam, 2016). While *The File Room* (1994) existed as an installation piece at various points throughout its existence, Antoni Muntadas undertook the project knowing that it could never be completed (Muntadas, 2016). The publication of these artworks came alongside the rise of Web 2.0, which heralded the shift towards Net platforms as dynamic systems composed through mass participation. It was an era in which the transaction between producer and consumer became an act of co-creation. Burgess and Green discuss this in the context of popular sites like YouTube, and how it transitioned 'from the idea of the website as a personal storage facility for

video content to a platform for public self-expression', a transition that amounts to a 'user-led revolution' (2013: 4).

For all the rhetoric of democratisation that accompanies participatory concepts, the convergence between art and the affordances of the Web increases the potential for corporate forces to exert control over public expression. As noted by Lanier, users of the Web, however participatory it may be at present, always 'lose control of their own personal content' (2013: 207). The utopia of Web 2.0 belies something of a dystopic reality, wherein the crowd, and in this context, the authors and artists, are simply doing the creation for the producers, but sharing in few of the spoils, and having no say in the governance. But the same could be said of most institutions which support the creation and dissemination of artistic practice, and if one is to subvert a system, it is best to do so through direct engagement. It is in such a context that we can appreciate Net art as being political in itself, not merely a form open to the encapsulation of political content. Shulgin's 'Form Art' (1997) was published some 20 years after the earliest literary games, titles like Will Crowther's *Adventure* (1976), and *Zork* (1977/80), but it is nonetheless historically significant, transforming 'the most bureaucratic, functional, and unloved aspects of the web into aesthetic, ludic elements' (Shulgin, 2016). Drawing readers through a series of inane Web forms, 'Form Art' challenged its audience to traverse the maelstrom of forms as if they were playing a game that they could win or lose. In this respect, Shulgin was one of the first artists to really question the pervasiveness of emerging Web technologies and the ways in which the interface has dictated our use of such innovations. Shulgin describes the 'Form Art' as 'a declaration of the fact that a computer interface is not a "transparent" invisible layer to be taken for granted, but something that defines the way we are forced to work and even think' (2017). By creating a competition that solicited other submissions of form art – a critique of the Prix Ars Electronica – Shulgin used participatory mechanisms to reinforce the ideology of his piece.

Art which interacts with capitalist tools and processes is always in danger of advancing such instruments, a tension which Shulgin expressed in relation to his artistic movement:

> In general, now I am having mixed feelings about early net art because I see how the strategies developed by net artists are now used by corporations and in politics. But that's the destiny of avant-garde art – developing communication and aesthetic tools for the future capitalists and politicians. (2017)

His prediction proved accurate in some respects: many artists and critics recognised the power of the participatory, of the role of the receiver in the creative process, long before major commercial entities realised that survival in the Web 2.0 era was dependent on their capacity to embrace 'the power of the web to harness collective intelligence' (O'Reilly, 2010: 230). But in many respects, the converse of what Shulgin anticipated has turned out to be true, wherein artists now tend to reuse commercially driven tools for creative purposes. Artistic appropriation of capitalist media technologies is a disruptive act which serves to subvert the profit motives driving the development of such tools. Flash, Twitter, Unity – these are all examples of proprietary systems and spaces which artists have distorted and occupied for the purposes of facilitating some artistic purpose. In this respect, the history of art and literature and the Net is one of subversion.

Distinct communities have been treated in tandem here in the sense that practitioners within the Net art community do not always identify with those from the e-lit movement. Grigar explores this issue in some detail:

> For the most part, digital media theory has been dominated by scholars and critics trained in formalistic theories of cinema and visual art. Lev Manovich uses Russian formalism, for example, as his lens for formulating views of 'new' media, while Oliver Grau focuses his attention on Italian

> Futurism. What chance does an emergent form with literature in its name have when faced with such a strong art history perspective? Likewise, Stephen Wilson devotes little attention in his 900+ page book Information Arts to early hypertext work with no mention of more contemporary elit pieces. That 'net art' became the name of choice for some working in the area of web-based elit should come as no surprise under these circumstances since the term 'literature' in the name of elit may have limited its inclusion in media art festivals, exhibitions, and art scholarship. (2008)

There are, of course, figures who have transcended often arbitrary distinctions like 'community' and 'movement', such as Mez Breeze, an artist and writer whose work has appeared in both the *Net Art Anthology* (2016) and the third volume of the ELO Collection (Campbell and Breeze, 2012), but, typically, artistic groups relevant to this space have operated as considerably independent cohorts. Mark Amerika figures largely as a cross-disciplinary artist who straddles media art gallery installations and e-lit performance space.

Furthermore, this treatment is largely Anglocentric in its focus, and for every artist, artwork, or artistic group mentioned, many more have been omitted. But the purpose in drawing reference to these few examples has not been to privilege certain works over others, but rather to trace some of the key trends that are of relevance to the history of electronic literature as net art, and indeed, emphasise the one consistent element of all of these works – language. Whatever term you think most appropriate to such works, be it 'net art' or 'e-lit', the word as text is the dominant force throughout. The history of electronic literature as net art is a history of artists – be they authors or otherwise – responding to the affordances and constraints of the Web as a space for *writing*. The Web was not the first digital technology which writers adopted, but it is undoubtedly one of the most significant. This significance is represented in the reality that those artistic trends that emerged throughout the 1990s are still dominant today in the prospering modal exchange between literature, sound and visual art, video games, and an increasingly diverse range of realities.

The Contemporary Situation

While electronic literature had an existence before the Web, its beginnings and evolution



Figure 29.4 ***All the Delicate Duplicates*****, by Mez Breeze and Andy Campbell (2013).**

can be tied to the cultural diffusion of the Internet age – networking changed the way authors thought about writing, its processes, and dissemination. Hayles describes electronic literature as that which is usually meant to be read on a screen, but the field's recent history is one in which most works have been designed to be read in a browser. Perusing the Electronic Literature Organisation's collections, one encounters a high volume of works which rely on Web technologies. The influence of the Net is waning in contemporary contexts – as the fields of electronic literature and video gaming continue to converge, the Web is gradually reverting to its disseminative role. Where authors once predominantly wrote in the languages of the Web, electronic literature's localised traditions are seeing something of a resurgence with the rise of literary games. The critical discourse surrounding electronic literature and video games draws from a large pool of terms – interactive fiction, digital literary, literary games – but all of these concepts point to works with similar essential traits: they combine the 'ludic (from the Latin *ludus*: game or play) and literary (from Latin *littera*: alphabetic letter, or plural *litterae*: piece of writing) elements' (Ensslin, 2014: 1). We can think of electronic literature with ludic traits quite simply as 'creative media that has both *readerly* and *playerly* characteristics' (Ensslin, 2014: 1).

The creators of contemporary electronic literature are availing of increasingly sophisticated technologies to develop complex narrative spaces, such as those typified by the productions of The Chinese Room, or the work of Mez Breeze and Andy Campbell. The latter's recent piece, *All the Delicate Duplicates* (Fig 29.4), exemplifies a new wave of electronic literature wherein the literary is juxtaposed with the technologically immersive to forge game-like literary spaces that are shared, but not played, online.

Electronic literature is utterly reflective of the mechanics of its era, and as technology continues to progress at an exponential rate, so too will our notions of what it means to be contemporary in this domain. Where authors once wrote in HTML, they now code in Javascript; where they once animated in Flash, they now build worlds in Unity; where they once displayed their work on screens, they now immerse their audiences in augmented and virtual realities. As it stands, most of the form's emerging trends are independent of internetworking, shifting from the Web back towards localised systems, and indeed, experiences driven by physical peripherals like headsets. The reality of the practice is that most authors do not have the resources nor the desire to develop such literary spaces as participatory. Contemporary electronic literature, certainly, at the level of critical acclaim enjoyed by the likes of Breeze and Campbell (O'Sullivan, 2017), is about downloading and installing – the floppies have made a resurgence. The Net has had its moment, and the Web, while still visible in the aesthetics of electronic literature, is slowly being relegated to a means of distribution – but this should not diminish the legacy of either, which will undoubtedly rise again.

Notes

1 Many early works of electronic literature were produced for Macintosh computers. It wasn't until the Windows operating system was available for PCs that e-lit works for that platform became common.

2 *afternoon, a story* was not published by Eastgate until 1990, though an earlier incarnation had been released three years prior, at the 1987 Association for Computing Machinery conference.

3 For more on The WELL, or Whole Earth 'Lectronic Link, see http://www.well.com/aboutwell.html.

4 Details on the *Pathfinders* project can be found at http://dtc-wsuv.org/wp/pathfinders/, while the project's open-access book, published in Scalar, is at http://scalar.usc.edu/works/pathfinders/index.

5 By 'origins', we do not refer to works that might be considered the first of many – there is little to be gained from extensive exploration of what came when, as all that this tells us is the order in which particular pieces gained publicity; rather, we see origins as being concerned with the complexities of the entire network of practice that

was operating throughout the era in which e-lit was formed. Origin stories are less about chronology than they are contribution.

6 Readers interested in further exploring the literary history of this field might consider one of many detailed accounts Funkhouser (2007a, 2007b); Kac (2007); di Rosario (2011); Walker Rettberg (2012b); Emerson (2014); Pawlicka (2014); Rettberg et al. (2015); Flores.

7 Unfinished at the time of writing, *Rhizome's* Net Art Anthology can be found at https://anthology. rhizome.org/.

8 By ludic, we mean relating to 'play'.

9 For more detailed disambiguation of the different forms of digital art, and the means by which lan- guage plays a role in this process, readers should see Ensslin's literary-ludic spectrum (2014: 43–5).

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