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Interactive Digital Narrative

History, Theory and Practice

Edited by

Hartmut Koenitz, Gabriele Ferri,
Mads Haahr, Diğdem Sezen
and Tonguç İbrahim Sezen



Interactive Digital Narrative

The book is concerned with narrative in digital media that changes according to user input—Interactive Digital Narrative (IDN). It provides a broad overview of current issues and future directions in this multi-disciplinary field that includes humanities-based and computational perspectives. It assembles the voices of leading researchers and practitioners like Janet Murray, Marie-Laure Ryan, Scott Rettberg and Martin Rieser. In three sections, it covers history, theoretical perspectives and varieties of practice including narrative game design, with a special focus on changes in the power relationship between audience and author enabled by interactivity. After discussing the historical development of diverse forms, the book presents theoretical standpoints including a semiotic perspective, a proposal for a specific theoretical framework and an inquiry into the role of artificial intelligence. Finally, it analyses varieties of current practice from digital poetry to location-based applications, artistic experiments and expanded remakes of older narrative game titles.

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First published 2015
by Routledge
711 Third Avenue, New York, NY 10017

and by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

Routledge is an imprint of the Taylor & Francis Group, an informa business

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Library of Congress Cataloging in Publication Data

Interactive digital narrative : history, theory, and practice / edited by Hartmut Koenitz, Gabriele Ferri, Mads Haahr, Digdem Sezen and Tonguc Ibrahim Sezen.
pages cm. — (Routledge studies in European communication research and education ; 7)
Includes bibliographical references and index.
1. Digital storytelling. 2. Interactive multimedia. 3. Narration (Rhetoric)
4. Digital media—History. I. Koenitz, Hartmut, editor. II. Ferri, Gabriele, editor.
III. Haahr, Mads, editor. IV. Sezen, Digdem, editor. V. Sezen, Tonguc Ibrahim, editor.

QA76.76.I59I549 2015

006.7—dc23

2014046169

ISBN: 978-1-138-78239-6 (hbk)

ISBN: 978-1-315-76918-9 (ebk)

Typeset in Sabon
by codeMantra

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Foreword

Nick Montfort

The essays in this collection further our understanding of how computers can narrate responsively and in profoundly new ways. While the articles are organised into those emphasising the historical, the theoretical and the practical, the editors have helpfully identified ways to also read across the three sections by following common threads. In addition, many essays deal quite substantially with two or all three aspects.

Consider a few of the ways in which these three categories overlap: Scott Rettberg's 'historical' essay on the American hypertext novel documents his 'practical' experience as an author of *The Unknown*; Marie-Laure Ryan develops her 'theoretical' discussion with reference to the 'history' of playfields in digital games; Janet Murray situates her 'theoretical' discussion by considering a rich 'history' of women and their boyfriends in interactive and noninteractive media; Nicolas Szilas draws on his system-building practice to 'theorise' highly interactive digital narrative; and those whose work appears in the practice section have informed their system-building and art-making with an awareness of both history and theory. While this book is organised according to whether history, theory and practice are stressed—and it needs to be somehow organised—these are not exclusive silos, and they are not shown to be. Rather, they are the bases from which connections are made. The work the authors and editors have done moves us beyond the popular chant of "theory and practice," which really does nothing but juxtaposes these two without explaining their relationship, to actually connect them, and history as well, allowing all three to inform one other.

A FIELD IN FORMATION

Having noted the above, this collection is also important because of how it reveals a lack—not any lack inherent in this particular project overall, or in any essay, but rather something that is incomplete in this intellectual area, which is still in the process of coalescing into a field. This nascent field has framed but not solved its initial conceptual problems. That is part of what makes it exciting. This book, after all, is not a festschrift for a body of work that has essentially been concluded, but it is an important part of the foundation for those of us still establishing major ideas, directions and practices.

A sign that this is not a well-established and fixed field is that those of us in this area have not yet agreed on its name. *Interactive digital narrative*, whether in short form (IDN) or long, is in certain ways similar to *intelligent narrative technologies* (the name of a workshop series), *interactive drama* (pioneered by Oz Project participants but also taken up by David Cage), *interactive storytelling* (the name of a conference series and considered so conventional that it is abbreviated to IS in Chapter 12), and *narrative games* (a term often used at the Game Developers Conference, for instance, although it appears only in passing in this book). These different terms suggest their own different emphases and connections—to artificial intelligence or narrative theory, or traditions and theories of drama, or ludic interaction and videogaming—while, at the same time, the people working under these banners, and others, do truly share many common assumptions, use many similar techniques, and are often informed by each other's work.

At certain points, developing some sort of neologism to serve as a standard term can be extremely valuable. A new name can serve to productively expand some concept, defined by previous terms, that is now seen to be too narrow. This happened in different ways with both cybertext and electronic literature, two categories that have rich intersections with each other and with interactive digital narrative. These two terms were also successful because they hearkened back to a relevant history and foundation (-text, literature), contextualising the field they described and grounding it in known cultural practices, while also embracing recent changes and the future cyber-, electronic).

While this type of naming activity can be valuable, and may eventually be important, there seems to be no need to immediately unify everyone's name for this activity or field, or to standardise on a single term, old or new, for all that we do. *Interactive digital narratives* is a fine term, existing alongside several that are slightly different, because it too makes connections to well-known aspects of culture, to history, while also looking forward. It gathers together academic work from a wide variety of disciplines and from the practice of artists, writers and game-makers within and beyond industry. Certain other terms—as long as they aren't attempts to retrench and to wall off and ignore relevant, related work—can be fine, too, and can show how many different perspectives are involved in the same enterprise, or at least, very similar enterprises.

Yes, there are some related activities that would seem to be left out of IDN strictly interpreted: Interactive digital poetry and art that is nonnarrative, story generation systems that are noninteractive, live interactive drama experiences that may be scripted and rule-based but are enacted by people without the use of computers. Of course, some focus is always needed for conversation and progress. The existence of other, related fields simply suggests to me that this diversity in names is a good thing and can allow researchers and practitioners to make different connections at different times.

That is, our diversity of names, and the use of IDN here, is productive. These are not serving as exclusive decrees; rather, they facilitate intersections and connection, just as the conjunction of history, theory and practice do.

A MATTER OF GOALS AND IDEALS

Since there is no need to create history/theory/practice intersections or to worry ourselves about establishing a single standard name for the whole field and everything related, what needs to change in IDN?

The urgent question for interactive digital narrative is what it truly aspires to. What are its goals? How does it seek to change or maintain society? Is it here to reassure us or provoke us? In this sense, it is time to refine our associations, to discern, and to distinguish, even as we celebrate intersections in other ways.

Will the work that we are doing end up as a (possibly profitable) extension of the worst properties of current media—as with “The Family” in Ray Bradbury’s *Fahrenheit 451*, in which the numbed Mildred Montag reads a script to characters on three wall-sized displays, becoming ever more enthralled? In such a scenario, which is participatory although not truly interactive, the absence of fourth wall is hardly what is important—no matter that Mildred bemoans having only three walls installed. The real issue is that the system provides a sort of engagement, immersion and ability to play along in superficial ways, without offering any true agency, any new aesthetic vision or any new philosophical or political concept.

Our field doesn’t lack passion and enthusiasm on the part of researchers, theorists and artists who seek to dig into every possibility. But, why are we doing this?

What this field needs now is to become a movement, or perhaps more than one if there is no single common cause. Is IDN out to bust up the game industry and fundamentally change it, or does it seek to simply buttress what exists? Is it supposed to be pure entertainment or something beyond that? Does it care more about empowering the disenfranchised or about training the military, and does the answer to this question depend upon how much funding is available for each option? Is it about human nature and our cultural world, or a distraction from them? Is IDN fashion, always seeking to set and follow trends, or can it open a chasm to the timeless? Is it a pleasing but meaningless salve to soothe workday aches or a way to model a better society?

Something I have heard Scott Rettberg speak about is that electronic literature is a migration rather than a movement. This description is inclusive, and it too connects the past with the future, as there is somewhere to migrate from (print literature) and new possibilities of where to migrate to (the digital medium). It means that people do not have to have a common artistic vision or shared goals at the highest level to discuss their experiences

and learn from one another. Whether this is precisely true of the related field called IDN or not, IDN is certainly *more* a migration than a movement. The migrants may come from a wider or at least different variety of disciplines and practices, but it is the arrival at user-controlled computational narrative, not the underlying drive, that defines this field.

A CHOICE POINT: ENTERTAINMENT OR UTOPIA?

People making videogames, interactive TV, interactive story generators and all manner of other interactive narrative experiences on computers can consider themselves in the same field—the same migration—and they would be correct. But people who have opposite answers to these questions I have posed—some trying to retrench and focus entirely on earnings, some trying to innovate and make progress toward new cultural developments and understandings—may not be in the same field. They certainly aren't in the same movement.

The technologies to model a utopia may not be the same ones needed to entertain, or, at least, the intersection of these may be slight and not very interesting. Let me suggest that people need to communicate, collaborate, and be empowered with an understanding of computation to use interactive digital narrative as a way of designing a new society or ameliorating social ills. They have to be builders, makers and coders, rather than just being given an experience. Working toward such a goal involves collective thought, deliberation and consciousness on the part of the interactors. Mildred Montag did not need any of this in order to feel a part of her video narrative and to be entertained. The techniques that entertained her, we have to imagine, were very different. It was a fundamentally different design problem.

The community of writers using Twine, an effective and straightforward hypertext creation tool, one that is free software and outputs HTML for the Web, provide one example of a more movement-like group. While authors seem glad to be part of the interactive fiction (IF) community (the former participate in and do well in its annual competition, and the creator of Twine is an IF author), the work they do is radically different as a writing practice and as interactive design. Recent Twine work strongly focuses on issues such as cultural desolation, personal identity, alienation, and lack of choice much more thoroughly than has been done in parser-based interactive fiction, even though individual parser-based works have treated these themes.

One might try to locate the difference between Twine production and parser-based production (most of which is done using the Inform 7 system) in particular aspects of writing style, in Inform 7's ability to accept input and understand typed user commands, or in the choice of themes. Perhaps the most significant distinction is that Twine authors are more allied in terms of what they want to accomplish. They create unusual fantasy worlds of

the sort that appear in other digital work, but theirs cut into personal and cultural questions in obvious and jarring ways. They are often seeking to do work that is personally or politically meaningful, to provoke the reader into understanding other people's cognition, emotion, and experiences.

If the Twine community agrees with my (outsider) assessment or something like it, they might realise that although it's good to trade tips and technical tricks with other Twine users, it isn't the development tool, but their more abstract goals, that unite them as a group. They might join with others working in different sorts of IDN and other sorts of poetic, narrative, and digital development. They might decide that someone writing a Twine game that is, for instance, a humorous Choose-Your-Own-Adventure parody aimed only at laughs isn't really part of their movement, while a digital poet working with a different system could be.

The more retrograde and more aspirational types of IDN can, of course, both exist, and there can be groups, even large and organised ones, working in both of these ways. But as people in the field determine who to confer with and collaborate with, they should both consider the particular valence of IDN being undertaken, as well as think about who the others are, or would be, in their movement. I am not suggesting that we shun those with different goals, but rather take the opportunity to form alliances based on deep values and principles, noticing where we have already done so, and reaching out across different practices and media.

The essays in this book show that IDN has tremendous capability and is continuing to excel. As someone compelled to learn more about this field, while you read and learn from what is included here, consider, please, how this capability will be used. Consider in what direction you would like to move the field, and what you and like-minded researchers and artists—in your movement—can do to help it progress.

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Acknowledgments

The editors would like to give their sincere thanks to the ECREA book series editors, especially Nico Carpentier, for their positive critique and helpful advice during the formative period of this volume, as well as their support in seeing this work to completion.

The editors are also grateful for Benjamin Larkin, whose outstanding abilities in copy-editing and proofreading were crucial for the readability of this volume.

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1 Introduction

Perspectives on Interactive Digital Narrative

*Hartmut Koenitz, Gabriele Ferri, Mads Haahr,
Diğdem Sezen and Tonguç İbrahim Sezen*

1. AN OPPORTUNITY AND A CHALLENGE: VISION AND STATE OF THE ART OF IDN

Interactive Digital Narrative (IDN) connects artistic vision with technology. At its core is the age-old dream to make the fourth wall permeable; to enter the narrative, to participate and experience what will unfold. IDN promises to dissolve the division between active creator and passive audience and herald the advent of a new triadic relationship between creator, dynamic narrative artefact and audience-turned-participant. Within this broad vision of fully interactive narrative environments through the use of digital technologies, IDN aggregates different artistic and research directions from malleable, screen-based textual representations to the quest for virtual spaces in which human interactors experience coherent narratives side by side with authored narrative elements and synthetic characters.

The IDN vision is as much about narrative and control as it is about balance. Indeed, the quest for the right artistic measure, for equilibrium between agency and a coherent, satisfying experience, might be the ultimate challenge of the field. Yet, the artistic challenge does not exist in isolation and is joined by technological and analytical challenges. IDN is a truly interdisciplinary field, which includes scholars and practitioners with backgrounds in multiple disciplines: from literary studies to computer science and fine art. While guiding visions have been described, sometimes even heralded, in various forms for quite some time—for example, the image of Alice entering the rabbit hole or Borges' infinite labyrinth in the form of a novel—it is only with the advent of computer technology that its realisation seems possible, and constant developments in computer technologies seem to put them ever closer to our reach. Indeed, digital media has radically changed the way narrative content is being created, shared, experienced and interpreted.

In her seminal work *Hamlet on the Holodeck* (1997), Janet Murray notes that digital media is inherently procedural and participatory, referring to the capacity of computers to execute a series of commands and react to user input. While procedurality affords digital creators the expressive power to define initial conditions and rules under which an interactive work executes and reacts to input, IDN bestows cocreative power on its users through

interaction and therefore reshapes the relation between creator, work and audience in a way that far surpasses aspects of interpretation and reader-response theory, but whose exact extent is a subject of scholarly debate. The complex relation between authorial control and the power of interactive agency is therefore an underlying topic in all three parts of this collection of essays, which focus on history, theory and practice.

While IDN has been an artistic practice and a topic of scholarly inquiry for more than two decades, it is still in its infancy compared to other narrative forms like the stage drama, the printed book or the moving image. As a technical and artistic challenge and opportunity, advances in the IDN field depend on the combined effects of developments in different parts within the greater field. However, progress in these different areas has historically been uneven. For example, graphical representation has seen rapid improvements from the humble beginnings as text on the screen to current cinematic-quality 3D depictions driven by simulations of highly realistic physics. Whilst the progress in graphics and physics is no less than astonishing, the same cannot be said for the larger challenge of creating specific narrative forms to produce compelling and captivating experiences: in this regard, the pace of development has been unsteady and slow. The virtual environments used for many contemporary interactive narratives are realistic, dynamic and feature high fidelity in terms of their visual presentation and physical mechanics. However, the narratives and characters they host remain shallow, static and lacking in believability, dramatic engagement and narrative development in comparison.

Indeed, while clearly eclipsed in visual presentation, the strong narrative of early titles like *Zork* (1982) holds up well even today. Maybe this fact should not surprise us, as resources for work on improving the graphical representation have been more readily available than for the more artistic problem of narrative development, spurred originally by the US Air Force's interest in convincing visuals for flight simulators (Myers, 1998). Research in IDN ideally combines technical development and advances in artistic expression, as well as the expansion of analytical perspectives; and historically, it has been difficult to find resources for such interdisciplinary projects. Funding, however, is only one aspect of the problem. Cinematic visualisation and real-world perceptions provide an ideal to aspire to for graphical representations. A comparable, shared goal on the side of narrative development and resulting form is elusive. Janet Murray's proposal of the 'Holodeck' (Murray 1997), an imaginary future form of entertainment first depicted in the TV series *Star Trek: The Next Generation* that immerses its audience in a dynamic, reactive narrative, has perhaps been rejected more often (Ryan, 2001; Aarseth, 2004; Spector, 2013) than it has been tacitly embraced (Mateas, 2001; Nitsche, 2008). Other visions, like constructive hypertext or interactive drama, share this fate. However, while the absence of a canonical set of narrative structures specific to IDN can be problematic, the lack of a unanimously shared vision also represents an opportunity

because it provides space for experimentation and creative license to create new forms.

If the defining artistic moment of the book was the advent of the novel in the 17th century¹ and of film was the invention of montage (Eisenstein, 1949), a similar breakthrough is still elusive in IDN, and maybe there never will be a comparable moment in this field. Instead, we might see existing design modes (e.g., third-person versus first-person perspective, modes of audience participation and novel narrative structures) grow into mature artistic conventions applied in a conscious way by a new generation of authors. A possible defining milestone for IDN might even be the emergence of a consistent group of practitioners, IDN auteurs or *cyberbards*, to use Murray's term (1997), who feel more confident with the notion of relinquishing some of their authorial control to users, players and interactors, and see themselves not as the creators of singular visions, but as designers of expressive potential.

Analytical perspectives have developed considerably since the 1980s, when the first scholars with backgrounds in design and the humanities became interested in the topic. Where early treatments of the topic focused on the comparison to older narrative practices, later works have become increasingly more focused on specific aspects like space (Jenkins, 2004; Nitsche, 2008; Ryan, in this Volume), on the particular manifestations (Montfort, 2003), specific theoretical concepts (Koenitz, 2010) and the connections to larger frameworks (Ryan, 2006; Koenitz et al, 2013a) and most recently on particular theoretical aspects (Bruni and Baceviciute, 2013; Mason, 2013; Ferri, 2013). Amongst this much needed focus, scholars in this field are also engaged in a meta-reflection on the defining characteristics of IDN (Murray, 1997; Aarseth, 1997, 2012; Juul, 2011; Eskelinen, 2012; Mateas, 2001; Ryan 2001, 2006; Frasca, 2003b; Crawford, 2004; Koenitz et al., 2013b). A particular example of this discussion emerged in the early 2000s with the advent of computer game studies as a discipline. In that debate, narrative-oriented and game-oriented approaches were framed as a dichotomy, painting games through the simulative aspects as a “radically different alternative to narratives as a cognitive and communicative structure” (Aarseth 2001). A group of game studies scholars (Aarseth, 2001, 2004; Juul, 1999; Eskelinen, 2001; Frasca, 2003a), opposing narrative-centric views, adopted the name of *ludologists*; and thus the discussion is often referred to as the ‘narratology vs. ludology debate.’ The very first ludological perspectives not only opposed the use of narratological concepts to describe video games but, in their early forms, also described interactive narrative as practically impossible: “computer games [are] simply not a narrative medium” (Juul, 1999, p. 1). Jesper Juul's argument conflated two claims; notions derived from narratology—or related disciplines—are not effective to read games, and games cannot convey narratives. The first claim followed from the need to legitimise game studies as an independent academic discipline, thus defining it by contrast with others and establishing

its own vocabulary. This was a move understood by Stuart Moulthrop (2003) as a necessary “defensive maneuver (sic),” however at the cost of an “alarmingly narrow” point of view, one that carries the danger of creating “conceptual blind spots” (Jenkins, 2004). As game studies became a recognised academic discipline in the following years, a gradual softening of perspectives finally allowed Janet Murray to pronounce the end of the debate (Murray, 2005). The second claim about the constitutive dichotomy between play and narration—although retracted by Juul himself (2001)—today remains influential, especially in the professional practice of game design where gameplay and narrative are often seen as opposing parameters. In this vein, game designer Ralph Coster, for example, defines narrative in contrast to gameplay: “The commonest use of a completely parallel medium that does not actually interact with the game system is narrative” (Koster, 2012). He categorises the narrative parts of a game experience as linear, noninteractive and in the sole function of rewarding players.

Even after years of research and discussion, the coupling of narration and interaction can still spark provocative debates that require our attention. Therefore, the practical and ontological analogies and differences between interactivity and narration warrant further academic inquiry. Likewise, the relationship between static and procedurally generated narratives calls for more attention. In this respect, a more holistic view of IDN, foregrounding how digital means enable interactive forms of narrative, could also contribute to the ludological discussion.

2. A DIVERSE AND VIBRANT FIELD

This volume covers a diverse and vibrant field that has continually grown since the late 1970s, from the first text-based Interactive Fiction to such forms as Hypertext Fiction, Interactive Cinema, Interactive Installations, Interactive Drama and Video Game Narrative.

The book is structured in three parts. The first part is historical and addresses how forms of IDN emerged over the years as distinct phenomena and how the transformations of digital media shaped the current forms. Scott Rettberg examines hypertext novels and poems, offering an historical perspective on their technical development and literary fruition, while Chris Hales describes the historical development of interactive cinema with a focus on the impact of digital technology on this form of IDN. Finally, Udi Ben-Arie and Noam Knoller offer a diachronic perspective on the user-facing aspects in IDN, foregrounding the aesthetic, experiential and hermeneutic dimensions.

The book’s second part is theoretical. Theoretical enquiry into IDN started with adaptations of established narratological perspectives, for example neo-Aristotelian poetics (Laurel 1986, 1991; Mateas, 2001), post-classical narratology (Ryan, 1999, 2001), African oral traditions (Jennings, 1996;

Harrell, 2007) and French post-structuralism (Montfort, 2003). In recent years, scholars have started to look beyond narratology to understand the changes in narrative modalities afforded by IDN. Also, particular aspects, such as spatiality, have come to the forefront of analytical work. The editors introduce this section with an overview of these earlier approaches before the book's second part presents a range of current theoretical perspectives. First, Gabriele Ferri proposes a common ground for narrative theory of IDN by reexamining the similarities and differences with unilinear storytelling. Hartmut Koenitz argues for a theoretical approach that is specific for IDN based on cognitive science and cybernetics, while Marie-Laure Ryan discusses spatial representations as a key topic in interactive narratives. Janet Murray analyses dynamics of relationships in literature and discusses their application as a schema for IDN, before Nicolas Szilas in the final theoretical chapter offers a critical perspective on the role of Artificial Intelligence in developing a future, better form of digital narrations.

The book's third part is concerned with practice. When a new medium appears, early practitioners often engage with it first by extending existing practices. In this way, early film was used to show theatrical performances. Eventually these modes of extension lead to distinct practices. As the written text became more than a collection of printed pages in the form of the novel, and film became more than a theatrical performance through montage, it is no longer adequate to relegate IDN practices to the fringes of a perspective centred on narrative in long-established media forms. The third part of the book is intended to examine the wide range of current practices and the emergence of IDN as a distinct phenomenon. Ulrike Spierling begins this part of the book with a chapter that emphasises the importance of user interface design for the IDN experience, as well as its implementation in practice. Scott Rettberg describes current practices in electronic literature, while Sandy Louchart, John Truesdale, Neil Suttie and Ruth Aylett report on research and implementations of emergent narrative, based on autonomous intelligent virtual characters. Andreea Molnar and Patty Kostkova ask how story-based learning is transformed by the encounter with truly malleable narrative. Mads Haahr analyses examples of location-based games that position digital narrative elements in the real world, and Diğdem Sezen examines video game poetry. Martin Rieser puts the spotlight on distinctly artistic uses of IDN, while Tonguç Sezen's chapter on remakes alerts us to the fact that IDN has already reached a self-reflective state.

In addition to reading the book's three parts in a linear order, the reader can also follow specific trajectories across the whole volume, for example on IDN and the human-computer interface (Knoller and Ben-Arie, Szilas, Spierling, Haahr, Rieser), on literary aspects (Rettberg, Murray, Diğdem Sezen), transformation of existing fields and self-reflective practices (Hales, Rettberg, Molnar and Kostkova, Tonguç Sezen), novel theoretical approaches (Ferri, Koenitz), spatial aspects (Ryan, Haahr, Rieser) and critical/practical perspectives on the role of artificial intelligence (Szilas, Louchart et al.).

As the development of procedural media progresses, the powers and abilities of readers as interactors and authors as procedural creators are constantly being shifted and rebalanced. Since we are aware of the continuous advances in the IDN field, a companion website at www.gamesandnarrative.net/idn-book will provide a space for further discussion. IDN enhances the experiential dimensions of human expression, with multimodal manifestations, procedural generation and novel structures. Furthermore, technical and artistic advances in interactive narratives open epistemological questions that require constant theoretical attention. As this volume attests, the development—in every dimension—is continuous and shows no signs of slowing down. And herein might lie the lasting attraction of the field—to further human expression by applying a range of human faculties, from the invention of digital technology to the continuous development of hardware and software to artistic treatment and critical reflection.

NOTE

1. Cervantes' *Don Quixote* (1605) can be seen as the foundation of the modern novel (Riley, 1962).

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Section I

IDN History

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Introduction

A Concise History of Interactive Digital Narrative

*Hartmut Koenitz, Gabriele Ferri, Mads Haahr,
Diğdem Sezen and Tonguç İbrahim Sezen*

The first part of the book is concerned with the history of Interactive Digital Narrative (IDN). Its intention is to serve as a concise historical account of the development of IDN from its beginnings to recent works by means of representative and influential examples. The identification of distinct historical phases is problematic, given the many parallel developments in the field, for example of hypertext fiction and graphical adventure games. Therefore, we identify trajectories based on form—in the sense of particular visual and physical manifestations. The three evolutionary trajectories identified here—text-based, cinematic/performative and ludic/experimental—represent major facets of IDNs. The trajectories traced here are not meant to be mutually exclusive the same artifact might easily be related to several of them.

Text-based examples constitute the first trajectory, from the very first IDN artefact originating in the 1960s, to Interactive Fiction games in the late 1970s and Hypertext Fiction in the early 1990s, leading to their recent resurrection in the Versu platform in 2013. The second trajectory adds an audio-visual dimension that partly remediates aspects of cinema and performance, and examples in this group range from interactive movies over multi-linear TV shows to experimental art installations. This trajectory also shows the strong interests of *avant-garde* artists in the expressive use of interactive technologies. Finally, the third trajectory encompasses video games and experimental forms that feature complex narrative design. This last trajectory traces examples that benefitted most from recent advances in technology—better visual representation, more advanced AI and increased storage capacity.

1. TEXT-BASED EXAMPLES: FROM *ELIZA* TO INTERACTIVE FICTION AND HYPERFICTION

The beginnings of IDN can be traced back to the computer program *Eliza*, created as an experiment in artificial intelligence (AI) in 1966 by Joseph Weizenbaum. *Eliza* took the form of a program that emulates a Rogerian therapist; it responds to a user's textual input by adopting simple but effective techniques of parsing and pattern matching. For example, *Eliza* could reply

to sentences like “I’m depressed much of the time” with “I am sorry to hear you are depressed” (Weizenbaum, 1966). *Eliza*’s ability to sometimes sustain surprisingly compelling dialogues marks a significant milestone for the use of computers as an expressive narrative medium. *Eliza*’s considerable impact at the time (Murray, 1997, pp. 69–70) was also due to the still largely unchallenged belief in the abilities of AI in 1966, and therefore users interacting with *Eliza* were more disposed to accept the premise of a computer program as an intelligent therapist. With this work, Weizenbaum became the first successful author of an IDN experience by finding the right balance between procedural-ity (the rules behind *Eliza*’s responses), agency (allowing natural language input) and scenario/role (therapy session and patient) that played into the belief system of his contemporaries (AI as capable of intelligent conversations).

Adventure (Crowther, 1976) is the next seminal piece in the IDN tradition that marks the beginning of the Interactive Fiction (IF) genre. *Adventure* allowed players to explore a fictional world set in a large cave that is rendered to the players in the form of textual descriptions and subject to interaction through the entry of textual commands such as “go north,” “pick up sword” or “fight troll with sword.” The basic mechanics of *Adventure* consisted of problem solving, combining objects, dialogues and spatial exploration. *Adventure*’s considerable success would reach into the commercial realm, as the American company Infocom famously expanded this framework in the following years. Their first product, *Zork I* (Blank and Lebling, 1980), broke new technical ground as programmers applied techniques like object orientation, demons and states to create a dynamic fictional universe (Murray, 1997, p. 78). IF successfully integrated complex narrative with puzzles and riddles that not only control the revelation of the narrative (Montfort, 2003a, p. 3) but also generates narrative through the players’ typing of words.

Michael Joyce’s *Afternoon, A Story*—first shown in 1987 and subsequently published in 1991—constitutes one of the earliest pieces of Hyper-text Fiction (HF, sometimes also abbreviated as Hyperfiction), another text-based IDN subgenre that was particularly active until the mid-1990s. Michael Joyce and Jay Bolter, cocreators (with John B. Smith) of the HF authoring tool *Storyspace*, clearly position HF as a new form of highbrow literature in contrast to IF:

Interactive fiction has already existed for some time in the form of computerized adventure games. ... Admittedly the text of the current games is simple-minded, but the method of presentation is not. ... This method of presentation can now be applied to serious fiction.
(Bolter and Joyce, 1987)

Whilst the other examples discussed so far originated within research labs in computer science, HF works from the very beginning were created by authors like Michael Joyce and Douglas Cooper who had already published traditional books before picking up HF. These creators aimed at overcoming the

limitations of the printed book by embracing digital media and turning readers into participants, which Murray terms *interactors* (Murray, 1997). The interactor of HF as envisioned by Bolter and Joyce is no longer the passive consumer of a finished work but instead is given an active role in constructing meaning.

HF relies on the principles of segmentation and linking, as authors produce screen-sized segments, or *lexias*, and connect them with different types of hyperlinks. Interactors traverse the story by selecting links, unveiling new lexias, or returning to the ones already visited. Such repeated visits—called *multivalence* by hypertext theorist Mark Bernstein (2000)—constitute a design strategy specific to HF, where the meaning of particular lexias change upon revisitation, as the interactor gains additional insights. The success of this strategy depends on the complexity and depth of the particular narrative. In Michael Joyce's *Afternoon, A Story* (1991), multivalence is particularly successful, as the interactor slowly gains a better understanding of the unreliable narrator's narrative by traversing more than 500 lexias connected by over 900 links regarding the life-changing event of witnessing a car accident, the protagonist's failure to provide help and his consequent psychosis.

Another design strategy in HF is in the equivalence between content and structure: for example, a fragmented narrative like *Afternoon* is presented in fragmented pieces and the associative connections as links. In Shelly Jackson's *Patchwork Girl* (1995), the protagonist herself is literally patched together from body parts of deceased women. This narrative strategy sets the stage for a fragmented narrative, exploring the main character as well as the lives of the donors.

After years of relative obscurity, Interactive Fiction recently seems poised for a return to the spotlight in the form of Versu (2013), a project that originated with Linden Labs, the developer of *Second Life*. Versu merged text-based narrative with advanced artificial intelligence methods and expressive graphics. The project aims to create a platform for procedural textual narrative and hopes to attract authors by offering a specific authoring tool and a business model for distribution. The first examples—narratives set in a Jane Austen-inspired Regency era and the Roman Empire, respectively—by renowned interactive fiction writer Emily Short received positive reviews.¹

2. FROM INTERACTIVE CINEMA TO INTERACTIVE PERFORMANCES

Interactive Cinema is an umbrella term for works and experiments combining cinematic experiences and interactivity, dating back to the 1967 experiment *Kinoautomat* created by Radúz Činčera for the Czechoslovakian pavilion at the Montreal World Fair. The movie *One Man And His World* was stopped at several points during the presentation, and the audience was asked to make a decision. Depending on the answer, the projectionist exchanged the lens cap between two synchronised film projectors (see Naimark, 1998).

The *Kinoautomat* therefore required a human intermediary to execute the audience's choices, and direct interaction between an interactor and a cinematic experience was not possible until the late 1970s when MCA/Phillips, Pioneer and RCA introduced the laser disc system which allowed random, direct access to every point in a video via a computer interface. With this technology, the Architecture Machine Group at MIT created the *Aspen Moviemap* (1978), which enabled an interactor to virtually explore the town of Aspen in Colorado, USA by using a touch screen interface to control a running video of a drive through the town. The interactor could click on the facades of houses along the way to access additional material, such as interior shots, historical images, menus of restaurants and video interviews with inhabitants. In the following years, many other applications combining video and interactivity were explored. Of these, *A City in Transition: New Orleans 1983–86* (Davenport, 1987), a multimedia experience providing access to narrative video and other content, stands out as a particularly refined piece. Glorianna Davenport, a pioneer in the area of interactive documentaries, focused her work on a massive urban development effort on a strip of New Orleans Mississippi river embankment in connection with the 1984 world fair.

The terms *Interactive Movie* and *Interactive TV* have also become associated with experiments in interactive films for the cinema and television, respectively. In 1991, Oliver Hirschbiegel created *Mörderische Entscheidung* (Murderous Decision), a crime story broadcast on two TV channels simultaneously, each one presenting the same story from the perspective of a different character and allowing the audience to interact by zapping between the channels with an ordinary remote control. Hirschbiegel experimented with several narrative strategies to adapt his story for interactivity—for example, cueing interactors to switch channels by reducing the amount of information given (Weiberg, 2002), but also making sure that information essential for understanding the story was given on both channels. An empirical study about the experiment (Kirchmann, 1994) suggested that the narrative “worked best when both versions showed the same information from different points of view” (Weiberg, 2002), for example when both main characters were present in the same space and their views were represented similarly. Conversely, the moments in which the representation diverged (for instance, when one of the two characters was depicted as intoxicated) proved more problematic for the audience.

In the following years, the same concept was reelaborated in the Danish experiment *D-Dag* (Kragh-Jacobsen, Levring, Vinterberg and von Trier, 2000), showing four different narratives on separate channels plus additional channels presenting the directors' commentary, for a total of seven options. The framing narrative for *D-Dag* was a bank robbery on New Year's Eve of the new millennium in which the noise from the celebratory fireworks was used to mask the explosion needed to break into the bank.

Interactive video installation pieces combine video segments with algorithmic rules and a level of interactive control by the audience or a live