

NETWORK NARRATIVE: PROSE NARRATIVE FICTION AND PARTICIPATORY
CULTURAL PRODUCTION IN DIGITAL INFORMATION AND COMMUNICATION
NETWORKS

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Abstract

In this study of prose narrative created explicitly for participatory network communications environments I argue that network narratives constitute an important, born-networked form of literary and cultural expression. In the first half of the study I situate network narratives within a rich, dynamic process of reciprocity and codependence between the technological, material and formal properties of communication media on the one hand, and the uses of these media in cultural practices and forms of expression on the other. I point out how the medial and cultural flows that characterize contemporary network culture promote a codependent relation between narrative and information. This relation supports literary cultural expressions that invoke everyday communication practices increasingly shaped by mobile, networked computing devices.

In the second half of this study, I extend theoretical work in the field of electronic literature and digital media to propose a set of four characteristics through which network narratives may be understood as distinct modes of networked, literary cultural expression. Network narratives, I suggest, are multimodal, distributed, participatory, and emergent. These attributes are present in distinct ways, within distinct topological layers of the narratives: in the story, discourse, and character networks of the narrative structure; in the formal and navigational structures; and in the participatory circuits of production, circulation and consumption. Attending to these topological layers and their interrelationships by using concepts derived from graph theory and network analysis offers a methodology that links the particular, closely read attributes and content of network narratives to a more distant understanding of changing patterns in broader, networked cultural production.

Finally, I offer readings of five examples of network narratives. These include Kate Pullinger and Chris Joseph's *Flight Paths*, Penguin Books and De Montfort University's collaborative project *A Million Penguins*, the Apple iOS application *The Silent History*, Tim Burton's collaboration with TIFF, *BurtonStory*, and a project by NFB Interactive, *Out My Window*. Each of these works incorporates user participation into its production circuits using different strategies, each with different implications for narrative and navigational structures. I conclude by describing these distinct strategies as additive participation – participation that becomes embedded within the work itself – and delineating different approaches that are employed either independently or in combination.

Dedication

This dissertation is dedicated to the memory of my mother Susan, my grandfather Harry, and my grandmother Helen, who motivated and inspired me, and to Leslie, Mason and Daniel who generously gave me the time and support needed to complete it.

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Chapter One: Introduction: Network Narrative and the Future of the Novel

For decades now, literature and communication scholars, media theorists, philosophers, publishers, journalists, educators and a variety of commentators have carefully considered and weighed in on the implications of electronic communications, computing technology and digital media for books, literature generally, the novel specifically, print media, literacy, and the humanities. The contours between established and emerging media forms, communication technologies, social practices, and modes of cultural expression converge, diverge, and give constant rise to emergent hybrids. Making sense of the implications of this change and upheaval for the production and consumption of literature can be challenging, and the material, cultural, and technological terms of reference change quickly and frequently.

The constant recalibration of communication technologies, media forms, and modes of expression elicits responses that range from utopianism and democratic hopefulness, to curiosity and wonder, and even anxiety and trepidation. Often these responses hinge on assumptions about the importance or dominant characteristics of literary production, literacy, cultural values, and pedagogy. Observers of shifts in culture and technology may conjoin the medium of print with the communication technology of the book, or fuse the cultural form of the novel with the broader field of literary production, or conflate literacy as the competence that underpins the production and consumption of literature and texts with literature as a system of cultural value sanctioned by a society.

One source of uncertainty over the future of literary culture is the declining relevance of print to younger social demographics, and the implications of changing habits of consumption for economic instability in the print-oriented cultural industries. Waning interest in books, and any decrease in economic activity in publishing may be considered symptomatic of the pending demise of literature as predominant mode of cultural expression. A common view is that the closing of bookstores and news stands, the proliferation of text messaging shorthand, the troubled economic models of the publishing industry, and the general decline in literacy and civility are all facets of the same problem: Print culture is dying, and the many cultural achievements spawned by print culture are imperilled. The tendency to read paradigm shifts into the visible effects of media change arises in popular news discourse but occasionally also in literary studies.

One of the best-known laments is that of literary critic Sven Birkerts. His impassioned plea for print culture bemoans the diminution of reading, writing, and literature as drivers of social meaning and self-awareness. For Birkerts (2006) this reduction signals a fundamental shift, for "[t]he printed word is part of a vestigial order that we are moving away from—by choice and by societal compulsion" (p. 118). Yet surely Birkerts and other defenders of print culture do not yearn for more unsolicited mail, pine for their paper bill statements, or allocate their disposable income on a new multi-volume edition of a print encyclopedia? Print media takes many forms, and these forms convey a variety of cultural and informational content; many of these forms have been happily cast aside.

While some still prefer the once ubiquitous road atlas or ring-bound street map, many prefer the added directional functionality, hands free operation, and voice enabled

technology of GPS units or the convenience of GPS-enabled smart phones. No doubt some vacationers still tote a large, heavy travel guide on their voyages or consult one in making their arrangements, however in many cases the hotel listings, attractions, directions, and ratings have been supplanted by travel directories, Web searches, and informational Web sites. In other words, the demise of Birkerts "printed word" may be lamented or celebrated depending on the medium that print is supplanted with, the cultural or informational content that is conveyed, and the particular social contexts of users of the materials.

Nonetheless, deterministic thinking is so prevalent that in the Los Angeles Review of Books, Alizah Salaro (2012) can facetiously summarize the effects of the Internet on the novel in a single sentence: "In case this is the first article you've come across about the relationship between the internet, novels, and their authors, here's a quick recap of the last few years: the internet is eroding attention spans and triggering the novel's demise, click by deleterious click." Her terse summation is trumped by Jeff Gomez (2008) in his *Print is Dead: Books in Our Digital Age*, an extreme pronouncement on the challenges and opportunities of digital communication technologies for the book publishing industry. And in the mainstream tech media, witnesses to the demise of print are plentiful. Steve Jobs of Apple fame, for instance, claimed that dedicated e-readers were pointless because "people don't read anymore" (Markoff, 2008) though his remark is ironized by Apple's inclusion of a bookshelf and ebook marketplace in its iOS mobile operating system.

Of course the dismissal of digital technology and the social practices associated with it is often as sweeping and imprecise as the conflation of print and literature. Mark Helprin (2009), for instance, blames "the digital revolution" for "the atomization of attention spans, the degradation of concentration, the triumph of the image over the word, the rise of

multitasking, the surge of easy plagiarism, the destabilization of citation, and, of course, the various forms of assault upon the independent voice and the incentive to create" (p. 209). Helprin here lumps questions of literacy, pedagogy, psychology, visual culture, post-industrial labour practices, scholarly practice, and intellectual property all together, and hitches their putative devolution to a single, monolithic abstraction of socioeconomic change.

Oversimplifications of digital cause and analog effect abound, and are at times hitched to questionable accounts of the persistence and stability of the book form. Helena Mulherns (2011), writing about ebooks for the New York Times, for instance, quotes novelist Declan Burke's assertion that "the book is a perfect design - it's lasted for 500 years" – a claim that indicates the extent to which "the book" like "the novel," "the writer" and "the reader" has been reified as objectively stable rather than highly varied, evolved, and socially contested and negotiated. In actuality, the books of the early sixteenth century were still incunabular and held a great deal in common with manuscripts and scribal culture and were markedly different from those of today in terms of binding, layout, typography, and materiality (Steinberg, 1974). A common paperback and an incunabular book may both be codex texts, but their symbolic, economic, and social functions within their respective societies are vastly different. Eliding these differences does a disservice to our understanding of the particular ways in which culture, media, and sociality coalesce in material expressions that are continually being adapted to a variety of influences.

Often, the book, literature, the novel, and literacy skills are treated – together – as a single complex expression of an accretion of cultural activity, and there may be compelling reasons to do so as part of a particular argument. After all, the affordances of the book and

the affordability of printing contribute to the rise of the novel as a popular cultural form, one which both requires and reinforces literacy skills and helps to spread existing practices of cultural production and incite the development of new ones, and to consider any of these technologies or processes in isolation would be a grave mistake. But at the same time, when focusing on periods of rapid and significant changes in any of these mutually constituting influences, conflating one with another can lead to the abrupt, misdirected, or premature dismissal of one or another eventuality. As I will argue with respect to the novel, this is what we often hear.

Alarmist predictions of the demise of the book, literature, literacy, and print often rest on oversimplifications. They ignore the complex imbrications of media and communication technologies and cultural expression. Such positions may presume that network subjects are uniformly or absolutely given over to peripatetic ways of consuming text and that they have abandoned printed texts and are no longer capable of sustained, focused reading. These views unaccountably presume that intensive and extensive reading practices are mutually exclusive.¹ Overly simplistic accounts of the relations between print and digital media and their associated modes of cultural production and consumption have, however, been contested by a large body of media theorists, book historians, scholars of contemporary literature, and those who create, analyze and theorize the field of electronic literature.

At the same time, despite the variety of theoretical and methodological approaches directed at understanding the relationship of digital textuality to various modes of cultural expression, the place of the novel within the contemporary period of media volatility and

¹ See Saenger (1982) and Chartier (1995) for a discussion of intensive versus extensive reading, and their coexistence as textual consumption strategies.

technological change – and what this relationship suggests for the future of the novel – is not well understood. While novels drive the ebook marketplace, and while there are examples of phenomenally successful novel franchises that have originally emerged out of non-traditional, networked publishing processes, such texts are, while undoubtedly digital and even born-digital, very easily converted to printed book form. The novel, while constantly evolving generically and stylistically, has been relatively stable in terms of its overarching features. The techniques with which narrative, characterization, and dialogue are developed vary greatly between genres, eras, and authors, but they are persistent features of the novel as the major form of prose narrative fiction. How do these characteristics of the novel change in a work of prose narrative fiction that is not simply adapted from print to the affordances of digital networked media, but rather emerges out of it?

As communication and transmission technologies effect changes in the media ecology, and as these changes influence how people communicate and interact, the ways in which cultural expressions are imagined, created, distributed, and consumed are also transfigured. These imbrications between digital media, social practices and literary expressions have received significant attention. As Francisco J. Ricardo (2009), for instance, has insisted, “transformations . . . introduced within the constitutive media [that] expressive traditions exploit” lead to “consequential changes in the categorical character of art and literature” (p. 1). But what are these changes, and what kinds of expressions result in response to them? The collection of essays Ricardo introduces with his comments focuses on works that are experimental in nature. While some have narrative or proto-narrative structures, the reader/user must contend with the programmatic constraints of the works

in order to exact a performance from them. They may be, in other words, fairly far removed from everyday network communication practices and require users to set conventions and expectations aside in order to engage with the works. An inverse orientation in which writers, producers and their collaborators work with, rather than against normative network communication practices, holds great promise for extending the influence and importance of literary expression into the network media ecology. To a large extent, my work is intended to probe these possibilities through an investigation of the structure and content of network narratives with diverse participatory production circuits predicated on distinct digital communication practices.

One of the vexing problems of entering into and advancing a discussion of the future of the novel through an analysis of contemporary cultural expressions is the problem of terminological rigor. Terms such as ‘the book,’ ‘the novel,’ ‘narrative’ and ‘network’ are highly contested within the relational sign systems of popular, conversational, and everyday discourse, and in academic discourse are often accompanied by qualifiers for analytical precision. Is an ebook a book? There can be little consensus on that point. Is a game a narrative? The question remains contentious among ludologists who study games, and narratologists who study digital culture. When we refer to “the novel” which novel are we referring to? Which nation, culture, period, or genre do we have in mind? Moretti (2005) identifies no less than forty-four British novelistic genres between 1740 and 1900.

Ultimately, what the novel designates in my discussion is a long work of prose narrative fiction. It is a work that is primarily textual, and created by an author who represents the final, discrete, literary work as a product of her creative labour. The network narratives I analyze are either highly multimediated, or collaboratively authored,

or possess distributed and emergent structures. In this sense, they are no longer novels; and yet, it is useful to think of them as new, though highly transfigured articulations of the cultural imperative to produce prose texts in which character, plot, and setting figure prominently. There can be no question, however, that terms such as “the novel,” “narrative,” “network,” and “the book” accrete a great deal of meaning, and that these meanings are contingent upon the historical, cultural, social, academic and disciplinary contexts in which they are used. It is precisely because these terms carry such fulsome and at times even conflicting connotative meanings that I do not impose a narrow denotative signification on them.

The complex signification of a term like “the book” is pointed out by James Carey (1984) in his essay “The Paradox of the Book.” The book, Carey notes, is in certain ways a cathexis for those who strongly associate the invention of printing with a rise in literacy, culture, progress, and civilization. Within such accounts:

The Book is . . . an homunculous, an inscription of the social order writ small, that condenses in an artifact a certain set of skills and ideals. The Book refers less to a manufactured object than to a canon: a selective tradition of the best that has been thought and written in the Western tradition. But it condenses, as well, certain skills and values: hieratic literacy, the ability to write, comment upon and interpret these texts in some depth; *homo litterratus*, a certain social type or figure of unquestioned rectitude and honor; and a certain way of life in which the intercourse with books connects to wider habits of feeling and conduct. (Carey, 1984, pp. 106-7)

If the significance of the book is linked at the same time to cultural traditions, to national identity (Anderson B. , 2006), to communication technologies and techniques, to models of

scholarship and pedagogy, to textual sociality, and even moral conduct, there must be a great deal of amplitude in the ways and means in which these aspects of the book may be reconfigured in response to digital network communication technologies. As Carey and other media ecologists understood, the collision of cultural forms of expression, modes of communication, and media formats generate recombinant forces that may depress, inhibit, or subsume some modes of cultural expression, but also transform, invigorate, rearticulate, and give rise to new forms of expression.

Cultural, technological, and medial changes are inevitable. But change alone does not imply the absolute loss of a cultural form, such as the novel, or its decisive displacement by another. The recombinatory power of media, culture and communication was also evident to systems theorist Niklas Luhmann. He argued:

The higher complexity of a new level of development makes it possible to reinvest the old with new meaning, as far as it lets itself be integrated. New technological achievements do not necessarily mean the forceful negation of older media, but rather their recombination. (as cited in Tabbi & Wutz, 1997, p. 9)

Like Luhmann, Carolyn Marvin (1988), noted the recombinant linkages and continuities between older and new media technologies. As she pointed out:

New media broadly understood to include the use of new communications technology for old or new purposes, new ways of using old technologies, and, in principle, all other possibilities for the exchange of social meaning, are always introduced into a pattern of tension created by the coexistence of old and new, which is far richer than any single medium that becomes a focus of interest because it is novel. (p. 8)

Prose narrative fiction is one of many spheres of cultural activity that is shaped by the medial, technological and cultural interdependencies noted by Carey, Luhmann and Marvin. Network narratives, I argue, are one exemplary cultural form that arises out of the pattern of tension between the expansive technological, cultural and social domain of print and the connected, emergent, distributed and multimedia environments enabled by vast networks of computers, people, and mobile devices.

The Future of the Novel and Electronic Literature

In light of the fact that questions of the literary are so often tied to the novel, this work is intended to reorient discussions of the future of the novel in at least three important ways – and to thereby challenge the novel’s centrality in public discourse as the cultural benchmark for prose narrative in the network media ecology. First, I uncouple the problem of the future of the novel from questions of literary value. Second, I shift emphasis from the cultural form of the novel to narrative as a more transmedial mode of cultural expression. Third, I emphasize the characteristics of networks over those of electronic or digital media. To begin with my work decouples the future of the novel from questions of the literary value or popularity of hypertext fiction and other narrative forms of electronic literature. The wider cultural capital of born-digital literature has been in some respects depressed by the relative invisibility of born-digital narrative fiction to mainstream audiences. This problem deserves some consideration. Few fictional prose narrative works of electronic literature, if any, have drawn the attention of, much less culturally influenced, a significantly large reading public. This condition is something that critics of electronic literature writing for mainstream print and online news media (Gallix, 2008)

have pointed to almost gleefully, in their dismissals of a still emerging field of creative literary practice². Responses to such arguments have maintained that the literary value of electronic literature is occluded by its physical, material, and formal instability relative to print literature and insisted that popularity is not a relevant measure of the value of an emergent literary field (Grigar, 2008). On the latter point, while popularity may not be a measure of literary value, following Bourdieu I would argue that popular fiction, like popular theatre, is as essential to a functional literary field as experimental narrative fiction and avant-garde theatre are (Bourdieu, 1993).

If electronic literature – or digital media generally – lacks a body of popular and accessible works, it calls into question the vitality and perhaps even the structural integrity of the sub-field of electronic literature within the larger literary field of cultural production. Rather than suggest that no popular electronic literature exists, or claim that its purported non-existence is unimportant, I look to an emerging body of works – network narratives as I refer to them – for evidence of literary practices and expressions that might fill this gap of the popular in the field of electronic literature. These network narratives, while quite different in theme and narrative structure, share important similarities. Each incorporates a feedback loop predicated on online participation, with user interactions enabled through everyday network communication practices. While works of electronic literature often employ experimental or aesthetically distinct user interfaces, network narratives employ modes of interaction that are familiar to network subjects through their use of Web-based

² Aspects of these criticisms sometimes arise in scholarship on the field of electronic literature as well. In a discussion of the growth of electronic literature as a community of practice, for instance, Scott Rettberg (2009) concedes that electronic literature may never gain a mass audience. Johanna Drucker (2009), on the other hand, celebrates the technological and aesthetic aspects of electronic literature while questioning whether the same works possess any independent literary value.

software and social media platforms, and this characteristic might prove crucial in growing the audience for electronic literature generally.

On one level then, my dissertation is a way of responding to criticisms of electronic literature as a field of cultural expression. I contest assertions that the limitations of literary expression putatively found in the field of electronic literature constitute evidence of fundamental limitations of digital media for literary expression generally. Any such arguments will invariably be fallacious – they argue a very large whole based on a very small part – and they indicate that expectations for literature in the network media ecology are disoriented. Looking solely at the field of electronic literature represents a narrow view of digital literary culture. For this reason, I extend the first line of argument, which I take up in the second chapter, to address broader frames of reference.

From the Novel to Narrative

The second reorientation is to shift focus from the media specificity of the novel to the transmedia storytelling apparatus of narrative. What might seem to be a merely terminological quibble is, in fact, a way of emphasizing a method of telling stories rather than a particular mode of cultural expression in which that storytelling method is instantiated. The novel is one of the forms that narrative expression takes, and while the novel has existed for a couple of centuries by most definitions and perhaps longer according to others, it remains one aspect of a much longer, transcultural narrative tradition (Scholes, Phelan, & Kellogg, 2006, p. 9). To place the novel at the epicenter of our understanding of the narrative tradition is to dissociate it from the narrative literature that

precedes it, and the narrative traditions that are still emerging and have yet to fully develop (Scholes et al., 2006, p. 8).

Accordingly, I insist that while prose narrative fictions created specifically for network environments share salient structural features and literary strategies with the novel, the ways in which network narratives depart from the novel are substantive enough to warrant a departure from the re-use of the term. The novel is a very particular form of prose narrative fiction that is arguably too closely tied to the print medium to remain useful for describing literary prose narrative expressions – in all their variety – that are born-networked. To call these works networked novels, or digital novels all but ensures they will be viewed as technological experiments that fall short of delivering the immersive literary experience one encounters in great novels.

The novel, in all its generic variety, being primarily textual, and consumed in codex form, supports extremely complex narrative structures, temporal involutions, and character focalizations. These aspects of the novel are skillfully interwoven over hundreds of pages of text but their complexities are counterbalanced by the familiar material features of the book – features that are invariably reproduced in ereaders and ebooks: the regularity of the page structure, one's ability to orient a sense of completion around the ratio of pages or chapters read to those not yet read, ability to mark pages and note page numbers and easily reread a prior passage, and so on. Many or even all of these characteristics are subverted in hypertext and interactive fictions, for example.

The features of the book and related print communication forms were, until relatively recently, encountered throughout everyday experiences of leisure, labour and domesticity. They were iterated and reiterated in fictional, non-fictional, and informational

resources such as almanacs, annuals, digests, directories, dictionaries, encyclopedias, newspapers, magazines, comic books, manuals, albums, newsletters, reports and circulars. Their formal characteristics helped inculcate students, citizens and workers into what Michel de Certeau (1984) refers to as the “scriptural economy,” a socioeconomic structuration in which reading and writing are systemic processes that strongly shape subject formation.

But if changes are underway in how people experience the world – in how we interact with each other, find, use, re-use, share, organize and participate in the production of cultural information – then I would contend that the everyday strategies and tactics that social groups develop for dealing and communicating with others must be visible to them in the cultural expressions they encounter if those modes of cultural expression are to remain societally meaningful. In part, this requires recognizing the ways in which narrative and information are inextricably joined as information and culture circulate through digital networks. Their co-constituting presence offers new opportunities for literary production from a formal and processual standpoint. The conjoined nature of information and narrative is the principal focus of chapter three, but is also taken back up in the case studies in which these interrelationships are evident.

Prose narrative is undoubtedly compatible with emerging technologies and practices. After all, a great many of them are fundamentally or primarily textual. As William Paulson (2001) has written, “[w]herever we find texts, readings, discourse, or linguistic structure serving as central preoccupations, controlling metaphors, or implicitly dominant models, we are (at least to some extent) in the presence of literary culture” (p. 5). Network communications are rife with textual expressions and practices, and text

permeates network communication technologies on a multiplicity of layers. From tweets and status updates to chat forums and instant messaging, text is everywhere in abundance. While much has been made of the rise of visual culture, the file names, directory structures, metadata, descriptions, and organizational logic of multimedia resources are partially, if not predominantly textual. The efficacy of search engines is largely predicated on the textual content and metadata of the resources accessible over the Internet, and the quality of search query results depends in part on the content being logically and semantically structured with text.

Beyond the omnipresence of textual information and communication, cultural expressions in narrative form are also widespread on the Internet. Personal blogs are fundamentally organized in a temporal sequence that often places a narrative structure around the events, thoughts, and matters of interest recounted by an individual. Sequences of Facebook posts (<http://www.facebook.com>), status updates and comments also evince a narrative structure, and provide the means to narrate the networked self. An intentional and incidental narrative logic informs how photos are uploaded and explicitly organized into albums or collections, or, by being date stamped and geo tagged, automatically added to a user's timeline. Video blogs and, sadly, the YouTube (<http://www.youtube.com>) suicide note videos of bullied teens demonstrate the narrative potential of short, publicly broadcast webcam and cell phone videos. There are the personal biographies of the digital storytelling genre, and collaborative fan fiction writing communities. Narrative expression is everywhere online, and while these narratives may not possess the temporal involutions, structural complexity, or linguistic artistry of a literary novel, they certainly do

demonstrate the compatibility of prose narrative with the network media environment of the Internet.

The production environments for creating video and multimedia resources for the Web are also frequently textual. The timeline layers in a Flash authoring file, for instance can be given numerical names, but since they are presented to the user as a layered sequence, there may be little use in numbering them. They are more likely to be named textually in a manner that conveys semantic meaning to the user, such as “sound” for a layer dedicated to the use of sounds, and “actions” for applying scripts in the native ActionScript language. The functions of the ActionScript language are themselves largely linguistic signs hierarchically organized into categories that are textually described. Video editing software similarly relies on text and textual shorthand for capturing and organizing video files. While it may be difficult to imagine a narrative comprised of such functional uses of text, code poetry is an example of literary expression that exploits computer programming functions and scripting languages.

Documents and multimedia resources displayed on the World Wide Web are also structurally and stylistically defined using pseudo languages such as the hypertext markup language (HTML) and Cascading Style Sheets (CSS) language for controlling the format and layout of Web pages. Every Web page is rendered by parsing linguistic HTML markup code such as <table> for tabular data, <cite> for a citation, <blockquote> for an indented quote and linguistic abbreviations such as for an unordered list, <div> for a logical division, or for an image. Attributes allow for the specification of alternative linguistic descriptions of non-textual elements like images. Style formatting is indicated with similarly linguistic code. A block element might be formatted using properties like

background-image, *border-color* and *border-width* and corresponding values such as *red* or *thick*.

The commenting code in HTML markup and CSS also enables programmers to leave explanatory notes that may be rendered in the source code but not displayed to the user or be hidden completely upon rendering the page in the case of PHP. The markup used to structure and format Web documents, and the programming code used to build applications are used for explicitly cultural purposes in emerging literary genres such as codework or code poetry. In *Lexia to Perplexia* (2006), originally published on the *Iowa Review Web*, Talan Memmott embeds literary content in the code layer of the work, but also deploys code within the multimedia content displayed to the user. *Lexia to Perplexia* demonstrates, quite masterfully, that markup codes, linguistic codes, and literary codes can be compellingly integrated for the purpose of cultural expression.

The linguistic substrate of the markup, style, and programming languages that underpin Web pages may serve a practical purpose for those who work with them and must recognize and employ them, but this pseudo linguistic content may also have cultural importance to readers and users as well. Current best practices for specifying the URLs (or uniform resource locators) used to surf to documents and resources on the Web for instance, are to ensure they are comprised at least in part by human readable semantic text, even if this URL is in fact a “slug” for a page identified numerically within a content management system or other Web application. Twitter tweets are short snippets of text supplemented with links to the Web, to photos, or to other users or topical hashtags. Discussion forums and comment threads are most often textual, with some usage of graphics and shorthand such as avatars, emoticons, and gif animations incorporated into

signatures. Facebook status updates and comments are textual, and much additional visual functionality is itself partially textual: Images are often tagged with the names of other Facebook users, and the ubiquitous blue thumb indicates that a user 'likes' something. In an era of omnipresent branding, the visual simplicity of the iconic Nike "Swoosh" is unlikely to appear in a television commercial without a textual hashtag, Facebook address, or short form URL.

These highly textual computer mediated practices are increasingly insinuated into everyday communications, and prose narrative arguably remains the predominant mode of textual cultural expression. It is therefore not surprising that there are already many fields of cultural expression in which the production, distribution and consumption of prose narrative is far more substantively integrated with computing technologies and practices. Some spheres of digital cultural production already have their own long and productive traditions – most notably the field of electronic literature. And yet even the most exemplary cultural works produced within the field of electronic literature have failed to achieve either the critical recognition or the consumption levels of their print counterparts and this warrants deeper investigation.

From Electronic Literature and Digital Fiction to Network Narrative

The third manner in which I reframe discussion of the future of the novel is to shift the terms of reference of the defining attribute from electronic or digital to the network. If we want to understand the future of the novel, it isn't being born electronic or digital that matters – virtually every printed book today is organized, written, edited, designed, typeset, printed, sold and distributed using digital technology. Rather, we need to carefully study

narrative works that are born networked, or, at the very least, born digital and designed to incorporate participatory processes that can only realistically be achieved at scale by being published to communication networks.

The need to reorient discussions of the future of the novel is in large part a response to the fact that the connection between contemporary, everyday network communication practices and prose narrative fiction is not yet clear, or well established. This is a gap in scholarship that my work contributes to correcting. As Michael Giesecke (2002) has argued:

If we grant the premise that urban-industrial culture is currently undergoing profound changes and that the term ‘information society’ brings to a point current developments in our culture—including a vision for the future—then we need to introduce new frameworks to describe not only the economy, but also science, literature, and practically all other cultural phenomena. (p. 11).

Developing methods for describing cultural phenomena at a macroanalytic scale is itself an important challenge, one taken up by digital humanists such as Franco Moretti (2005; 2013), Matthew L. Jockers (2013), and others. But analysis must at the same time be directed toward specific works in order to identify how literary expression is recalibrated and concretized within and for network environments. In part, this requires looking at the varied forms of textuality engendered by telecommunication networks and the Internet in order to recognize how these texts support narrative expression using distinctly different strategies and network architectures.

In chapter four I argue that network narratives are best understood in terms of their distributed, emergent, multimedia, and participatory characteristics. Individually, these

attributes problematize fundamental aspects of the novel as a cultural form – the textual stability of the readable cultural object, the role of authorship, the centrality of textuality and linguistic expression, and the ability to publish an authoritative and copyrightable text, and so on. My argument is not that such pressures on textual and cultural stability are new to digital networks, much less to the expression of literary culture in digital or electronic media, as opposed to print. These pressures are not particular to network environments and I do not wish to reanimate the hyperbole of early and “first-wave” hypertext theory (Bolter, 1991; Landow, 1997, 2006). However, when network narratives combine aspects of each of these characteristics the effects are compounded and combined; they reverberate through narrative and navigational structures and often recalibrate the circuits of literary production. Analyzing these mechanics, as I do, helps locate the literary within network communication and culture. It establishes literary expression as a cultural resource for network subjectivity and places the production of prose narrative fiction within a forward-leaning account of medial, technological and social change.

To return for a moment to the novel and its close association with the formal characteristics of the book, there is validity to the recurring refrain that “Nobody is going to sit down and read a novel on a twitchy little screen” (Proulx, 1994, para. 6). It is certainly true that few people are willing to read several hundred pages of sequentially ordered text in the form of a single Web page with a table of contents comprised of links to chapter headings (as is the case when reading the HTML versions of books at Project Gutenberg, for example). But by the same token, online publishing offers enormous potential for the integrated use of digital images, motion graphics, video, computational processing, and programmatically enabled participatory processes. While the field of electronic literature

has seen the creation of numerous such works, in a variety of genres, such as hypertext fiction, hypermedia fiction, interactive fiction, and Flash-based narrative, these works have not succeeded in winning a mass audience over, or capturing the novel reading public's imagination. There must surely be a way for the novel and online narrative culture to combine in hybrid prose narrative fictions that might flourish and support the wider appreciation of narrative developed for network computing environments. I argue that it is not only possible, it is occurring, in nascent works of network narrative.

To support this claim I offer detailed analyses of several works that fit this model in the fifth chapter in this dissertation. In the case studies and scalable readings that I develop, I examine the narrative and navigational structures, thematic content, and production circuits of these selected narrative works in order to demonstrate how distinct topological layers generate structural and thematic interdependencies. These interdependencies establish a topological ecology that is simultaneously derivative and constitutive of network communication protocols and practices. While some of these narratives may be less successful as literature due to their participatory production models, such as the Web-based Wiki novel experiment, *A Million Penguins* (2007), or much shorter due to the selected format such as the collaborative Twitter fiction *BurtonStory* (2010), or non-fictional in nature such as the interactive Web-based documentary *Out My Window* (2010), they nonetheless offer insights into how online prose narrative fictions might function more engagingly and successfully within the network media ecology than digitized novels. Unsuccessful collaborative models might be modified and refined for future projects; shorter formats might form episodic components of larger works; and successful documentary forms might be adapted for fictional narratives. Together, these projects

exhibit a range of strategies for designing, authoring and producing network narratives that might establish an audience for popular, born-networked prose narrative fiction. I discuss how these projects may be reconfigured or reimagined within the cases studies and scalable readings.

While certainly not a distinct or uniform genre, these works are representative of an emerging range of literary practices for creating prose narrative fiction in network environments. I argue that these emergent literary practices must be understood by analyzing their character networks, themes, narrative structures, navigational systems, and production models, and that doing so offers a significant opportunity to understand the future of prose narrative fiction.

Disciplinary Contexts

The lines of inquiry I pursue in this dissertation traverse disciplinary boundaries, scholarly fields and subfields. Scholars, theorists and cultural producers have probed the relationship between print communication technology and electronic, new or digital media with a nuanced, and at times even hopeful view of the potential for emergent forms of literary cultural expression. While my direct interest in prose narrative fiction native to digital network communication environments is more specific than the bulk of scholarship that precedes my research, my work constitutes an essential and necessary update to broader considerations of how the interface between literary culture and media reflects social, economic and technological relations. As a detailed, multi-layered account of how particular works of born-networked prose narrative are shaped to and by the contours of network communication, my work supplements and updates a variety of research domains

and expands critical frames of reference for understanding both contemporary media and contemporary cultural expressions and practices.

One area of research to which I contribute is book history, a field in which scholars working as humanists, historians, and bibliographers have leveraged their expertise with prior periods of social, economic and technological change relevant to the medium of print in order to better understand the current cultural and economic instability of the print medium and the book form. Recently, Piper (2012) has explored the differences between books and electronic media in terms of how they are used in everyday life, while Maxwell (2013) has argued that the formal characteristics of e-book technology are largely designed to perpetuate the economic positions of publishers and their competitors in the online marketplace. Before them, Ray Kurzweil (1992), Richard Lanham (1993), Geoffrey Nunberg (1993; 1996), Roger Chartier, (1995), Paul Duguid (1996), William Paulson (1997; 2001), James O'Donnell (1998), and Robert Darnton (2009) reflected on the future of the book and print, or of literature and the humanities as cultural phenomena. Each has offered historically, materially and technologically grounded insights into the changing conditions of writing, publishing, and reading with the rise of information and computing technology.

Some of the scholarship in this field is concerned with the societal dimensions of consumption and with reading as a socially and materially constitutive, co-constitutive, and re-constitutive practice (Garvey, 2003; Price, 2012). The commitment to historically and socially contextualize literary production and consumption under contemporary media change is an aspect of book history scholarship that I seek to incorporate into my analysis. Network narratives, by virtue of enabling and even fundamentally requiring additive

participation, are inherently social. However, while they may be uniquely social in technologically-facilitated participatory ways, we must remain cognizant of the fact that pre-electronic texts are also always social, and that practices of print consumption are inputs in a feedback loop of print production. Grounding an understanding of the sociality of electronic and networked texts in the forms of sociality that are already invoked by printed texts adds requisite precision to the analysis and tempers any claims of revolutionary technological change.

At the same time, book historians, by virtue of their disciplinary orientations, do not often offer detailed analyses or close readings of how literary works register the social and technological changes that are underway today. Research in book history tends to be informed by documentary and archival historical research into the social, political and economic activities of prominent publishers, authors, intellectuals and citizens across geographical regions. As a result, scholarship in this field on the future of the book tends to look through a similar lens. Questions of pedagogy, digitization, electronic distribution and the formal attributes of texts figure more prominently than well-developed case studies of literary works that invoke the everyday, participatory uses of networked communication technologies and thereby move more significantly beyond normative print and e-book publishing models.

Historically grounded probes into the future of the book have in turn stoked public discourse that is invigorated by a variety of authors and commentators (Birkerts, 2006; Gomez, 2008, Helprin, 2009; Martin & Magee, 2011) with differing perspectives on the deleterious effects of information and computing technology on what might generally be referred to as book culture. This discourse, while at times referring to particular cultural

works or creative practices, is also generally not directed at the themes or narratives developed in particular texts. Network sociality is an important consideration for authors and cultural producers moving forward. This dissertation emphasizes that network narratives are shaped by and to network sociality in a multiplicity of ways relating to character networks, themes, narrative structures, navigational architectures, and production models. To scholarship on the book then, broadly construed, I contribute what may best be described as a history of the contemporary future of the book as a form of networked cultural expression: an investigation, in other words, of how current literary practices point to future models of production that – however different – remain materially and structurally grounded in longstanding relations between communication media and cultural expression.

An additional field of scholarship in which the reciprocal relationships of influence between media forms and literary expression in distinct historical and contemporary cultures have been investigated is literary studies. Nancy Armstrong (1999), Maurice Samuels (2004), and David Trotter (2013) have explored how media and literary production are interconnected in photography and British realism, optical spectacle and the nineteenth century French novel, and communication technologies in British literature between the World Wars, respectively. Similar approaches are taken by Green (2005), Wutz (2009), and Punday (2012) to position contemporary and late postmodern novels within a shifting media ecology while a collection of essays edited by Joseph Tabbi and Michael Wutz (1997) explores the “material self-awareness” (p. 2) of modernist and post-modernist novels. These studies offer detailed interpretive readings of prose narrative works in which media-sensitive properties figure prominently. However, the novels that

underpin these studies remain, from a formal standpoint, print artifacts published in a fixed, final, and authoritative form. They may generate paratextual activity in the form of criticism and commentary, inspire derivative works and elicit intertextual references, but the novels themselves do not incorporate participatory contributions and the content will not evolve as the work circulates through communication networks. The network narratives I analyze, by contrast, incorporate participatory feedback loops that integrate user-generated content into the work where it is subsequently encountered by readers and contributors.

Attention is increasingly paid to literary works in which the influence of electronic media and computing technology is more pronounced than in postmodern novels. Straddling the fields of electronic literature and comparative media studies, N. Katherine Hayles (2002) employs the term “technotext” to describe a literary work that “interrogates the inscription technology that produces it” and that “mobilizes reflexive loops between its imaginative world and . . . material apparatus” (p. 25). Hayles subsequently elaborates on this reflexive loop as a process of “intermediation” (2008) and as the expression of “technogenesis” (2012), or the coevolution of humans and technology. None of the texts Hayles surveys is, however, born-networked in the sense that I use it. While the concepts Hayles develops may prove useful in analyzing network reflexivity, the close readings she provides do not describe reciprocal or reflexive loops with specifically network characteristics. Although some of the literary works she addresses are published online, and others are produced under collaborative conditions and output in fixed form to CD-ROM, none has a built-in participatory feedback loop enabled through the use of network communication technologies. The case studies I offer of network narrative are so highly

dependent on being produced, distributed and consumed via network communications that to produce them in printed form (while in some cases possible and even subsequently intended) flattens the social, networked conditions under which the works are created, redacts the material added through networked participation, or attenuates the multimedia aspects of the work.

Scholarship in the field of electronic literature – the study of literature that is born digital – is generally less comparative, and less assiduous in its focus on materiality than comparative media studies, although exceptions certainly exist. Early, or “first-wave” theorists of electronic literature (Bolter, 1991; Landow, 2006; Murray, 1997) often proffered claims for the revolutionary and destabilizing potential of electronic technology for models of authorship and linear narrative. Such claims were later derided or discredited (Aarseth, 1997, 2003a, 2003b) and in turn led to closer, more skillful analysis of the content and structure of works in various genres, including hypertext fiction (Ciccoricco, 2007), interactive fiction (Montfort, 2003), and electronic poetry (Morris & Swiss, 2006), as well as the elaboration of more detailed theories and typologies of literature and interactivity (Ryan M.-L. , 2001; Ryan M.-L. , 2006).

“Second-wave” literary criticism in the field of electronic literature (Van Looy & Baetens, 2003; Simanowski, 2007; Pressman, 2014) is characterized by closer readings that recognize the need to balance or supplement literary analysis with an examination of the digital materiality of electronic texts (Wardrip-Fruin, 2010; Ciccoricco, 2012). This entails a need to adapt methodologies to the study of digital fiction (Bell, Ensslin, & Rustad, 2014), and develop new approaches, such as the forensic material analysis of Matthew Kirschenbaum (2008), or to look at the field of electronic literature through a different

conceptual lens, for instance as a community of practice (Rettberg & Tomaszek, 2012a, 2012b). Interest in the procedural and programmatic aspects of electronic literature, and in the software platforms for which digital culture is created has also resulted in drift as scholars previously interested in electronic literature transition into game studies and peripheral fields of digital cultural expression (Wardrip-Fruin, 2009).

Within the shifting landscape of scholarship on electronic literature, network architectures have figured less prominently than might be supposed. Rettberg (2002) offers theoretical approaches to understanding the writing and reading of novels published over a network, while Walker (2005) investigates how narrative works are distributed over networks with respect to time, space, and authorship. Ciccoricco's (2007) insightful study of network fiction looks at a particular sub-genre of hypertext that he differentiates from axial and arborescent narrative structures (p. 5), and that the user interacts with in an interpretive and explorative manner, but does not contribute to (p. 27). Network communications and network culture have evolved considerably since these studies were undertaken, and communication and interaction via social networks has increased tremendously. In addition to extending the concepts introduced by Rettberg (2002), Walker (2005) and Ciccoricco (2007), my analysis is centred on recent works designed with more advanced software, greater multimedia capabilities, and greater capacities to incorporate participation: works that are designed for and exploit networked communications in different ways.

Narrative theorists have also taken a comparative, media-centric approach to clarifying how narrative structures are attuned to the affordances of different media forms including film (Chatman, 1980) and digital media (Ryan M.-L., 2006). Most significantly for

a discussion of network narrative, Ryan applies network topology to architectures that shape a work as text, as story, and as discourse (2006, pp. 97-107). The categories and combinations Ryan suggests are enormously useful for crystallizing how network structures may be manifest in different forms within the story, as the story is expressed as discourse, and in turn how that discourse is presented to the reader. At the same time, the ability to categorize narrative work has grown more complex as works are published through platforms that invite a range of participatory – and non-participatory – modes of engagement. Which category a user's interaction falls under is likely to vary depending on the user, or even as a particular user's interactions vary from one session to the next. This is where employing concepts from network topology descriptively rather than categorically, as I do, is useful, as networks are not necessarily uniformly structured or balanced.

Returning to the underlying focus on how network narratives are particular expressions of the interface between literary production and network communication technology, the reflexivity between media forms and cultural forms is also of interest to scholars in media studies and its many subfields such as media ecology, media history, media archaeology, convergence culture and transmedia. Media ecologists, archeologists, and theorists have sought to account for the relationship between various media over both long- and short-term periods of large-scale social and historical change, and these interests at times explicitly engage print media and literary culture.

In the earlier era of media ecology, Marshall McLuhan (1962/1969, 1964) probed the evolving relationships between film, radio, television, the cultural forms they give rise to, and the ways in which media change is manifest in the works of literary authors such as

James Joyce, Edgar Allan Poe, and others. McLuhan's contentious views on media environments have been extended, adapted, and contested in ensuing media scholarship. Like McLuhan, Walter Ong was interested in the media ecologies produced by changes in communication technologies and related shifts in cultural expression. Ong (1975) pointed out how conventional book publishing and print media often erode or even eradicate markers of orality, insisting that in the absence of a feedback loop between storyteller and reader within the telling of the tale, "the writer's audience is always a fiction." For Ong (1982) the immediacy and participatory aspects of oral cultures could be recuperated through the "secondary orality" enabled by electronic communication, something that is today evident in practices such as real time tweeting during live broadcast events, in the polling of viewers on the elimination of contestants in reality television programming and, in literary culture, social commenting upon and annotation of ebooks, online book reviews, and the expressions of fan fiction communities. Carey (1984) lucidly explores the "paradox of the book" - that its supersession by the computer and the computational processing of data were set in motion by the use of print media for gathering, recording, transmitting, and interpreting information as a support for the social, economic, and political administration of societies. Born-networked multimedia narratives are a contemporary example of how cultural forms of expression emerge out of the imbrications of media environments. Network narratives are predicated on prior cultural forms but at the same time make novel uses of emerging media technologies and the everyday practices they give rise to. They are contemporary instances of the simultaneous cultural negotiation of media paradigms that are in productive tension with one another.

The study of network narrative as multi-layered cultural expressions of network technologies and digital media also extends and amplifies concepts that elaborate on the fluidity between media forms and the cultural and informational flows this condition enables. “Remediation” (Bolter & Grusin, 1999), “intermediation” (Hayles, 2008), and “participatory culture” (Jenkins, 2006) are grounded in various approaches to media studies and they provide a lens through which network narratives may be viewed, and to which the elaboration of these mediated, network cultural forms contributes. Similarly, network narratives instantiate the cultural and formal heterogeneity of “mediation” (Couldry, 2008), the process through which communication and culture are shaped to and constrained by media properties (Couldry, 2008).

One sphere of cultural activity that is of particular interest in media studies is the rise of narrative expression in an overtly digitally mediated form. The term “digital storytelling” is occasionally used to describe any digitally mediated storytelling activities (Alexander, 2011). It also designates a particular genre of community-based, self-reflective non-fictional narration that is actively directed toward individual and collective identity formation (Lambert, 2013; Hartley & McWilliam, 2009). Typically characterized by memory-based reflection and the retelling of life experiences, “self-representational digital storytelling” (Lundby, 2008) is frequently facilitated through “co-creative, workshop-based practice” (McWilliam, 2009) that provides guided instruction in multimedia production practices to non-technical users. Digital storytelling differs from network narratives as a particular cultural form in several crucial ways. Digital storytelling is a non-fictional, reflective and often private and personal biographical representation of real events from the perspective of an individual with firsthand experience of them. Network narratives on

the other hand are fictional stories explicitly presented to a participatory audience and are often narrated from the perspective of multiple characters within the story world.

While one of the works I consider under the rubric of network narrative, *Out My Window* (Cizek, 2010), is non-fictional and employs digital storytelling techniques, my analysis considers the applicability of its narrative structure for works of prose narrative fiction. Digital storytelling, then, is not inherently incompatible with network narratives, as I conceive of them. But literature is more than story, and the story in digital storytelling is almost always a relatively brief, first person non-fiction narrative of a life experience, rather than a carefully crafted, linguistically artistic reimagining of the world in fictional terms. Digital storytelling is, intentionally, often not networked at all, but produced largely for the therapeutic effect of simply telling one's story, of giving voice to the voiceless, and may remain personal, and unpublished. This does not undermine its narrativity or its digital mediation, but it does suggest a dissonance between digital storytelling and digital literary production practices. Network narratives may evolve to take up and redeploy digital storytelling techniques for the production of prose narrative. However, digital storytelling is rooted in oral storytelling performance while literary production is rooted in textual stylistics; oral and textual storytelling practices are technologically mediated in distinct ways.

In German media theory, Friedrich Kittler (1999) has described the ways in which linguistic and other modes of cultural expression are enabled and constrained by technologies of transmission within specific media epochs. Bernhard Siegert (1999) has examined how the postal “epoch” informs the development of literature in the long 19th century. Within this German tradition of media theory scholars have investigated the

relationship of literary expression to electronic communication technology or digital media more specifically. Kittler (2002) argues that the alleged obsolescence of the book in the face of emerging video and computing technologies elides the intermedial flexibility of print and Michael Giesecke (2002) outlines a number of distinct ways in which the technical media used for communication in post-industrial society are linked to literary culture and scholarship.

While these approaches successfully elaborate on the “embeddedness of media systems within social or historical processes” their emphasis often remains on “media as pure formal devices” (Galloway, 2011, p. 380). In contrast, by developing multi-layered case studies of network narratives I analyze how media properties are deliberately invoked and actualized to shape the contours of particular prose narrative expressions as story and discourse, navigational structure, and through participatory circuits of literary production. The inherent sociality of the textual processes and intermedial dependencies that characterize network narratives are rendered visible in part through close readings that are not always compatible with the epochal scale of media archaeology. Network narratives are realized through participatory, technologically-mediated approaches to cultural expressivity, but by virtue of being embedded within and exploiting everyday digital communication practices, have implications for contemporary cultural expression in general. In that sense I undertake a media archaeology of the present that attends very closely to the material and topological properties of network communications, and reads them within cultural works.

Media studies, broadly construed, overlaps with research in communication and cultural studies, where the ideological implications of communication technologies for

cultural production and reception are foregrounded, as in critical theory, and Toronto school communications theorists, and these concerns may be focused on literary culture. The sociological dimensions of cultural production, including literary culture, are in turn studied within the social sciences alongside theories of network society and immaterial labour (Coté & Pybus, 2007), all of which may be brought to bear on how circuits of literary production change under the influence of digital media, information technology and the social and cultural practices to which they give rise.

Cultural and critical theorists who consider communication technologies often engage questions of literary form, and the production, distribution and consumption of literature. Walter Benjamin, in particular, was very prescient about the relationship between media technologies and cultural expression (1969b, 2008b), the attendant “recasting of literary forms” (2008a, p. 82) and the socially and technologically outmoded nature of well-established storytelling forms (1969a). My descriptions of network narratives emphasizes the ways in which they invoke and are invoked by network topologies and technologies that are in turn instantiated in social practices of communication. This line of inquiry is consistent with Benjamin’s cultural critique in that it recognizes how broader cultural and technological patterns of change are refracted in particular cultural forms and expressions.

Communication technologies exhibit a “pattern of tension created by the coexistence of old and new” (Marvin, 1988, p. 8). These tensions inspire and incite new responses from cultural producers; network narratives, situated at the interface between computers and reading and writing technologies, are but one literary example of cultural influences shaping cultural production in a cyclical process. In this way, network

narratives contribute to ongoing processes of negotiation in which reading habits, materials and the markets that shape them – while undeniably changing and shifting – are certainly not disappearing (Baron, 2009). Indeed, while less interested in emerging cultural forms than in evolving circuits of cultural production, Ted Striphas (2009) has documented how the production, distribution and consumption of books exhibit a transmedia dynamism in this “Late Age of Print.” Striphas notes how books and book culture have increasingly traversed media channels as they are featured in broadcast television book clubs such as Oprah Winfrey’s, or are adapted into movies, toys, video games and other consumer products. As in the case of the Harry Potter series, books may develop into truly global cultural phenomena and become socially embedded through electronic and digital media communication in a multiplicity of ways.

Striphas’s take on the contemporary book publishing industry, in other words, exemplifies the condition of “flow” that characterizes the contemporary global cultural industry, as media are converted into things, and things into media (Lash & Lury, 2007). The increasingly accelerated and unendingly transfigurative process of flow animates “cultures of circulation” (Lee & LiPuma, 2002; Straw, 2010) to which not only material and digital objects, but also interpersonal communications are subject. Network narratives differ from the global, transmedial circulation of books and print culture in that their structures, in whole or part, are inherently predicated on this circulatory flow and their multimedia narrative content often accretes through this process. Things that become media, while embedded within relational and cultural sign systems are discrete digital or material artifacts: they are books, articles of clothing, video games, and so on. Network narratives, on the other hand, are only experienced as discrete and bounded works – if at

all – through participatory feedback loops facilitated by online communities and social media platforms, such as Flickr (<http://www.flickr.com>), Twitter (<http://www.twitter.com>), and Google services (<http://www.google.com/about/products/>), and network software, such as wikis.

The flow that characterizes these cultural works is not a transformation from one cultural form to another, or of transliteration or adaptation but rather one in which the narrative trajectory of the work fundamentally requires informational and communicative exchange in the form of network participation. An active audience supplies content and resources necessary for the realization of the work: their creative production is not peripheral to a principal authoritative work, but rather an integral part of it. This condition is particularly pronounced in two of the case studies I consider in detail, *A Million Penguins* (Penguin Books, De Montfort University, 2007), and *BurtonStory* (2010), prose narrative fictions created using wiki software and Twitter respectively. Each of these works was seeded with a single phrase and generated thousands of participatory contributions. Their existence was entirely predicated on network interactions and user-generated content.

The participatory feedback and feedforward loops that characterize network narratives are dependent on both digital communication networks and computational processing. Through network communications, narrative works are able to incorporate asynchronous participation across a globally diffuse network of contributors. And it is only through the increasing availability and affordability of software systems and social media platforms that interactions are able to occur at such scales. Recognition of the particular network attributes of these narratives adds specificity to the study of cultural forms and production processes that are typical of network society (Castells, 1996; Barney, 2004),

network culture (Taylor, 2001; Terranova, 2004), and considerations of network protocols (Galloway & Thacker, 2007) while augmenting other perspectives on the influence of other computational processes, such as algorithms (Galloway, 2006) and database aesthetics (Manovich, 2001; Vesna, 2007) on cultural practices.

Network narratives are, I argue, an important emerging cultural form that exemplifies how the distributed informational networks and dynamic cultural production practices of contemporary western societies coalesce in particular expressions. These sociocultural expressions occupy an interstitial zone where media forms, communication technologies, and the social practices that animate them collide. For this reason, they are relevant to scholarship in a multiplicity of fields and subfields in which communication, cultural production, media, and textual and multimedia culture are an area of critical attention.

Discussion of Methodologies

Analyzing network narratives necessitates an interdisciplinary stance and a mixed methodological approach. In my analysis I draw on a set of complementary methodologies. In chapters two and three I syncretize work in neighbouring scholarly fields with a range of methodological approaches to the study of cultural expression. In the second chapter I draw on communications, media history, book history, bibliographic studies, and literary studies in order to offer a theoretical, yet empirically grounded analysis of how media are adapted to the social and cultural uses that are made of them, and cultural expressions are shaped by the attributes of the media through which they are expressed. This relationship differs over time, between cultural geographies, and among communities of practice. As a

consequence, literary forms and expressions must be recognized as partially contingent on and constrained by media, but also adaptable to them; network narratives are a contemporary instance of this medial and cultural circuit.

Network narratives, positioned within and reliant upon communities, platforms, and software designed for the exchange of information, act as levers between narrative and database, and between stories and information – forms of expression often considered distinct. Using semiotics and narratology, in chapter three I offer a “form-sensitive reading” (Gaonkar & Povinelli, 2003, p. 380) of various ways in which narrative and information collide, intersect, and fuse as they circulate within global communication networks. I heed Gaonkar and Povinelli’s call to “foreground the social life of the form rather than reading social life off of it” and to focus on “circulation and transfiguration, rather than meaning and translation” (Gaonkar & Povinelli, 2003, p. 387). Information surfaces and circulates in social and political contexts. Facts are often narrated into existence, while informational resources provide scaffolding over which fiction and fabulation are shaped. Recognizing this reciprocal dynamic is essential to understanding how network narratives function in a circulatory manner within the network media ecology.

In chapters four and five I employ a mixed methodology to produce a multi-layered analysis. I use narratology to explore how the narrative structure of a work informs and is informed by the navigational structure and the architectures through which participation is incorporated into the production of the work. Concepts derived from network analysis aid in the description of the network topologies that tie distinct structural layers and production circuits together. Narratology and network analysis are in turn complemented by close readings that discern how story and discourse are shaped to and by the network

structures present within distinct topological strata. This approach is necessary in order to identify the affordances and constraints that arise in creating and distributing a participatory work of prose narrative on an online network. Characteristics of the narrative's network structure, for instance, may not be present in the navigational network structure and yet these differences may require one another in order to accommodate participatory production circuits.

The method of analysis I employ responds to calls across electronic literature, media studies, and the digital humanities for methods that traverse media formats, and are applicable at multiple levels and layers of analysis. In media studies, Michael Giesecke (2002), for instance, advocates for “approaching the complexity of cultural processes (which take place in numerous media and on numerous levels concurrently) from the perspective of multiple description . . . through various practices of description that complement and presuppose one another” (p. 15). Literary scholar Franco Moretti (2005, 2013) and his “distant reading” approach to large-scale data sets of literary works, and digital humanist Matthew L. Jockers (2013) and his macroanalytic approach make it possible to conduct literary analysis at a large scale. Their approaches have been met by digital humanists Seth Denbo and Neil Fraistat (2011) who encourage “scalable readings” in which scholars move between distant, abstracted views of large corpora and the singular texts of which the corpora are comprised. Alan Liu (2011) also explores the efficacy of combining close and distant reading approaches, while N. Katherine Hayles (2012) encourages the blending of somewhat different “close, hyper, and machine” reading techniques.

As digital media enter into the study of literary works, the key challenge, as Roberto Simanowski (2010) notes, is to strike a balance between the generalities of taxonomies, categories, and formalism and the specificities of works that are revealed through close readings. In analyzing digital literature, he argues, it is imperative not to treat a work as “an object of technology rather than as an act of creative expression” (2010, p. 19). Methodological challenges have also been noted by Bell, Ensslin and Rustad (2014) who assert that “while authors have been experimenting with different modes and media, creating different structures and forms, and writing in different genres and styles, the scholarship surrounding digital fiction hasn't yet caught up” (p. 3), and that consequently, “methodologies for the media-specific study of digital fiction” (p. 7) are needed.

Recognizing and analyzing distinct network topologies encountered in traversing the technological and structural layers present in works of digital fiction supports both closer and more distant readings, and in so doing, greatly clarifies how these works exploit the network media ecology. In this respect I also establish a model for analyzing additive participation which I define as participation that modifies a work as experienced by subsequent readers. In the study of digital literature, participation has thus far been subordinated to authorial intention, which is manifest in the attention paid to programmatic functions and procedures that define how users interact with a work, and that often constrain users to a much greater extent than in print.

Much less attention has been paid to how audiences respond to a work, how readers are invited to contribute to a work, or how user-generated content is necessary for the creation of network narratives. James Pope (2010) has studied reader interactions with digital literature; however the works upon which his study is based do not incorporate

participatory feedback loops. Page and Thomas (2011) have noted that as audiences interact with texts together in a processual, collaborative manner, new approaches are needed for understanding these processes. As they point out: “Analysts of digital storytelling need to develop ways of understanding the ongoing, process centered nature of storytelling within ... online interactions and also the genres thereby created and contested” (p. 13). This need is growing as works are designed to incorporate participatory models enabled through social media, collaborative software, and online communities.

Summary

In the contemporary digital and network media ecology, literary production practices and reading habits straddle the putative divide between print and digital technology. Steve Jobs claimed that people don’t read anymore, but we may read more than ever – if we allow the concept of reading to accommodate practices of scanning, reviewing, browsing, skimming, analyzing, searching and otherwise processing texts in the manner that Hayles (2012) refers to as hyper and machine reading. Given the number of emails, text messages, status updates, image captions, RSS headlines, tweets, Web pages, and comment threads processed in the digital everyday, our experience of the world is arguably more textually mediated than ever. In light of the proliferation of digital textuality and the ubiquity of inexpensive printing technologies and services, pronouncements of the death of books, print, the novel, or literacy are fraught with contradiction.

What remains unclear, and of vital importance to the problem of the future of the novel, is whether authors of prose narrative fictions are capable of developing new forms out of network communication technologies and practices rather than adapting print-based

technologies and practices to them. A suitable response to the problem, as I have outlined it, should take into account a range of disciplinary perspectives and current scholarship in diverse fields, including narrative theory, network analysis, literary studies and electronic literature, various strands of media studies, communication and culture, and the sociology of cultural production. The following pages develop a new approach to studying digital literature that reveals how born-networked narratives exploit the network media ecology in ways that are consistent with the reciprocity between media forms and literary culture. They explore one of the many possible futures of the novel – prose narrative fiction that is rooted in the everyday communication practices, production circuits, and cultural flows of network societies.

Chapter Two: Literature and Digital Media

The characteristics and attributes of media forms inherently impinge on and influence cultural expression in a continuously occurring and recurring process. It is essential to recognize this fact when inquiring into emerging, born-networked literary forms and expressions. Print media and electronic media, books and ebooks, novels and network narratives are not as independent, from a formal standpoint, as might be presumed by those who fear the demise of literary culture with the rise of electronic and network media. In this chapter I provide a wide-ranging overview of how literary expression and media forms interact over time with particular emphasis on the novel and prose narrative. I explore this process of interaction as it arises in contemporary literary culture and as reflected in contemporaneous literary production practices. I argue that the persistence and vitality of the relationship between media and literary culture suggests an enduring ability for literature and prose narrative fiction to adapt to networked media, emerging communication technologies, and the social practices that they give rise to. Network narratives constitute a particularly interesting and current example in which digital network communications permit the integration of participatory feedback loops within the narrative, extensive use of multimedia, and exhibit distributed and emergent structural characteristics that accommodate user-generated content.

Media archaeologists (Kittler, 1999; Siegert, 1999) have extensively documented and theorized how media may have a determinative effect on cultural expression. Cultural practices also influence media forms by realizing, and reinforcing their ability to serve specific purposes framed by particular social contexts (Parikka, 2012). These contexts are

situated within social assemblages that function at various societal scales such as the family, the community, the workplace, educational institutions, or the nation. Media are “constructed complexes of habits, beliefs, and procedures embedded in elaborate cultural codes of communication” (Marvin, 1988, p. 8). Media and culture are shaped by a reciprocal process in which the capabilities and affordances of media forms influence how people communicate and express themselves culturally, while the uses made (or not made) with communication technologies in turn influence whether and how technologies are subsequently enhanced, recalibrated, marketed and made available to publics.

Advances in communication technologies such as movable type, offset printing, the typewriter, and desktop publishing often extend, reinvent, or recalibrate the technologies that precede them. These technologies overlap, coincide, and coexist in real world usage. Their imbrications result in shifting relationships of influence between media and communication technologies, and the characteristics of newer media and technology often enhance, retrieve, reverse into, and obsolesce their antecedents (McLuhan & McLuhan, 1988, p. 129). No cultural form exists wholly or discretely within a single medium. The novel is a “technology-dependent genre” (Baron, 2009, p. 138), and individual expressions of that genre invariably bear markers of “material self-awareness” (Tabbi & Wutz, 1997, p. 2) and may allude to different aspects of the media ecology in which they participate. As Winthrop-Young and Donatelli (1995) argue:

The idea of leaving one communication technology behind in favor of another fails to account for intermediality as the condition of media ecologies over time: the use of speech in cultures with writing, the continuing production of handwritten documents in the 'age of print,' the orality of the telephone and the radio as well as

the 'secondary orality' of television, the simulation of a typewriter by word-processing programs. (p. xviii)

The condition of intermediality that is articulated in literary and narrative expressions is also evident in how audio and video recording, telephone and cellular telecommunications, and printing technologies are configured and employed. Cell phones are often set to remediate the classic analog and touchtone ring tones of earlier telephones even though they are not limited by the constraints of a mechanical ringer, electronic pulse or tone. Digital music files are redundantly organized into albums and accompanied by album art, adding new semantic meaning to a term that also denotes a collection of photographs, newspaper clippings or ephemera, a book containing the signatures or comments of attendees at a building or event, and has even denoted a roman tablet inscribed with information of public interest (“album, n.2,”). Digital video-editing controls mimic the familiar knobs, dials, scrubbing wheels and film-splicing techniques of analog editing suites. Streaming audio stations accessed through the Internet via websites, mobile devices, and digital media applications such as iTunes, while not transmitted via radio waves, are still modeled after the medium of radio. Ebook and ereader user interfaces often provide “bookmark”, “bookshelf”, and “page-turning” features.

The process of creating, producing and distributing cultural works often employs both analog and digital media. Cinematographers capture footage to film with the express aim of editing it digitally and enhancing it with computer-generated graphics. Music is created out of digital recordings of analog instruments and subsequently published and distributed using both analog (the long play record) and digital means (compact disc, MP3 file) over digital communication networks (the Internet). Recording engineers rely on

Auto-Tune pitch correction technology to improve a vocal performance, while photographers use digital photo enhancement – sometimes controversially – to modify or composite several images into one superior composition. Artistic and creative production practices, in other words, though materially fixing a work through analog means, still anticipate subsequent use of digital production techniques to alter the original recording.

As the characteristics and creative potential of different media are realized in artistic practice, new, hybridized cultural forms emerge. Dub, a subgenre of reggae, for instance, developed out of record producers' experiments with mixers and dubbing equipment to create new versions of songs out of existing recordings. The accessibility of electronic recording technology aided the development of hip-hop's signature sampling practices. Media and cultural forms are also, in turn, hybridized through production practices. Responding directly to the affordances of technological change, artists, writers and creators experiment and combine media to produce unique and innovative cultural expressions and even, at times, inspire new genres. Cinematic works blend together music, audio textures, photographs, animation and motion graphics, and excerpts of radio and television broadcasts. Novelists may incorporate photographs and illustrations into their work, and depict letters and other means of communication in a realist manner.

And yet, in certain spheres of public discourse, when discussion turns to books and literature there is a persistent temptation to draw a sharp distinction between print and digital media. Literature is often located on one side of the divide as if to insulate literary culture from the impurities of popular culture and audiovisual media. Mark Helprin (2009), for instance, considers literature and digital media to be diametrically opposed in a confrontation that pits "human nature versus that of the machine" (p. xii). His invective

challenges the “incontrovertible desire to replace books with ‘media’” (Helprin, 2009, p. 17) by positioning writing, literacy, and literature on one side of a civilization versus barbarism divide, and digital culture and practices on the other. To Sven Birkerts (2006), reading and literacy are all but lost to the distractions of gadgets, games and electronic media. His contentions are so resolute that in a new afterword to the original text, Birkerts characterizes his key concerns as an oppositional contest, and the book as “the site of the struggle...between two opposing forces . . . clearly lined up against each other” (Birkerts, 2006, pp. 249-250).

Oppositional views also pit printed against electronic books. Writing in *The New York Times*, Helena Mulherns (2011) summarized this discourse: “The current debate is whether the availability of the electronic book format will ‘kill the book’ and change how humans read or whether it will turn out to be a complement to traditional book publishing and allow for new departures for writers and readers” (p. 2). In this discourse, even the possibility of a complementary relationship between print and digital media rests with the ebook – on the digital reformulation of the book form. More substantive hybridizations of the book form (electronic or printed) are omitted from consideration, along with cultural forms specific to the book (such as the novel), and natively-digital forms of communication and culture.

New approaches to imagining the perimeters of literature and electronic and digital media are needed. For William Paulson (2001), the imperative to transfigure the humanities demands a strategic and formulated response from humanists. The “technological turn away from print and toward electronic textuality” requires sustained and concerted effort to co-opt or redeploy the “technological challenges to the continuation

of literary culture” (Paulson, 2001, p. 8). Here literature, and by extension, the novel, are presented as stable abstractions rather than cultural forms and traditions that have already been shaped through their encounters with a variety of communication technologies, media expressions, and social practices. In asserting, for instance, that “new electronic technologies, if they are not taken as *The End of the Book*, can help print and literature overcome some of their own most dubious features” (2001, p. 160), Paulson presents a view in which print and literature will be electrified or multimediated – that is, that well-established forms will remain the primary vehicles for modes of cultural expression. Instead, I would argue, it is the modes of cultural expression – such as prose narrative fiction – that are emerging out of digital media and network communication technologies in new forms – such as network narratives – that are acutely deserving of our attention.

The publishing and bookselling industries, to be fair, have embraced strategies of transmediation. Ted Striphas (2009) closely attends to “the contours of the late age of print” (p. 5) and “the enduring role of books in shaping habits of thought, conduct, and expression” (p. 3) in the contemporary world. He is concerned with how printed cultural works increasingly circulate materially through distribution networks, and immaterially through communication channels, and how this process of circulation has been reconfigured in response to newer technologies. However his investigation is directed toward printed matter and its production, circulation and distribution, offering thoughtful analyses of “browsing around a large retail bookstore; selling books online; scanning a book’s bar code at the checkout counter; reading and discussing a popular work with a group; waiting in a line to buy a hotly anticipated bestseller; and creating spinoffs based on popular literary characters” (Striphas, 2009, p. 5). Book culture may very well be alive and

well, and ebooks and printed books may fruitfully coexist for a long time, but these kinds of adaptations to the contemporary media ecology are still anchored predominantly to modalities of print rather than to digital network communications.

One field of cultural production in which born-digital literary works and practices thrive is the field of electronic literature. It encompasses a diversity of genres, including hypertext and hypermedia fiction, interactive fiction, kinetic and electronic poetry, and various digital forms of textual expression that defy easy categorization. These works are a testament to the ongoing reciprocity between literature and communication media, as each work of electronic literature is an artifactual expression of attempts to expand the nature and scope of literary textuality through innovative and experimental uses of electronic technologies. Arguably too experimental, avant-garde, abstruse or opaque for popular consumption, electronic literature is certainly not supported by the large readerships that facilitated the rise of the novel.

Literary and multimedia cultural practices are nonetheless constantly emerging in response to changes in contemporary media ecologies. Prose narrative works are increasingly designed to exist within or otherwise make use of social media, online resource sharing, and multimedia production. They integrate participatory feedback loops that allow users and readers to generate and contribute content to the work, and these works require networked computers or mobile devices in order to be accessed. I provide a detailed analysis of the characteristics of these network narratives in chapter four, and conduct close readings and case studies of several examples in chapter five. Network narratives contest the notion of a deep-seated incompatibility between literary expression and digital media. They are examples of how the challenge to reimagine literature is being

met, and the place of born-digital and born-networked prose narrative is being established within global culture. Narrative traditions and media technologies have continuously evolved. This mutually constituting relationship has positive implications for the future of literary expression in digital media and network communications.

The continuous cross-pollination of literature and media begins well before the rise of digital communication technologies. As I argue in the subsequent section, this assertion is supported by research on the narratives of oral and early scribal cultures, in theories of the origin and development of the novel, and by scholarship on the formation and function of reading publics. I then review theoretical perspectives on the process of remediation and media recursion through which successive and contemporaneous media forms are linked in relations of imitation, obsolescence, and supercession. The continuities and mutually constituting nature of literature and digital media in particular are, in turn, revealed in specific cultural works analyzed by theorists of digital culture and electronic literature. In drawing these varying strands of scholarship together, I lay the groundwork for subsequent discussion of the dynamic between prose narrative and network communications technologies, and between narrative and information.

Oral Narratives and Communication Media

Not only are literature and media fundamentally interconnected, they are already intertwined in some of the earliest forms of literature, as oral cultural forms are modified by and for people who possessed the communication technologies of writing. Both the form and content of epic narrative poetry, for example, were shaped to – and by – the oral imagination. As Walter J. Ong (1982), building on the research of Milman Parry, has

persuasively shown, the “psychodynamics” of orality are evident in works such as Homer’s *Iliad* and *Odyssey* – texts that were often assumed to be fixed in writing by Homer due to the difficulty of memorizing works of their length without written aids. However, Milman Parry’s work indicates that, in Ong’s words, “virtually every distinctive feature of Homeric poetry is due to the economy enforced on it by oral methods of composition” (1982, p. 21). These identifying characteristics include a deep reliance on mnemonic devices and formulae that aid oral recitation and now seem archaic to a reader accustomed to the later conventions of the novel.

The Homeric bard relied on a variety of mnemonic strategies in order to commit lengthy works to memory and then recite them, including:

“heavily rhythmic, balanced patterns in repetitions or antitheses, in alliterations, in standard thematic settings (the assembly, the meal, the duel, the hero’s ‘helper’, and so on), in proverbs which are constantly heard by everyone so that they come to mind readily and which themselves are patterned for retention and ready recall” (Ong, 1982, p. 34).

As Ong asserts, “[i]n an oral culture, experience is intellectualized mnemonically” (1982, p. 36). The *Odyssey*, for example, employs the epithetic formulae “wise Nestor” and “clever Odysseus” (Ong, 1982, p. 39) and compositional strategies of redundancy and copiousness (Ong, 1982, pp. 39-41) in order to reinforce character types and events for listeners as opposed to readers. Moreover, these devices lent themselves not only to memorization by the reciter, but also recognition and recollection by the listener, as well as ready and situational composition in “hexameterized phrases” (Ong, 1982, p. 58). Milman Parry points out, as an example, that the phrase “there spoke up clever Odysseus” or “there spoke

out clever Odysseus” appears 72 times in the Homeric poems in part because the epithet “clever” or *polymētis* in the Greek, lent itself well to the meter of the epic narrative poem (Ong, 1982, pp. 58-9).

With respect to narrative structure in particular, oral cultures do not employ the climactic and linear plot structures associated with Aristotelian poetics or Freytag’s pyramid, according to Ong, and instead begin where the action is and build outward temporally using an episodic structure to fill in the plot (1982, pp. 142-144). As Ong explains:

In fact an oral culture has no experience of a lengthy, epic-size or novel-size climactic linear plot. It cannot organize even shorter narrative in the studious, relentless, climactic way that readers of literature for the past 200 years have learned more and more to expect – and in recent decades, self-consciously to depreciate. (1982, p. 143)

In short, just about every aspect of the Homeric poem is derived from, or developed as a response to material conditions that inform the relationship between reciter, composition, and audience.

Jack Goody (2006), it should be noted, has more recently contested the thesis that the epic form is specifically or definitively pre-literate, pointing to research that finds the epic absent in purely oral cultures with no writing technologies whatsoever. Nonetheless, whether the Homeric epic is pre-literate or early-literate, it clearly bears the structural and mnemonic markers of the oral cultures from which it emerges. Indeed, Goody’s views suggest that the Homeric epic develops out of a trilateral relationship between the cultural form, and the technologies of oral and written communication. This early relationship is

instructive, as similar dependencies and relations exist between more recent cultural forms – including the novel – and the media and materials that they are inscribed on or communicated through.

Communication Media and the Novel

The novel occupies a privileged space within Western culture. Like the Homeric poem centuries before it, the novel in many respects emerges out of fundamental interrelationships between the form and content of prose narrative on the one hand, and prevailing social practices and communication technologies on the other, and it evolves continuously under the changing pressures and flows between these imperatives. Formally, the novel has evolved in an appropriative and opportunistic manner with respect to the forms of communication and cultural expression that predominate, as authors draw for material and inspiration from the social and technological relations in which they participate. These relations between communication and culture are generally recognized by scholars working on the novel as a cultural form, regardless of how they situate the novel's emergence within various national literatures.

Echoing Margaret Anne Doody (1996), who has “called the bluff of the English origination of the novel,” (as cited in Resina, 2006, p. 292) Joan Ramon Resina (2006) disputes the exclusion of *Don Quixote* (1605) from accounts of the rise of the novel – whether such narratives represent the novel as exclusively British, as in the case of Ian Watt's seminal work, *The Rise of the Novel* (1957), or “internationalized” in versions of Watt's thesis that incorporate cross-cultural exchange between England and France (Resina, 2006, p. 292). *Don Quixote*, Resina notes, is “a formidable catalogue of

entertainment literature [that] draws not only from chivalry books, but also from ballads, pastoral novels, Moorish romances, pilgrimage tales, proverbs, and folklore” (2006, p. 293). The cultural bricolage employed by Cervantes is crucial to his ability to produce a “reality effect” (Resina, 2006, p. 293) in which “the quotidian displaces the miraculous” (Resina, 2006, p. 295). This foregrounding of the everyday, Franco Moretti (1998) concurs, is essential to the novel:

The wonder of the open sea, with its extraordinary adventures, is replaced by a slow and regular process; daily, tiresome, often banal. *But such is precisely the secret of the modern novel* (of ‘realism,’ if you wish): modest episodes, with a limited narrative value – and yet, never without *some* kind of value. (as cited in Resina, 2006, p. 295)

If the novel, monolithically considered, is characterized by attention to the everyday, one of the key literary strategies for realist depiction of the everyday is the incorporation of contemporaneous cultural forms and communication practices.

Similar observations are made by Cathy Davidson in *Revolution and the Word: The Rise of the Novel in America* (1986). Beginning in the eighteenth century, she points out, the early American novel was “formalistically, voracious” (1986, p. 13) and incorporated elements of “travel, captivity, and military narratives; political and religious tracts; advice books, chapbooks, penny histories, and almanacs” as well as “drama (in its dialogic moments) and even (in its epigraphs and endings) poetry” (1986, pp. 13-14). The novel also borrowed elements from nonliterary forms including diaries, “oral forms of culture such as local gossip, rumor, hearsay [and] folktales” (Davidson, 1986, p. 14). Perhaps the best example of this formal opportunism is the epistolary form, with its heavy reliance on

letters. As Davidson notes, “one third of the novels written in America before 1820 were epistolary” (1986, p. 14). The influence of diaries and letter writing on the novel indicates that a cultural form – the novel – associated with a specific communication medium – print – and a particular form of communication – the book – draws from, represents, and is in dialog with the materials, forms and practices of chirographic communication.

Interactions of this kind are typical of the early American novel. The novel is also deeply imbricated with the social practice and performance of literacy as both an institutional and ideological objective and as an informal program of individual betterment. From the late eighteenth century to the early nineteenth century depictions of (and arguments for improving) education and instruction were virtually ubiquitous in both the American (Davidson, 1986, p. 66) and the British novel (Watt, 1957, pp. 40-45). Literary representations of educated citizens sustained a circuit of moral edification in which readers perceived characters as prescriptive role models for well-educated individuals; readers often sought to improve themselves in that image. Epistolary novels, for instance depicted “patterns of discourse” and assured female readers that “an unblemished prose style was as proper to a would-be heroine as a spotless reputation or a winsome smile” (Davidson, 1986, p. 73). By developing reading and writing skills, moreover, readers in turn fed a growing market for novels.

During this period of the American novel’s development, programs of education generated pronounced concern. This, Davidson notes, was typified by “educational reformers [who] insisted not on the value of passively learning to spell and pronounce but on the need for the *active* production of meaning both in the free play of the mind that comes from reading imaginative literature and in the active production of meaning that

arises from writing out one's own thoughts" (1986, p. 68). Many readers consumed novels together with self-improvement books that encouraged the active production of texts such as unsolicited reviews or letters to newspaper editors, basic legal documents, the copying by hand (for general improvement) of material that had been read, and, of course, letter writing (Davidson, 1986, p. 69). Ultimately, the novel "was contiguous with other literary forms, was intertwined with the social and political concerns of the day, and was part of the activities of the reader's life" (1986, p. 70).

In addition to being bound up with literary and non-literary forms of culture and communication, novels also function as lenses through which history is viewed, transcribed, and in some sense made real. Novels are in dialog with competing and complementary forms of depicting history that inflect the experience of everyday life for reading publics. As Maurice Samuels (2004) argues in his study of Stendahl and Balzac, "[s]cholars have long seen the presence of the past in the fiction of both authors [as] the key to their Realist style" (p. 234). The nineteenth century tendency to romanticize history visually, to communicate particular historical narratives to the public illusorily through panoramas, dioramas, wax displays, and phantasmagorias was also realized in the dominant dramatic genres of the time and in less cosmopolitan cultural forms such as oral histories, books, and prints (Samuels, 2004, p. 236). *Le rouge et le noir* (1830), Samuels notes, "provides a catalog of these historical sources [and] a proliferation of Napoleonic representations" (2004, p. 236). What Samuels shows is that Stendahl's *Le rouge et le noir* confronts the production of spectacular history in the nineteenth century in a number of ways. The actions and perceptions of reality held by Julien and other characters are contorted by their

obsessions with illusory visual representations of the past, of right conduct, and of moral character.

Romantic historical dramas are conspicuously incorporated into the story; they appear as cultural expressions consumed contemporaneously within the time frame that Stendahl's novel both depicts and was published in. Romantic historical dramas also represent a mode of culturally constituting the past that the author rejects as being illusory, and that the text as a whole contests. As Samuels writes:

The invocation of . . . popular theatrical productions does more, however, than anchor Stendahl's text in the cultural calendar of the time or provide it with the trappings of contemporaneity; it provides a vital intertextual connection between the novel and the new modes of spectacular representation that dominated the popular historical imagination in 1830. [T]he characters in *Le rouge et le noir* structure their relation to the past according to the Romantic theatrical model, whereas the novel itself structures its own relation to the past *against* this model. (2004, p. 240)

Here again we see a novelist grappling, in the realist manner, with ways of being in the world that are unavoidably mediated through the communication technologies and practices of the day. These mediations permeate the social practices depicted, and they invariably punctuate the form and structure of the work.

Social Mediations of the Novel

The novel is closely tied to social practices that are simultaneously predicated on and constitutive of print culture. It acts as a vehicle for the inscription and incitement of

social values, and functions as a potent source of social meaning (Lynch & Warner, 1996). The cultural institutions of the novel and the social practices that animate them are so closely tied that, as Clifford Siskin (1996) has argued, the novel is often conflated with writing itself (p. 423). Today the cultural institutions of the novel legitimates the study of national literatures, underpins the historical formation of university departments, and in that sense shapes the contours of disciplinarity (Siskin, 1996, pp. 425-6). Novels bind communities of readers through shared symbolic resources and, as cultural expressions, contribute to the formation of what Benedict Anderson (2006), historian and theorist of nationalism, terms “imagined communities.” For Anderson, the technologies of print capitalism underpin collective, nationalistic identity formation among distributed communities. Historically, the commercial exigencies of book publishing necessitate the standardization of language and consolidate dialects into “higher” shared vernaculars. These processes contribute to the fixation of language and the cultural unification of previously disparate and relatively disconnected communities (Anderson B. , 2006, pp. 44-5).

The novel, and other literary forms help foster these “imagined communities” through their inclusion in educational programs or other modes of broad dissemination. These works thus become a common point of cultural reference in imagining the nation. Cervantes’s *Don Quixote* (1605), for example, is inextricable from Spanish national identity. Sarmiento’s *Facundo: Civilization and Barbarism* (1845) and Hernandez’ *Martín Fierro* (1872) are essential to the character of the Argentine people. Literature is fundamental to the ways that citizens of many nations historicize and imagine themselves as sharing a common sociocultural identity.

Importantly, novels – like newspapers and other modes of cultural exchange predicated on print media – depend on more than “just” a literate public of potential readers or consumers. Further conditions for a novel-reading public include the proliferation of reading and writing throughout everyday life – in what Clifford Siskin (1996) describes as “novelism.” For Siskin, novelism denotes a discursive field in which the tensions and pulsions between reading, writing and the novel are negotiated without subordinating communication practices to the form of the novel, or by explicating these communication practices primarily as a condition *for* the rise of the novel as a cultural form.

With the term novelism, Siskin challenges the “developmental narrative” implied by positing the “rise” of the novel out of changing patterns of access to technology and increasing levels of literacy. He contests the idea that the emergence of the novel should be considered a cultural outcome of greater importance than the explosion in writing practices (Siskin, 1996, p. 437). He insists instead on recognizing a more complex ecology that binds together communication media, cultural forms and social practices. Siskin foregrounds the technologies of writing that became more widely available, and emphasizes the integration of writing as a social practice of textual production realized not solely in the growth of the novel, but also increased expression in other less overtly cultural forms including legal contracts, accounting ledgers, and exams (1996, p. 426).

The term novelism attends not just to the reading and consumption of texts, but to the insinuation of writing into everyday life: into commerce, politics, the public sphere, and private domestic life. Periodicals and newspapers for instance, proliferate alongside the English novel, concurrent with the production of letters, editorials, and other substantive contributions to public discourse by a reading and writing public (Siskin, 1996, pp. 426-7).

The novel both exploits and inverts the informationalism of dictionaries, encyclopedias, travel guides, government publications and census reports, and managerial practices such as schedules and bookkeeping (Nunberg, 1996, p. 115). For Siskin, the writing and reading of novels animates a reciprocal process: on the one hand depicting characters and events that inform an “imagined community’s” ideas about the world it belongs to and understands; and on the other hand impelling readers to think about the world around them as writable, to reflect on character development in a moral sense, and to consider chronology and history from a narrative standpoint.

The concept of “novelism” highlights that the connection between literature and media is not limited to particular cultural forms (the novel), the outcome of a limited set of economic imperatives (the growing market for novels), or a direct response to emerging technologies (cheaper paper and printing costs). Literature and media are knit together by a multiplicity of social practices that in turn influence the content and the contours of emerging cultural forms. Needless to say, these relations of influence vary over time, and within and between national literatures. Siskin’s insights suggest that if, today, we want to know whether the novel either is or might become compatible with the social practices that both respond to and shape the possibilities presented by network communication technologies, we have to look not only at authorial technique and the form that works of electronic literature take, but also at whether or not these forms reflect the social, technological practices of everyday life.

Siskin’s approach to thinking about the relationship between literature, media, and social practices is both complemented and inspired by the writing of Michel de Certeau. In *The Practice of Everyday Life* (1984), Michel de Certeau describes reading and writing as

activities that shape individual subject formation within capitalist societies. Within what he calls “the scriptural economy,” writing is an “initiatory practice,” a productive process that structures the experience of the everyday (Certeau, 1984, p. 136). The inscription of identity through the writing of laws, regulations, bureaucratic protocols, and administrative procedures are some of the more visible aspects of this “machinery of representation” but subjectivity is equally and reciprocally constituted by personal, individual, and private communication practices (Certeau, 1984, p. 147). The novel and other literary forms are cultural elements that function within these writing mechanisms, “producing society as a text” (Certeau, 1984, p. 134). Both the sociality of texts and the textuality of society are contingent on the integration of writing practices into everyday life, the articulation of these writing practices in cultural expressions, and the reincorporation and dissemination of these practices back into the everyday by social actors, who thereby reinforce their capacity to generate meaning and structure experience.

Historical Connections Between the Novel and Contemporaneous Communication Technologies and Practices

Siskin’s “novelism,” Anderson’s “imagined communities” and De Certeau’s “scriptural economy” reveal the intricate interrelationships between literary forms and the social practices that develop in response to communication technologies. These relationships are evident in literary works produced in virtually any time period. As I demonstrate in the extended analysis that follows, and as I have argued with less elaboration elsewhere (Meurer D. M., 2012), the narrative structure of Bram Stoker’s *Dracula* (1897) epitomizes how the novel, as a cultural form, simultaneously exploits,

mimics, and models communication technologies and practices. Stoker's gothic novel, written in the late Victorian era in epistolary form, reproduces the communication practices of its contemporaneous reading public in a realist depiction of the everyday. *Dracula* is the tale of a Transylvanian vampire's attempts to establish a power base in England. The narrative is structured as a series of letters, diary entries, periodical and newspaper clippings, telegrams, ship logs, memoranda, and even undelivered notes and a phonographic diary entry. The story is rationalized as a realist representation of the discursive exchanges and moments of textual inscription that occur between characters.

The initial chapters are comprised of entries written in the journal of Jonathan Harker, a solicitor assigned to assist Count Dracula with a real estate transaction in England. Historical background on the Transylvanian region is furnished not through omniscient narration, but rather through realist representation, by Harker, who records the research conducted in the British Museum prior to his travels for later recollection to his fiancé, Mina Murray (pp. 9-11). At a later point in the narrative a wolf smashes a window in Mina's friend Lucy Westenra's home in order to provide entry to the Count in the form of a bat (pp. 131-2). Stoker supplies prior support for the appearance of a wolf (an animal that is traditionally under the sway of vampires) in an unusual setting through an article from *The Pall Mall Gazette* describing the escape of a crazed wolf from the Zoological Gardens (pp. 125-9). The explanation for the wolf's origins and appearance is established through a newspaper article rather than omniscient narration or description.

In *Dracula*, the modes of communication that drive the action are also the principal vehicles for developing characters. They are exemplary of the way that the novel acts "parasitically" on informational genres (Nunberg, 1996, p. 116). A logical exploration of

strategies for intercepting Count Dracula, to offer one example, is presented to the reader in the form of a memorandum written in Mina Harker's journal. Mina Harker is the wife of Jonathan Harker, a solicitor sent to Transylvania and held prisoner by the Count while there to manage the Count's affairs in England, and the best friend of Lucy Westenra, who falls victim to the Count early in the narrative. Later the Count victimizes Mina, forcing her to drink his blood and fall under his influence, but she becomes, at the same time, subconsciously attuned to his whereabouts and activities.

Mina's mastery over her subconscious intimations of the Count's surroundings, her rational consideration of the strategic options available, and her procedural application of logic lead to triumph over the supernatural powers of the Count. It is Mina who provides the group with the final details of a plan for intercepting him (Stoker, pp. 304-6). Her memo is ordered sequentially, and outlines a series of necessary conditions for the safe return of Count Dracula to Transylvania including the methods of transit and their implications for the likelihood of intercepting the Count. Harker's journal provides a private medium of inscription in which to work logically through a multitude of possible scenarios. It permits her to break an amorphous and irrational set of circumstances down into its composite, informational bits. Harker is subsequently able to apply the bureaucratic rationality of industrialization to structure this information, to subsequently shape it into a strategic plan, and to share these observations with the other members of the search party. The logical possibilities identified by Harker inform the actions of the characters from that point on, and drive the narrative to its conclusion.

In *Dracula*, it is through the everyday production of writing and the transcription of communication through typewriters, telegrams, and phonographs that the full

comprehension of circumstances relating to characters becomes known. At the same time, the reading audience *is itself* constituted in part by everyday practices of reading and writing. The depiction of daily diary, journal and letter writing within the novel models these self-reflective social practices for readers and reinforces their validity as discursive modes. The instantiation of memoranda, telegrams, ship logs, and shipping registers within the narrative text reiterates the importance of these methods of textual inscription for the administration of goods and services in the late nineteenth century. In other words, the communication practices represented in the novel contribute to the formation of a publicly “imagined community,” and to the social and cultural acceptance of the place of the novel within everyday life. The representation in the novel of productive self-reflection in letters, journals and diaries legitimizes and reinforces the everyday importance of those activities for readers.

Indeed, *Dracula* offers particularly rich material for elaborating on the interface between media and culture. According to Geoffrey Winthrop-Young (1994), *Dracula* offers a particularly strong example of “how the changing practices of information processing affect literature” (p. 108). In a deftly argued essay on the “media boundary conflicts” that are both depicted within and that shape the narrative structure of Bram Stoker’s *Dracula*, Winthrop-Young maintains that the intrusive changes introduced by “decisive media shifts” (1994, p. 108) are particularly evident in Stoker’s novel. Winthrop-Young links these patterns of tension with “the rapid growth and development of the nineteenth-century novel” (p. 124) – a growth that “can be described as an act of defiance on the part of literature to defend the dominant position of the time-honoured media technology it was a part of” (p. 124). In his view, the “effort to describe more, if not everything, in a far more

'life-like', complex and detailed way than literature had ever done before was an attempt to incorporate, mimic or co-opt the achievements of competing electric media" (p. 124). In *Stoker's Dracula*, then, the relationship between literature and media comes into sharp relief, even revealing, as Winthrop-Young argues, a tension between media technologies – such as the pen, the typewriter, the telegram, and the phonograph – that are competing for primacy.

But does this relationship between literature and media persist? Is it equally evident in contemporary cultural contexts? Reviewing more recent media theory and specific contemporary novels shows that indeed, even as media are shaped by digital technologies, and despite the fact that the novel is associated with the growth of literacy and print culture, the novel and media remain bound up in a relationship of influence that derives context through social practices.

Remediation in Digital Culture

Media eras and media practices reiterate and mutually constitute one another. New media are often designed to improve upon or extend an existing medium, and in doing so, may reimagine and reinforce the technologies or practices associated with their antecedents. Older media may be updated and redesigned to accommodate new usage patterns or processes and thereby remain influential. With respect to digital media, Jay Bolter and Richard Grusin (1999) describe this process as "remediation." They argue that "[w]hat is new about new media comes from the particular ways in which they refashion older media and the ways in which older media refashion themselves to answer the challenges of new media" (Bolter & Grusin, 1999, p. 15). Of course, as we are reminded, it

is not merely newer electronic media that refashion the characteristics of older media. The reverse is also true, as “remediation operates in both directions: users of old media such as film and television can seek to appropriate and refashion digital graphics, just as digital graphic artists can refashion film and television” (Bolter & Grusin, 1999, p. 48). The Internet, they point out, remediates prior media and accommodates the display of television and cinema, audio and music streaming, image collections and photo albums, as well as different modalities of text. Computer technology remediates the book electronically as ebooks and ereader technology. Novel reading is also remediated, for instance, through social book annotation services that in some sense reimagine the discussion and dialogue generated in reading groups.

The logic of remediation also functions inversely through contact, as an older cultural form like the novel, associated primarily with print media, may also depict and refashion newer media. As Joseph Tabbi and Michael Wutz argue in their introduction to *Reading Matters: Narrative in the New Media Ecology* (1997), the novel has always equipped writers with “a powerful instrument for representing its own media multiplicity, and a discursive practice that can help us to locate ourselves within the changing media environment” (p. 24). Novels associated with late postmodernist literature, such as Thomas Pynchon’s *Vineland* (1990), Don DeLillo’s *White Noise* (1985), and *Underworld* (1997), and DBC Pierre’s *Vernon God Little* (2003), for example, often foreground the ascendancy of electronic media and popular culture, and emphasize their capacity to function as a perceptual lens and ontological anchor point for subject formation in contemporary society. This attentiveness to electronic, broadcast, and computer media, as well as the cultural forms and informational genres disseminated over them feeds

characters, dialogue, narrative structures and descriptions of place. “[T]he distinctive achievement of the late postmodern novel,” writes Jeremy Green (2005), “lies in the way it engages with the semiotic density of the mediascape, the sign and image saturated spaces that increasingly shape public and private consciousness” (p. 213). These key characteristics and preoccupations of late postmodern fiction signal a deeper negotiation between media, communication technologies, and models of culture and cultural production – a negotiation that also occurs between a novelist and the form of the novel itself.

In her 2008 book, *Electronic Literature: New Horizons for the Literary*, N. Katherine Hayles shows in considerable depth how the form of selected contemporary novels remediates computing technologies. While virtually all novels today are produced through a digital workflow that involves word processors, editing programs, desktop publishing and digital printers (2008, p. 159), Hayles asserts that both the content and the structure of some contemporary prose narratives are substantively aligned with computing technologies. In *House of Leaves* (2000) for instance, Mark Danielewski strategically employs unorthodox typographical displays. These typographical experimentations add layers of signification to the novel in the form of editorial commentary, copious footnotes, multi-coloured text, struck text, layered text, variations in font and font-size, and unconventional blocking of text on the page. While some of these variations are possible, in theory, with a typewriter, many, such as font and font size variations are not. And without computing technologies, Danielewski has pointed out, the publisher could never have typeset the novel and still retailed it at an affordable price (Hayles, 2008, pp. 177-8).

From a formal standpoint, *House of Leaves* contests the boundaries of the novel. Danielewski's digital sensibilities locate and challenge the limits of print through a critical awareness of computer enabled design processes. Danielewski's production process for *House of Leaves* also bears some of the hallmarks of network computing technologies. As Hayles succinctly describes them, these negotiations are a "recursive dynamic between strategies that imitate electronic text and those that intensify the specificities of print" (2008, p. 175).

All the same, despite the author's substantial achievements in reimagining the relationship between prose narrative and the printed page, *House of Leaves* remains, in other important respects, firmly entrenched in the production practices that we associate with print. There may be practical or functional limits to how much remediation the novel – a specific cultural form supported by a well-established set of production practices – can accommodate. Danielewski's work is, of course, solely authored, and while the work incorporates highly original typographic design strategies, these too are driven by the author's vision for the relationship between the narrative and the printed page (Hayles, 2002, p. 126): they do not emerge out of the kinds of creative collaborations between designers, writers, photographers and illustrators that might arise in magazine or new media production as a matter of course. And although the author distributed the work online before it was published in print format, and rich online discussions emerged around its interpretation and appreciation, it is clear that the author views the print publication of the work as its natural, terminal state even if it is, as Hayles astutely describes it, "a work that edged toward becoming a distributed multi-sited production, one of whose manifestations was a print book" (2002, p. 124). In *House of Leaves* Danielewski shows a

keen aesthetic awareness of the materiality of print that finds its expression in representations of the characters' own creative production. While still ultimately published in book form, *House of Leaves* is in some respects about as digital as a novel published in book form can be. In this respect, it can be considered a bridge to the field of electronic literature, where works are born digital and evince greater attentiveness to the unique constraints and affordances of digital communication technologies.

Many of the most sustained and committed efforts at probing the contact zone between print and digital computing technologies have occurred in the field of electronic literature, both in theorizing the permeability of media boundaries and in revealing their contours through literary practice. In this field, theorists and authors negotiate the deep imbrications of print and digital materiality (Hayles, 2002), of literacy and "secondary literacy" (Moulthrop, 2003) and of narrative practices and communication networks (Ryan M.-L., 2006, pp. 148-180) with great insight. Even earlier, Jay David Bolter (1991) drew attention to the new expressive forms of writing and reading made possible by computerized textuality, and in particular, hypertexts. Although Bolter claimed with excessive enthusiasm that hypertext was "a textual medium of a new order" (1991, p. 6) and similarly overstated the authorial agency of the reader, he was nonetheless careful to emphasize that hypertext is in many respects a recalibration of the characteristics of earlier forms of writing rather than a completely and utterly novel arrangement of text unique to computer environments. George Landow, in *Hypertext 3.0* (2006) shows similar concern for the formal traits shared by print books and hypertexts, and the shared practices that often straddle these differing technological modalities. Landow describes print texts such as Laurence Sterne's eighteenth century novel *Tristram Shandy* (1759-1767), James Joyce's

Ulysses (1922) and *Finnegans Wake* (1939), and the work of Argentine writer Jorge Luis Borges for instance, as “quasi-hypertextual,” remarking that each in some way or other challenges the conventions of literature and “linear narrative” and thereby anticipates multilinear narratives (2006, pp. 219-226).

A narrative that is comprised of a multitude of perspectives and intended to challenge or otherwise engage the reader’s experience of linear temporality is referred to by Janet Murray (1997) as a multiform story (p. 30). Multiform print narratives, such as Jorge Luis Borges’s story *The Garden of Forking Paths* (1962), or Milorad Pavić’s *Dictionary of the Khazars* (1988) and multiform cinematic works including Harold Ramis’s *Groundhog Day* (1993), or Robert Zemeckis’s *Back to the Future* (1985), Murray points out, anticipate characteristics of the computer that have been associated with interactivity, feedback loops, and the incorporation of user selection processes (1997, p. 38). Multiform cinema is even more fully realized in Bob Bejan’s *I’m Your Man* (1992). The film was touted as the first interactive movie and required wiring a pistol-grip to theatre seats in order to register the audience’s collective choice for narrative advancement.

Comparable relationships between cultural forms and communication technologies occur earlier still, according to Murray, in the compilation and adaptation of oral traditions to manuscript culture by Malory for *Le Morte d’Arthur* in the late fifteenth century, and William Caxton’s subsequent editorial modification of Malory’s work in a one volume print edition in 1485 (1997, pp. 28-9). Murray further suggests that the use of flashback, cross-cut and close-up narrative techniques by Emily Bronte, Charles Dickens, and Leo Tolstoy herald the development of cinematic techniques for stitching together character perspectives and diverse temporal and spatial settings in the medium of film (1997, p. 29).

John Dos Passos's *USA* (1938/1996) is also exemplary in its use of "newsreels" within the prose narrative to mimic the brevity and format of the newspaper. The proto-cinematic techniques of focalization and description also support intertextual reflexivity in contemporary literary works that deliberately invoke them in more overtly cinematic literary technique (Tschofen, 2004, pp. 36-7).

Following theorizations of literature and digital media advanced by Bolter, Landow, Murray and others, Espen Aarseth (1997) consolidated many of their ideas, subjecting them to rigorous analysis, to develop a typology of variables useful for more clearly defining and employing the often carelessly used term "interactivity". Precisely because Aarseth recognizes a great deal of overlap between the perceived capabilities of print and computing technologies, he groups together all works for which "nontrivial effort is required to allow the reader to traverse the text" – regardless of medium – and identifies them as "ergodic" rather than interactive (1997, p. 1). An ergodic work associated with writing or the book form is the ancient Chinese text, *I'Ching* or *Book of Changes* (Wilhelm, 1923), a text that is "read" by throwing coins or sticks to randomly produce one out of 4,096 possible texts in response to the reader's question. Other examples are Milorad Pavić's *Landscape Painted With Tea* (1990), a text that is arranged as crossword clues and that may be read either "down" or "across", Marc Saporta's *Composition No. 1, Roman* (1962), a novel comprised of pages that are shuffled before reading, like a deck of cards, and Raymond Queneau's *Cent mille milliards de poèmes* (1961), a "sonnet machine" comprised of ten sonnets of fourteen lines that can be variably arranged, line by line, by the reader (1997, p. 10). Any work that is ergodic in nature Aarseth terms a "cybertext," and he is careful to emphasize its applicability outside the realm of digital computing:

Cybertext, then, is not a 'new,' 'revolutionary' form of text, with capabilities only made possible through the invention of the digital computer. Neither is it a radical break with old-fashioned textuality, although it would be easy to make it appear so. Cybertext is a *perspective* on all forms of textuality, a way to expand the scope of literary studies to include phenomena that today are perceived as outside of, or marginalized by the field of literature – or even in opposition to it. (1997, p. 18)

Aarseth's work establishes, quite definitively, that literature and digital media possess certain shared traits and characteristics, and should not be studied or thought of as paradigmatically distinct realms of cultural activity or as zones of sharply opposed formal and experiential models.

Literary works that negotiate the affordances of print and digital media in pronounced ways have also received sustained focus from Marie-Laure Ryan. In *Narrative as Virtual Reality* (2001) she builds on the work of Espen Aarseth and analyzes texts according to three characteristics. For Ryan, texts may or may not be ergodic, interactive or electronic. The combination of these characteristics yields eight categories of texts, and literature, she points out, fits into many of these categories. Some texts may be neither ergodic, nor electronic, nor interactive. Such a text might be a "traditional" literary text such as a conventional novel for which "the dynamic construction of the text that takes place during the act of reading concerns meaning exclusively" (2001, p. 207). In other words, while the intertextual nature of the work, and the multiplicity of meanings that a reader brings to her interpretation of the work may vary widely from one reader to another, the material text is by and large the same one for all readers. The same novel

presented in the form of an ebook, however, is electronic but nonergodic and noninteractive.

Texts authored with multiple reading pathways generated through reader input or selection, constitute what Ryan calls “multilinear texts” (2001, p. 209). These texts are ergodic, since they require nontrivial effort, and interactive since they require user input in order to, at the very least choose between two paths, but are nonelectronic. In this category are located a number of experimental novels. For example, the novel *Hopscotch* (1966), Julio Cortázar explains in the prefatory table of instructions, “consists of many books, but two books above all” (1966). The first book is read sequentially from chapter 1 through 56 and terminates without reading “expendable chapters” 57 through 155 (1966, p. 363). The second book takes the reader through all 155 chapters, traversing the text according to a differentially ordered sequence. Pavić’s novel *Landscape Painted With Tea* (1990), referred to previously, employs a similar, multilinear approach, consisting of two books. The first book is a relatively conventional, though multivocal, text, but the second, “A Novel for Crossword Fans” is read either “across” or “down” in order to generate a “solution” (pp. 99-102). The second book also includes an associated index (p. 339) and two blank, ruled pages: “Space left for the reader to write in the denouement of the novel or the solution to this crossword puzzle” (pp. 341-2).

Both Cortázar’s and Pavić’s multicursal texts require nontrivial effort on the part of the reader, and each requires the reader to interact with the text by selecting a particular narrative pathway, thus anticipating some of the characteristics that have traditionally been associated with electronic media. On the other end of the spectrum are works that are ergodic, interactive and electronic. Examples may include literary hypertexts,

interactive drama, Internet-based collaborative literary projects, and Ryan notes that interactivity may be either selective or productive, depending on the work in question (2001, p. 210).

What Bolter (1991), Landow (2006), Murray (1997), Aarseth (1997), and Ryan (2001) have each in their own way pointed out, with differing emphasis and terminology, is that in many respects literature both fosters and emerges out of productive relationships between old and new media, and between the material affordances of print and digital media. This fluidity in which media, culture and communication technologies mutually shape and influence one another, and in which literature clearly takes part, supports, I would suggest, the potential for literary and cultural practices to further adapt to contemporary network communication technologies. Many of the works noted demonstrate these capacities. It is less clear, however, whether born-networked prose narrative fiction will develop to the point where the quality and popularity of these works convincingly establishes the place of literary culture in the new media ecology. While born-digital narrative works abound, and numerous examples are, in effect, born networked, these works are not widely known, consumed or experienced.

As exemplified in the *Electronic Literature Collections Volume 1* (Electronic Literature Organization, 2006) and *2* (Electronic Literature Organization, 2011), the field of electronic literature encompasses works of fiction, non-fiction and poetry that evince a marked attentiveness to the literary and aesthetic potential of digital media. For the most part, while these works employ a broad range of digital technologies and techniques, all share the characteristic of being truly born digital and not simply digitized. Given the deep integration of digital computing and communication technologies into the everyday lives of

people around the world, and the influence of these technologies on everything from interpersonal communication and business models to cinema production and music consumption, one might expect these born-digital literary works to be widely known, experienced, and appreciated and to perhaps signal to us what the future of the novel in network society might be, and whether or not its place is either secure or likely to become so. However, born-digital literature holds little cultural influence in comparison to other born-digital cultural forms, and there is little indication that a born-digital literary work will win a major literary award or make it to the bestseller lists any time in the near future.

The Futures of Electronic Literature

Curiously, anxieties about the future of literature, literacy, and the book are mirrored within the field of electronic literature itself – expressed by theorists and practitioners as well as in critical reviews of key works and cursory evaluations of the cultural field as a whole. These apprehensions regarding the quality, popularity, and cultural relevance of electronic literature are oddly counterintuitive as it is precisely the emergent electronic and digital forms of textuality and the increasing importance of audio-visual media and computers that elegists for print culture and literature often rail against. If digital cultural forms are a pronounced threat to literature and literacy, this fear is ironized by the fact that literary works produced precisely with and for digital methods have by most accounts failed to economically, socially, or culturally displace conventional printed novels and their digitally translated ebook versions. And if ebooks and ereaders are growing more quickly in popularity than electronic literature, it would be logical to conclude that conventional models of reading and traditional literary culture have been

more firmly established within digital media than any of their born-digital counterparts. There are several potential explanations for this state of affairs.

In a review of Matthew Kirschenbaum's *Mechanisms: New Media and the Forensic Imagination* (2008), Johanna Drucker (2009), a digital humanist and scholar of digital materiality and aesthetics, argues that seminal works of electronic literature are studied for their novelty as digital media works yet are incapable of standing on literary merit alone. She asks, "do any of these works have literary qualities that merit our critical engagement? If these weren't digital texts would we read them as literature? For all my respect for these folks, I doubt it. Have any works appeared in digital media whose interest goes beyond novelty value? Not yet" (2009, para .10). It is precisely, she argues, the awkward, transitional relation between print and digital media that leaves too many authors ill-equipped to both develop an unequivocally great work of literature and at the same time master the technical and aesthetic challenges of digital communication technologies. "Paradoxically," she explains, "the generative tension between transparency and resistance to media that form the right conditions for a higher level of aesthetic production may arise only when the geek-culture necessity for technical engagement disappears" (2009, para .10).

Comparable contradictions are surfaced by Scott Rettberg, co-founder of the Electronic Literature Organization and co-author of *The Unknown* (Gillespie, Marquardt, Rettberg, & Stratton, 1998-2001) – one of the first networked narratives. – takes stock of current developments in electronic literature and the current state of the field in a 2009 article. Rettberg observes that "most people have no idea that electronic literature exists" (2009, para. 6). Indeed, the general lack of public awareness of born-digital literature is

reinforced in news discourse when culture and technology are covered. A post in *The Economist's* books, arts, and culture blog, Prospero, for instance, describes a political parody Twitter account as “the first truly great piece of digital literary work” (Economist Staff, 2011, para. 1). The author dismisses “other digitally based literary works . . . such as hypertext novels, electronic literature and flarf poetry” as modernist and postmodernist experiments without widespread readership (Economist Staff, 2011, para. 6).

If the literary merits and lack of public popularity of electronic literature are viewed at times as problematic, perhaps electronic literature has simply not yet matured as a literary field to the point where a popular literature can emerge to complement the substantial body of experimental and avant-garde works. Marie-Laure Ryan (2007) has suggested that digital textuality is polarized between avant-garde texts on the one hand, and popular computer games on the other. Ryan sees the middle ground – a zone that we might compare to front list literary fiction in print publishing – as filled by serious games such as *Myst* and *The Sims* that incorporate aesthetic and intellectual components that stimulate educated consumers of textual culture.

Johanna Drucker (2008) offers a somewhat similar observation in the *The Blackwell Companion to Digital Literary Studies*:

The vision of a reconfigured reading environment has been realized, but not in the way the proponents of electronic book or story space imagined. . . . A disconnect exists between the windows-based experience of online reading and the e-book industry's attempt at designing a visual format that suggests an extension of the traditional book for presentation or re-presentation of materials once only available in the bound codex. An even greater disjunction has existed between those designs

and the conceptualization of formats suitable to the functions unique to electronic space. (para. 8)

Ultimately what Ryan and Drucker independently note is that the literary subfield of electronic literature is not fully developed. Without popular digital fiction to complement the digital avant-garde, it bears asking whether electronic literature fits – at all – among the oppositional sub-fields that together comprise the cultural field of literary production on a whole (Bourdieu, 1993).

At times, it seems that those who dismiss electronic literature seek precisely to exclude it from the cultural field of literary production altogether and thereby assure the absence of popular digital fiction. Bloggers and media commentators, for example, often defend literature and literary production models associated with print, and sweepingly critique or dismiss born-digital literary works through cursory analyses of early, experimental, and incunabular works of electronic literature. Critiques of electronic literature are often predicated on assertions of unpopularity and lack of literary merit. However, in using the merits and popularity of the novel as benchmarks, critics hitch their evaluations of the future prospects of emergent digital literary works to their own interpretations of works that are invariably particular to earlier ways of culturally thinking about constantly shifting computing technologies. These critics rarely give thought to the ways that contemporary digital communication technologies and practices can or are being applied to literary production and instead concentrate on the multitude of enhancements that are applied to works recognizable as books but delivered in electronic forms.

In a 2011 post published to his blog BookTwo.org, for instance, James Bridle laments that when it comes to computing technology and literature we are “being

distracted by shiny things” (para. 2). And while his argument is directed more at the efforts of publishers to produce multimedia and interactive versions of print texts, the basis for his rejection resonates with detractors of electronic literature. Bridle ultimately argues that literature is best left more or less as is, to be supplemented with digital technology sparingly in order to accelerate dissemination from author to reader, and to increase the social dimensions of the reading experience. He cautions against substantive changes to, or social intervention in the processes whereby literary works are produced, or to the nature of the cultural work itself. He writes: “We’ve been trying for decades, since the advent of hypertext fiction, of media-rich CD-ROMs, to enhance the experience of literature with multimedia. And it has failed, every time” (Bridle, 2011, para. 3).

The discursive move of characterizing emergent models of literary production as failed enhancements of well-established, normative models is typical. Yet this fails to ask whether seminal works of hypertext fiction function to “enhance the experience of literature” or for exploring the cultural uses of new communication technologies. Were these digital texts created by adding interactive widgets to printed texts or did they emerge as explorations of new possibilities for literary expression? Bridle’s position uses pre-existing frames of reference to evaluate the success or failure of cultural practitioners who use emergent communication technologies and nontraditional literary production practices to develop new works that expand literary forms.

Critics who primarily or predominantly evaluate the achievements and literary merits of emergent digital literature with reference to print literature invariably follow and reinforce the contours of familiar cultural forms, and they inevitably circle back to print media, the book, and the novel. Rather than “enhance the experience of literature with

multimedia," it is the network communication technologies and the emerging social practices they engender that are enhanced when cultural producers negotiate the formal constraints and expressive potentials of contemporary media. Producers of electronic literature are, I would argue, so motivated and rarely, if ever, endeavour to simply enhance literature authored for conventional print publication. This is the defining characteristic of electronic literature – that it is born digital – so it makes little sense to evaluate such works as if they were born of print and subsequently enhanced for electronic devices. Doing so is akin to dismissing the value of a literary work on the grounds that it would make a poor film, graphic novel, or video game.

Responding to emergent forms of communication according to the conventions of older, dominant forms is a frequently recurring method of critique. Carolyn Marvin's (1988) work on the social reception of electric communication in the nineteenth century offers a homologous example of the discursive framing of a new technology and its cultural implications. As she notes, "[e]xperts and publics greeted a new world of electricity by elaborating an old one. New electrical inventions and ways of thinking about electricity were given shape and meaning by being grafted onto existing rules and expectations about the structure of social relations" (Marvin, 1988, pp. 232-3). Bridle's position essentially grafts the literary possibilities for emergent communication technologies on to normative circuits of literary production, circulation, and reception, thus reinforcing the structural, social and cultural relations that undergird the cultural field of literary production.

Ultimately, how we perceive the place of electronic literature within the broader domains of culture, and literature more broadly is very much a function of the particular frames of reference we bring to bear on our perceptions of electronic literature. Whether it

is viewed as vibrant or successful hinges on the literary works, media forms, cultural fields, and models of production that we compare it to. Criticism and critiques of electronic literature as a whole, while often illogical and predicated on confluences of cultural forms, communication media, and social practices, are nonetheless relatively common. These views underscore the pitfalls inherent in conceptualizing the adaptation of long prose narrative fiction to digital communication technologies in terms of the very communication media that the creators of these works must move definitively beyond. They reveal the degree to which communication forms, cultural forms, literary genres, and models of literary production are conflated, often unintentionally, in dismissals of born-digital literary works.

What the logical structure of these dismissals helps make clear is that born-digital prose narrative fiction must emerge out of the already established and continuously evolving cultural practices of contemporary network communication technologies. A strategy of developing born-digital prose narrative through technological augmentation of existing literary forms like the novel – a genre intractably linked to the cultural and communicative practices of print – will not produce compelling literary works of undeniable literary merit and lasting cultural significance, nor will it secure the place of prose narrative fiction within the media ecology of network communication technologies. On this point, criticism is largely justified. If the substantial body of born-digital works of electronic literature is viewed as less popular and of lower quality than conventional print novels, and technological augmentation is insufficient to achieve the objective of a robust cultural field populated in part by popular digital fiction, a different approach may be

necessary to establish a place for literary culture in a world increasingly dominated by network communication technologies.

Literature and Digital Media

The ways in which the future is imagined often reveal biases or shortcomings in the very methods, logic or thought processes underpinning how the future has been framed. Geoffrey Nunberg (1996) has pointed out that the rhetoric of the future of the book is characterized by two distinct misapprehensions. These misapprehensions underpin the bold claims of those who argue for a deep rupture or revolutionary shift in the cultural and informational forms of network technologies. The two misapprehensions are imagining the future as “insufficiently like the present” on the one hand, and as “insufficiently different from the present” on the other (Nunberg, 1996, p. 104). Those whose arguments suffer from the first misapprehension unrealistically exaggerate characteristics of technological innovation and predict a fundamental displacement of older technologies. These overenthusiastic visions fail to account for the inertial tendencies that people adopt due to preference, resistance to change, or the persistent utility of existing technologies and cultural forms.

Those who advance the second perspective view technology as equally paradigm shifting, but they unwittingly reproduce normative social and economic relations in their descriptions of the future. Thus, to use Nunberg’s example, predictions for the future of housework may imagine plastic furniture that can be hosed down quickly and efficiently, yet responsibility for the hosing down will rest with a recast housewife, leaving postwar domestic relations more or less intact (1996, p. 103). The latter misconception “rests on

the unspoken presuppositions of a discourse” (1996, p. 104). In the discourse on the future of the book, the most prevalent presupposition is that the function of authorship will persist and endure in the production of textual and literary forms in response to new technologies. Indeed, Nunberg counts “authorship,” alongside “publication” and “reputation” as terms that require substantial rethinking in the context of emerging information technologies (1996, pp. 106-7).

While Nunberg’s observations pertain to the communication technology of the book as speculatively reimagined for the future – rather than the literary form of the novel – the same presupposition applies to how commentators such as Bridle (2011) and Gallix (2008) perceive prose narrative fiction and electronic literature. Bridle’s views that literature is better left alone than augmented with multimedia and “shiny things” (2011, para. 2) ignores the fact that literature – which he feels compelled to defend from the deleterious effects of technological innovation – is itself inured to the once “shiny” and “new” narrative techniques – such as the epistolary form. These narrative techniques are initiated through contact with prior technological shifts in communication, and they distinguish the novel from other literary forms. Bridle, in other words, imagines electronic literature as insufficiently different from non-electronic literature, in being the same, except with “shiny things” added, rather than as a more extensive attempt to shape literary forms and production to network communication technologies.

Having teased apart discourse surrounding the future of the book, the end of print, and the demise of literacy, I now take the future of the novel to be of central importance. Clifford Siskin (1996) has argued that “we have so thoroughly conflated the novel with writing that even when we want to separate the two ... we have trouble pulling them apart”

(p. 423). If, as Siskin contends, the novel is the cultural form we most deeply associate with literacy and authorship – and the centrality of literature and the novel to arguments regarding “digital barbarism” (Helprin, 2009) and “the fate of reading in the electronic age” (Birkerts, 2006) bears this out – then in relation to emerging network communication technologies and practices the key question is not whether the novel can be networked, but whether prose narrative fiction can be developed out of the social experience of networked media. If it can, surely it is not through the continued adaptation and minor reformulation of the preeminent print communication form, the book. As architect Frank Lloyd Wright famously insisted: “No house should ever be on a hill or on anything. It should be of the hill. Belonging to it” (Wright, 1977). For literary culture to thrive in the networked era, literary works must be of the network – belonging to it – and not simply on it.

The future of electronic literature, it seems to me, can only be assured if prose narrative is adapted more deliberately to the communication platforms, protocols, and practices of digital media. This, really, is the first and necessary step for the emergence of a fully fledged, network narrative cultural form, and it holds no assurances of a “quality” that will compare favourably to “the literary” by those invested in maintaining it as the gold standard of quality. Importantly, this need not imply a choice between “playable stories” and “narrative games” (Ryan M.-L. , 2009) for the kind of simultaneous immersion and participation that one may experience in social media and that is commonplace in the digital everyday is neither a game, nor a story, though it is certainly interactive, like a game, and exhibits narrative characteristics, like a story. Regardless, literary quality or merit should no more constitute the ultimate arbiter of the value of network narratives than should the value of novels be judged on the extent to which they invite participation or

incorporate multimedia resources. To focus primarily on the literary merits of a work designed to be more than literature merely signals the limitations and media specificity of the frame of reference by which the work is being judged. The reflexivity between media forms, between cultural forms, and between the technical apparatus of media and the expression of culture in social contexts must be taken into account.

Any attempt to consider the future of the novel amidst the rise of network communications must recognize the rich complexity of the relationship between literary forms, social practices and communication media. As I have attempted to show, the development of literature and the novel reveals that the formal properties of works and their narrative content always adapt to, depict, model, prefigure, and critique modes of communication. The future of the novel cannot be assessed through a cursory evaluation of the first exploratory and experimental attempts to challenge generic conventions, adapt digital media production to literary texts, and probe the material limits of literary form.

If there is a multimediated future for prose narrative fiction and the novel it will be realized in new narrative forms and through production practices that calibrate the relationship between widely used multimedia platforms, prevalent habits of communication, and the creative and artistic deployment of language in narrative form. Simply augmenting or enhancing well-established forms by adding technological baubles to them is of no use – on this point critics of digital literature hit the mark – but it is a failure of the literary and artistic imagination to position an augmentative approach as the only one available. Cultivating the growth of prose narrative fiction out of digital and network media must be intimately bound to collaborative and participatory production practices and therefore will involve profound recalibrations to the circuits of cultural production

through which literary works are created – a point I return to and expand on in a subsequent chapter. These recalibrations are not easily conjoined to the novel, and not readily negotiated by the literary author. It is for precisely this reason that questions regarding the future of the book, and the novel are so contentious and fraught.

Does born-networked prose narrative have a place within the contemporary digital network media ecology? I argue that indeed it does, and it must if there is lasting cultural value in the deep exploration of character, plot, and description that we traditionally associate with long prose narrative. While the novel is one modality for the cultural expression of narrative, it is certainly not the only one; each mode emerges and evolves in a feedback loop with communication media and the social practices that develop in response. Establishing a place for born-networked narrative within contemporary network culture requires substantive shifts in the forms of literary works – and the production practices that underpin them – in order to better accommodate additive participation, multimedia content, and other distinctive features of network communications. The novel can, I believe, be recast to the affordances of digital communication technologies and practices; however this transformation may erode and weaken the authorship function and fundamentally loosen the anchor points of literary production.

Over time, everyday reading and writing practices have changed in response to digital media—this is one source of anxiety over the future of print, the book, literature, and the novel. Letter writing has been supplanted by emails. Invitations, postcards and greeting cards have been largely superseded by their more popular, less costly, and more efficient online alternatives. Letters to newspaper editors have been partially displaced by article comment threads. Shopping lists and other quotidian notes and to do lists once

transcribed to paper are now often saved to cloud-based note-taking applications on mobile devices. Casual phone chats have been rendered partially redundant by the constant stream of information about friends, colleagues and family distributed via email, photo-sharing services, Facebook status updates, and tweets. But just as the varied writing practices of the eighteenth century both shaped and were shaped by the form and content of the novel, the digital and networked equivalents of these communication strategies are integral to emerging cultural circuits of production, circulation and distribution, and these circuits can support prose narrative fiction.

To a large extent, we associate the Internet and the telecommunications networks that enable it with the proliferation, exchange and circulation of information. Global markets are linked together to permit the instantaneous coordination of national economies, commodity and securities exchange and currency traders through immediate access to information about stock, currency and commodity prices. These same networks hold the promise of big data and the ability for technology corporations to aggregate, analyze, and leverage information about habits of consumption. Frequently, information is embedded within, emerges out of, or is interpreted using narrative techniques. Narrative in turn, has certain informational properties, and often elicits information about people and events, as in the case of police interrogations, and community consultations held by civic administrators. The narrative expression of information, and the informational properties of prose narrative persist in the media ecology of network culture. As I argue in the following chapter, the ways in which narrative and information coexist, mutually shape one another, and circulate together within the network media ecology enhances our

understanding of how emergent, born-networked narrative forms are, or may be structured.

Chapter Three: Narrative and Information: Compatibilities and Incompatibilities

In the previous chapter I explored the complex interdependencies and mutually constituting relationship between literature and media. I argued that literature is influenced and shaped by the everyday communication technologies and modes of textual expression that predominate in the time, place, and social contexts in which literary production takes place. At the same time, prose narrative fiction presents models of social interaction, communication, and literary expression that are subsequently incorporated by readers into their own lives. I contest the view that literature and digital media are fundamentally opposed to one another: that the methods of organizing, distributing and consuming information on networked computers represent a fundamental threat to the attentive reading required by novels.

In this chapter I argue that cultural expression in a narrative mode, as typified by the novel and prose fiction, and by non-fictional genres, subsists in a codependent, mutually requiring and mutually constituting relationship with the proliferation and acceleration of the flow of information characterized by information society. The production of narrative is dependent upon the availability of information, data and facts, while facts and informational data are more often than not shaped and made meaningful to individual subjects and for the benefit of audiences through a process of narrativization. Recognizing and appreciating the interdependencies of information and narrative is critical in order to better understand the modes of prose narrative that function best online, where

cultural expressions are shaped and inflected by their contingency on processes and platforms for informational exchange.

I begin my discussion by anchoring terms such as narrative, information, and data to etymological uses that emerge under particular social and historical conditions. I draw on narratology in order to link my discussion of narrative to its everyday relevance and applicability beyond the novel. To contextualize my discussion of information I turn primarily to theories of information society and network society in which the production, circulation and social centrality of information is considered a defining characteristic of post-industrial society. As these uses of the term information are most closely aligned to computing technologies and network communications, they are most relevant to my discussion of the novel and network communications.

Following the operationalization of these key terms I analyze several discussions of the future of the novel, the book, and literature that invoke an oppositional relationship between literary narrative and the proliferation of information that is associated with contemporary Western society. I break this discourse down into some of the more specific ways that narrative and information are fallaciously framed as oppositional, and I provide counter examples in each instance in order to emphasize their mutually constituting relation. The scholarship I engage with is based in literary, media and communication studies, narrative theory, and semiotics. I support the discussion with examples of literary works, dramatic television series and other expressions of contemporary culture.

Following on this analysis I consider several theoretical perspectives that offer a more sophisticated and fluid understanding of narrative and information under the rubric of circulation and flow. Subsequently, I present a case study on how information and

narrative are mutually constituted in networked communication environments. I consider cuisine in particular which, while not generally representative of the narrative structures we associate with the novel, nonetheless indicates that narrative expression is permeated by information, and vice versa, and these circulatory flows proliferate and are amplified through network communication. As food culture circulates across media, and is repackaged or reframed for varying purposes, recipes and culinary information are continuously narrated by and for the network subjects. This condition of narrative remaking and reshaping – of network subjects weaving culture and information simultaneously into their lives – may be viewed as foundational for the production of longer, born-networked prose narrative fiction. Prose narratives that are designed to similarly circulate, to invite and support participation, and to be integrated with the platforms, processes and communication circuits that catalyze the network media ecology stand a better chance, I would argue, of making inroads to the network cultural imagination than digitized books do.

Narrative and Information

Literary narrative and information are often viewed as contrasting modes of representing and experiencing the world, and this contrast is frequently invoked in defences of literature and the printed word against the rise of network communications and culture. As author E. Annie Proulx (1994) has argued in *The New York Times*, “the electronic highway is for bulletin boards on esoteric subjects, reference works, lists and news – timely, utilitarian information, efficiently pulled through the wires” (para. 6). Proulx is compelled to contrast the usefulness of the Internet for accessing information

with the experience of reading a novel, of long prose narrative fiction. “Nobody,” she insisted, “is going to sit down and read a novel on a twitchy little screen. Ever” (Proulx, 1994, para. 6).

Essayist Sven Birkerts (2006) also conceives of narrative and information as oppositional. He argues that “while circuit and screen are ideal conduits for certain kinds of data – figures, images, cross-referenced information of all sorts – they are entirely inhospitable to the more subjective materials” that he associates with literature (p. 193). Birkerts takes his cue from sentiments expressed by the character Bill Gray, a writer, in Don DeLillo’s *Mao II* (1991): “The novel used to feed our search for meaning. . . . But our desperation has led us toward something larger and darker. We turn to the news, which provides an unremitting mood of catastrophe. This is where we find emotional experience not available elsewhere. We don’t need the novel” (Birkerts, p. 208).

The compulsion to hold information and prose narrative fiction apart, it should be noted, is neither uniquely postmodern nor specific to digital media, and stretches back quite a bit farther than Proulx and Birkerts. Walter Benjamin (2008b) viewed literary production and the “indiscriminate assimilation of facts” as “insoluble antimonies” responsible for a “decline in writing” that nonetheless had the ulterior benefit of increasing opportunities for collaboration and production by readers (pp. 359-60). He explored information and prose narrative fiction alongside one another and in greater detail in the essay *The Storyteller* (1969a). There, Benjamin drew attention to the narrative expertise of Nikolai Leskov, and contrasted the practice of storytelling, more closely linked to oral narrative expression rooted in social circumstances, with the novel. Storytelling, he asserted, is an art more deeply embedded in the teller’s lived, social experience of the

world, more tightly knit to the social experiences of other social subjects than the novel, which Benjamin distinguishes from storytelling for being predicated on the “solitary individual” and for its “essential dependence on the book” (1969a, p. 87). Threatening both forms of literature, the proliferation and growing dominance of information “confronts storytelling” and “brings about a crisis in the novel” (1969a, p. 88). In fact, Benjamin lamented, “by now almost nothing that happens benefits storytelling; almost everything benefits information” (1969a, p. 89).

The comments of Proulx, Birkerts and Benjamin are indicative of a tendency to hold narrative and information, the novel and news media, the book and digital media, apart. This separation is predicated on a clear delineation between certain cultural and informational forms, and the kinds of content associated with them. These views present information and prose narrative fiction as being in competition for the attentions of readers and cultural consumers. The producers that cultivate informational and narrative modes of expression are effectively striving to secure finite economic resources and social and cultural capital. Any resources or capital lost to information imperils the future of prose narrative by reducing its cultural relevance and eroding its function as a vehicle for critically interrogating the social structures and dominant values of society.

The stakes of these delineations between narrative and information can be high, and they are everywhere evident. For instance, the legal disclaimer found on the copyright page of Gillian Flynn’s bestselling novel *Gone Girl* (2012) asserts: “This book is a work of fiction. Names, characters, businesses, organizations, places, events, and incidents either are the product of the author’s imagination or are used fictitiously. Any resemblance to actual persons, living or dead, events or locales is entirely coincidental.” Such claims are

necessary to safeguard the author's economic rights in the work of fiction and the publisher's investment in them. The author's acknowledgments, however, emphasize the socially situated, and informationally dependent nature of realist fiction and ironize the claim made on the copyright page. "For my many questions about police and legal procedures" Flynn notes, "I turned to some very gracious experts" (2012, p. 406). She thanks a detective with the Overland Park Police Department "for answering my 42,000 emails (a modest estimate) over the past two years with patience, good humor, and exactly the right amount of information" (2012, pp. 416-7). The separation between fiction and reality upon which the economic rights in the work are predicated are, if not contradicted, then at least problematized by the author's recognition of her dependence on others for the facts and information that lend her story realistic credibility.

The tendency to overstate the separate and distinct natures of information and narrative is reproduced and reinforced in the policies governing usage of social media platforms and online communities where non-fictional narratives today proliferate. Personal biographical narratives often anchor the nodes within social networks. A Facebook profile, for instance, consists of a chronologically ordered stream of posts, status updates, comments, likes and tags that connects a user's profile to the other social nodes in their network. Facebook's "timeline" feature ("Introducing Timeline") in turn distills the noisy flow of information into a visual and textual mosaic of the most algorithmically salient events, milestones and photos, thus programmatically narrating a user's life through the lens of Facebook. These interfaces and informational structures might also support fictional narratives and the emergence of a genre of fiction particular to Facebook. However, Facebook's terms of use explicitly prohibit the creation of fictional profiles.

Notwithstanding the propensity to invent the self online (there are numerous instances of individuals fraudulently presenting themselves as suffering from debilitating and life-threatening conditions to curry sympathy and interest), the usage policies of Facebook insist that every profile be attached to a real person. In order to convert user activity on a free communication platform into advertising revenue, Facebook must be able to deliver non-fictional consumers over to advertisers. Such requirements often sustain the division of information-as-fact from narrative-as-fiction that is all too often taken for granted. A revenue model based on low-cost subscriptions might put less stock in whether profiles are fictional, but one that is reliant on advertising revenue can not afford to.

From a structural standpoint, the separation between information and narrative breaks down under scrutiny as information is almost invariably selected, arranged, and presented from a particular perspective, and these processes, though not necessarily fictional or literary, often constitute a simple narrative with both a teller and a tale. Prose narrative fiction – one particular kind of narrative – on the other hand, is often constituted by the selection and arrangement of narrative components that bear the characteristics of information, as I will discuss later in this chapter. Moreover, the realistic effects that are considered a hallmark of the novel – the perception that the characters, events and settings in a novel are, if not real, then certainly plausible – are supported by the provision of descriptive information. This information is designed not to advance or support the plot, but rather to present the impression of reality and the potential for factuality. Such information helps generate an immersive experience in which the reader comes to believe that whatever occurs in the text could, in fact, happen in someone’s historically situated “real life.” Many novels, as I pointed out in the previous chapter, enfold informational

genres within them and remediate methods for transmitting factual messages in order to generate verisimilitude in the text. Information adds an important veneer of semblance to an everyday that corresponds in some measure to a contemporary or historical actuality.

Information

The characterization of information and narrative as antinomies is particularly relevant today, at a time when the production, availability and circulation of information is understood to be central to the rise of information society (Webster, 2006) or network society (Castells, 1996; Barney, 2004) out of the prior conditions of the “control revolution” (Beniger, 1989). As Frank Webster (2006) writes:

Contemporary culture is manifestly more heavily information-laden than its predecessors. We exist in a media-saturated environment which means that life is quintessentially about symbolization, about exchanging and receiving – or trying to exchange and resisting reception – messages about ourselves and others. It is in acknowledgement of this explosion of signification that many writers conceive of our having entered an information society. (p. 20)

As Webster suggests, the rise of information can not be solely accounted for by shifts in the global labour force from manufacturing to services, by a quantitative increase in the amount of information available, or by a decline in the quality of previously more reliable sources for information. More than that, the exchange of information is thoroughly and inexorably embedded in everyday life, with scientific and economic rationality arguably dominating modes of thought, and the increasing normalization of self-surveilling practices. As discussed earlier, Birkerts, Proulx, and Benjamin have asserted that the rise of

information has had deleterious effects on culture and is a threat to the novel. In a more general vein, Paul Virilio, the French philosopher of postmodernity has insisted, as part of a larger discussion of the militarization of technoscience in *Information Bomb*, (2000) that the world “has become alien and obscene, entirely given over to information technologies and the over-exposure of detail” (2000, p. 57). This hyperactive production of informational detail has also been described as “the information glut” (Baron, 2009, p. 217).

Increases in the production of information for technoscientific, political and economic ends have also been viewed with opprobrium by commentators who associate the increase with computing technologies. Novelist Mark Helprin considers the rise of information to be one of the central drivers of historical change in the 20th century, and a key factor in what he terms “digital barbarism,” noting “[t]he history of the last hundred years has been, as much as anything else, the process of encoding information” (2009, p. 9). Similarly, George Steiner viewed the computerized storage and retrieval of information as substantively new, and as distinct from the cumulative acquisition of knowledge, as “a new way of organizing human knowledge and the relations of present inquiry to past work” (1980, p. 199). As Helprin and Steiner rightly point out, developments in computing technology have established a means to gather and analyze greater volumes of information. However, these same computing technologies also support new social practices and forms of cultural expression.

I would like to contest the general perspective on information that Helprin and Steiner represent in several ways. Importantly, information and narrative are deeply bound to one another etymologically, as linguistic signs in the English language, and this association counters any view that holds them apart. Moreover, the production of

information almost always occurs under conditions that have cultural contexts, while prose narrative fiction and other narrative modes of cultural expression are in turn quite dependent on information. Finally, the rhetorical move of positioning narrative against information in order to defend the sanctity of literature frames narrative and information in reductively narrow terms and it fails to adequately recognize the heterogeneity of form and the variability of cultural practices out of which narrative and information arise.

Acknowledging these limitations and identifying the ways in which the concepts of information and narrative are codependent can contribute to a more nuanced understanding of how prose narrative fiction is both narrative and informational, and how this dual nature helps support the development of prose narrative fiction in networked communication environments. Indeed narratives that are born networked, as I argue in the following chapter, often possess highly informational characteristics.

The deep imbrications between the concepts of narrative and information are evident in their etymology. Both terms cover a great deal of semiotic terrain, and they overlap significantly. In the *Oxford English Dictionary*, for instance, one category of definitions that correspond most closely to the conventional usage of “information” is of “The imparting of knowledge in general” (“information, n.”). This group of definitions for information is divided into two general senses, one now rare, the other most closely corresponding to general usage. In the first, and now rare sense, information denotes a larger and broader program of instruction and implies a sustained, deliberate, and even organized process of transferring knowledge that we would associate today with education. While I will not analyze this term in detail, it is worth noting that this sense of information as instruction resonates with narrative in the sense that educational programs are often

strategically significant to the Lyotardian sense of a “grand narrative” or “metanarrative” in which particular historical views are naturalized through ideologically motivated stories of the origins of nationhood, or of the validity of certain regimes of truth (Best & Kellner, 1991, pp. 160-1).

The second broad category of definitions associated with the imparting of knowledge is more atomistic in shifting from the structured, intentional transfer of knowledge (as in the course of education) to a more neutral sense of making particular facts available in some format or other, in the manner that news items, stock quotes, weather, and other smaller units of information about the world are delivered. This meaning arises in the fourteenth century and means “[k]nowledge communicated concerning some particular fact, subject, or event; that of which one is apprised or told; intelligence, news” (“information, n.”). In this sense information is still communicated or told, but is associated with a brief account of current events or occurrences rather than as a larger program of instruction and information becomes implicitly severable from the particular contexts of its presentation. One might receive the same intelligence or news from multiple independent sources without marked difference in the information communicated.

I would like to emphasize here that information, once viewed atomistically as “some particular fact, subject, or event” is eminently more transferrable, more amenable to being communicated in different ways, from divergent perspectives, while nonetheless retaining the quality of conveying specific facts and events. Without turning to definitions of narrative quite yet, I want to point out that this definition of information carries significant similarities to some definitions of narrative, which at a minimum, distinguish between the a

tale and its teller (Scholes et al., 2006) – that is, a series of plot events that drive a story (regardless of medium) and the ways those events are communicated as discourse in a particular order, from a narrator’s perspective, with specific emphasis and in a deliberate style.

Importantly, this definition of information, in which communication by a subject is implied – whether an author, interlocutor, or publication – is followed in the twentieth century by a new sense of the word associated with cybernetics and entropy theory in which information is explicitly severed from any implication of a human source and denotes “a mathematically defined quantity divorced from any concept of news or meaning” (“information, n.”). This definition of information is closely associated in the *Oxford English Dictionary* with the ideas presented in Shannon and Weaver’s *The Mathematical Theory of Communication* (1949/1998). Shannon’s theory was intended to solve a problem of communication engineering for measuring the efficiency of information throughput. In this algorithmic solution to mathematically representing the transmission capacities of a medium, the amount of information refers to the freedom of choice in selecting a message (1949/1998, p. 9), as in the case of a long or short dash, letter space or word space in telegraphy (1949/1998, p. 36).

The divorce of information from meaning initiates subsequent understandings of information that take their separation as natural. Once this separation is naturalized in wider discourse, I would argue, emphasis shifts from conceptualizing information as facts and events communicated in a particular context in which the integuments of perspective and narration are recognized, to one in which information may be characterized as the contextless bits – the binary code – that underpins digital communication technologies.

Without this definition of information it is much more difficult to dismiss or lament the proliferation of information on the grounds of anti-narrativity. In its prior senses, information becomes knowable through agency and purposiveness because it is always situated within the social contexts of communication. Information, in other words, is effectively always told, and the circumstances and format of its telling underpin the sociality of texts as developed in the concepts of imagined communities (Anderson B. , 2006), novelism (Siskin, 1996), and the scriptural economy (Certeau, 1984), in that it supports the novel, news, and other forms of narrative and cultural expression.

Not coincidentally, the mathematical calculation of the capacity of a channel to carry a signal helps establish the field of information theory and a method for measuring the efficiency of communication networks in a variety of media. The ability to measure the efficiency of a communication system in turn becomes an important factor in the development of new communication technologies that permit ever increasing amounts of data to be transmitted and the emergence of the network society we recognize today (Blahut & Hajek, 1949, p. ix). But the ability to transmit increasing amounts of information more efficiently from an engineering standpoint also contributes, as I have pointed out, to protestations over the amount of information available today, and the deleterious effects it has on literacy and literature.

There is an inherent contradiction then, in dismissing information as a threat to the novel and to literature when information connotes, in all but the most mathematical sense of the word, communication by a teller and therefore, at a minimum, the rudiments of narrative. Indeed, the most recently evolved sense of information is predicated on its differentiation from data specifically through the agency of a diagnostic, curatorial, or other

interpretive agent acting to obtain utilitarian knowledge out of the processing of “raw” data. And yet the rawness of data, putatively not yet shaped or narrated into information, has also recently drawn critical attention as the research value of data to the social sciences and humanities increases³, and the economic value of “big data” to businesses grows. As Lisa Gitelman and Virginia Jackson explain in the introduction to the aptly titled collection *“Raw Data” is an Oxymoron* (2013), “[d]ata need to be imagined *as* data to exist and function as such, and the imagination of data entails an interpretive base” (p. 3). In Daniel Rosenberg’s (2013) contribution to the same volume, “Data before the Fact” he historicizes the emergence of the term data as a rhetorical strategy for supporting a particular viewpoint in the process of argumentation. “Whether in mathematics, theology, or another field,” Rosenberg points out, “use of the term ‘data’ emphasized the argumentative context as well as the idea of problem-solving by bringing into relationship things known and things unknown” (p. 20).

The interpretative contexts for the presentation of information may be contrasted against ostensibly “raw data,” however these data are still arguably subject, in their very collection, to guidance and intention that may be protonarrative in nature – designed, that is, to support a particular perspective on putatively inert facts in order to tell a particular story about some aspect of the world. And as Johanna Drucker has noted in *Graphesis: Visual Forms of Knowledge Production* (2013), even the logical, visual, and rhetorical techniques on which the presentation of data relies are far from neutral: they are ideologically imprinted by the administrative exigencies they have previously served, and they naturalize particular points of view that are organized for motivated purposes.

³ See Moretti (2005, 2013) and Jockers (2013) for quantitative methods for literary analysis.

Playing on the latin *captus*, to seize or take, Drucker insists that “*Data are capta*, taken not given, constructed as an interpretation of the phenomenal world, not inherent in it (2013, p. 128). As the idea of information has evolved to accrue new and varied senses, it has always been attached to or associated with contexts in which the information conveyed is presented by someone, and in that sense told to someone else. In the following section I consider whether the concept of narrative harbours information within it in the same way.

Narrative

Narrative, in relation to the concept of information discussed above, is defined more straightforwardly, and perhaps most basically as “no more and no less than a teller and a tale” (Scholes et al., 2006, p. 4). The *Oxford English Dictionary* records three broad meanings associated with the term narrative (“narrative, n.”). One of these meanings is as a mass noun, while another is its use in various legal senses, which I will return to. The most common use of the term carries three denotative meanings. The first of these corresponds most closely to everyday usage and denotes “[a]n account of a series of events, facts, etc., given in order and with the establishing of connections between them; a narration, a story, an account” (“narrative, n.”). This definition is remarkably similar to one associated with information, already noted above: “[k]nowledge communicated concerning some particular fact, subject, or event; that of which one is apprised or told; intelligence, news” (“narrative, n.”). Both definitions emphasize the communication of events or facts (in other words information), and both imply recounting by a subject – in effect, a narrator, and therefore narrative. The common presence of the communication of events is particularly noteworthy, as even the definition of narrative associated by the OED with literary

criticism emphasizes the recounting of events. This definition captures the following denotative meaning for narrative: “[t]he part of a text, esp. a work of fiction, which represents the sequence of events, as distinguished from that dealing with dialogue, description, etc.” (“narrative, n.”). While the aforementioned definition draws particular attention to fiction as a particular kind of literary expression (as opposed to poetry, for instance), this meaning is by no means considered applicable exclusively to fiction.

The key here is that the telling of a story is predicated on a series of events that may be reduced to information about occurrences with some claim to fact within the contexts that they are conveyed. Realist fiction makes claim to the truth status of events as facts within a narrative even when the details of an event are given different significance by characters. The same events may be recounted in different ways by different narrators, but their ability to shape a series of events into a different story is contingent on them being recognized within the work of fiction as having occurred. Often, the tentative facticity of an event within its fictional narrative context is itself a source of experimentation. In the short stories of Jorge Luis Borges (1962), for example, metadiegetic layers of narrative (stories within stories) complicate the factual status of an initial event presented in the frame narrative as its relationship to facts or characters is revealed within narratives embedded at deeper layers and the veracity of the event is thereby called into question. The implicit truth status of information and facts supplied within a fictional narrative are so essential to a reader’s immersion in a novel that it is nearly impossible to pick up a work of fiction and disbelieve, from the outset, the story that is narrated or the narrator through which the story is presented. Readers unwilling to accept the fictional facts (or factual fictions) on which a realist novel depends tend not to read them and prefer non-fiction – though works

presented as entirely factual, such as memoirs and autobiographies, are themselves more often than not narrated, and frequently include fabrications of events that are disputed by other narrators (such as family members) or researchers (biographers or historians, for instance).

The relevance of narrative to non-fiction is noted explicitly in various scholarly reference sources, including as a keyword in the study of culture and society. In *New Keywords: A Revised Vocabulary of Culture and Society* (2005), for instance, Terry Threadgold's starting point for his entry on narrative defines it as "a story, told by a narrator about events which may be factual, fictional, or mythical" (p. 230). In this sense of narrative, a journalistic account of a current event may bear a similar structure to a fictional, literary account of an event that drives the plot of a novel forward.⁴ A text, in other words, may have a discernibly narrative structure regardless of whether the work is primarily an expression of the imagination or the end result of the systematic arrangement of information.

In the field of narratology, the applicability of narrative analysis to a wide range of textual forms has long been recognized. Robert Scholes and Robert Kellogg, in their foundational work *The Nature of Narrative* (2006), advance a cross-cultural theory of narrative that can be applied across literary and cultural forms. Their theory recognizes the codependence of fictional and non-fictional modes of expression. They contend that out of mythical traditions two distinct modes of narrative emerge: empirical and fictional narratives (2006, p. 13). Scholes and Kellogg subdivide the empirical tradition into

⁴ An example of this occurs in the excerpt from *Dracula*, discussed in the previous chapter, in which an article in the "Pall Mall Gazette" provides the context for the appearance of a wolf.

“historical” and “mimetic” categories, with historical narrative bearing an “allegiance specifically to truth of fact and to the actual past” and mimetic associated with “truth of sensation and environment, depending on observation of the present rather than investigation of the past” (2006, p. 13). Fictional narratives are either “romantic” or “didactic”. The former are characterized by esthetic idealizations of the world, while the latter are instructional and moralistic, as in the case of a fable (2006, p. 14).

Importantly, Scholes and Kellogg saw the novel as a creative synthesis of these antithetical categories. The realistic tendencies that characterize the novel hinge on establishing a productive tension between fact and appeal to truth on the one hand, and imagination and creative invention on the other. Novels are a creative reformulation of reality in which the author’s freedom to imagine characters, events and to communicate them to the reader remains anchored to a plausible depiction of a particular experience of the world, whether contemporary, historical, or some combination thereof. Even genres such as science fiction and fantasy, in which characters or settings are explicitly distanced from the societies in which the author writes, will reproduce aspects of a world that is familiar to the reader in terms of political and social structures, character types, or moral and ethical dilemmas. It would be logically and economically impossible to write a novel about forms of life, such as deep-sea creatures, that lacked any semblance to the ways that humans organize themselves, communicate with each other, and relate to their environment. “Meaning, in a work of narrative art,” Scholes and Kellogg insist, “is a function of the relationship between two worlds: the fictional world created by the author and the ‘real’ world, the apprehendable universe” (2006, p. 82).

A novel in which the narrator offers a first person account of his or her life, may be structurally more homologous with an empirical narrative such as a non-fictional memoir than with a second novel featuring an extra-diegetic narrator (a narrator that is not a participant in the story narrated) that reveals the thoughts of a multiplicity of characters through free indirect discourse. Fiction and non-fiction, fictional narratives and informational narratives, then, subsist in a mutually sustaining relation: the suspension of disbelief presupposes an orientation toward a real that the reader can relate to.

At the same time, empirical narratives, or narratives in which “the historical component owes its allegiance specifically to truth of fact and to the actual past” (Scholes et al., 2006, p. 13) still incorporate fabulation within their non-fictional constraints. Literary works of history, autobiography and memoir may generate boundary problems where fiction, non-fiction, and the commercial categorization of texts is concerned. This is precisely what occurred with James Frey’s *A Million Little Pieces* (2004), originally purported to be a memoir but subsequently debunked by the website *The Smoking Gun* as substantively fabricated (“A Million Little Lies,” 2006). Today, the book is described in the front matter as “a combination of facts about James Frey’s life and certain embellishments” and cautions that “[t]he reader should not consider this book anything other than a work of literature” (Frey, 2004). Frey’s “memoir,” now referred to pejoratively as “literature,” exhibits the tensions between narrative modes very well. On the one hand, the author feels compelled to fictionalize reality, to idealize and romanticize the disorder of his personal tale of addiction and recovery, to make a putative real more surreal, in order to ensure his story is a good and therefore influential narrative. On the other hand, the didactic significance of his story relies on an empirical claim: that a drug-addicted alcoholic driven

to criminal acts and having no sense of moral obligation to the society of which he is a part can, under the right conditions and with dedication, be redeemed. Redemption here is relative to the depths from which one is redeemed, and so the author is compelled to ensure those depths are dramatically rendered for readers while simultaneously insisting on the veracity of the claims that are made.

The backlash unleashed by revelations about Frey's embellishments is a telling reminder that even fictional narratives have more than just a mimetic relationship to the external world and may result in or elicit tangible real world responses. Literary theorist J. Hillis Miller (1995) notes that a story "makes something happen in the real world . . . it can propose modes of selfhood or ways of behaving that are then imitated in the real world" (p. 69). Narratives often contain informational content that provides resources to readers for negotiating circumstances and conditions existing in the real world. Narratives may also be the vehicle through which power and influence are exerted over real world subjects. "Sometimes," narratologist Michael J. Toolan (1988) points out:

[T]he narratives told crucially affect our lives: those told by journalists, politicians, employers assessing our performance in annual reviews, as well as those of friends, enemies, parents, siblings, children – in short, all which originate from those who have power, authority, or influence over us. (p. 3)

Narratives, then, are in varying ways influenced inflected by and codependent with information. Works of prose narrative fiction often rely on the provision of information to develop a sense of realism for the reader. Narrative fiction may share many characteristics with non-fiction narratives, or empirical narratives such as histories, autobiographies, and memoirs. Information, on the other hand, is frequently presented as a narrative and told

from a particular point of view. Nonetheless, in various fields of discourse, narrative and information are viewed as distinct in terms of their structure and in terms of how they are consumed by readers, and the codependence of narrative and information is often overlooked. These ways of thinking about narrative and information can be thought of as fallacies. In the following section I consider each of these fallacies in turn, anchoring my discussion of them to particular sources in which they arise.

Narrative and Information: Three Fallacies

When narrative and information are contrasted, at least three distinct fallacies underpin the assertion that narrative and information stand in a dissonant relation. In this section I would like to expose these fallacies in order to emphasize that works of prose narrative fiction may not solely be distributed over, but also be embedded within and creatively exploit the networked communication environments that are more widely associated with information retrieval and exchange than literary production. The three fallacies are the fallacy of structure, the fallacy of reception, and the fallacy of independence. The first of these fallacies differentiates narrative against data and the database from a structural standpoint and contrasts the ordered sequence of a narrative that is given to a reader with the flat, non-hierarchical structure of a database that is not shaped in advance of the user's query. The second fallacy differentiates narrative and information based on distinct models of reception and contrasts intensive reading with the peripatetic scanning of information. The third fallacy treats information and narrative as independent from one another and fails to recognize the ways in which information may be shaped by

interpretive narratives, and how narratives, in turn, are reliant upon information in a number of significant ways.

The fallacy of structure. The first of these fallacies contrasts the linear, chronologically structured and bounded experience of reading a novel with the flatter, unstructured, experience of browsing, searching, or scanning through information resources. Information may be quite literally organized in a database, as in the case of most searchable online resources, or it may be figuratively viewed as a database as in the case of the Internet as a whole, or the Web specifically, where some content may be stored in a database but by no means all information is. Information and the database in this view are vast, boundless, and unstructured. Sven Birkerts (2006) for instance, cautions that "[i]n cyberspace... the slow conventions of narrative will be overwhelmed by simultaneity," (p. 214) by "oceans of fact [and] [b]ottomless wells of data . . . flowing at circuit speed" (p. 229). For Birkerts, the unstructured nature of data is signaled by its comparison to oceans. The boundlessness of data is characterized as a bottomless well, and is contrasted to narrative on the basis of a "simultaneity" that undermines linearity and perceivable progression. On a similar note, Lev Manovich argues in *The Language of New Media* (2001) that works of new media respond to two predominant forms: database and navigable space, with the database in particular contrasted with narrative (p. 215). As Manovich (2001) explains:

Many new media objects do not tell stories; they do not have a beginning or an end; in fact, they do not have any development, thematically, formally, or otherwise that would organize their elements into a sequence. Instead, they are collections of

individual items, with every item possessing the same significance as any other. (p. 218)

The database is “a new symbolic form of the computer age,” a lens through which “the world appears to us as an endless and unstructured collection of images, texts, and other data records” (Manovich, 2001, p. 218). The Internet, dominated by discrete and infinitely re-orderable elements (2001, p. 220), is for Manovich the signal instantiation of the database form. The opposite of database is the logic of narrative, with its sequential order, determinative structure and “cause-and-effect trajectory” (Manovich, 2001, p. 225).

The position taken up by Manovich, however, in which “oppositional logic” is emphasized, elides the characteristics that are shared by narrative and database logic in terms of formal structure on the one hand, and the ways in which interpretation and narrative guide the structural design and contents of databases on the other hand. Roland Barthes (1982), for instance has argued that the presence of data in narrative is inadequately accounted for by structural analysis. Narratology inadequately recognizes what Barthes refers to as “notations,” the extra-narrative, structurally “superfluous” descriptive details or “data” that are not essential for advancing the story, discourse, and character (Barthes, 1982, p. 11). When Flaubert, for instance, writes “on an old piano, under a barometer, there was a pyramid of boxes and cartons” the barometer would seem to have no significant narrative purpose from the standpoint of events, setting or character (Barthes, 1982, p. 11). For Barthes, the function of these nonstructural “residues” is to denote a “concrete reality” (1982, p. 14), to support, in other words, the realist apparatus of the novel and stake a claim of correspondence to the real as constituted within the narrative, but without referring directly to the structural events of the narrative itself. “It is

the category of the ‘real,’ and not its various contents, which is being signified,” Barthes explains (1982, p. 16).

The linguistic construction of Barthes’ “category of the ‘real’” has been associated with the novel as a cultural genre for centuries. As Scholes and Kellogg (2006) note, the earliest theories of narrative emphasize the importance of constructing an impression of reality. In her 1785 work *The Progress of Romance Through Times, Countries, and Manners*, Clara Reeve contrasted the novel with the romance:

The Novel is a picture of real life and manners, and of the times in which it was written...
The Novel gives a familiar relation of such things, as pass every day before our eyes, such as may happen to our friend, or to ourselves; and the perfection of it, is to represent every scene, in so easy and natural a manner, and to make them appear so probable, as to deceive us into a persuasion (at least while we are reading) that all is real, until we are affected by the joys or distresses of the persons in the story, as if they were our own. (Scholes et al., 2006, p. 7)

Manovich (2001) describes narrative as having a necessary and sequential logic and yet novels, the preeminent form of prose narrative, are constituted in part by linguistic content that, as Barthes (1982) maintains, is literally inconsequential. These details are not a necessary element in a sequence but rather a nearly arbitrary one capable of being easily substituted for by virtually any other sign capable of signifying the “category of the real”.

Another way to understand the contradiction is to refer back to Manovich’s discussion of the database and narrative as oppositional based on the paradigmatic and syntagmatic axes of linguistic structural analysis (2001, pp. 229-233). These axes represent associative and sequential relations in linguistic semiotics (Saussure, 1983, pp.

121-5) and correspond, respectively, to the planes of substitution and combination (Hodge & Kress, 1988, pp. 16-17). Thus in a phrase such as “I saw a dog,” the grammatical order is structurally syntagmatic, and permits the extension of the phrase with additional clauses, within the constraints set by grammar, to produce, for example, “I saw a dog chase a cat.” The clauses in a phrase may also be reordered to produce grammatically correct, alternate sentence constructions. However, the order is rule-bound by grammar. In the same phrase, word associations are paradigmatic, and capable of being substituted for while maintaining the grammatical integrity of the phrase and/or its meaning. Substitution of the noun “cat” with “squirrel” results in an equally grammatically correct construction, as does the substitution of the pronoun “I” with “We”.

As my example indicates, both axes function within linguistic constructions: it is not a case of aligning a form of cultural expression with one axis or another, as Manovich implies in associating paradigm with database, and syntagm with narrative. Virtually any structural theory of narrative acknowledges the role of substitution. This is, after all, what makes a structural theory of narrative relevant and applicable to a wide range of narratives. In his foundational work, *Morphology of the Folktale* (1968) Vladimir Propp defines a function as “an act of character, defined from the point of view of its significance for the course of action” (p. 21). For Propp, examples of functions include the “departure” of the hero from home (p. 39), the “provision or receipt of a magical agent” to the hero (p. 43), the “difficult task” in which the hero is presented with a challenge that must be overcome (p. 60), the “punishment” of the villain (p. 63) and of course the “wedding” in which the hero is rewarded through marriage (pp. 63-4). One of Propp’s basic theses is that while all 31 functions are unlikely to be present, and while functions may recur and occur for more

than one character, “[t]he sequence of functions is always identical” (1968, p. 22). In this respect Manovich (2001) is absolutely correct to point to the imperative of sequence, and syntagmatic structure in a narrative. Regardless of how a tale is told, any telling of it must uphold the laws of causality within the tale. Don Quixote cannot discover the world of chivalric romances after completing the picaresque adventures upon which his delusions as a knight errant are based. However, as Propp (1968) notes, the functions present in the formal structure of a narrative structure may be substituted. Indeed this is what gives the formalist description of the folktale the flexibility to simultaneously describe hundreds of distinct folktales.

While every folktale has an interdiction that is addressed to the hero, the nature of this interdiction is highly variable as in the examples of “You dare not look into this closet” or “Take care of your little brother, do not venture forth from the courtyard” (Propp, 1968, p. 26). For the function of “villainy” no less than 24 variations are recorded for the hundred folktales that comprise the study (Propp, 1968, pp. 149-150). And as Propp makes explicit, while the storyteller does not have the freedom to alter the “over-all sequence of functions” or modify several other formal dependencies, she does have the freedom to choose which functions are included or omitted (1968, p. 112). In the structural analysis of narratives then, there is, precisely, both the tyranny of syntagmatic sequence, and the freedom of paradigmatic substitution. The functions in a narrative structure – like Barthes’ “notations” or extranarrative details (1982) – have an informational character in that they may be substituted according to the same paradigmatic logic that Manovich (2001) associates with databases.

I would argue that databases, like narratives, have both syntagmatic and paradigmatic characteristics. Manovich (2001) may be correct to foreground the paradigmatic function of databases and even to argue that these are their most salient characteristics. One database record displayed in a user interface (a book for sale on an ecommerce site, a library record, an online dating profile) is easily substituted out for another, and a set of database records is certainly highly searchable. However, this flexibility of substitution is predicated on a syntagmatic imperative in the structure of the database, for example in upholding this order at the point of data entry, in the addition of new rows, and in the display order of a series of records returned as a list in response to a user's query.

Finally, the linearity and sequential characteristics of narrative that Manovich more or less takes for granted, are subject to temporal involutions fundamental to narrative structure. As Scholes and Kellogg (2006) note, a narrative is "no more and no less than a teller and a tale" (p. 4) but this deceptively simple definition belies the numerous temporal complexities between teller and tale that problematize the notion of linearity. Narrative exhibits what narratologist Gérard Genette (1980) terms "anachrony," a term that refers to the "discordance between the two temporal orders" of story and discourse (p. 40). The strategies for expressing these discordances are many. They include the use of "analepses" and "prolepses" (or more simply, narrative passages of retrospection and anticipation) (Genette, 1980, p. 40), and these in turn spawn narratives that vary in terms of the temporal distance or "reach" from the framing narrative, and the duration or "extent" of time that they describe (Genette, 1980, p. 47). Analeptic and proleptic narratives may be "internal" or "external" to the principal narrative of the story, and a narrative may also

contain substantive variations in “duration” (the amount of time in the narrative spent in recounting events) and “frequency” (recurring narration of events from one or more vantage points) (Genette, 1980, pp. 113-117).

The use of these techniques generates discontinuities between the sequence (or linearity) of the story, and the progression of narrative discourse. If anything, it would seem that the primary characteristic of any narrative – even a print novel read in strict accordance with its paginated sequence – is that it is not straightforwardly linear but rather, at the very least, multilinear in light of the temporal trajectories that proliferate within. Rather, the temporal discord between the teller and the tale ensures that there are always at least three chronological sequences: that of the story, that of the narrative discourse, and that of the reader’s temporal experience of it. To reduce the complex temporal variety of narrative to a single overarching attribute as Manovich (2001) does – to sequence or syntagm – elides the richness that characterizes the novel as a form of cultural expression. And over and above the narrative structure of a novel, print media is also flexible enough to permit further complications to the “linearity” of narrative.

Narratives with formal characteristics that demand or invite the rearrangement of their constituent units by readers are most accurately described as “ergodic.” Espen Aarseth (1997) deploys this term to describe scenarios in which “nontrivial effort is required to allow the reader to traverse the text” (p. 1). Among the ergodic novels recognized as possessing “literary” value, one notable work is Milorad Pavić’s *Dictionary of the Khazars* (1988), a “lexicon novel” structured as “a dictionary of the dictionaries on the Khazar question.” In this work, the reader is invited to follow the trajectory of his choosing, “to use the book as he sees fit” (1988, p. 12), or even “read as he eats” (1988, p. 13). As

instructed in the novel's preliminary notes, readers may read "like the buzzard that flies only on Thursdays," or "move through the book as through a forest" or ultimately rearrange the story "in an infinite number of ways" (1988, p. 13). In *Dictionary of the Khazars* the reader is assigned the responsibility of selection.

In addition to the preliminary notes, closing notes, and two appendices, the work incorporates forty-five lexicon entries distributed between red, green and yellow books based on Christian, Islamic, and Hebrew sources on the Khazars. Lexicon entries are cross-referenced in more than one hundred and fifty linked terms, and the complex narrative structure is further supplemented with numerous notes, annotations and footnotes, as well as letters and folk tales embedded within individual entries. Given the density of connections of the work, virtually every reader follows a different branching path. The unique, variable narrative structure is rationalized by the reader through the pseudo-encyclopedic format of the work. Just as one does not typically read an encyclopedia from start to finish, the reader is not expected to proceed through *Dictionary of the Khazars* in that manner. All narrative threads – whether focalized in the fictional historical past or in the novel's temporal now – are developed within and between encyclopedia entries covering a variety of characters and settings.

Julio Cortazar's *Hopscotch* (1966) is another example of a "non-linear" work of prose narrative fiction. *Hopscotch* differs from *Dictionary of the Khazars*, however, in that the narrative structure is not reflective of a specific informational form, as in the lexicon novel. The prefatory "table of instructions" for *Hopscotch* indicates that the novel "consists of many books, but two books above all" (1966, preface). The first suggested reading strategy is to proceed sequentially, but terminate the reading at chapter fifty-six out of one hundred

and fifty-five total chapters, thus omitting the “expendable chapters” that remain. The second strategy begins at chapter seventy-three and jumps between chapters non-sequentially, following the author’s recommendation at the end of each chapter. Whereas *Dictionary of the Khazars* is comprised of narrative discourse capable of generating a multiplicity of reading orders, *Hopscotch* is designed to for only two. Both examples demonstrate, however, that even narratives designed for print media challenge notions of the inherently sequential linearity of narrative.

The previous points emphasize that the events narrated in a work of prose fiction always involve a creatively productive discord between the sequential structures of story and narrative discourse. The multi-sequential character of narrative may also be amplified by the strategic use of the print form, as in the case of *Hopscotch* and *Dictionary of the Khazars*. But the putative linearity of prose narrative fiction – Manovich’s (2001) sequential imperative – is further undermined if the reading strategies of particular individuals are taken into account. And this occurs at the text layer regardless of its structural variability or whether it is ergodic. Even texts with an expectation of linear progression are still subject to the interpretive improvisations of readers. Readers skip forward and backward through a text in a strategy Roland Barthes refers to as “tmesis” (1975, p. 11).⁵ Barthes also argues that readers experience both “pleasure” (plaisir) and “bliss” (jouissance) in the reading of a text: the joy of being led forward through a work by artful language, narrative suspense and other authorial strategies in the former case (i.e. along the syntagmatic axis of the text), and on the other, to be led “out” of a text to reflect, make individualized, intertextual connections, or follow semiotic associations that are

⁵ See Aarseth (1997) p.78 for the application of Barthes’ concept of ‘tmesis’ to hypertext fiction.

beyond the author's intention or control in the case of the latter term (i.e. along the paradigmatic axis of the text) (1975).

Readers move uniquely through a work, lingering, rereading to increase understanding or in appreciation of the writer's craft, retracing the plot after a disruption, or recuperating narrative flow after permitting thoughts to wander. Impatient readers may skip forward in order to sneak a glimpse at the perpetrator of a crime in a detective story, or in order to accelerate the pace of a slow moving narrative, or to hasten toward the conclusion of a chapter. Readers recalibrate their pace as their attention to events, description, dialogue, internal character reflection, and to the qualities of the writing ebbs and flows.

Narratives, for all their temporal involutions and interpretive interventions are always ultimately consumed temporally, and therefore sequentially and according to a linear progression during reception. But the same might be said of databases. After all, whatever substitutions of equivalent terms are made during data input or output processes, the very fact of substitution is itself generative of a sequence. This sequence occurs as output in, for example, the form of a list of data entries returned by a query, as well as from the perspective of input, in the sense that as a collection of data grows, and is stored in the rows of a database table, subsequent additions of rows themselves produce a sequence that is evident in viewing, organizing and manipulating data through a database management system.

Databases can also be viewed as subject to the logic of chronological sequence. Every interaction that occurs within Facebook, for instance, is ultimately time-stamped and sequenced for display in users' feeds and timelines. Regardless of how many millions of

interactions occur in a given minute, or even second, ordering these events for subsequent retrieval is no more difficult than adding a sufficient number of decimals to the time-stamp. Add enough decimals and the likelihood of a simultaneous event is reduced to a logical impossibility. Similarly, Amazon's database grows sequentially as new users register, purchase products, and as Amazon and third party resellers add new products to the marketplace.

The fallacy of reception. The second fallacy differentiates narrative and information based on distinct models of reception and contrasts intensive reading with the peripatetic scanning of information. This viewpoint ultimately contrasts two narrow views of reading and information retrieval and absorption. On the one hand, reading is associated with a kind of quiet, leisurely, and solitary armchair experience. This way of reading, it is assumed, lends itself to deep reflection, unstinting commitment, and concerted reflection on a narrative work and constitutes the best way to appreciate the author's literary craft. This is embodied by the cliché of the bespectacled librarian sternly delivering a "Sssshhh!" to audible library patrons. The textual consumption practices associated with the Internet, on the other hand are generally viewed as superficial, as simple information retrieval tasks directed at the straightforward comprehension of news and other informational works, retrieved from a variety of reliable, semi-reliable and unreliable sources, in a multitude of formats, and scanned before moving on to the next. An inability to focus for significant periods of time is correlated to the peripatetic paths taken when surfing the Web and is considered evidence of a lack of cultural seriousness. Consumption of information is noisy, directionless, non-authoritative and acquiescent to

distraction in comparison with the solemn, time-honoured authority of reclining in a chair with a weighty tome of classic literature. The Internet is all surface, in this view of things, and the novel is all depth.

One example of this line of thinking is provided by Sven Birkerts (2006). For Birkerts, “constant electronic contact” threatens the “silence and solitude” that he considers to be “the original condition of the world” (p. 237). “Electricity – and the whole circulatory network predicated upon it,” insists Birkerts, “is about immediacy” whereas “[d]epth, meaning, and the narrative structurings of subjectivity” can only be experienced in “deep time, time experienced without the awareness of time passing” (2006, p. 219). “[B]eing on-line and having the subjective experience of depth . . . are mutually exclusive” for Birkerts (2006, p. 219), while “inwardness,” “isolated selfhood” and “the idea of individuality” are “under siege” and being overwhelmed by “connectedness” (2006, p. 204).

Similar, related concerns have been raised in response to the distractions of mass media and audio-visual culture. In his 1972 essay “After the Book?” George Steiner lamented the “marked decline in habits of solitary, exclusive reading” among youth who “resent the solipsism, the egotistical claims on space and silence implicit in the classic act of reading” (1980, p. 197). Steiner foresaw greater reliance on information storage and retrieval technologies and less emphasis on cumulative knowledge, and the necessity of “progress and teleology” in learning (1980, p. 200). Changes in the “‘programming’ of knowledge” (1980, p. 200) were evident in the decline of “genuine ‘full’ reading” and the rise of “pseudo literacy” and the “semi-attentive” reading of popular fiction, advertisements, and the textual expressions of mass culture (1980, p. 201).

For Birkerts and Steiner mass media and computing contribute to a proliferation of information and to the fragmentary consumption of culture. Time and attention are diffused across media, split between diverse forms of cultural expression, and experienced with greater degrees of simultaneity. The chorus of distractions drowns out the possibilities for slow, purposive, and silent reading of books. While neither Birkerts nor Steiner reserves his comments for prose narrative fiction alone, both privilege literature and make frequent mention of prose narrative fiction. They also take special aim against the proliferation of information in their rebukes of contemporary society. Although the opposition of narrative and information is not always explicit, it underpins their observations of how texts are consumed as the social, cultural and economic influence of television broadcasting, games and consumer electronics, and computing technologies grows. The distinctions between “full” and “semi-attentive” reading (Steiner, 1980), and between the private, “forward-moving” and “linear sequentiality” of reading books with the public “circuit of larger connectedness” and “jump-cut increments” typical of the information networks of the “electronic order” (Birkerts, 2006, p. 122) are manifestations of the oppositional view of narrative and information.

In my view, characterizations of the dissonance between narrative and information in terms of the methods of consumption and modes of relating to cultural works are limited in two distinct ways. The first misconception is to overstate differences in reading strategies and to inadequately recognize the ways in which these strategies are mutually supporting. The second misconception is that they fail to recognize the ways in which the cultural forms associated with semi-attentiveness, passivity, and distraction – such as cinema and television dramas – have adapted to take on some of the characteristics of

narrative works that require deeper, more sustained attention – such as the novel – and vice versa. More specifically, such assertions avoid discussion of the ways in which literary prose narrative fiction accommodates a fragmented reading experience and otherwise depicts, mimics or incorporates aspects of visual culture, and how visual culture has been adapted to demand more committed, sustained and attentive modes of consumption. Ultimately, both misconceptions oversimplify the relations between media, materiality, consumption, and the diversity of cultural expression.

The first misconception is to frame different modes of reading as mutually exclusive. Reading strategies differ in relation to the time available (constraints, time of day, etc.), to the setting (reading while in transit, at home, at work, at a library, etc.), according to the purpose of reading (for pleasure, for research, for comprehension, for subsequent recall, etc.), and the material being read (newspaper, magazine, novel, non-fiction, reference work, travel guide, etc.). Different modes of reading do not simply overlap during periods of change, nor do they vary primarily based on class, or geography. Reading in one way does not necessarily undermine or threaten other modes of reading. Steiner's distinction between "full" and "semi-attentive" reading maps relatively well onto the distinction made in the field of bibliographic studies by Roger Chartier (1995) between "extensive" and "intensive" reading (p. 17). The intensive reader consumed a limited number of texts but read these works with great attention to detail and with much repetition. The intensive reader memorized passages, recited them, and transmitted them, and the best example of this is the bible (Chartier, 1995, p. 17). The extensive reader, on the other hand, consumed texts widely and voraciously as an act of concerted intellectual activity and this mode of

consumption has been linked to the increasing availability of printed texts and contributes to the emergence of Romanticism (Chartier, 1995, p. 17).

As Chartier points out, however, these modes of reading, which are homologous to the modes of reading differentiated by Birkerts and Steiner, were more codependent than some scholarship implies. The commonplace books of humanists, for instance, were derivative compilations comprised of excerpts and quotes copied from other texts (Chartier, 1995, p. 17). Commonplace books were, in other words, both a record of extensive reading practices and an *aide memoire* that supported the intensification of those extensive reading practices, a supplement through which texts could be better revisited, remembered and thereby amplified. As Chartier notes, the “reading revolution” that gave rise to extensive reading coincided with a significant growth in consumption of the novel which intensively “seized its readers to become a part of them and to govern them as the religious text had once done” (1995, p. 17).

Clifford Siskin (1994) also notes a complementarity between growth in the publication of periodicals and the changing habits of readers in the Eighteenth Century. Periodicals increasingly directed attention to the identities and gender of authors, thereby reinforcing the profile of the author in relation to the work. This shift also contributed to an increase in public discourse relating to literary production. Readers wrote more letters to periodicals, novels were reviewed more frequently, and in that respect periodicals – a source of cultural information – stimulated awareness of and interest in reading novels. As Siskin notes, “periodicals themselves, despite – actually, because – of their diversification, evidence the increasing consolidation of the novel's cultural power” (1994, p. 37). The importance of the novel is contributable in part, in other words, to “extensive” readers who

took a greater interest in reading periodicals, encountered serially published novels in those publications, and stimulated discourse in the periodicals about the emergence of the novel as a cultural form.

Today we can mark a similar complementarity in the sense that readers often identify narrative works of interest to them in magazines, or the book review and arts and culture sections of newspapers. Moreover, at a time when readers purchase more of their books online, it is often through information retrieval tools and capacious data-capture techniques that readers encounter appealing works of prose narrative. Social book recommendation platforms, such as GoodReads.com (<http://www.goodreads.com>), and the review functions and recommendation engines of online book marketplaces are examples of how readers of prose narrative fiction simultaneously direct their reading habits into both consuming and producing information about books. Contrary to the hard distinctions posited by Birkerts and Steiner, today's intensive readers are quite likely to pair their intensive reading with extensive practices, searching online for historical biographical contexts of the works they read, and sharing their thoughts and opinions on them in their social networks and in online discussion forums.

There is a material dimension to this complementarity between intensive and extensive, full and semi-attentive reading, between the reading strategies we associate with the linearity of narrative and the non-linearity of information seeking. This complementarity exists between what Paul Saenger (1982) describes as "narrative" and "reference" reading, and he considers it to be intrinsic to the codex form of the book (p. 373). From a reader's standpoint the principal advantage of the codex over the scroll, Saenger emphasizes, was that it permitted random access, which proved useful for

consultation in the production of sermons and letters. The material constraints of contiguity and linearity characteristic of the scroll were supplanted by the convenience of numerical page referencing and marginal notation, differences that provided not only utilitarian benefits but also accommodated distinct and competing approaches to spirituality and religious scholarship at the dawn of Christianity (Saenger, 1982, p. 374). The random access properties of books exploited for reference reading (and in concert with, rather than opposition to narrative reading) have even been viewed as the model for non-sequential, non-linear consumption. Peter Stallybrass (2002), for instance, has argued that “in many ways, it is the book form – the *combination* of the ability to scroll with the capacity for random access, enabling you to leap from place to place – that has provided the model [for] other cultural technologies” such as hypertext (p. 42).

As Chartier (1995), Siskin (1994), Saenger (1982) and Stallybrass (2002) show, when reading habits are placed in their particular social, historical, and material contexts, sharp distinctions and oppositions between intensive and extensive strategies are difficult to substantiate. The literary narratives associated with deep focus must be situated within the media ecologies in which they participate, and when they are, the reading practices of a wide variety of texts, and the material forms in which they are read, appear to be far more complementary and codependent than Birkerts (2006) or Steiner (1980) suggest. This certainly applies to narrative and informational cultural forms.

The second misconception regarding reading practices is the presumption that “informational” properties are extrinsic to the narrative form and vice versa. I have already touched on this problem in my discussion of the fallacy of structure, insisting that narratives are not solely syntagmatic, but also, in important ways, paradigmatic. Here I

want to direct attention to the ways that the cultural forms Birkerts (2006) and Steiner (1980) link to deep reading have also adapted and matured to the point where they no longer support a strongly oppositional thesis. The benefits of slowness, which might once have less disputably belonged to the novel, are today realized in other media, and by other cultural forms. I also want to illustrate how the kinds of literary prose narratives that Birkerts (2006) and Steiner (1980) uphold often exploit and even rely upon informational resources for both content and form, thereby foregrounding the importance of informational forms to the production of prose narrative.

Prose narrative fiction, as Birkerts (2006) in particular makes clear, is aligned with slowness, with sustained, silent focus and attentiveness to deep, complex, and socially meaningful interactions between action, characters and setting in narrative literature. Slowness in this case signifies several features. It can refer in part to the generally significant length of a novel (as distinct from the novella or short story) and the implication that consuming a novel requires a longer and greater commitment from a reader than, for instance, watching a film, attending a concert or play, or participating in a sporting event or leisurely amusement such as a board or card game. Dramatic television serials, however, over the course of many episodes, develop character and plots with a comparable level of complexity to the novel. This is particularly true of the programming developed by specialty cable channels such as HBO, AMC and Showcase. Today's multi-season, dramatic television serials such as *The Sopranos* (1997-2007), *Mad Men* (2007-), and *The Wire* (2002-2008), may require a greater total time commitment than a substantial novel. More importantly, the total viewing time affords ample opportunity to explore characters in extraordinary psychological and sociological detail, as in the case of Tony Soprano of HBO's

The Sopranos and Don Draper of AMC's *Mad Men*, and this depth was once largely restricted to narratives published in codex form.

Dramatic serials also permit extensive and detailed social critique, as in the case of HBO's *The Wire*, which looks at the social problems in Baltimore's underprivileged neighbourhoods from the vantage point of the gangs who run the drug trade (season one), the maritime port through which the drugs flow (season two), political networks (season three), the school system (season four), and the news media (season five). With each season, viewers of *The Wire* acquire a much more complex, nuanced, and troubling understanding of how the social problems that perpetuate cycles of poverty, criminality and abuse are imbricated. It is this narrative complexity that has prompted television critics to argue that the dramatic television series has supplanted the novel (Doyle, 2012). Regardless of whether or not one endorses the view that dramatic television has surpassed the novel as a cultural form, it would be difficult to dispute the fact that television has evolved to the point where those of us who watch it are no longer necessarily "amusing ourselves to death" (Postman, 2006).

Conducting a detailed comparative media analysis of every cultural form or genre from the standpoint of narrative is far beyond the scope of this work, and in the field of narratology it is an ongoing and perhaps endless process (Ryan M.-L. , 2006). Thus, even if one were to dismiss the narrative forms that are specific to network communications as less complex, less literary, less immersive, or really, less anything than the novel, there is nothing to suggest that this putative lack is a necessary one. Dramatic television series, it also bears noting, are frequently augmented by websites that enable deeper character exploration, and they generate a substantial amount of user-generated informational

content. Cable networks often supplement episodes with behind the scenes footage, outtakes, character sketches, actor biographies, and other forms of content that feed viewers' desires for a more intensive engagement with the shows and their characters. This desire is met through the provision of extensive multimedia information resources. The point is not that an intensive experience of television narratives is predicated on a surrounding sphere of informational resources, but simply that dramatic television serials are supported by such resources.

Viewers also generate a substantial amount of informational discourse around their favourite programs. They participate in real-time Twitter conversations using hash tags to link comments together into a feed, and these hash tags are very often suggested to viewers by the networks themselves, displayed on screen briefly during the broadcast of the show. Viewers discuss the shows and their characters in online discussion forums, and on social networks. They seek out information about the characters, the actors, the settings, and the historical and geographical contexts of their favourite shows. The depth of character, and complexities in the relation between story and narrative discourse, in other words, are not exclusive to the novel, nor incommensurate with the production, circulation, and consumption of information. In many respects, the intensive experience of a television serial is signaled by a viewer's desire to extend his or her experience of it – to watch the series again, to become active in discussion forums, to watch the extra material included on DVD sets, to talk about the show by the proverbial water cooler and so on.

The mutually supportive relation between narrative and information is also evident in how authors draw upon informational resources in the production of prose narrative fiction for inspiration and to give a work its narrative structure. Two examples of this

process occurring are Primo Levi's *The Periodic Table* (1984) and E. Annie Proulx's *The Shipping News* (1993). Levi's semi-autobiographical short story collection is comprised of twenty-one chapters, each linked to a chemical element. Both the structure and the content of the work foreground the importance of scientific information in the social development of the narrator, and Levi's work in large measure explores the degree to which the acquisition or application of chemical information may have deeper narrative implications. Proulx's *The Shipping News* relies heavily on *The Ashley Book of Knots* (Ashley, 1944) to supplement the reader's understanding of the work with meanings derived from the book of knots. Each chapter is marked by an epigraph excerpted from *The Ashley Book of Knots*, and each epigraph provides a gloss on a particular character or event in the chapter. Here, even the almost purely informational and encyclopedic content of *The Ashley Book of Knots* – a compendium of knots, their uses, and how to tie them – is exploited and refashioned in the creation of a narrative work. Knots are so important to the narrative that Proulx makes particular mention of *The Ashley Book of Knots* in her acknowledgments (1993).

One approach to thinking about Levi's use of the periodic table, and Proulx's use of an encyclopedia of knots as a narrative apparatus is through Gérard Genette's (1997) concept of "peritexts." Peritexts are textual elements such as titles, chapter headings, forewords, afterwords, prefaces, etc. that are simultaneously apart from a text and at the same time ineluctably a part of it. These textual components influence how a reader interprets a text. Some peritexts may themselves be comprised of a narrative structure, such as a preface or foreword, but others, such as tables of contents, the publication and printing information, author's name and even date of birth, are much more informational. All peritexts and epitexts (textual matter extraneous to the published work, such as author

interviews and correspondence) perform important paratextual functions and form the “threshold of interpretation” alluded to in Genette’s title. This threshold in some respects navigates the boundary zone between narrative and information, between story and facts. Genette makes particular mention of “factual paratexts,” information such as the publication date, the gender and age of the author, and any literary prizes awarded for the text – information, that is, “whose existence alone, if known to the public, provides some commentary on the text and influences how the text is received” (1997, p. 7).

Neither the structure of a narrative text, nor its paratextual supports is entirely immune or resistant to information. Moreover, even when paratextual information is absent from a work – in a novel devoid of chapters, for instance – the writing process may itself be grounded in informational research conducted through the review of archival documents, newspapers, diaries, and other texts upon which authors of prose narrative rely in order to produce a work that conveys an authentic, realistic historicity to its readership.

Information is embedded in the very fabric of narrative inspiration. As Umberto Eco has written: “Whenever I’m asked what book I would take with me to a desert island, I reply, ‘The phone book: with all those characters, I could invent an infinite number of stories’” (1994, p. 60). What Eco’s statement makes clear is that narrative works that exploit informational resources for their structure, such as *The Periodic Table* and *The Shipping News*, in order to produce an intensive reading experience for an audience, often emerge, whether explicitly or implicitly, out of literary production practices that exploit extensive and informational reading practices. From the standpoint of reading practices, putative binaries surrounding the depth of the reading experience seem difficult to support

at the level of production or reception, and this simultaneously suggests that narrative and information are likewise more proximate in their orientations.

The fallacy of independence. Following on the previous two fallacies regarding information and narrative, I want to contest oppositional logic that presents them as independent epistemological models. I would like to mount this challenge by drawing attention to the ways in which information may be shaped through interpretive narratives, and how narratives, in turn, are reliant upon information in a number of significant ways. What I take issue with is the assertion that "[d]atabase and narrative," as Lev Manovich insists, "are natural enemies" (2001, p. 225). To be fair, as I have already indicated in the section above, Manovich's argument progresses a good deal further than the antagonistic statement with which I here begin. Manovich does, for instance, come around to the possibility that database might support narrative (2001, p. 228) but this is presented as a kind of redeeming quality of the database, a consequence of its preternatural flexibility. Even when the potential for database and narrative to combine is acknowledged, Manovich still frames this as the subsuming of one cultural form by another "whose logic is the opposite" (2001, p. 228). At the root level, however, even when the collection of data does not emerge straightforwardly out of narrative cultural expression, the collection process may still be shaped by organizational and structural logic with narrative attributes.

The cultural and interpretive conditions for the extraction and collection of data are increasingly being recognized. Lisa Gitelman and Virginia Jackson point out in the introduction to *Raw Data is an Oxymoron* (2013), "[d]ata need to be imagined *as* data to exist and function as such, and the imagination of data entails an interpretive base" (p. 3).

This insistence on the interpretive dimensions of gathering data is so critical to our cultural understanding of the importance of information in contemporary society that it underpins the disciplinary shift from mass communication to communication as culture, and the recognition that communication necessarily occurs within cultural contexts. As James W. Carey and John J. Quirk (1989) point out in their critique of the “third communications revolution” or “cybernetic revolution” and the “increasing [of] available information by a quantum leap” (p. 190): “There is no such thing as ‘information’ about the world devoid of conceptual systems that create and define the world in the act of discovering it” (p. 195).

Insights into the relation between database and narrative have also emerged out of the digital humanities where Manovich’s (2001) oppositional take on database and narrative has elicited a flurry of responses. In a 2007 issue of *PMLA*, the journal of the Modern Language Association, Ed Folsom’s “Database as Genre: The Epic Transformation of Archives” and his numerous respondents offer a collective disavowal of Manovich’s oversimplifications. Together, these commentators produce a discursive exchange that, while questioning the opposition of database and narrative, at the same time validates the boundaries of those distinctions.

Literary scholar Ed Folsom’s encounter with Manovich is prompted by reflections on developing *The Walt Whitman Archive* (Folsom, 2007). Folsom’s involvement in the archive offered him a vantage point for thinking about the digitization of literary texts and contextual materials and their provision to users in an online archive. Online databases, notes Folsom, increase access to and facilitate comparative analysis of digitized documents that could never be physically examined side-by-side. The database format enables scholars to unhinge archival projects from the economic imperatives of print publication

and move from limited, chronologically sequenced biographical narratives to copiously glossed and illustrated multimedia encyclopedic resources. These possibilities underscore the rationale behind Folsom's characterization of database as "a new genre" (2007, p. 1576), a characterization that reinforces Manovich's privileging of computation over storytelling and selection over sequence in the digital media ecology.

The numerous responses to Folsom are to some extent anticipated by Folsom himself who, while seemingly endorsing Manovich's binary logic, nonetheless describes Whitman as "an early practitioner . . . of the database genre" and notes the database-like qualities and informational aspects of his poetry, present in the "shifting from moments of narration to moments . . . of data ingestion," and in the "pages of data entries," the "unruly catalogs" and "incorporating [of] detail" (2007, p. 1575). And yet, if Whitman's literary production offers evidence that the database genre predates the computational logic of the database itself, does the Whitman's poetry not undermine any claim to the new or computational properties of database logic? Is the productive, artful, literary coexistence of database and narrative within the poetry of Walt Whitman not evidence of fruitful compatibility rather than antagonistic opposition?

A succession of respondents to Folsom argues this point from various perspectives. Peter Stallybrass notes that in appropriating phrasing, character elements and plots from other sources, "Shakespeare consciously practiced his own form of database" (2007, p. 1581). He cautions that "[t]o make database entirely a feature of the present is to ignore what information is stored and why" (2007, p. 1583). For his part, Jerome McGann emphasizes that "[n]o database can function without a user interface [that] embeds, implicitly and explicitly, many kinds of hierarchical and narrativized organizations" (2007,

p. 1588). Jonathan Freedman also calls attention to the ways in which a user's experience of a database is shaped by the decisions that precede and coincide with the existence of the database itself. Freedman insists that "[t]o celebrate the branching, rooting, rhizomic, proliferating quality of database – to celebrate database as a kind of autonomous form, rooting and branching by a logic of its own – is . . . to downplay the inclusions, exclusions, choices that have gone into the making of databases" (2007, p. 1597). What each of these respondents to Folsom insist upon is that data and information do not exist independently of the interpretive contexts for their collection and organization. Furthermore, the interpretive conditions under which data is amassed often impose hierarchy, sequence, and order – characteristics that Manovich associates with narrative. These contestations make clear the need for a more nuanced approach to understanding the relationship between narrative and information, one that I hope to provide.

Again, to be fair, Manovich acknowledges that "data does not just exist – it has to be "generated" (2001, p. 224), however he inadequately recognizes the agency involved in this process. "Data creators have to collect data and organize it," notes Manovich, "or create it from scratch. Texts need to be written, photographs need to be taken, video and audio material need to be recorded" (2001, p. 224). But why are these cultural materials produced, and under what conditions? The writing of texts and the production of audio and visual materials, whether primary or secondary to its status as data, I would insist, are often predicated on an act of storytelling and part of a narrative structure (a series of photos documenting an event, for instance). More recently, Manovich (2012) has argued that one of the most significant sources of "big data" for humanists is "born-digital user-generated content." "For the first time," Manovich writes, "we can follow imaginations,

opinions, ideas, and feelings of hundreds of millions of people. We can see the images and the videos they create and comment on, monitor the conversations they are engaged in, read their blog posts and tweets, navigate their maps, listen to their track lists, and follow their trajectories in physical space” (2012, para. 6).

But here the narrative conditions for the emergence of “big social data” should be clear: If a user adds a song to his playlist, the action is inherently meaningful only within the sequence of the playlist and in relation to the curatorial logic of social and cultural relevance. When a Flickr user uploads a photo, the image is not fundamentally replaceable with any other but, on the contrary, meaningful as part of a collection or set, or for having been selected for inclusion in a thematic group. Even if never explicitly tagged or organized by the user, the uploaded images are still ordered sequentially within the photostream according to the date of creation and thus placed within a chronological sequence that represents at minimum, a narrative of the Flickr user’s photographic interests or social experiences.

Manovich (2001), ignores, in short, the very tangible beginnings and endings, and the ultimately sequential organization of the discrete informational units that are navigable on the World Wide Web. A single blog entry, news article, Flickr image or social comment may indeed be found or organically encountered through a search engine, social network feed, or other aggregator of information, and it may certainly be managed non-hierarchically in a flat database with respect to the atomic units of communication (tweet, blog comment, Facebook status update). Web content may be viewed as unstructured in that sense. However user-generated content is almost invariably and unavoidably sequentially organized in its native online context (the chronologically sequenced Twitter

feed, blog roll, or Facebook post). This ordered sequence is not subordinated to the data's presence and position within a larger database, nor is it pasted on "afterwards," but rather the reverse is true: The presence of the information in a database is predicated on its value within a digital cultural context that is likely a narrative expression.

When Manovich asserts in *The Language of New Media* (2001) that "creating a work in new media can be understood as the construction of an interface to a database" (p. 226) he has the process fundamentally reversed: As far as Internet resources are concerned, rarely does the database come first and the consideration of how and why users will interact with it come second. Web application and website development begin, of necessity, with the process of identifying target audiences and modelling their use of a service or resource in what are known as use-case studies – descriptions of how users are anticipated to interact with the system. Both exercises involve a very deliberate process of narrativizing the user experience and these exercises precede the development of a database structure. Until the expected user interactions have been reviewed, it is impossible to fully ascertain what kinds of data need to be captured.

Even if we set aside the narrative conditions for aggregating data at the root level, the big social data that Manovich views as inherently informational more often than not exists in a cultural context that involves some form of narration. The minimalist communication represented by tweeting a link to a news story in effect places the twitter user in the position of narrator: it is the agency of the twitter user, her endorsement and curation of the information linked to in the tweet that makes the story accessible to her followers and places it within a chronological (date and time of the tweet) and thematic (hash tags) sequence. While this example pares narrative down considerably and may be

viewed as more empirical than fictional in the sense that Scholes and Phelan use the terms (2006, p. 13) it has significant relevance to the production of more extensive prose narratives. The same structures that support micronarratives may be aggregated to produce larger fictional narratives with greater complexity, depth and sense of progression.

Twitter fictions, for instance, realize the narrative potential of a sequence of tweets for developing a more complex story. The @MayorEmanuel Twitter account (Sinker, 2011), written by Dan Sinker is a parody account of former White House Chief of Staff and current Chicago mayor Rahm Emanuel's election campaign. The account was lauded for going beyond simple parody and for being "a fully realised work of fiction" (Economist Staff, 2011). More collaborative and less likely to earn accolades, the *BurtonStory* (2010) project was launched in association with an exhibit on Tim Burton's designs held at TIFF Bell Lightbox in Toronto. The project was a digital take on the Exquisite Corpse collaborative writing technique. After an initial tweet to seed the story, each day the best submission submitted via twitter was selected to advance the story until the story concluded, 87 days, and 87 tweets later. Works of prose narrative fiction have also been developed natively within blogging software and across social media platforms, as in the case of *The Lizzie Bennet Diaries* (Su et al., 2012-2013) an online video weblog adaptation of Jane Austen's *Pride and Prejudice* (2000).

Data that is not obviously social – that is not generated out of or provided through social interactions or – still arises out of contexts that are interpretive, cultural, and social. Data that does not have an unequivocally narrative structure may emerge out of conditions of narrativity. All data, whether explicitly gathered for such purposes or not, is subject to subsequent forms of narration. There is little compelling justification, I am arguing, for

holding database and narrative apart as binary logics or distinct ontologies. Recognizing the ways in which database and narrative mutually animate our processes of understanding under conditions of codependence is essential for a meaningful discussion of how prose narrative fiction is commensurable with the informational network of the Internet.

To this point, my analysis has been limited to problematizing the tendency to hold database and narrative, information and story apart. Having, I hope, convincingly argued that narrative and information are much more intimately bound together than has been acknowledged by scholars working in fields relating to prose narrative fiction and network society, I want to now look at narrative and information in relation to circulation theory. This approach is, I believe, more conducive to recognizing the imbrications of narrative and information without reifying their separation. I will then offer a detailed example of how network culture is permeated, through and through, with both narrative and information.

Narrative, Information, Circulation, and Flow

While various scholars have, as I have noted, contested the database versus narrative dichotomy introduced by Manovich (2001), these contestations often leave the distinctions intact in a way that elides the extent to which databases and narrative expression are intertwined in the networked media ecology. N. Katherine Hayles (2007), for instance, in her response to Ed Folsom's article, characterizes database and narrative analogically as "symbionts," or biological species with a symbiotic relationship to each other, rather than as enemies or opposites. Hayles describes the relationship between narrative and database as a "complex ecology" of mutually requiring "ontologies, purposes, and histories" (2007, p.

1603). Narrative and database in this conception, however, are still held rather deliberately and forcibly apart. Hayles frames narrative and database as “different species” (2007, p. 1605), as cultural forms that – however intertwined they may be in practice – are still best thought of as distinct elements within a system. I would like to move beyond this separation by emphasizing the need to shift from thinking of narrative and database as distinct forms concretized in particular material expressions to conceptualizing them as complementary processes in the cultural production of meaning in an information society. In other words, we need to think of narrative and database in terms of media ecologies rather than bio-environmental ecologies in order to recognize how narrative and database are conjoined within processes and circuits of production. The most suitable model for developing such an understanding is that of circulation theory.

Circulation theory recognizes the importance of communities, users, and active subjects (and the processes through which they interact) in shaping the interpretive contexts within which cultures, cultural forms, and individual cultural expressions are given particular, but transitory and unstable meanings (Straw, 2010). As cultural expressions and cultural forms circulate they acquire and generate variable meaning. They become subject to social practices of reinterpretation and recontextualization and are shaped by broader globalized processes of transculturation, appropriation and cultural exchange (Rogers, 2006). The imperative to interpret stable, bounded cultural texts, either by immanent subjects or from a critical outside, is itself decentred in order to shift attention to the mobility and variability of forms – to what Gaonkar and Povinelli describe as the “edges of forms as they circulate” (2003, p. 392). “[C]irculation and exchange,” Lee and LiPuma emphasize, are “constitutive acts in themselves” (2002, p. 192). This condition

describes the circulation of culture (i.e. the flow of cultural goods and expressions within transnational information and communication networks), but also economic “cultures of circulation” – the adaptation of marketplaces and other structurations away from the kinds of labour and product-centred marketplaces described in Marxist political economy.

Marketplaces are increasingly characterized by value generated through oscillations in global markets and the “metatemporal” interactions of financial instruments such as derivatives. Economically, and by extension culturally, there is a shift “from a production-centric system to one whose primary dynamic is circulation” (Lee & LiPuma, 2002, p. 209). The wide availability of digital media technology with embedded production capabilities contributes to this condition and supports both the proliferation of digital cultural expression and the accelerated circulation of these expressions over communication networks (Meurer & Coombe, 2009). Indeed, a key feature of postmodernity is that the enunciation of meaning by consumers through their selection and individuated use of products is increasingly digitally mediated (Poster, 2004).

Circulation theory permits us to see narrative and database as each shaped by “the contexts and conditions of becoming – the entailing, demanding, seducing, and enticing intoxications that produce the various surfaces of a recognizable form as such” (Gaonkar & Povinelli, 2003, p. 396). Databases and narratives are both constitutive of and constituted by the dynamic cultural interactions that animate the global media ecology. Their signature properties are productive of and produced by the constant transformation and reformulation demanded by a circulatory approach: The database is by design relational, modular, extensible, and scalable while the fundamental distinction made in narrative between story and discourse ensures that every tale is generative of countless media-

specific, culturally inflected discursive retellings. If, as Will Straw has suggested, the key question is “how the movement of cultural forms presumes and creates the matrices of interconnection which produce social texture” (2010, p. 23) the cultural forms of narrative and database need to be recognized and studied in the context of these social textures.

In this last section I want to look more closely at some examples of how narrative and database are shaped by social and technological processes and participate in intermedial flows. I will draw attention to how these interactions support the fluid contours of cultural expression in network environments and, toward the conclusion of this chapter, consider their relevance for prose narrative production specifically. Cuisine offers a particularly instructive example of the circulation of culture generally, but also within network environments specifically. Recipes themselves have both informational and narrative features, and they arise out of social conditions where both the selective logic of database and the sequential logic of narrative are present. As recipes are circulated they are subsequently compiled into informational resources – cookbooks, online recipe databases – that are also constitutive of narrative experiences such as festive meals, celebrations, and of subjectivity, as in the case of signature recipes or personal comfort foods.

Conventional cookbook usage conforms to what we have so far aligned with database logic: a cook consults the cookbook as an informational resource for the purpose of selecting one or more recipes, in order to prepare a meal of some kind. This is the logic of selection and it is operative not only in the choices the cook makes, but also in the choices that the author makes in which recipes to include, and which dishes best or most usefully represent a national cuisine or other organizing theme. Long before recipes are

compiled into a book, of course, they circulate between family members and among friends, and often supply their users and participants with important narrative and cultural utility. Signature recipes may be particularly meaningful for families, and even guarded secretively to prevent unregulated circulation. The origins and importance of a family's ownership of a recipe may constitute, in and of itself, a narrative within the larger genealogical and cultural story of a family's history. My request for a friend's tomato butter recipe, for example, was rebuffed when I was informed that it was a family recipe and not permitted to be shared outside the kinship group. Recipes, while strictly speaking informational (and thus much less protected by copyright than a fictional story), exhibit narrativity. The cooking directions, as distinct from the list of ingredients and cooking temperature, for instance, are strongly sequential. Actions must often be followed, for baking in particular, in a specific order in order to yield satisfactory results.

Narrativity is also central to how marketing methods are utilized in order to capitalize on celebrity cooking culture. What makes cookbooks alluring to readers and cooks – apart from their usefulness as an information resource – is often the personal narratives of celebrity chefs, the stories about how they entertain, where they first encountered a recipe and the memories they associate with it. There is the psychogeography of culinary traditions, one kind of pasta sauce redolent of a region once travelled in, or a Provençal stew a reminder of the fresh ingredients once sourced at a local French market. Today, the photographs in a celebrity cookbook are less likely to be studio photos of a food stylist's sculpted dish, and more likely to document staged entertaining. (Ina Garten's *Barefoot Contessa Family Style*, 2002, features countless entertaining photos with barely an instance of patterned clothing – Garten's guests clearly having been

instructed, as for a studio photo shoot, to only wear solids.) The effect is to make the consumer feel a part of the celebrity chef's world, to literally have a seat at table, to be involved in the narrative experience of a birthday celebration or garden party.

As a consequence of the oral delivery of cooking instructions typical of the television format, recipes are now less structured as ingredient lists and preparation instructions and more as narrative content. Jamie Oliver's recipes, for instance, are always in his distinctive culinary vernacular, and they instruct cooks to "[p]ut your chopped tomatoes into a bowl with a *glug* of extra virgin olive oil and a *swig* of balsamic vinegar" (italics mine) (2007, p. 215). The seemingly faithful transcription of Oliver's dialogic instructions reflects practices of oral transmission and circulation in which recipes are shared. This is, no doubt, more than just an effort to personalize the recipe, but also a strategy for bringing recipes more convincingly under the economic protection of intellectual property regimes in the form of authorially produced and sanctioned culinary stories. When the bulk of a recipe, including such informational details as cooking temperature and doneness, is given in the form of autobiographical narrative discourse, it leaves only the list of ingredients – the culinary facts as it were – clearly unprotected by copyright law, and as a result may protect the recipe from circulation without economic compensation to the chef.

Today, it seems that few cookbooks are published without a personal introduction or foreword that situates the mastery of a particular cuisine within a narrative account of the cultural significance of food for the author. The first sentence of the introduction to *New World Provence* (Quaglia & Quaglia, 2007), for instance, is "I never quite knew what I wanted to be when I grew up," an analeptic reference from the narrative present of the cookbook's creation to the childhood past that at the same time refers proleptically to the

past future of imagined adulthood (p. 15). This first sentence initiates a six-page narrative of the author's personal journey of becoming a chef and restaurant owner. *Cucina Simpatica* (Killeen & Germon, 1991), also written by married chefs and restaurateurs, similarly begins with an abstract that summarizes the introductory narrative: "When we try to explain to people why we made the move from the visual arts to the art of cooking, we have a difficult time because the transition seems so natural to us, so logical" (p. 11).

The centrality of narrative in the culinary culture of circulation is even present in cookbook titles. David Rocco's cookbook, *Made in Italy* (2011) is a double reference, on the one hand indexing the Italian cuisine described within it and on the other signifying the Italian-ness of the author, and the alignment of his identity with the cuisine of his ancestral country. This double meaning navigates on the one hand, the cultural form of the database – the cookbook as informational compendium, as database of recipes – and on the other, the cultural form of narrative – the cookbook as personal journey, as description of the subjecthood-shaping cultural vectors of food, nation, and family. "As a proud Italian-Canadian," an online summary notes, "David says his love for food, cooking, and preparing meals for friends and family is part of his DNA" ("La Dolce Vita Cookbook").

Celebrity cookbooks also illustrate the high level of intermediality that occurs within the culinary culture of circulation. Chefs such as Jamie Oliver, Nigella Lawson, and Ina Garten will often introduce a recipe in a television episode, then publish it in book form as part of a collection, cross-market the recipe on a promotional website, and provide a live demonstration of it for a nationally televised talk show segment. Thus David Rocco's *Dolce Vita* television program (2004-) begets a cookbook of the same name (2008), as does Chef Michael Smith's *Chef at Home* series on Food Network (2011; 2009-2013). David Rocco's

first television series, *Avventura: Journeys in Italian Cuisine* (n.d.), is the narrative of Rocco's culinary tourism. The culture of circulation that underpins cuisine also surfaces in intertextual references to other chefs, restaurants, and cookbooks as borrowed recipes invariably require their own frame narrative. Ina Garten prefaces a recipe for turnips by describing it as her favourite dish at Union Square Café and her pleasure in discovering that it had, in turn, been published in the restaurateur's own cookbook (2002, p. 112).

Cuisine is, clearly, a cultural sphere in which circulation plays a prominent and crucial role. Communication networks only amplify and accelerate the circulation of recipes and culinary culture. Two excellent examples are the *Julie & Julia* phenomenon and Epicurious.com, an online recipe resource that invites extensive user interactions. *Julie & Julia* began initially as a blog (Powell, The Julie/Julia Project Blog, 2002-2003) – the Julie/Julia project – in which blogger Julie Powell set out to document her attempt to cook all 524 recipes in Julia Child's classic *Mastering the Art of French Cooking* (1968) in the span of a year. The blog was so successful, and garnered so much media attention, that it was eventually turned into a bestselling book *Julie and Julia* (2005), and then a Hollywood film *Julie & Julia* (2009).

The central premise of one individual's experience of cooking being channeled through a classic cookbook is a striking inversion of narrative and database logic. Powell's resolve is not to *master* French cooking, or to improve her cooking abilities generally, or to simply try out a variety of recipes from different sources and blog about it, which countless other bloggers have done. Instead, the novelty of Powell's project is that she sets out to exhaustively consume the database of recipes contained in Julia Child's cookbook. In doing so, Powell's endeavour effects a kind of figure/ground reversal in which the narrative of

her own personal experiences and culinary abilities becomes the principal focus and the classic French recipes are the backdrop. The sheer scope of the task Powell sets for herself constitutes a narrative foundation in which the reader doesn't wonder whether Powell is skilled enough to cook a particular dish, but rather whether she will successfully complete her Herculean task. This supplants the logic of selection of the database with the sequential logic of narrative. The logic of selection is taken to its extreme and ultimately effaced by Powell in selecting all recipes instead of one or two, and thereby shifting attention to the narrative sequence of completing a larger process. Powell's initial project is in a sense less like the domestic instruction and celebrity chef model of the Food Network, and more like the conceptual poetics of the digital avant-garde, a kind of culinary take on Kenneth Goldsmith's extremist "uncreative writing" (n.d.) project of transcribing the entire textual contents of an issue of *The New York Times* and publishing it as a nine hundred page book (Day, 2003).

Epicurious.com is an online compilation of recipes previously or simultaneously published in culinary magazines owned by Conde Nast, such as *Gourmet*, *Bon Appetit*, and *Self*. Epicurious actively promotes the circulation of its recipes within a circuit that captures the immaterial and affective labour of the website's users to the publisher's commercial infrastructure in order to monetize it. Instead of simply digitizing the magazine issues and publishing them within one of several digital magazine marketplaces, or compiling them within print cookbooks (as they have also done), Conde Nast instead reimagined the collection of recipes as a freely accessible, ad-supported online database with additional, subscription-based premium features. Conde Nast recognized the opportunity to build loyalty among users, and site "stickiness" by including features for

paying and non-paying users such as the ability to save favourite recipes to a “recipe box,” to rate recipes by assigning them up to four “forks,” and to submit reviews of recipes. What Epicurious does is leverage the value inherent in the circulation of recipes among online and real world social networks in order to increase the usefulness of its recipe content.

The value of the online resource is no longer just the huge database of recipes or the usability that database storage permits, such as the ability to programmatically generate shopping lists with a click, or to search for recipes based on the ingredients you have on hand. Instead, significant economic, social and culinary value is generated as user interactions occur. A cook need not try out a recipe and have it fail in order to realize it was not well tested, because she now has the comments of countless cooks who have tested the recipe out and noted defects for subsequent users. Informational defects are corrected through narrative sociality. Cooks can read the ingredient substitutions that others have made to a recipe, look at suggestions for accompaniments, or for reducing the sweetness or spiciness of a dish. Most of the supplementary discourse generated within the informational resource of the Epicurious database and its community of users is narrative discourse.

When a cook submits a review, he is literally telling the story of his experience of making that particular dish. Each recipe functions, in effect, as a tale that is told not just in the officially sanctioned, originally published telling, but now also open to an infinite number of retellings – to a proliferation of narrative discourse. As the recipes sourced from Epicurious.com circulate through a user’s life, the collection of reviews he submits over time, for the benefit of others, can be understood as an aggregation of comments subject to database logic, but at the same time as a story of culinary becoming – like that of

Julie Powell – in line with the logic of narrative. The network communication and database technologies that undergird the online publishing of thousands of recipes enable both an increase in the volume of culinary knowledge that circulates, and an increase in the amount of public social discourse relating to culinary experience. Database structure facilitates the production and proliferation of narrative culture, and the proliferation of culture in turn expands the amount of data stored in the database and may also, through the implicit or explicit suggestion of new features, lead to structural changes in the database architecture.

The narrative and informational aspects of cuisine are also bound together in longer works of prose narrative initially produced for print. Laura Esquivel's *Like Water For Chocolate* (1994) is a work of fiction narratively structured around information in the same manner as Primo Levi's *The Periodic Table* (1984) and Annie Proulx's *The Shipping News* (1993). In Esquivel's novel, the chapters correspond to the months of the year, and each month includes a recipe with instructions for culinary preparation – but that also features prominently in the characters, actions and events of that chapter (1994). Every recipe performs both an informational and a narrative function. An empirical, rather than fictional narrative in which recipes feature prominently as narrative catalysts is Frances Mayes's memoir *Under the Tuscan Sun* (1996), in which the cuisine of Tuscany is part of the fabric of life in the author's experience of renovating a dilapidated villa and adjusting to life in a Tuscan village.

The examples of *Julie & Julia* and Epicurious.com demonstrate that today narrative and information, story and database are coiled together in the participatory architectures of the Internet in a manner that augments, rather than supercedes the ways in which those relations are often already present in non-digital prose narrative works, both fictional and

non-fictional. The informational aspects of cuisine are circumscribed and permeated by narrative, and this condition is neither limited to the cultural sphere of cuisine nor to the circulatory processes particular to network communication technologies. The fundamentally codependent relationship between narrative and information, between story and database is supportive of narrative works that exploit the codependence in emergent ways. These modes of expression are deeply aligned with the properties of network communications and are not simply being distributed through online marketplaces or consumed on electronic devices.

In the following chapter I explore the characteristics of narrative works created explicitly for the network media ecology in greater detail. To varying degrees and in various ways these network narratives extend the narrativity inherent within online computing technology; they incorporate the core properties of the novel – depth of character, rich description, and complex temporal relations between story and discourse. I develop an analytical framework that evaluates network narratives in terms of their distributed, emergent, participatory and multimodal characteristics. This approach combines narrative theory, network analysis and close reading techniques in order to identify the particular ways that born-networked prose narrative works harness the sociality and technological capabilities of the network media ecology.

Chapter Four: Toward Network Narrative

Narratives of the Network

There are few terms employed today that are as widely applied or as polysemic as the term “network.” From the rise of social networking, to the description of a globalized world as a “network society,” the specter of the network is everywhere. Yet the influence and importance of the network concept reaches far back beyond social networks and the Internet. Armand Mattelart, in *The Invention of Communication* (1996) has linked the history of communications to “the first formulations of networks of communication as an instrument of global solidarity” as well as to the “networks of communication and culture that in the nineteenth century accompanied the formation of hegemonies in the era of empire” (p. xv). In the United States, distribution networks such as the railroads and national mail delivery system, and communication networks including telephone and telegraphy, have been recognized as critical in the development and refinement of techniques for managing, synchronizing, and monitoring the flow of information, goods, and capital in the “control revolution” that precedes the post-industrial “information society” of the twentieth century (Beniger, 1989).

During the 1960s and 1970s, networks were a master trope for understanding the complex relationships between population growth, urban planning, communications, and electronic technology. Intellectuals from around the world, including Buckminster Fuller, Marshall McLuhan and Margaret Mead regularly convened as a group brought together by Greek architect Constantinos Doxiadis to discuss globalized society and patterns of urban, social, and biological growth (Wigley, 2001). On a planetary scale, society was viewed by

the group as a single “biotechnological organism” (Wigley, 2001, p. 87). The dominant concept through which this organism was understood was the network: from communication (telephone, electronics), transportation (interstates, airline routes), architecture and urban planning (buildings, homes, cities) to biology (the circulatory system, neural structures), virtually all processes could be subsumed under the sign of the network, in what Wigley (2001) describes as “network fever.”

Focusing on more recent developments, in *Theories of the Information Society* (2006) Frank Webster has traced many of the differing articulations of what constitutes information society, and the network is a key concept, explicitly or implicitly, in many of these articulations. Theories of information society, though they may attend to technological, economic, occupational, geographical or cultural processes and phenomena to varying degrees, invariably foreground access to, and the circulation of information. The acceleration, amplification and increased importance of the circulation of information are in turn tied to the technological enhancements and proliferation of communication and distribution networks.

In light of the historically recurring invocation of the network to describe the social, economic, political, and cultural organization of complex processes in contemporary societies, it should not surprise us that pressure has been brought to bear on its efficacy as an explanatory concept. If everything is networked, after all, how does the concept of the network remain useful for cultural analysis? As Webster notes, looking at network culture may entail studying the media-saturated nature of contemporary societies, or the increased production and circulation of cultural goods and forms, or widening accessibility to culture

through analog and digital media devices such as televisions, radios, computers, mp3 players, ereaders, and tablets (2006, p. 19).

Network communication structures have, over time, received a substantial amount of critical attention, yet there is significantly less awareness of the particular cultural forms and expressions that are shaped to and informed by network communication structures. The culture in “network culture,” it seems, is almost invariably what Raymond Williams described as “a noun of general process, specialized to its presumed configurations in ‘whole ways of life’” – a general process rather than the ‘inner’ process of intellectual and artistic agency (1977, p. 17). Tiziana Terranova, in *Network Culture: Politics for the Information Age* (2004), for instance, attends primarily to the political and economic implications of changing models of production in the cultural industries but does not investigate the specific relationships between cultural forms, relations of production, and network communication technologies. While she refers to the labour structures underpinning such spheres of cultural activity as the “webzine” (2004, p. 73), Terranova’s “network culture” is more a description of a global coalescence of political, economic, and social formations (and largely, in effect, a synonym for Castells’s “Network Society”) than an analysis of cultural forms of expression particular to or substantively adapted for network communications. Terranova’s insights into broad social, cultural and economic processes may be usefully extended, however, through more detailed analysis of the production circuits of specific cultural forms and expressions. Broader changes in social, economic, and cultural processes are writ large in the systems that support communication and cultural exchange, and in the social habits and practices they give rise to, but they are also writ small, in particular cultural works and forms of expression.

The macro-sociopolitical view of network culture advanced by Terranova is also evident in Darin Barney's *Network Society* (2004). Barney's discussion of culture focuses primarily on Manuel Castells's categories of labour and production (pp. 165-75). While Barney addresses the ways that cultural production can be disintermediated in network society, his macrosocial perspective offers little analysis of the particular cultural forms that emerge out of these new relations of network cultural production. Like Castells, Barney attends more closely to cultures of production than the production of culture. Both perspectives are important, and bringing them together, as Kline, Dyer-Witford and de Peuter (2003) do for video games and digital culture, would be fruitful, and this is one of the objectives of the present work.

Given the predominantly macrosocial application of the network concept to an extraordinarily wide range of cultural and social phenomena, it should come as no surprise that the cultural usefulness of the network concept has been called into question. As others have noted with respect to the adjectival use of "digital" (Aarseth, 2003b) or "interactive" (Aarseth, 1997), "network" may be so widely and ambiguously employed, and therefore denote so many structural formations, activities and processes that the term is flirting with descriptive redundancy. Christopher Kilgore (2013), for example, has investigated the challenges of employing the network metaphor for closer, literary analysis and concludes that a texture-map method is preferable to employing the "rhetoric of the network".

And yet, the term network remains useful, not in spite of, but because of its dynamism, and its broad applicability to a host of cultural activities. If we see the term network everywhere, it is because it has descriptive relevance, and analytic utility for a multiplicity of interconnected social, economic, and cultural relations. Through the

apparatus of the network concept, we are able to see that countless pre-digital, pre-electronic realms of interaction share certain characteristics with our contemporary experiences of the world and the network communication technologies that enable them. If the growth of printing may today be viewed as the prototype for the production, distribution, and consumption networks of industrial society (Febvre & Martin, 1958, 1976), and the Age of Enlightenment's "Republic of Letters" benefits from being studied today as a social, intellectual and physical network of knowledge,⁶ that doesn't make the term less useful. Today, it is not the network structure that is unique, but rather the extent to which network experiences, technologies, and organizational structures are layered, and how these layers bring various networks into closer, more active, and more amplified codependent relation. It is only by parsing the layers of interconnected networks that the continued value of network concepts and analysis is apparent.

However, this strength of the network concept can also be a weakness in approaches that rely on it. If the concept can be usefully applied to each layer in a dense, stratified assemblage of processes and relations – if it applies equally at the macro-, meso-, and micro-level of social, political, economic and cultural analysis – any analysis will have a sharper focus on some layers and a duller one on others.⁷ Galloway and Thacker address the challenges of network analysis in *The Exploit: A Theory of Networks* (2007) where they suggest a framework for critical analysis of network structures and the relations that bind

⁶ For example, the *Mapping the Republic of Letters* project (Stanford University, 2013).

⁷ Indeed, this is precisely the failing of taxonomic approaches to the study of electronic literature – they fail to acknowledge the degree to which one descriptive category may apply to one node, or hub of nodes in a network structure, but not to others, or to how a term might usefully describe one user's experience of a narrative work, but not another's, or accurately describe the relations of consumption underpinning narrative work, but not those of production.

them. Importantly, their definition of networks is deliberately expansive. They clarify that: “by ‘networks’ we mean any system of interrelationality, whether biological or informatics, organic or inorganic, technical or natural” (Galloway & Thacker, 2007, p. 28).

Galloway and Thacker key their analysis of networks on the importance of protocols through which different kinds of technologically mediated control are asserted within systems. In order to request and retrieve a Web page over the Internet, for instance, the user’s computer and the Web server will communicate using numerous protocols for displaying hypertext documents and multimedia content, for unbundling data and transmitting it over a network in packets, for identifying computers on the network, and for carrying information over physically different technologies, such as fibre optic versus coaxial cable (Galloway & Thacker, 2007, pp. 42-44). A protocol, in their use of the term, is “a technology that regulates flow, directs netspace, codes relationships, and connects life-forms” (Galloway & Thacker, 2007, p. 30). Protocols are the control apparatuses, the logical and linguistic structures, the procedural rules and regulatory schemes that govern flows within a network. In a network assemblage of nodes and ties, flows may be regulated by a multiplicity of protocols, and when different kinds of networks interact, nodes, ties, flows and protocols with very different properties and implications for the system may be invoked.

In order to bind the network concept to Williams’s (1977) agential definition of culture – culture as expressed by individuals and groups rather than as a general way of life – analysis must overcome the limitations of graph theory-based network analysis. As Galloway and Thacker point out, network analysis has at least three shortcomings (2007, pp. 33-5). The first is the failure to account for agency as an active, shaping force exerted

on networks and their dynamics. Agency must not be isolated to the nodes within a network. For electronic literature, a field in which the agency of the reader is a defining feature, agency is particularly important. Is a narrative with a vast, distributed network structure the same work for a methodical critical reader determined to navigate every link and read every lexia and for a curious novice reader who may only dip into the work and never gain a sense of the work's scope or structure? The variability of agency asserted by different users and readers must be accounted for. Moreover, it is through a reader's agency that a network narrative may be integrated into the larger fields of discourse in which networked communication and storytelling may occur in informational contexts.

The second shortcoming of graph theory is its "diachronic blindness" (Galloway & Thacker, 2007, p. 33). To analyze a network structure is to assume, for the most part, that the structure is stable. However network structures in many cases change, over time, just as languages and language systems do (Saussure, 1983, pp. 178-181). For the most part, this stability may be safely and accurately assumed for works in many genres of electronic literature, such as interactive fiction (in which the structure typically is programmatically constrained), and in hypertext fiction where the network structure is a fixed set of nodes and links often published in a stable form. However, once cultural works are embedded within larger or broader communication networks such as the Internet, or more importantly, are designed to incorporate substantive participation within the circuits of production, the structural stability of the network structure over time can no longer be taken for granted. At that point, diachronic changes in the network architecture must be acknowledged in any analysis.

A third shortcoming of graph theory is that in its application it may not acknowledge or address the relationships between network topologies in cases where topological layers are linked together. This is particularly important in the case of the network structures of cultural works because at a minimum, these works can be addressed in terms of three network relations: networks of production, networks of distribution, and networks of consumption. Each of these networks may be topologically distinct and each may be connected to or embedded within larger networks. For example, a centralized network of production (an author working with little or no collaboration but linked to others within a literary community as well as the editorial and production network of a publisher,) may be linked to a decentralized network of distribution (the completed and published work being accessible through various channels, i.e. for purchase in stores and via online retailers, for limited access via library electronic resource portals, and over the Internet), and to distributed networks of consumption (a multiplicity of audiences): All three networks of cultural production may inform the narrative structure of the work and the network of nodes navigated by the reader.

In conventional book publishing, the interactions within these circuits of cultural production differ in important ways from a network narrative. A novel must be completed and made “camera ready” before being printed, and once printed in book form, circulates within distribution networks that are media agnostic before being sold in stores alongside other products, being lent in libraries, or passed on from one reader to another. The readers of the novel, in turn, may generate social discourse around the novel in book clubs, university courses, using social media, by writing reviews, and so forth, but this discourse will have limited or no material effect on the literary work that is consumed in these social

environments. The popularity of a novel may trigger feedback for a subsequent circuit of literary production, prompting, for example, additional print runs or greater visibility at retail sales points in the distribution network. However, the reception or consumption of a work in print form can not result in the alteration of the cultural work of the novel itself as it appears to the wider readership. As always, there are, exceptions or examples that challenge this logic of consumption. In fan fiction, for instance, fans intervene in the circuit of production by actively adapting familiar stories and characters and rewriting them into new, derivative works of fiction (Jenkins, 2006). As subversive or reconfigurative as these activities are, however, they do not alter the original works upon which they are derived.

For various genres of network culture there is a great deal more integration between these network circuits of cultural production, and the topological or structural characteristics of one network may have a direct bearing on another. If a work is designed with highly participatory and emergent features it is unlikely to be distributed through conventional retail channels in the manner of a book or DVD, since the work is constantly changing. It is impossible, for example, to purchase a MMORPG (or Massive Multiplayer Online Role Playing Game) such as *World of Warcraft* (Blizzard Entertainment, 2004-) in the same way as one would a novel; instead, one purchases access to the MMORPG, or purchases resources within the game. Unlike non-networked console games in which the entire game space is algorithmically programmed on a disc or cartridge purchased by the player, the game space of *World of Warcraft* relies substantively on the network of players to generate aspects of the game play experience. One purchases access in order to participate in a social process and the networked nature of the game brings a multiplicity of technological, social, and spatial networks into play.

In light of the limitations of graph theory and network analysis, the study of born-networked narrative must recognize the stratified, heterogeneous and variable nature of the topologies that come to bear on a narrative work. Narrative works that are comprised of layered networks, or those that are structured in such a way as to exploit the properties of digital communication networks in particular need a term to designate them as distinct. I use the term “network narrative” to refer to narrative works that are born-networked. These works are designed to incorporate the properties of networks over and above the formal structure of narrative nodes and ties – of lexia and the links between them.

Defining Network Narrative

Why add yet another term to the discussion of electronic and born-digital literature? The simplest answer is that it is both more specific and more general than other terms. It is more specific in signaling narrative as a key structural and cultural focus in the study of electronic literature. It excludes works that may incorporate narrative, but for which it is not the central mode of expression. Poetry, games, social networks, content-sharing communities like Flickr, or a strictly informational resource such as Wikipedia (Wikimedia Foundation, 2001-) certainly incorporate narrative elements, but narrative is not the dominant mode of expression. On the other hand, network narrative is more expansive than terms intended to establish or describe narrower genres, such as interactive fiction, hypertext fiction, Web serials, or twitter fiction. Network narrative, by contrast, can be used to describe works from various cultural fields, such as interactive cinema, wiki-based fiction, flash-based narrative, some games, and many examples of electronic literature.

Many terms, in whole or in part, have already linked the network concept to narrative, or literature more broadly. Among the earliest attempts to identify literature featuring not only network structures but also network interactions is Aarseth's "metamorphic literature" (1997, pp. 181-2), which denotes texts of an indeterminate structure in which user agency is essential. While some of the works Aarseth includes in this category are networked (most significantly MOOs and MUDs, which are inherently born-networked), it also accommodates works of a primarily algorithmic nature in which user agency is significantly and programmatically constrained, such as John Cayley's *Book Unbound* (1995) – originally a hypercard program – and the *Racter* computer program (Chamberlain, 1984). It even includes an analog print work, the *I Ching* (Wilhelm, 1989, 1923). Ultimately, the network concept is subordinate to indeterminacy in metamorphic literature, and the topologically layered nature of network narrative is never addressed.

The term "net literature" is employed by Gendolla and Schäfer (2007a) to designate "networked media literary forms" (p. 30) that express the media upheaval of networked computing and communication in structural and procedural ways, and in their capacity to incorporate feedback loop. Net literature emphasizes the ways in which socio-cultural processes that arise alongside non-digital technical media alter the relations between literary production and communication media by enabling the performative staging of a text by its readers. While the authors recognize the sociality of literary culture, and in particular the recursion of production and reception in works with collaborative authorship, the particularly networked forms of sociality that we recognize in everyday communications are not overtly identified as vehicles for enabling the feedback loops critical to net literature. The feedback loop, as a particular feature of net literature, tends

to refer to works for which the interactions of readers are essential for producing (and performing) the text as a particular event.

Within the conceptual framework of net literature, there is room, I would argue, for considering narrative works specifically, particularly because their narrative structures must accommodate feedback loops, but also for broadening what and how we understand the social dimensions and implications of networked computing on literary production to be. As Gendolla and Schäfer note in the preface to *The Aesthetics of Net Literature* (2007b), a key question is “in what way the fundamental openness of networked communications can be successfully amalgamated with the aesthetic demands of closure, perfection or coherence of literary creations” (p. 9). Because coherence is generally more accessible and verifiable to readers of narrative than it is to readers of lyric poetry, for instance, prose narrative – or network narrative – is a particularly apt field of literary expression in which to attempt an answer.

In his doctoral dissertation *Destination Unknown: Experiments in the Network Novel* (2002), Scott Rettberg uses the term “network novel” to refer to “works of fiction that are not only published on the Internet, but which are structurally and aesthetically informed by network writing and reading practices” (p. 68). The narrative works described by Rettberg as network novels feature network structures, are published via communication networks, and many include participatory elements, and thus are substantively oriented toward the network concept in numerous ways. While Rettberg’s use of the term sketches out some of the characteristics of what I refer to as network narratives, the terminological utility of network novel is problematic in that its use suggests the novel – even the postmodern novel – as the model against which the works are considered. This framing potentially

sequesters a discussion of network narratives to a fairly narrow field of cultural production (to a particular, electronic kind of novel) at a time when media technologies and practices are constantly converging and blending together, and therefore spilling beyond the boundaries of what the novel designates as a cultural form. To be sure, Rettberg's early recognition of the ways in which narrative expression and network communication could be and were being combined is important and prescient. But having been completed in 2002, before many important social media platforms, photo-sharing communities and other now familiar practices of participatory online interaction came into everyday use, Rettberg's analysis places significantly more emphasis on authorial technique and the formal constraints of networks, than it does on participatory practices.

The novel persistently anchors several other terms that refer to narrative fiction. Kate Pullinger and Chris Joseph describe *Flight Paths* (2007-) as a "networked novel," and while it evinces some of the characteristics Rettberg associates with his use of the term, in other respects it reproduces and even compounds some of the conventional features of the novel. Pullinger and Joseph do not advance a theoretical justification for their use of the term, however some of its sense can be inferred from its use in the description of *Flight Paths*. Although *Flight Paths* is a multimedia narrative published to a network environment and has been updated several times since first being launched, its hierarchical structure – six chapters accessible from a landing page – is comprised of a relatively small number of nodes with strong ties unlike the works discussed by Rettberg. Once a reader selects and begins a chapter, each node has only one link forward, and no navigation for moving backwards or accessing other nodes within the section.

The terms “distributed fiction” (Amerika, 2007) and “distributed narrative” (Walker, 2005) have been employed but without clearly differentiating either the structural differences or distinguishing characteristics of networks. Walker, for instance, refers to works as distributed but her use of the term is not specific to particular network structures (i.e. distributed as opposed to centralized or decentralized) and it tends to overlap with other variable characteristics that may be present in distributed and non-distributed networks alike, such as whether they are bounded or boundless, and finite or proliferating (Barney, 2004, p. 26). For Walker (2005), distributed narratives may be distributed in time, in space, or both. Importantly, however, distributed narratives may be comprised of a distributed network in one respect, time for example, but not another, which suggests that the term network may be more apt than distributed to describe these works.

Some researchers have employed the term network narrative previously. David Ciccoricco, in his book *Reading Network Fiction* (2007), uses network narrative as a synonym for network fiction. Ciccoricco uses both terms to refer to a specific genre of hypertext that is neither axial (unicursal) nor arborescent (multicursal), but rather comprised of nodes connected by a multiplicity of ties. Such works, Ciccoricco argues, are emergent and recombinatory, and require different reading strategies than axial and arborescent works (2007, pp. 4-7).⁸ Ciccoricco’s network narrative is used in a fairly narrow sense and while his observations are applicable to other kinds of cultural works – his use of the term has since been extended to refer to fragmentary modernist novels with a distributed narrative structure (Beal & Lavin, 2011) – Ciccoricco does not discuss how

⁸ Ciccoricco’s triadic set of axial, arborescent, and network hypertext, which is derived from Landow, corresponds roughly to Aarseth’s triad of novels, anamorphic, and metamorphic works. I briefly discuss metamorphic works above.

they would apply to electronic literature more broadly, or to other fields of network cultural production.

By employing the term network narrative, I wish to syncretize, refine, and extend these other uses of similar terms. In order to do so, I place greater emphasis on how born-networked narrative works are often networked in various ways and at different but interconnected topological layers. Each of these codependent layers may be structured differently and evince different variable characteristics of network structures. In drawing attention to these layers and their interconnections, and to the uniquely networked forms of cultural expression that these frameworks support, I recast discussion of network narrative literature and pry it away from the narrower field of cultural expression signified by the novel. We can better understand the future of the novel not by thinking about the ways in which novels, books, or narrative practices of cultural expression have been digitized or digitally augmented, but rather, how network structures, networks of readers, users and participants, and the communication networks that underpin them can support long form prose narrative fiction. Flattening the relationships between these topological layers by assigning one descriptive characteristic to them would undermine our understanding of how narrative structures, the agency of readers, participatory feedback loops, and the circuits of cultural production are integrated together.

By using the term network narrative, I seek to avoid privileging one kind of network structure over another, one particular cultural form (i.e. the novel) over another, or any single medium (i.e. print) over another. This approach is consistent with the call issued by N. Katherine Hayles and Jessica Pressman (2013) for a comparative textual media methodology that recognizes the interrelationships between media forms, but also how

they are sustained by technologies of material inscription, social circuits for communicative exchange, and cultural processes of creative production. Network narrative signals an attempt to take a simultaneously media aware and media agnostic approach to studying narratives substantively shaped by network structures – and not simply for them. This approach is media agnostic in that it relies on analytic techniques such as narratology, network analysis, and close reading that may be applied across a variety of media. It is media aware in that it recognizes how the particular media through which cultural expressions are produced and consumed influence the form and content of those works in overt and subtle ways.

Although perhaps counterintuitive, it is only through a multi-layered analysis of the topologies of a varied and representative sample of network narratives – rather than a selection of hypertexts, works of electronic literature, or experimental literary works – that we can effectively understand how emerging communication networks are able to support new forms of prose narrative expression. Precisely because the term network narrative casts a wide net, by using that term I make no absolute assumptions about the structure, media, production practices, or reader interactions that may come into play. Network narrative is less a terminological unity than it is a way of looking at and thinking about narrative cultural expression and network communications.

The Limitations of Typological Approaches to Electronic Literature

By studying a relatively wide range of cultural expressions under the rubric of network narrative, two methodological pitfalls must be avoided. The first is to place too much stock in one analytical concept, and then apply it too casually to a variety of

phenomena and structures. There are numerous terms that have been loosely used in this manner. As others have pointed out, “digital media,” “new media,” “interactive” (Aarseth, 2003b) and “non-linear” (Aarseth, 2003a) have all been employed in an unfocused way, and they have arguably since been supplanted by “network” and “distributed” in this regard. When I use network to draw attention to the characteristics of narratives, I do so not to define them as fundamentally similar, but to point out the ways in which network characteristics provide a vocabulary for telling their differences apart. Networks are not topologically uniform. By attending to the topological differences between specific network narratives we can see how different relations among narrative structures, circuits of cultural production, and user interaction are effective for the development of complex characters and narrative intrigue.

If it is prudent to avoid placing too much analytical emphasis on a single term, too many analytical terms, particularly when applied in developing a set of discrete types, can be equally unwieldy. Typological approaches are inherently limited because to specify an exhaustive set of discrete categories – even a very large number of them comprised of different combinations of key properties – is to assume a homogenous structure and a uniform experience in the works that are categorized. In practice, however, categorizing an emergent, mutable work is invariably less a matter of discerning its essence than it is a function of privileging some aspects and experiences of the work and disregarding others.

If we ignore the participatory component of a narrative like *The Silent History*⁹ (Horowitz, Quinn, Derby, & Moffett, 2013) we may be inclined to describe it, using Espen Aarseth’s typology (1997, pp. 62-64), as a static, determinate, intransient, impersonal text

⁹ Note that *The Silent History* and other network narrative mentioned briefly in this chapter are discussed in greater detail in the subsequent chapter.

with controlled access to explicit links and an interpretative user function. It is static because the number and content of textons (textual components) and scriptions (the way the textons appear to users) is fixed. It is determinate because the sequence of scriptions is fixed (a user can jump between visited testimonials, but only once they have already been viewed in sequence). It is intransient to a post-serialized user because all of the scriptions are accessible during navigation (whereas during serialization users would have had to wait for a subsequent testimonial to appear). It is impersonal because the reader is not positioned within the narrative. Access is controlled because the reader is unable to skip over unread testimonials. Links are explicit since there are no hidden conditions that must be fulfilled. The user function is not explorative, configurative or textonic, and therefore is it interpretative, which is true of any text.

According to my classification, *The Silent History* differs only slightly from a print novel in controlling access to nodes, which must be read sequentially. But if we consider the participatory component – the ability to send in user-generated “field reports” and have them added to the narrative’s geotagged map – the narrative is typologically different: it is now a dynamic, indeterminate, transient, personal text with controlled access to explicit and implicit links with a textonic user function. In the fixed text of the testimonials and the variable texts of the field reports, what we really have is two distinct modes of interacting with the narrative, and these are in turn supplemented by the peritextual introductory nodes: a video narrative entitled “The Archives,” a multimedia presentation-like element entitled “The Condition,” and a textual prologue that anticipates the form and structure of the testimonials but is not linked to them via the radial navigation of the central narrative.

The diversity of cultural forms encountered within *The Silent History* underscores the problems with using discrete typologies to analyze network narratives.

Classification of *The Silent History* as textonic depends on a user not only accessing and viewing field reports in her geographical vicinity, but also creating and submitting a field report and having it accepted and included. The field reports component is not mandatory or required in the same way that interactions in a game environment might be, so in reality the integration of the principal text and the field reports supports a range of user functions as defined by Aarseth. While it is true that the user-generated field reports imply that the work is textonically dynamic, indeterminate, and transient, unless readers interact with the work in the geospatial vicinity of completed field reports, or submit field reports themselves, the participatory aspects of the work are never experienced by readers. As an example, as of February 2014 the closest field reports to Toronto, Canada (one of the largest cities in North America) were in Cleveland, Ohio. There is no way to view those field reports except by travelling to Cleveland and standing, with an active data connection, within metres of a geotagged field report.

As the example of *The Silent History* demonstrates, typological or taxonomic approaches present significant challenges for the analysis of network narrative works. The challenges raise questions regarding which criteria we privilege by choosing to slot works into one category and not another. This is not to say that Aarseth's typology is not useful – it is perhaps the single most influential approach to studying electronic literature, and it brought much-needed clarity to the discussion of interactivity and nonlinearity in literary works. But using the same typology and adapting it to account for the structural hybridity and participatory dynamism of network narratives may add complexity without clarity.

After all, the existing combinatory types already number 576 “unique media positions” (Aarseth, 1997, p. 64).

Narratologist Marie-Laure Ryan proposes, in *Avatars of Story* (2006), a simplified adaptation of Aarseth’s system comprised of four modes of interactivity based on the binary pairs internal/external and exploratory/ontological (p. 107). Ryan also categorizes plot structures, and interactive structures that operate at both the story and discourse level within a narrative, and recognizes the need to accommodate hybrid categories (2006, pp. 120-1). To accommodate hybridity, she presents the four modes of interactivity as the cardinal positions of a wheel with an unlimited number of intermediate, hybrid modes of interactivity (2006, pp. 120-121). Importantly, Ryan excludes “metatextual interactivity” from her wheel-diagram of interactivity (p. 121), because she considers it to be non-combinatory. However, for network narratives, metatextual interactivity, which includes “adding new links and nodes to a hypertext, creating new maps and new levels for a game, and building permanent objects for an online virtual world” (p. 107) is both prevalent and combinatory, as the example of *The Silent History* demonstrates. For this reason, different modes of interactivity might be simultaneously present or available in a network narrative that is heavily dependent on participatory processes. Locating multiple modes of interactivity within Ryan’s wheel-diagram is not a matter of hybridity, but of multivariance, and if multivariance is present in the plot, story and discourse layers as well as the forms of interactivity, this adds considerable complexity to using the framework for analysis.

Network narratives typically exhibit blended user experiences. An active user/contributor to *A Million Penguins* (2007), for instance, might invoke all four of Aarseth’s user functions, whereas a reader drawn to the project out of a basic curiosity

might spend a few disoriented minutes exploring it and never return, never having fulfilled even the basic interpretative user function. Categorizing such a network system means we have to rely on a conception of a model reader (Eco, 1994), and an ideal reading. But describing a work relative to an optimal or ideal experience merely effaces and withholds the variability of readers and readings, and of users and participatory processes.¹⁰ The problematic nature of discretely categorizing a user's relation to the structure and affordances of a narrative work is exacerbated by taking into account the interdependencies of protocols, the interconnectedness of online social networks, and the numerous ways that users are called on to participate in the online cultural production of distributed, emergent works and how their participation may already be embedded in pre-established social and communicative practices.

The typological approach to studying cybertexts, electronic literature and digital media was a necessary and important undertaking that anchored critical scholarship on electronic literature and it remains influential. Typology clarified the nebulous and ambiguous terminology – such as interactive, non-linear and immersive – that was employed hyperbolically and without rigour in early writing on hypertext. Now, however, digital and online cultural expressions take a multitude of forms, and they increasingly support varied modes of interaction, participation, and often change over time. Instead of filing network narratives away into discrete categories, it is more useful to work with a limited number of properties and to consider the extent to which these properties are present within the work at different times, in different ways, for different users, and at

¹⁰ Roland Barthes recognized the reader's agency and the variability of interpretive strategies in the concepts of bliss, pleasure, and tmesis (1975). This recognition of agency and the semiotic relationships among and between texts under conditions of intertextuality also inspired Barthes to famously declare the death of the author (1988).

different points in the circuits of production, circulation, and reception. In this way, the application of specific properties is always contextualized and linked to specific topological layers of the network narrative.

Janet Murray takes a somewhat comparable approach in her 2012 book, *Inventing the Medium: Principles of Interaction Design as a Cultural Practice*, in which she focuses on four “representational affordances” of digital media. “The computer,” Murray maintains, elaborating on and reiterating her position in her 1997 book, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*, “is encyclopedic, spatial, procedural, and participatory” (1997, p. 51). Digital artifacts may straddle all four quadrants of the “affordance grid,” however their strengths typically lie within one or two quadrants and focusing in this way may be one of the keys to strong usability (Murray, 2012, pp. 89-91).

By concentrating on the digital artifact, however, the user’s agency (or the varied expression of that agency in a community of users) is subordinated to the craft and quality of the designer’s work. This is evident in Murray’s selection of encyclopedic, spatial, and procedural as three of the four affordances as the first two relate most directly to the informational and navigational structures of an artifact (to conventions of organization and navigation, respectively) while the latter privileges the agency of the programmer’s role in shaping user interactions (the control conventions) (p. 96). Nonetheless, Murray’s grid of affordances is, in many respects more accommodating of fluid boundaries and less inflexible than taxonomic approaches to analyzing the characteristics of digital cultural works.

Like Janet Murray, Noah Wardrip-Fruin (2010) has proposed a more flexible approach to studying digital cultural works. Wardrip-Fruin acknowledges the importance

of Aarseth's work and even describes his own model as an expansion of it (2010, p. 47). Wardrip-Fruin proposes studying digital literature under a model that analyzes five distinct elements: data, processes, modes of interaction, presentation surface (i.e. visible output) and contexts for interpretation (2010, pp. 47-8). As he makes clear, while these elements are fluid and codependent, they need to be recognized in different ways. "It is important," Wardrip-Fruin insists, "to distinguish process and surface, rather than collapse both into the 'medium'" (2010, p. 48). In a similar vein, I contend that for network narratives – a category of works within digital literature – a multi-layered approach is needed in order to describe the network topologies that arise for different processes and modes of interaction.

Characteristics of Network Narrative

I propose four characteristics for the analysis of network narratives. These characteristics are evident in distinct layers with potentially contrasting network topologies. Building on the study of network structures and network culture, I view network narratives as, to varying degrees, multimodal, distributed, participatory, and emergent. These characteristics, which arise in the adaptation of narratives to the affordances of digital media, and network communications, may be applied analytically to any of the topological layers that describe the circuits of cultural production of a network narrative, as well as to the formal structure of that work. Like Murray's grid of affordances, the four characteristics of network narratives may not all be present within a network narrative, and if present, they may function in different ways at different topological layers. Often, a work will exhibit one or more characteristics to a greater degree than others, as in

the case of *A Million Penguins* (2007), or *BurtonStory* (Burton & collaborators, 2010), each of which is entirely or dominantly textual, with little or no visual content, despite being produced in a format or genre (wiki software in the case of the former, Twitter in the case of the latter) in which the integration of visual content is not an uncommon practice. Both narrative works feature, however, very high levels of participatory activity.

Multimodal. Network narratives are embedded within, contribute to, or draw resources from the multimodal media ecology of digital network communications. Multimodality is present in the capacities of network computing devices, in the ability of network protocols to handle multimedia files, in the communication practices that prevail among users of these devices, and in the informational and cultural resources that are accessed through digital communication networks. Video, digital images, audio, and text are combined and connected at virtually every point in the circuits of cultural production, distribution and consumption through which cultural resources are animated and experienced via network communication technology.

At the device level, smart phones, tablets and desktop computers function simultaneously as digital photography cameras, digital video recorders, audio recording devices, and sophisticated word processors. Desktop computers in particular often come bundled with consumer-grade multimedia production software for manipulating and retouching photographs, for editing, exporting and publishing audio and video files, for word processing, and for creating multimedia presentations. What tablets and smart phones lack in multimedia production and authoring software they often compensate for in specialized applications or apps. Mobile photo-sharing applications such as Instagram and Hipstamatic, for instance, feature sophisticated photo filters for easily generating effects

that once would have required professional grade photo editing software and a high-end graphics card and computer processor.

The constant availability of multimedia capture technology has arguably contributed to a change in communication practices between network subjects. While photographs of a child's birthday party might once have been relegated to a photo album and seen by a few close friends and family, social networks and network services like Facebook, Flickr, and Twitter mean that such photos may be seen by hundreds of friends and contacts and thousands of strangers. The threshold for what warrants documenting, or life-logging via multimedia capture has also decreased, in part with the obsolescence and associated costs of photographic film and developing, and also because the ability to capture lived experience through always-on-hand multimedia devices generates the imperative to do so for some of the users of mobile devices. Cheaper bandwidth, wider availability of high speed Internet access, free wifi in semi-public spaces such as shopping malls, big box stores and cafes, and larger data plans for mobile devices mean that more and more multimedia resources are transferred directly between subjects via email, downloaded from file-sharing services, and backed up to or stored on cloud services. Such services also mean that personal multimedia resources (old holiday photos, documents, presentations) that might have once been inconveniently and less accessibly stored on an external hard drive may now be accessible from anywhere at anytime from any device with an Internet connection.

The informational and cultural resources available through the Internet also exhibit highly multimodal characteristics. Millions of photos, illustrations and videos are accessible through online communities like Flickr and YouTube, from stock photography

websites, and through search engines with image search options. Music and audio are available for purchase, streaming or download from innumerable music marketplaces, subscription radio services, the podcast directories of broadcast radio and television, and streaming radio stations. Even content that is for the most part textual is often, in practice, multimodal. News articles posted to online news websites usually feature at the very least an accompanying stock photograph, even if the same article in printed form does not. These images are typically syndicated to social media feeds along with the URL and headline when users share the article, so the online-only visual images are often the first and most noticeable aspect when shared socially. Photos shared on Flickr are accompanied by textual titles and descriptions and tagged using a folksonomy approach. The tags are the principal means by which visitors to Flickr search for and locate specific kinds of images. YouTube videos are similarly accompanied by titles and descriptions and this textual metadata is the principal method used for searching. In both cases users also have the ability to leave comments that can often generate significant volumes of commentary, conversation, and dialogue.

Multimodal network expression is supported at the device level and draws on the multiplicity of multimedia resources available online. Whether produced or found, these multimedia resources in turn circulate through and support communication practices, adding expressivity, specificity, and visual context to otherwise textual communication, such as chat, sms messaging, and email. As such, multimodality is, in effect, an imperative of digital network communications, and network narratives express, exploit, and amplify this imperative in different ways. The ways in which network narratives express multimodality is often derived from the characteristics of the networks in which they are

embedded. They may be multimodal in one layer or component but not others as I demonstrate in considerable depth in the case studies developed in the subsequent chapter.

Distributed. Network narratives are structured as, embedded within, or connected to distributed networks. This aspect of network narratives is most commonly associated with a non-linear, non-hierarchical narrative structure, with a reliance on the Internet and a distributed network of users for content and resources, with the way in which the work is intended to meaningfully circulate over and within a distributed network, or some combination of the above.

In terms of narrative structure, distributed denotes a narrative in which there is no privileged path through a work. Distributed narrative structures – those in which passages, chapters or sections of text are multiply connected and no specific path is privileged over another – are rare in print, but certainly not exclusive to electronic or digital media. (Milorad Pavić's *Dictionary of the Khazars* (1988) discussed in chapter two, for instance, is a "lexicon novel" comprised of fictional encyclopedia entries.) At the same time, however, a logic of linked, interconnected documents underpins the hypertext markup language (HTML) of websites and the display of multimedia objects within them, and as such, narrative works created using these technologies will tend to be structured as a network of interconnected documents or pages. The Internet protocols that enable linking not only within a collection of documents, but also across a vast distributed network, further reinforces a default structure of interconnected, sequentially variable network of nodes. David Ciccoricco (2007) has studied hypertext fictions with a truly distributed network narrative structure, and he refers to these specific kinds of hypertexts as network fictions, though such works may not be distributed or networked in other respects.

Network narratives are embedded within a distributed network and made available through different Internet protocols including the hypertext transfer protocol or http (i.e. published as a Web page), or the protocols that handle email traffic (SMTP, POP, IMAP) in the case of an email-based narrative. The use of a distributed network for the publishing of a network narrative instead of physical media, such as a DVD, enables key possibilities. These include serialization, and ongoing modifications and additions – what Jill Walker describes as the quality of being “distributed in time” (2005)– and the possibility of integrating the narrative with digital communities and media ecologies, within a network of blogs, a video-sharing community, or as a collection of Web pages linked to and from other sites on the Internet. This latter possibility is the key strategy through which narrative and information become intertwined in network narratives and raise, for the reader, questions of verifiability, referentiality or non-referentiality, and epistemological legitimacy – the hallmarks of the porous divide between fiction and non-fiction that has garnered critical attention in literary studies (Cohn, 1999). Under these conditions the fictional status of the work emerges in direct relation to the putatively non-fictional publishing medium and predominantly non-fictional method of communication – the video weblog, for instance, in the case of a work like *Lonelygirl15* (Beckett, Flinders, Goodfried, & Goodfried, 2006-2008).

Often, though certainly not as a rule, homologies exist between the navigational structure, thematic organization and a distributed narrative structure. Geoff Ryman’s *253* (1996), variously described as an interactive novel and a novel for the Internet, is set on seven subway trains. The principal navigation is via a “journey planner,” a visual representation of a set of interconnected subway routes over which the seven cars are

travelling. The seven cars, in turn, contain the profiles or stories of each of the 36 passengers aboard, and these narratives are accessed via a “passenger map” or manifest oriented by seating rows and seats, and in relation to the doors of the trains. Although *253* is distributed in Ciccoricco’s (2007) network fiction sense, the narrative structurally mirrors the topologies of the journey planner and passenger maps. It is a multi-centred network of HTML Web pages with each car functioning as a hub for exploring the passengers and their stories. The nodes, ties and network structure are thus substantively shaped to the setting and themes of the network narrative.

Similarly, *Out My Window* (Cizek, 2010), a Web-based “interactive 360° documentary,” uses three distinct navigational structures, all of which are both thematic and structural articulations of the narrative. The default navigational scheme is an interactive collage of high-rise development windows. It bears directly on the thematic intention of the documentary to represent the domestic environs of high rise dwellers in a diverse range of locations, cultures, and socio-economic realities from around the world in a rich, interactive, multimodal form. As in the case of *253*, *Out My Window* bears strong links between narrative structure and thematic content. While both works are, topologically, a decentralized network of hubs linking to thematically related nodes (the passengers on the cars, the documentary subjects represented by each window), these network structures reveal content that is topologically distributed in the network sense. That is, no single passenger or documentary subject is predominantly focalized in these multivocal and heterodiegetic narratives. All characters or subjects are focalized equally, and linked to in roughly equivalent measures, and thus in this sense the narrative is distributed without emphasizing or privileging the experience of any one character over

others. These qualities both lend meaning to the network navigational structures and derive meaning from them.

The distributed aspects of network narratives frequently arise not as a deliberate structural strategy, but are inherited from the medium of publication. Twitter fiction, Web serials published to YouTube, and other network narratives must be both temporally and spatially distributed in that individual tweets and videos are broadcast separately, and are therefore at a temporal remove from one another as a consequence of serial publication, and a spatial remove in that they exist as different nodes within the larger network of Twitter tweets or YouTube videos. Unlike an HTML website such as *253*, a series of tweets or YouTube videos can not be uploaded together as one batch of files – the protocols for their use involve time stamps and other markers that place the node at a particular time that has relevance within the larger network of multimedia objects and user interactions.

Finally, network narratives that are directly connected to a distributed network often exploit those capacities to solicit contributions from the public readership of the network narrative. Those contributions may constitute a portion of the work, either through direct involvement (as in the comment threads and dialogue of a video sharing site) or mediated through a curatorial or vetting process for complete submissions or minor content elements.

Participatory. Network narratives are participatory to varying levels of formal and informal involvement by more than one person. First, network narratives are often co-authored, or in other words, conceived of and produced through initial and ongoing cooperation and agreement. Network narratives may be collaborative, or produced cooperatively by a number of individuals working closely together. There is a technological

imperative to collaborate in the production of network narratives in that they often require the fulfillment of many varied roles, such as coding, writing, digital image and digital video production, content management system or server administration, community management, and so on. Network narratives may be contributory, or designed in such a way that substantive, independently structured contributions may be added or incorporated with some degree of modularity either during initial phases of production, or subsequently. Finally, they may be participatory, or open to much less substantive contribution by a larger number of participants. Participatory narratives are more than interactive, in the sense the term is generally used, in that contributions become or have the potential to become incorporated within a subsequent reader or user's experience of the work. Thus, blogging about a narrative does not constitute participation in the sense I use it, but adding a comment to a narrative embedded in a video sharing site may constitute participation, particularly if comments form a dialogic component of the narrative or influence subsequent installments in a serialized production or connect to the story world of characters, as in the case of Web serials.

As differing modes of including an audience in the production of narrative works, co-authorship, collaboration, contribution and participation may be differentiated in terms of their qualitative and quantitative differences, but they also vary by degrees of involvement. An individual who participates frequently enough and that makes meaningful additions might usefully be thought of as a minor contributor. Network narratives exhibit a wide range of participatory practices that may be targeted or isolated to particular subnetworks of a narrative structure, to specific modalities, solicited through narrow communication channels, or that are temporally limited. Participation may be selective –

constrained to a particular aspect of a narrative, to a particular medium of expression, or to a limited group of participants – or it may be unlimited.

The ways in which participation is limited or constrained will generally have implications for how a narrative is structured in order to accommodate participatory material. In *A Million Penguins* (2007), a highly inclusive experiment in collectively authoring a wiki novel, participation was unlimited except to specific times of day (to permit maintenance of the wiki), and within a particular time frame of 5 weeks (Mason & Thomas, 2008, pp. 3-4). The initial narrative itself was little more than a seed – a single line from an existing text – intended to openly invite participation of virtually any kind. The narrative, in other words, did not exist prior to the contributions of a network of participants, and therefore the network structure of the narrative evolved concurrently with the participatory activity. The nature and scope of contributions varied widely, in large part because there were no significant structural or thematic limitations placed on participants aside from those dictated by the medium (the wiki format). Were the narrative more defined in advance of participation, the kinds of participation and their role and function within the narrative would have to be more clearly defined, as in the case of *The Silent History* (Horowitz et al., 2013), in which contributions conform to a content type (a testimonial) that is well established within the principal narrative.

Participation necessitates adherence to the structure of the narrative. In *The Silent History*, contributions must follow guidelines and be submitted to the lead collaborators in the project, but they are also more self-contained, substantive, and discretely and individually distinguishable than the wiki-based edits of *A Million Penguins*, most of which were limited to a sentence or two (Mason & Thomas, 2008). Contributions in both

examples are limited to text though in neither case is there a systemic limitation on the medium of expression. Wikis can easily accommodate photos, for instance, and *The Silent History*, an Apple iOS application, could support multimedia content as well (it does, in fact, in the introductory content, but not within the main narrative comprised of first person testimonials).

Emergent. Emergence refers to a processual becoming that arises out of a series of complex interactions without being a simple effect of (or attributable to) any one element. In network narratives emergence arises out of how specific processes within the cultural circuits of production, circulation, and consumption are implemented, as well as to the ways in which these components of the circuit interact. A change to the structure and content of a work, realized through user participation, may open new pathways for the narrative that were not anticipated within the initial work. Emergence may be present in different ways, to varying degrees, in distinct layers, and it may arise as a consequence of, or in relation to, the provision of other characteristics of network narratives.

To a certain degree, all cultural works are produced in a processual and potentially emergent manner. While the Romantic period lionized a kind of authorship of inspiration (the entirety of *Kubla Khan* supposedly being revealed to Samuel Taylor Coleridge during the course of a single dream), in practice, cultural production emerges out of an iterative process of consulting other works for inspiration and research purposes, of working with collaborators, editors or other greater and lesser contributors to a process (even one with a single author), and of working and reworking a text. Virtually any cultural production

process might in this sense be described as emergent if the creative process is complex and leads to unanticipated results.

Nonetheless, emergence functions quite distinctly for a narrative work that is produced in real time, and in response to various influences. If the work circulates through or is embedded within a distributed, emergent network (such as a social network, or a video sharing community), interactions enabled by particular features of the distribution environment may drive a feedback loop that leads to the modification of portions of the narrative. A network narrative published as a boundless network of connected nodes linked to a distributed communication network (rather than in a discrete, self-contained material form such as a DVD or book) will be open to user interactions and reciprocal, multi-dimensional flows. It will exhibit emergent characteristics in a markedly different way than a conventional print novel, where the influence of emergent processes necessarily precedes publication. The key is that for network narratives production may be emergent in ways that are distinct to communication networks because production, circulation, and reception are bound together by tighter, more responsive feedback loops. These feedback loops incorporate a large number of inputs managed through programmatic methods embedded in the software architecture of online communication platforms, and this is distinct from the production of a material product such as a book.

Network narratives may support emergence in being made available to readers and users incrementally, over time. A narrative work may be fully authored and produced before serial publication, and simply released for circulation incrementally, however serial publication also provides opportunities to the producers to modify the work based on its reception. Serial publication, or incremental circulation creates conditions for a work to be

adapted in response to feedback from its audience. The feedback loop thereby created permits emergent characteristics to arise in specific network structures. Emergence might arise in character networks, as the presence or importance of particular characters increases or decreases in response to audience interest. It might arise in the navigational and narrative structures, by developing new story branches based on user feedback.

Since Victorian literature was often published serially in periodicals prior to book form, incremental circulation that supports emergence is not specific to digital network technologies. It is also important to note that in some fields of cultural production, such as television, emergence may arise at a different scale. Television production is elaborate, labour intensive, and expensive, an entire season is likely to be filmed over a few months and completed in its entirety before being broadcast on a weekly schedule over the broadcast television season. The expense and coordination challenges of production mean that adjusting a dramatic narrative in response to viewer feedback on an episode-by-episode basis is impractical (even if potentially desirable). Nonetheless, from one season to the next, writers may make adjustments to account for the unanticipated popularity of a character, for instance, and from this point of view be considered emergent. Reality television, on the other hand, is often designed explicitly to incorporate viewer feedback, as when contestants in *American Idol* (Fuller, 2002-) are eliminated based on the number of votes they receive from the viewing public. A reality television series may be thought of as having more emergent properties in terms of how the circulation and consumption of the content is designed to invite feedback that is incorporated into production relative to a dramatic series written in advance of one television season, but recalibrated in response to its reception before the second season. Of course, in comparison to a dramatic series,

reality television typically has a much simpler narrative structure – essentially an inverted tree whittled down from a field of contestants, through weekly choices, to a single winner. Thus incorporating emergence at different scales can have implications for narrative structure.

Network narratives are published incrementally over time, with opportunities for participation, and therefore possess emergent characteristics. *BurtonStory* (Burton & collaborators, 2010) and other works of Twitter fiction, *Flight Paths* (Pullinger & Joseph, 2007-), *The Silent History* (Horowitz et al., 2013), alternate reality games such as *I Love Bees* (42 Entertainment, 2004), Web serials like *lonelygirl15* (Beckett et al., 2006-2008) all circulated in this way, which has implications for how readers consume the work. When a group of readers, viewers or users consume a serially published cultural work, their consumption is more or less temporally aligned. Every up-to-date reader or viewer will be at the same stage of unraveling and understanding a narrative that is still in the process of unfolding, and this simultaneity may incite the formation of dedicated knowledge sharing and discussion communities.

Serialization thus facilitates the assertion of some control over what Genette (1980) refers to as duration, with the intervals between episodes or installments constituting a synchronous pause in the narrative. Durational alignment fosters a kind of shared experience of a serialized cultural work. In such cases the synchronous consumption or reception of a cultural work by its audience does not in and of itself result in emergence. A participatory feedback loop must be integrated in order for emergence to arise out of circulation, however serialization is one of the means by which such feedback loops may be implemented. *Flight Paths* (Pullinger & Joseph, 2007-) is a good example of this. The

publication of *Flight Paths* in chapters means that participants can tailor their suggestions and contributions to the story as it evolves, and those contributions can in turn lead the principal creators to consider narrative plot events, or characters that were not reflected in the initial plans for the story.

When network narratives are experienced and consumed synchronously, particular instantiations of emergence may arise. While singular “encodings” of texts always lead to a plurality of individual “decodings” that can not be fully determined in advance (Hall, 2006), and so in a sense, cultural reception is always interpretatively emergent and processual, in network narratives one reader’s reception may actually inform that of another’s. This might occur through network communication technologies as individuals work together to figure out a puzzle (or anamorphic text) and thus reveal new layers of a narrative. The Web serial *LonelyGirl15* (Beckett et al., 2006-2008), for instance, in being published to YouTube (a network in which discussion and commentary is the norm) encouraged viewers to communicate with each other in order to make greater sense of mysterious circumstances revealed in a succession of video weblogs. This kind of emergent, synchronous or asynchronous, collaborative reception can also feed back into the production process in a deliberate way if creators tailor the development of the narrative to the hopes and expectations communicated by its audience.

Feedback loops predicated on the reception of a work are a guiding principal behind Alternate Reality Games, or ARGs, such as *I Love Bees* (42 Entertainment, 2004). ARGs, while produced and scripted in advance are often designed with flexibility so that the “puppet master” and producers can react and respond to how players actually play the game, “redesigning them in real time” (McGonigal, 2007, p. 262). As a cultural form, ARGs

are therefore predicated on exploiting and channeling emergent reception, and redirecting outcomes and receptive flows back into the game as production flows. Similarly, network narratives are often designed to elicit user and reader interactions and direct them back into contributions that constitute a kind of material participation. These interactions affect how the work will subsequently appear to others and this form of emergent reception, in order to function on a large scale, requires computational programming and the use of digital communication networks.

The participation models that underpin emergent reception may be compartmentalized and set alongside, rather than integrated with the principal narrative. *The Silent History* (Horowitz et al., 2013) invites the production of field reports by public contributors to supplement a silo of 120 serially published testimonials. *Out My Window* (Cizek, 2010) invites and displays photographic contributions (along with their textual descriptions and tags) for a companion project documenting high-rise living (National Film Board of Canada, 2010). In other cases, contributions may be integrated within the work itself, though selected, edited, and otherwise limited to maintain narrative integrity. *Flight Paths* solicits contributions, but a modest number of participants are credited in the individual chapters themselves (Pullinger & Joseph, 2007-). Similarly, *BurtonStory* (Burton & collaborators, 2010), a participatory, serially published Twitter fiction linked to a Tim Burton retrospective exhibit at the TIFF film festival, invited an unlimited number of contributions. Tweets could be submitted via Twitter using the #BurtonStory hashtag, and a total of 88 tweets were incorporated into the narrative over the course of fifteen days. In each of these examples, emergent reception is channeled into the work itself or a companion narrative and initiates a process of emergent production.

As the examples discussed briefly above illustrate, the emergent properties of a network narrative are linked to its participatory, distributed and multimedia attributes and it is the integration of some or all of these characteristics together that establishes the processes and rationale for incorporating reader and user-generated contributions back into the work. The completion of one feedback loop simultaneously triggers new ones in a continuous feedback circuit that ends once the project comes to a close, as in the case of the *BurtonStory* (Burton & collaborators, 2010) project, in which each new contribution was based on a previous submission, or in *A Million Penguins* (2007) in which participation was an ongoing, largely unregulated process. In some cases, there may never be a definitive or final work produced. Instead, the work's finality is always deferred, and the work strives instead to achieve a sustainable balance between narrative coherence and participatory emergence. In this respect a network narrative may be less like a novel and more experiential – like a social network, a virtual world, or a MMORPG like *World of Warcraft* that is never “completed” nor knowable in its entirety. In some cases, a balance is struck between the principal and supplementary components of a work. The series of video weblogs that constitute *LonelyGirl15* (Beckett et al., 2006-2008) can be consumed in their entirety, for instance, although the participatory dialogue contained in the YouTube comments and in social media networks, practically speaking, can not.

In order to better illustrate the dynamic tensions between the characteristics of network narratives, I will now expand on some of the examples already discussed and introduce several new ones. In each case I will analyze the ways in which these four attributes function differently at different layers in the narrative structures and within the circuits of cultural production that animate these works. As I survey these works, I will

emphasize how the methods employed to solicit participation by users and readers are designed around established digital communication practices and integrated within network communication technologies.

Chapter Five: Analyzing Network Narratives

As I argued in the previous chapter, network narratives are characterized by four distinct, codependent characteristics. Network narratives are – to varying degrees and in varying combinations – distributed, emergent, multimodal, and participatory. Often the plot, characters, and thematic content of particular network narratives as well as their narrative structure and sociality are shaped to and by unique configurations of distributed, emergent, participatory and multimodal attributes. In each of the case studies that follow I describe how these characteristics of network narratives are constellated using concepts drawn from the analysis of network topologies. I apply network concepts to different aspects of these works, such as the narrative structure, character networks, and production networks. The differences between the network narratives I discuss reveal particular methods for shaping network narratives to digital network communications.

What I undertake is a distinct approach to studying literature, and one that I would argue is essential in studying born-networked literature specifically, though it may be usefully applied to other genres in the field of electronic literature, or to the kinds of non – digital works that require “non-trivial effort” (Aarseth, 1997) for their traversal. The analytical model that I advance, using concepts derived from network analysis, is particularly useful for developing a multi-layered understanding of narrative works that are of the network and not simply on it. Network narratives exhibit network structures at many strata, so the method for elaborating on their imbrications must be applicable to the full range of topological layers in order to describe how these cultural works are structured, produced, distributed, and consumed via network communications. Network analysis is

more useful for the multi-layered investigation of narrative works than, for instance, narratology, which is effective for detailing narrative structures, but less so for describing the social relations that animate collaborative and participatory production networks. Indeed, real networks are generally described using a “scale-free” model of graph theory that, as the name suggests, remains accurate as network structures scale up and down, and even though nodes may be uniquely clustered and connected. Network concepts offer a similarly scale-free opportunity to analyze network narratives using the same methods for individual network structures at a range of scales.

The method that I employ is a form of closer reading than the “distant reading” advocated by Franco Moretti (2005; 2013). I neither propose nor undertake the purely quantitative analysis of thousands of texts, for instance, nor do I pursue an evolutionary theory describing network narratives as a subgenre explicable through linear descent. I do not propose that network analysis represents the construction of an “abstract model”: On the contrary, network concepts, in being applied at micro-, meso-, and macro- levels of analysis provide a scaffolding for inquiring into relations that are actualized within and beyond the work as such. That which is outside the text is always critical, but particularly so in registering the conditions for cultural production in a period of rapid technological and social change. Narrative structures and character relations may be modeled as networks but network structures also describe the real social conditions for the cultural production of the work and the materiality of the communication networks on which additive participation is predicated.

Analyzing narrative works as a constellation of distinct topological structures is essential for linking narrative structure to the sociality of production networks, to the

participatory feedback loops that link creators and contributors, and to the digital materiality of communication networks. This approach spills beyond the text and considers homologies and isomorphic relations between the networks internal to the work, the circuits of cultural production that give rise to the work, and the communication medium upon which these relationships rest. Network concepts provide a framework for traversing themes, character interactions, narrative, relations of cultural production, and media without a full-scale withdrawal into a “large mass of facts” (Moretti, 2005, p. 3). When a network analysis is conducted on relatively small-scale structures – such as a network of characters, narrative nodes, or limited group of contributors and participants – rather than enormous datasets comprised of thousands of novels – it remains possible to deal with the narrative works in granular detail: to, as it were, employ a microscope, telescope and naked eye in unison.

While my use of network concepts for the multi-layered analysis of narrative works affords extreme flexibility in focusing on different network structures in a particular work, it also creates distinct challenges. A methodological approach that is equally applicable to a wide range of textual, cultural, and across a variety of social phenomena linked to the production, circulation, reception, and narrative structure of a work introduces the problem of which structures to attend to, and at what level of detail. A single network narrative might yield a book-length study if each layer is analyzed in granular detail. But such an expansive study would not convey a sense of where and how a single network narrative fits in with larger patterns and changes in cultural production. Comparative analysis is needed to illustrate how production strategies and narrative structures that differ between works are nonetheless part of a broader, emerging shift in the relation

between culture and communication. In order to balance the analysis of network narratives at micro-, meso-, and macro-structural scales simultaneously, I focus on the particular structures and features of each narrative that best exemplify how that work functions and can be understood as a network narrative. The analysis I offer is therefore, of necessity, uneven: my attention to thematic content, narrative structure, and the circuits of cultural production varies in each case study.

Prior methods have been developed for stitching together close and distant critical perspectives on literary works. In the study of electronic literature, scholars at times direct close readings at the materiality of works and the media they are published to in addition to their structural attributes and thematic contents. Negotiating the middle ground between close and distant readings by attending closely to how media and materiality function in specific texts is one way to link textual details to broader shifts in how cultural works are produced and consumed. N. Katherine Hayles (2002) has emphasized how media, materiality, and culture are intertwined in what she terms a “technotext,” a literary work that “mobilizes reflexive loops between its imaginative world and the material apparatus embodying that creation as a physical presence” (p. 25). More recently Hayles (2012) has explored how the broader cultural, social and technological process of technogenesis is revealed in specific texts.

Matthew Kirschenbaum distinguishes between forensic and formal materiality, and between lower and higher level computing processes. He illustrates how these materialities and material processes shape works of electronic literature (Kirschenbaum, 2008). By combining close materialist readings with hermeneutic approaches to texts, Hayles and Kirschenbaum have each achieved a holistic understanding of the relationship

between literary cultural expression and media that we might think of as an alternate mode of distant reading. In this mode of distant reading the technogenesis (Hayles, 2012) between socially embedded cultural texts and the computing technologies and communication media used to transmit them becomes apparent. Hayles and Kirschenbaum adopt a more distant analytical stance characteristic of media archaeology, while remaining attentive to the folds and remediations between media types, technologies and eras, and retaining the granular analytical and interpretive rigour of close readings. My approach builds on those of Hayles and Kirschenbaum by tying the analysis of media and materiality and the close reading of particular works to a method that also attends to the particular ways in which network narratives are socially situated in actualized practices of reading and participating. These practices are themselves closely tied to the conditions of engagement provided for by networked media, digital materiality, and the configuration of these conditions by cultural producers. Network narratives incorporate feedback loops through which consumption alters the scope and structure of the narrative work. This additive participation is inherently social.

Maintaining a sense of literary value, and of the social contexts of authorship, I use network concepts to capture cultural forms in transition, and literature as a field of practice adapting to the cultural and social contexts of network society. Avoiding overreliance on theoretical conjecture, I elucidate the mechanisms through which readers are invited to participate in the social life of a literary work in a manner that is materially contingent on digital network communication technologies. Ultimately the value of a network approach to analyzing digital narratives lies in being able to knit together a wide variety of interdisciplinary approaches applicable to the study of digital culture. While network

theory provides scaffolding for holding distinct approaches together, it does not necessarily displace or subsume them: it is a flexible system for establishing pathways between ways of understanding culture and the material, social, and technological conditions for the emergence of particular works. I demonstrate this hybrid approach in the case studies on network narratives that follow.

The Silent History

The Silent History (Horowitz et al., 2013) is promoted as “a new kind of novel” – a phrase that captures very well its contrasting blend of familiar narrative and authorial conventions on the one hand, and experimental, interactive, and participatory forms and functionality on the other. While the narrative incorporates multimedia elements in the introductory prologue (where video, photographic, and other content is integrated), and invites the contribution of user-generated content in the form of “field reports,” the bulk of the work is comprised of 121 textual testimonials originally published serially between October 1, 2012 and April 19, 2013. *The Silent History* traces the appearance of a phenomenon known as “Emergent Phasic Resistance” in newborn children beginning in 2011. Children affected by the disorder, known as “silents,” are nonverbal. They have no neural capacities for processing linguistic communication, and are unresponsive to efforts to help them develop linguistic capacities. Implant technology is developed that effectively streams a copious library of auditory and linguistic signs to silents from a centralized server. Isolated pockets of resistance to implant technology form, and when the server is sabotaged, implanted silents around the world revert to nonverbal states with terrible social consequences until a “double silent” uses the broadcast technology of the implants to model the natural, nonverbal and nonlinguistic thought patterns of silents back to them.

The narrative structure of *The Silent History* is comprised of three principal hubs. The first hub, the “Introduction and Prologue,” contains three narrative nodes linked to the hub but not to the other nodes. The three narrative nodes may be accessed in any order, any number of times, and there are no dependencies or access restrictions governing the order in which they are accessed. The nodes that together constitute the “Introduction and Prologue” have no participatory attributes, though they do include calls to action to the reader to participate through the third hub, the geo-located field reports. These nodes are all positioned at a narrative distance from the central narrative of field reports, in that each acknowledges their completion and presumes the conclusion of the testimonial gathering process.

The introductory nodes have no significant emergent characteristics as they are in effect the starting point for the narrative, even in its serialized form and are accessible in the same form, through the same interface to all readers at all times. Two of the nodes “The Archives,” and “The Condition” are video objects. “The Archives” incorporates photographs, motion graphics, screen captures, musical soundtrack and an audio voiceover, and it provides a summary of the condition and the events connected with it that unfolded over time. “The Condition” has a presentation-like quality that focuses on the condition itself, and it includes a number of quotes, charts and motion graphics accompanied by a musical soundtrack. These two nodes are the only multimodal elements in *The Silent History* aside from the photographic background of the central narrative hub of testimonial nodes, the graphical user interface for the core narrative, and the graphical map images through which the field report nodes are accessed.

The third node, “The Prologue,” is a meta-testimonial by the Executive Director of the epidemiological archiving project that gathers testimonial accounts of EPR over the course of 28 years. Together, these nodes, through the provision of a frame narrative explaining how and why the testimonials were gathered, and supporting the textual testimonials with motion graphics and digital images, add a sense of authenticity to the narrative. Over and above the textual material, the introductory elements convey a sense, within the fictional contexts of the narrative, that the events and condition could have occurred, that the places and characters have a quasi-non-fictional status relative to a narrative with no such paratextual components.

The second, and principal narrative hub contains six chronologically ordered clusters or sub-networks. These clusters are arranged as radial graphs with twenty testimonial entries each, covering a span of between one and nine years of the story. A total of 120 text nodes are contained within the testimonials section and they form the central narrative (seven hubs and 121 testimonials, including the epilogue, which is only revealed after reading the previous 120 testimonials). Testimonials are revealed successively whether consumed during its initial serial publication or subsequent to it. Structurally, the nodes are arranged in a linear sequence with access to successive, dormant nodes restricted until the previous node has been read (or scrolled through). Side branches provide links to the active character’s previously accessed testimonials, thus permitting the reader to easily refer back to prior texts from the same persona. So, for example, a reader who has progressed to August Burnham’s fourth testimonial (i.e. chapter 10.3) sees links to the previous three entries (chapters 1.3, 3.2, and 5.3), but not to the seven subsequent testimonials. Within the sub-network of a single 20-testimonial

navigational hub, dormant nodes are not marked in any way as belonging to a specific character, or documenting a particular year until the node has been reached through the reader's progression. In any given testimonial node, the reader may click backwards to return to the previous testimonial, click forwards (after scrolling to the bottom), return to the hub or sub-network of chronologically organized testimonials, or navigate to the current character's previously viewed testimonials.

While the principal topological structure of nodes and ties for the testimonial portion of *The Silent History* is visible from the initial launch of the application, the meaningfulness of the increasingly copious and multi-directional flows grows during the consumption of the work. The ties between testimonial nodes grow stronger, denser and more redundant as character narratives are recounted, and the ties intersect more frequently as the links between characters emerge in the content of the textual testimonials. As the social networks and relationships between characters in the story layer of *The Silent History* are revealed, the network structure of narrative nodes in the discursive layer grows more complex. The side branches that link an individual character's multiple testimonials reveal new pathways for understanding the chronological unfolding of the narrative. Readers have at least two options available to them at any given time: reading syntagmatically (following the numerical and chronological sequence of the chapters), or reading paradigmatically (by reading laterally or associatively and following the chapters focalized through and narrated by a single character). In practice, a reader is unlikely to employ either strategy exclusively. However, retracing prior testimonial nodes in this latter way reinforces ties between characters and events that are not immediately evident during the initial, chronologically sequenced reading of chapters.

The Silent History may be described as emergent in several respects, and these are directly related to the pronounced chronological structure of the network narrative and its relation to the events that comprise the story. Whereas literary narratives often contain complex changes in duration – a decade summarized in a paragraph only to be followed by 60 pages describing the events of a few days – *The Silent History* proceeds at a fairly consistent pace, a pace that mirrors the spread of Emergent Phasic Resistance and its effects on the silents, their families and social networks, and on society. All told, the narrators of the testimonials recount events that occur over the course of 42 years through the perspectives of 27 characters. Much of the action is driven by the self-organizing acts of key clusters of silents and their supporters.

In terms of both story and discourse, this narrative structure is more emergent in the manner in which it unfolds with great deliberateness and sequentiality. It is literally the story of the emergence of a disorder that initiates highly complex social relations and interactions, leading to unforeseeable consequences for how the silents respond to society, and vice versa. In comparison to *Out My Window* (Cizek, 2010) which is by and large a series of snapshots (even if individual stories in it describe developments that occur over time), the core narrative of *The Silent History* evinces emergent qualities to a greater extent. The long chronological duration that *The Silent History* covers, and the large number of characters variably focalized within it create conditions for extending the emergent characteristics of the narrative through additive participation. The process of documenting, through direct testimonial accounts, a condition that emerges and spreads throughout a society, both invites and accommodates further documentation in the form of user-contributed field reports.

Network structures are critical to the development and dissolution of the social relations that form as a response to Emergent Phasic Resistance. In the initial stages of the story, as the condition is revealed, silents, their sympathizers, and their caregivers are effectively partitioned off from the social networks they are initially integrated with. Families are isolated from their communities, students are segregated from their peers, and clusters of silents form as their ties to other social groups weaken. As silents geophysically coalesce in condemned buildings and old school buses and the clusters grow, silents become easy targets for those who fear phasic resistance. A gathering of silents at Coney Island covered on the television news, for instance, is attacked with noise by the militant arm of an anti-silent group of concerned citizens. After paramedics are called to a warehouse, a standoff with authorities ensues. Following such confrontations between larger clusters of silents and various non-silent antagonists, the self-organized groups disperse into smaller clusters and withdraw further into the margins, or are assimilated as nodes scattered within normative institutions and structures of society. Margaret Lafferty, formerly opposed to but now empathetic to the plight of the silents, adopts several who have left or been abandoned by their parents and she cares for them at an isolated camp. The development of implant technology has a further assimilating effect, particularly after it becomes legally enforceable, and leads to the reintegration of most silents.

Silents form decentralized clusters through self-organization, then disperse into smaller clusters, and are then fully distributed as they are reincorporated into society. This latter phase is made possible by a broadcast system comprised of a centralized network of servers and the individual nodes of implanted silents. Self-organized clusters of silents are supplanted by a centralized broadcast network. The weakness of the centralized model –

its susceptibility to a targeted attack – is revealed when the central servers are sabotaged, affecting every node tied to it in the network, and leading to the neurological disruption of every single implanted silent around the world. The initial partitioning of silents into isolated clusters (or islands) and their subsequent assimilation and dispersal through a centralized broadcast system are resolved by the restoration of modes of thought and communication taken away from the silents in the ratio-scientific application of neuromedical procedures. Restoration is achieved through the retransmission of originary, silent thought patterns broadcast out over the very centralized communication network used to normalize, assimilate, and subjugate the silents.

The highly textual nature of the main narrative creates dissonance between the form and content of the work. It is set, on the one hand, as far into the future as 2043, yet the testimonials are curiously uniform in length, structure, subject matter and in some cases, even voice – uniformities one would not expect to encounter in the gathering of oral accounts from diverse participants in a wide-scale social phenomenon. All of these direct accounts are, somewhat inexplicably, conveyed to the reader in the form of austere textual transcriptions, though they are explicitly described as oral accounts and, even in 2011, audio recording and delivery technologies are in widespread use within archival practice. Potential incongruities are, to some extent, managed through the frame narrative in the “Introduction and Prologue” section, which is comprised of two videos titled “The Archives,” and “The Condition” and a textual, first person summary “Prologue” (set in 2044 – after the epilogue) of the documentary activities that comprise the entirety of the work. The dissonance between the auditory expression of oral accounts and the textual medium of their transcription, it should be noted, reproduces the psychological violence of imposing

linguistic modalities of expression and experience on the silents, who have no neurological capacities for them.

The third hub of narrative is comprised of user-generated, site-specific, geo-located “field reports.” Field reports must meet the stipulated criteria set out in the submission guidelines, and are subject to the editorial oversight of the project developers. Field reports are linked to specific, small-scale features in particular physical locations. Any participant who chooses to create a field report that meets the submission criteria may contribute. Although field reports are themselves textual documents, they are accessible only through the mapping functions of *The Silent History* application and are therefore bound to the visual representation of the geographical location to which they are linked.

The field reports hub differs from the other hubs in that the network of documents is, in principal, boundless and emergent. The number of documents is not fixed, and the locations to which they are attached are only limited by the practicalities of geographical access. As nodes, field reports are visible, yet effectively dormant until a reader of *The Silent History* travels within their vicinity and activates the application. In this respect, the navigational experience of locating field reports is like a single central hub with single, location-specific ties to individual nodes. There are no navigational ties between nodes aside from their proximity in physical space: Each node is tied to the narrative simply by being geo-tagged within the mapping application, and accessible only if geolocated by the reader. Although literally distributed throughout the world, the narrative structure of the field reports component of *The Silent History* is quite uncharacteristic of real networks. Although self-organized, it is a collection of dormant nodes activated by physical proximity, but with no inter-nodal ties or links and therefore little structural redundancy or

robustness. The peripheral stature that the field reports cluster of narrative nodes has, relative to the core narrative, reflects the divergent narrative positions available to the narrators of testimonials and field reports. Testimonials are firsthand accounts positioned within the story of the silents, and generally take up a homodiegetic (a witness or observer within the tale) position (Genette, 1980) within the narrative. Field reports, on the other hand, are secondary to the principal characters and events described in the testimonials and explore “new voices and settings” (Horowitz, Quinn, Derby, & Moffett, “Guidelines For Prospective Field Reporters,” 2012). Testimonials are effectively insulated from field reports in three ways: in terms of the necessarily heterodiegetic (outside the story) position of their narrators, in terms of their settings which by virtue of being geotagged on a current map will not be the fictional locations mentioned in the testimonials, and also by not being directly connected to the core narrative and the navigational hub of the testimonials.

The differences in how network structures and characteristics inform the distinct narrative hubs in *The Silent History* have implications for how the circuits of production, circulation, and reception function within the work. The production of the introductory narrative nodes and testimonials of *The Silent History* is effectively distributed across two smaller networks of collaborators linked ultimately to a larger network of participants. As a whole, the work is principally a collaboration between Eli Horowitz, Russell Quinn, Matthew Derby and Kevin Moffett. Three additional collaborators are credited for the video content, along with field report contributors (“advance reporters”) located around the world. Structurally, this is a small, centralized hub of principal creators supported by a second, smaller cluster of video producers and a large, distributed network of participants.

The participants are, of course, also readers, and so in contributing content to *The Silent History* they continuously complete feedback loops between consumption (or reception) and cultural production. The continuity of these feedback loops ensures emergent growth in both the production network and the narrative structure with each approved, participatory contribution of a field report narrative. Additionally, by linking new field reports to the central narrative through a mapping application, the creators avoid the need to publish a new Apple iOS application update every time new content is added, thereby overcoming the non-distributed limitations of the iOS format in contrast to direct publishing to the Web.

Incorporating emergent, participatory content created by a distributed network of contributors presents significant challenges. Two specific challenges are ensuring user-generated content fits with the testimonials in terms of both narrative structure and voice. Structurally, incorporating this content into a complex narrative requires striking a balance between participation and narrative coherence. To manage inclusive participation on a large scale in *The Silent History* (276 field reports had been contributed as of March 18, 2014), guidelines were developed in order to shape contributions, and editorial filters were set in place for quality control (Horowitz et al., 2012). Contributions must expand the story world enough to generate narrative interest but at the same time avoid impinging upon major plot events or undermining the logic of the story. Contributions must not be too significant or substantive or they may affect the central narrative. Nor can they be too insignificant, for readers must travel to a specific location to access the material, and must be rewarded for their efforts. Since the central narrative is comprised of a large number of brief testimonials, adding to that structure with a large number of brief field reports is

structurally consistent. Participation is positioned within the broader frame narrative of an archival project documenting the wide-ranging experiences and effects related to Emergent Phasic Resistance. Limiting field reports to the medium of text also aids in establishing some degree of uniformity among contributions.

Incorporating contributions in a variety of writing styles presents challenges over and above those of narrative structure. Just as *The Silent History's* structure inherently accommodates additional contributions or story nodes, in the form of field reports that mirror the form of the core testimonials, its method of variable and multiple focalization also supports the production of user-generated content. The core narrative is an archive of homodiegetic "direct oral histories" variably focalized through no less than 27 characters. These oral histories are focalized through characters with varying levels of involvement in the plight of the silent, but all are participants in the story. Some characters offer observations on the phenomenon from the general perspective of middle America, and possess direct but limited contact with silents, such as that of Warren Kramer, a Virginia gym teacher, or Zane Noeper's account in testimonial 15.2. Other testimonials are positioned much closer to the principal characters and complicating actions, such as those of Margaret Lafferty, who establishes an action group of concerned citizens and ends up adopting a group of silents, or of Theodore Greene and Nancy Jernik, both parents of silent children who play central roles in the action. Some oral histories are even provided by implanted silents, such as Calvin Anderson, the first silent to undergo corrective therapy.

Interestingly, the aphasic resistance that afflicts non-implanted silents prevents them from communicating verbally or linguistically, and therefore the direct oral histories are always, in fact, indirect accounts of the direct experience of non-implanted silents. An

autodiegetic narrative – a narrative recounted by a narrator that is both positioned within the story and a heroic or central figure – is impossible since the principal hero is a “double silent” boy who has been both raised silent and never been implanted. These pristine silent qualities permit him to broadcast his thought patterns to the worldwide group of implanted silents after the destruction of the central PhonCom servers and thereby cognitively restore the implanted silents to their ordinary, non-implanted, non-linguistic state. The same qualities that permit the boy to heal the silents makes an autodiegetic narrative of his experience impossible, and thereby necessitate the telling of the story from a multiplicity of focalizations.

As a consequence of the large number of variably focalized narratives recounted by numerous homodiegetic narrators, the introduction of new narrative voices through reader participation generates less dissonance than might occur in adding them to an autodiegetic narrative focalized from the single vantage point of a central character telling his or her own story. *The Silent History* is already (ironically, given the nature of the silents’ affliction) a clamour of voices: adding more voices through additive participation need not be disruptive to the narrative structure or thematic content of the story.

Accommodating participatory contributions that are consistent with narrative structure and voice while ensuring sufficient reader interest is also supported in a highly innovative way: by relying on the visual interest of a specific physical location. The value of a reader’s field report contribution does not rest entirely on the quality of the writing, the precision with which it fits the narrative structure, or the authenticity of the voice. A significant amount of interest is derived from the location itself, and perhaps the single most important contribution of a reader is not the text itself but rather the quality of

selection in choosing a location to link a field report to. A reader's initial encounter with a field report may be more of an evaluation of the aptness of the location than of the appropriateness of narrative voice. The geospatially distributed field reports are also anticipated in the varied geographic locations of the core testimonials, which are set across and even outside of the United States. Year, location, and the name of the character providing the testimonial are specifically included in the titles of all testimonials.

The authors of *The Silent History* strategically integrate network topologies in the thematic content of the story, at the level of narrative structure, in the circuits of cultural production, and in developing novel solutions for establishing feedback loops between these networks. The complexity of these interrelationships does come at some cost, however. While the participatory processes are a shrewd solution to balancing the integrity of the core narrative with the addition of user-generated content, the central narrative, introductory material, and field reports are disjointed in some ways. Temporal complexities lead to what could be considered narrative contradictions. *The Silent History* is, as noted in the introductory section, for instance, an "archival record" and "strictly a record of the past." The introductory narrative is in some sense both extradiegetic and intradiegetic, simultaneously straddling the narrative of the silents and the frame narrative presented to the reader. "The Archives" addresses readers from a vantage point at the conclusion of the documentary narrative (in 2043), and explains the serial publication form (extradiegetically, as a frame narrative to orient the reader), yet simultaneously invites readers to participate from any temporal vantage point they wish – to take up, in other words, an intradiegetic narrative position within the story. The basic temporal and narrative contradiction is that if *The Silent History* is a record of the past, how can

participants contribute to it, retroactively, from a narrative vantage point set after the conclusion and still maintain the realist stance of the work?

To a certain extent, if there is a structural dissonance in the narrative, it is in part explicable in terms of how narrative and information function together in *The Silent History*. The principal mode of participation is the creation of pseudo-factual accounts of a pseudo-factual epidemic spread of a sensory debilitation. The means of linking these field reports is through a mapping application that is anchored to the cartographic present of the reader. These aspects of the narrative do not generate an inherent or necessary temporal disjunction. Moreover, they are arguably a very effective and appropriate way of linking up a narrative structure with the informational resources that networked subjects employ in their everyday lives, for non-fictional purposes.

However, in setting the work so far into the future, and then inviting readers to contribute field reports for any year within the full time range, the field reports undergo a temporal compression in how they are made accessible. Field reports set at any given year between 2011 and 2046 are all linked to the geophysical world as it exists at the moment the reader accesses the field report via the mapping application. Since readers of fiction willingly suspend disbelief, that willingness could reasonably be expected to extend to how field reports from different years are accessed, but it does undermine some of the work's realist tendencies. In comparison, Web serials and other network narratives are often set in contemporaneous present, or an undefined present that more or less corresponds to the reader's present. This temporal correspondence maintains a link between the communication technologies and practices of readers and the characters of the narrative. In contrast, to use Walker's distinction between distribution in space and time (2005), *The*

Silent History is arguably too distributed over time, its story stretched across too large a timeframe and too far into the future to be able to make a concerted appeal to realism.

The geospatial aspects of the field reports further problematize this relationship. Since field reports are linked to a map that generates real-time data about the environment in which one is situated and is based on current map data, providing access to a document from the future is anachronistic even if the physical features that the document is geospatially linked to are resilient enough to persist. The simple answer, of course, is that participants take up a kind of metanarrative, authorial position and simultaneously straddle several diegetic levels in producing a testimonial that will ultimately reside intradiegetically within the text. However, in calling upon readers to simultaneously occupy different diegetic positions, and different temporal vantage points, the potential for immersion in the story is reduced.

Comparable dissonance occurs in attending to the principal modes of representation. The testimonials are extremely text-centric records, particularly considering that they are presented in “The Archives” video as “direct oral histories.” The same video introduction incorporates photos of people and places that, given the empirical, non-fictional posture of the introductory narrative, would presumably be represented within the testimonials. But that raises the question of why, in seeming contradiction with even contemporary archival practice, oral histories would be preserved or made available as transcribed texts rather than as the original audio recordings, or why the texts would not be supplemented by photographs and documents as occurs in the video introductions. Why, in other words, are the narrative nodes not multimodal as the practices they depict would presumably be?

These points regarding temporal dissonance and lack of multimodality are, of course, a form of quibbling, and it is the creators' prerogative to strive for realism in some narrative respects and not others. Such contradictions exist in novels as well, but the form is so well established that we do not ask, for instance, how it is possible that a narrator has gained access to another character's thought processes. Network narratives encounter new and unique challenges in how they negotiate the changing relations between literature and network media. The strategies their creators devise can be quite distinct, as the differences between *The Silent History* and *Flight Paths* (Pullinger & Joseph, 2007-) show.

Flight Paths

Flight Paths (Pullinger & Joseph, 2007-) is a highly multimodal network narrative (or a "networked novel" as described by the creators) with emergent and participatory characteristics. Its narrative is presented as more of a linear sequence than a distributed network structure. It is published serially, online, and exploits the highly distributed structure of the Internet in order to promote and integrate user-contributed content from a variety of sources. For this reason, *Flight Paths* illustrates in exemplary fashion the variability that may exist between distinct layers of a network narrative.

The plot structure of *Flight Paths* is comprised of singular, uni-directional ties between nodes. It therefore does not fit Ryan's network model of interactive architectures, nor does it constitute what Ciccoricco refers to as "network fiction." And yet, networks are intrinsic to *Flight Paths* as a work. *Flight Paths* is comprised of two "interwoven destiny lines" (Ryan M.-L., 2006, p. 101), those of the two principal characters, Harriet and Yacub. Harriet is an English mother, while Yacub is a migrant worker who leaves home to work in

Dubai, then subsequently decides to stow away on a plane destined for England. Six chapters or episodes long to date, *Flight Paths* is the story of how disparate lives – or flight paths – intersect when Yacub is ejected on the jet’s approach to a London airport, lands on Harriet’s car, and survives the fall. The transient, desperate, economically and geopolitically uncertain experience of migrant worker Yacub is contrasted with the domestic and economic stability of Harriet and her family. A representative of the developing, near eastern world literally collides with a representative of the developed, western world when their metaphorical flight paths intersect and the quotidian experience of shopping at a grocery store initiates an encounter between the principal characters. Cultural, social and economic differences – and their collision – are expressed in the narrative structure and in the multimodal content, and the varied expression of these differences is made possible through participatory and emergent processes.

The novel is published online and accessed via a URL. Six sequentially ordered sections or chapters can be read through any Internet and Flash-enabled device. Topologically, this is a centralized hub with a single tie or edge connecting the principal node of the main website to each of six chapter nodes. These six nodes are not linked together by secondary edges. Each chapter node is comprised, in turn, of a series of story segments connected by singular, uni-directional ties (buttons) leading from one lexia (or story segment) to the next. In contrast to a typical browser-based experience, the user has no mechanism for moving backwards through the narrative. The narrative structure within each section, in other words, is not a network at all, but rather a highly delineated sequence of nodes – a vector without side branches to use Ryan’s terminology (2006, p. 103). In permitting only forward progress from one node to the next, *Flight Paths* is a far

more controlled reading experience than that of a print novel. *Flight Paths* does not exhibit the distributed, decentralized structure of some hypertexts and narrative works. The plot structure is highly dependent on a particular, sequential reading order and its temporal organization is fairly straightforward. If the chapters or episodes are read in order, events are narrated in the same sequence in which they occur, with no analeptic or proleptic shifts, and no repetition in the telling of events. Story (the complicating actions of the plot) and discourse (the sequence in which events are retold) are closely aligned. While nothing prevents the reader from accessing the six currently published installments in any order, they are both visually and numerically presented as a sequence and a reader is unlikely to disrupt this order in the absence of a reason to do so.

The centralized hub and highly sequential plot and navigational structures of *Flight Paths* are in some respects contrary to navigational norms encountered by users of digital communication technologies. When surfing the Internet, browsing social networks, or interacting with a computer program, users typically have a range of navigational options available, so in that sense the narrative structure of *Flight Paths* undermines the variable selectivity and multicursal potential that even early hypertext fiction authors sought to exploit. In *Flight Paths* the reading experience is arguably more “linear” than that of a novel. At the same time, however, the unicursal attributes of *Flight Paths* complement the sophisticated use of multimedia, a participatory and emergent production model, and serial publication and circulation. The highly determined narrative structure of *Flight Paths* acts as a counterbalance to characteristics that are uncommon within electronic literature, and these aspects are, in turn, dependent on network communication structures.

The relatively simple narrative structure enables the creators to achieve various effects that link the narrative content to particular multimedia techniques and content. As the destinies of the two characters come together in the fourth chapter “Dark Mass,” for instance, the viewer sees both characters’ narratives in a split screen layout in which Harriet is shopping for groceries and Yacub is struggling to secure his position within the landing gear housing in which he has stowed himself away. The split screen layout emphasizes the disparities between the realities of the characters: the bright lights and frenetic consumerism of a shopping experience on the one hand, the darkness of the aviation hold on the other; the annoyance of a shopping cart with wonky wheels versus the life-or-death challenge of finding a way to hold on to the landing gear of a massive, intercontinental jet aircraft.

These disparities are graphically reinforced through the use of typographical markers. Harriet’s text is presented in the formality of a serified font, suggestive of the material solidity and stability of printed matter, while Yacub’s text has the dashed scrawl, informality, and ephemerality of a handwritten note. As the landing gear deploys, Yacub falls towards Harriet, and she looks up; the split screen pivots to mimic the visual perspective of a skyward glance. The darkness of the airplane’s landing gear hold recedes, removing the separation between the characters, and the texts of their narratives appear together over a motion graphic of a blue sky moving steadily upward in an animated loop to convey the sense of Yacub’s falling. Then Yacub’s text announces his landing, there is a sudden sound of impact and the screen goes black again, as if to suggest unconsciousness. The timeline-based, multimedia Flash format makes it possible to control the temporal

experience of the reader in individual narrative nodes and to articulate a sense of what it might be like to see someone falling from the sky, as Harriet does.

Multimedia presentation techniques amplify the narrative of *Flight Paths* throughout. Chapter 3, “Harriet Driving” for instance, is visually dominated by video-based motion graphics of a car driving through the streets of Richmond, a suburb of London. Movement occurs within the video segments, but the video footage also moves within the field of view. The bulk of the text is superimposed over the motion graphics. The visual effects employed complement Harriet’s textual narrative by emphasizing concurrence between the viewer’s perspective and the focalization of Harriet’s character. The reader is effectively compelled to identify with Harriet’s homodiegetic narrative position not just through the text, but also through the video content and the perspective it offers the viewer.

Similar techniques of matching audio-visual content to textual narrative occur in chapter 6, “Jack Meets Yacub,” in which Yacub reveals himself to Harriet’s son, Jack. The chapter relies heavily on a foreboding soundtrack, the sound of gunfire and explosions, visuals of sandbagged fortifications and camouflage backgrounds, and animated explosions – all related to Jack’s committed interest in a first person shooter video game. In order to advance the narrative, the reader must identify with Jack by clicking on a button to continue a game of *World of Battle Fatigues*. These audio-visual resources signal that Jack is actively playing the first-person shooter video game at the specific point in time when Yacub reveals himself. Yacub’s interruption of Jack’s gameplay is visually indicated by Yacub’s shadow encroaching on and obstructing Jack’s field of view – which the reader/viewer shares. Jack falls back in surprise and as his text narrative describes Yacub’s hand reaching out to help him up, the shadow of his hand passes, once again, in

front of Jack's and the reader's field of view. As dialogue is initiated between the two characters, Yacub's profile is centred within the screen. Throughout the sequence, multimedia resources reinforce the reader's identification with Jack's homodiegetic narrative and the textual content's focalization of his point of view. In *Flight Paths* the reader experiences a stronger identification with the characters and their narratives than would occur through text alone – by driving with Harriet, and by playing video games with Jack. Multimedia resources reinforce the connection that is asserted between how the characters experience the world – driving to the grocery store, working in Dubai, playing video games – and how the reader experiences or might experience it.

The multimedia resources that enrich *Flight Paths* are sourced through participatory, networked processes, and this process is also linked to the narrative's emergent attributes. Participatory multimedia contributions enrich the project with audiovisual expressions of diverse cultural contexts, and they enable sophisticated graphic possibilities. User-generated content contributions solve practical problems of creating multimedia resources for a narrative set in a variety of locations by acquiring the audiovisual resources from participants instead. The use of online sources for audio and image resources is necessitated in part by the diversity of subject matter. It would be impractical or impossible to generate, from scratch, explosion sounds and animations without the assistance of an audio effects producer for instance, and travelling to Dubai to take a few photographs for the "Yacub in Dubai" chapter could be prohibitively expensive on a limited production budget.

In order to mitigate these challenges, author Kate Pullinger and designer/programmer Chris Joseph rely on resource-sharing networks. Online image and

audio sharing communities offer Creative Commons licensed multimedia resources that may be re-used in derivative works. In some cases the multimedia resources used in *Flight Paths* are obtained from online content-sharing networks. As noted in the credits for the chapters, photos for the project were supplied by more than twenty different members of the Flickr photo-sharing community. Much of the audio is sourced from Freesound (<http://www.freesound.org>), a “collaborative database of Creative Commons Licensed sounds” (Freesound).

In addition to relying on online photo-sharing and audio-sharing communities, Pullinger and Joseph solicit contributions of various kinds via direct email contact, through a NetVibes resource portal dedicated to the project, and by utilizing Web services, such as Flickr. Each of the first five chapters includes, on the credits screen, an invitation to contribute: “To add your work to this project, please send your ‘Flight Paths’ inspired stories, texts, fragments, anecdotes, memories or musings via email” (Pullinger & Joseph, 2007-). The resource portal enables contributors to post text comments, links to articles and resources that are related to the topics and characters in *Flight Paths*. The portal also directs contributors to add resources to a Flickr user group, the Flight Paths Pool (Pullinger & Joseph, 2008), a Facebook group, and the File Dropper file-sharing service. As this combination of resource acquisition strategies demonstrates, the multimedia elements incorporated into *Flight Paths* are directly linked to the creators’ use of large, distributed content-sharing networks. Without these networks, sourcing the audiovisual resources necessary for a multimedia narrative would be difficult. Importantly, these online content networks are already integrated into everyday digital communication practices. Contributors that are already using one or more of these services need not register for or

figure out a new process. And by sharing the resources within these networks, the involvement of participants may promote the project to other contacts, and perhaps earn symbolic capital through association with *Flight Paths*.

The emergent properties of *Flight Paths* are closely linked to the processes for soliciting multimedia resources and integrating them within the narrative structure. Participation in *Flight Paths* is most meaningful if contributions are linked directly to the thematic concerns and characters. These specific themes are best revealed to a potential contributor through reading and experiencing the work. So, like *The Silent History*, the highly sequential narrative structure of *Flight Paths* serves multiple purposes: it makes it easy for readers to follow along as new episodes or chapters are published, and it also establishes contexts for the feedback loop between production, circulation, and reception of the work. While the narrative structure of the work is unidirectionally sequenced, and while the individual chapters are, like the individual episodes in a dramatic television series, bounded and complete (new chapters are added periodically but old ones are not updated), the production process is designed to incorporate participation into subsequent chapters. The relative ease with which a potential contributor can read the entirety of the work is in stark contrast to the difficulty of doing so for a network narrative such as *A Million Penguins*. The network of contributors is not only distributed, but also boundless, proliferating and expansive in scope – contribution is open to anyone who wishes to participate (though whether or not materials are incorporated is determined by the principal author and designer). While there is a practical limit to how much contributed material may be incorporated into subsequent chapters, the amount of material that may

be tagged or suggested for inclusion is limited only by the technical and functional constraints of the systems through which contributions are made.

Networks structures permeate *Flight Paths*. As a story about mobility, migration, and displacement that conveys the inequalities inherent in a globalized world, networks are thematically present in how different cultural, social, economic and political networks collide when a migrant worker uses global transportation networks to relocate himself from one group of networks to another. Exploring these themes in a narrative with rich, multimedia interfaces generates imperatives for sourcing audiovisual resources. This requirement is addressed through the use of digital communication network technologies and participatory practices, and taps into existing, globalized networks of content-sharing communities. The feedback loops between author, designer, and participants are essential components in an emergent network narrative comprised of serially published chapters.

A Million Penguins

A Million Penguins (2007), is a wiki-based writing project initiated by Penguin Books with author Kate Pullinger, New Media Professor Sue Thomas and graduate students in De Montfort University's MA program in Creative Writing and New Media in the United Kingdom. The goal of the project (which is no longer online) was to produce a publishable "wikinovel" – a novel written collaboratively and open to any interested contributor (Mason & Thomas, 2008, p. 1). Collaboration was managed using wiki software, and the text was seeded with a single line taken from Charlotte Brontë's *Jane Eyre* (2000): "There was no possibility of taking a walk that day." The project lasted from February 1, 2007 until March 7, 2007, and over that period of time, 662 registered users made a total of

11,070 page edits (Mason & Thomas, 2008, p. 28). More than a thousand pages were created, 491 of them with significant user-generated content (Mason & Thomas, 2008, p. 25). Over half of the 1,476 registered users never edited the text. Only 85 registered users returned to the site to make subsequent edits, and of these, only 18 users made more than 5 edits to the wiki-novel (Mason & Thomas, 2008, p. 31).

Structurally, *A Million Penguins* evolved over time as contributions were added or edited. It was ultimately organized into 7 sections, and each section was further subdivided into between 8 and 24 subsections. Links within textual passages led to other pages, or nodes, in the network of wiki documents. The principal subsections and the nodes extraneous to these clusters or hubs exhibited an extraordinary degree of heterogeneity in genre and voice, and dealt with unconnected plot events. While narrative strands, thematic concerns and distinct characters resurfaced in different sections of the wikinovel, the connections between them were vague or nonexistent, leading to noticeable fragmentation. As Mason and Thomas note, “There are at least seven nascent novels in ‘A Million Penguins’ most of which do not connect to each other” (2008, p. 14). What’s more, 150 content pages were unlinked (Mason & Thomas, 2008, p. 14) and in that sense violated the basic organizational principal of Wikis that pages link to each other. These nodes were “orphaned,” accessible only through the paratextual apparatus of the wiki’s maintenance tools and so, in effect, extraneous to the network structure – however ad hoc – of the narrative.

In contrast to the other network narratives I discuss, *A Million Penguins* is unique in that its navigational structure, or interactive architecture (Ryan M.-L. , 2006, pp. 102-107), is the product of a truly participatory, emergent and self-organizing network process. An

unlimited number of participants could contribute to the work by accessing it via the Internet, adding links, and creating and editing pages (or nodes). Over the course of 5 weeks, the number of nodes grew steadily and significantly and in the end, more than 40 nodes had at least 10 ties (“Most linked to pages,” 2007). The most linked to node with 54 links, was a page about a character named Carlo, and was, not surprisingly, created the first day the wiki was open, February 1, 2007 (“Joseph Carlos Sandiego: Revision history,” 2007). The second most linked to page, with 41 links, was The Real Novel (“Alternative Novel 1,” 2007). It was created within the first few days, on February 4, 2007, by separating content from an existing page (“Alternative Novel 1: Revision history,” 2007). In some cases the most linked to pages have a high link density as a consequence of how they were structured. The User: Sun Tzu page, for instance, is a kind of acrostically structured phrase (“New job: fix Mr. Gluck's hazy TV, PDQ!”) in which each letter except “x” is linked to a quote from Sun Tzu’s *Art of War* that begins with the letter it was linked from (“User: Sun Tzu,” 2007). Each quote, in turn, links back to the “User: Sun Tzu” page, with the number of quotes – 26 – accounting for almost all of the 29 inbound links. All of the ten most linked to nodes were created in the first week of the project.

In part, the density of links leading to the most linked to nodes is a function of being accessible for a long time during a process of growth. As Albert-László Barabási (2002) explains, early nodes are available to be selected for linking by a relatively large number of users and therefore have better chances of being linked to. Patterns of network growth are also affected by what is known as “preferential attachment” (Barabási, 2002). In complex networks the co-presence of growth and “preferential connection” leads to the formation of a small number of dense hubs (Barabási, 2002, pp. 79-92). The absence of a small number

of clearly distinguishable hubs in *A Million Penguins* may be reciprocal with the chaotic and fragmented nature of the narrative, and the fact that no single narrative strand or character was identifiable as centrally important and therefore dominant enough to secure an inordinate number of new links.

The fragmentary nature of the narrative was established early on in the 5-week process due to several initial conditions. Fragmentation resulted in part out of the deliberate lack of initial guidance on any of the usual characteristics of prose narrative fiction. However, the large group of contributors and their varied motivations, abilities, and perspectives on the work at the time of their participation also contributed significantly to the lack of unifying coherence. The seed line, taken from the first sentence of *Jane Eyre* (Brontë, 2000) – “There was no possibility of taking a walk that day” – provides virtually no markers of genre, setting, character, voice, point of view, or plot. The sentence leads almost anywhere. It is fair to wonder whether a seed paragraph with a few more narrative markers of characters, settings and plot might have provided a slightly better foundation for inciting coordinated participation, though given the number of “vandals” the project attracted, perhaps no amount of initial narrative content would have been sufficient enough to keep the final work coherent.

As the about page for *A Million Penguins* asks, “Can a collective create a believable fictional voice? How does a plot find any sort of coherent trajectory when different people have a different idea about how a story should end – or even begin?” (“About,” 2007). With nothing but the first line of *Jane Eyre* as a starting point, participants had little in the way of guidance or oversight in the initial stages of the project and as such, organic self-organizing efforts to maintain structural and narrative coherence were often met with concerted

opposition. After all, there were no officially sanctioned core assumptions about plot, character, narrative structure or voice to which to refer for authority. Indeed, the authority of an authorial voice was intentionally absent. Participants who sought order and made efforts to maintain it found the most active clusters of activity, such as the wiki's Welcome page, too frenzied and haphazard and were instead often consigned to less visited clusters, or islands, described as "walled gardens" (Mason & Thomas, 2008, pp. 15-16). These areas were typically a few links removed from the most active clusters and were very different in makeup, such as a collection of multicursal stories in the distinctive "Choose Your Own Adventure" genre.

As a textual site of extreme heteroglossia, and a multitude of narrative voices, the wikinovel has been characterized variously as a "carnival" or "moment of excess featuring multiple competing voices and performances" (Mason & Thomas, 2008, p. 2) and a "party that had gone on too long" (Mason & Thomas, 2008, p. 16). The novel was described less charitably as "sorrowful" (Anderson N., 2007), as characterized by "meandering pointlessness" (Farrelly, 2007), and as "incoherent" and more novelty than novel (Vershbow, 2007). Without question, the large numbers of contributors and contributions resulted in a multiplicity of narrative voices, thematic concerns, and plot devices. This is summarized well by Mason and Thomas as more of a crowd than a community, "ad-hoc groups of interest [with] no over-arching sense of communal construction" (2008, p. 19).

But it is in the chaos and crowdedness of *A Million Penguins* that the narrative's unique, self-organizing circuits of production are revealed to be extraordinarily compact and dynamic. Without anything but a single line borrowed from *Jane Eyre* to start things off, *A Million Penguins* is produced almost entirely by its readership. Every single edit –

however minor – resulted in a material alteration of the work as it appeared to other readers. In being open to any user who chose to register, there were no filters, review processes or editorial modifications placed in the way of publication. Except in cases where users deleted large amounts of content, or edits were overtly destructive or pornographic (Mason & Thomas, 2008, p. 10), the overseers of the project intentionally left the work to the contributors who chose to participate in it, without judgment as to the literary merits of their contributions.

During the course of more than 10,000 page edits, *A Million Penguins* was published in over 10,000 intermediary forms, each of them in effect circulated immediately, and made accessible to readers either synchronously (i.e. by viewing pages in their existing state, before subsequent edits), or asynchronously (i.e. by reviewing the history states of a particular page). Any one of these versions was editable by any registered user. This constitutes a remarkably tight, self-organizing circuit of production in which reception leads immediately to the (re)publication, and (re)circulation of a work. These circuits are made possible by the real-time feedback loops of the Wiki software, and they proved so dynamic, that a lockdown period had to be implemented to constrain the circuits of production for a few hours per day in order to prevent the proliferation of spam and pornography (Mason & Thomas, 2008, p. 4).

A Million Penguins is virtually unprecedented as a narrative work that is simultaneously distributed, participatory, and emergent. However, the concurrence of these features of network narratives to such an extreme degree, comes at a deficit in one other important respect – that of multimodality. While wiki software typically accommodates the use of digital images, audio and video, and while the world's most

famous wiki, Wikipedia, includes a rich collection of images managed through the Wikimedia Commons, the implementation of wiki software for *A Million Penguins* limited users to text contributions only. The lack of images, although likely necessary from an administrative standpoint (the resources needed to check the licensing and ownership of all uploaded images would likely have been prohibitive, and too legally risky for an international publisher to simply ignore), introduces a disjunction between the expectations of the readers of novels, and the users of wiki software and digital networked communications generally. As a result, *A Million Penguins* was arguably, in the end, neither typically wiki nor novel.

The dynamic characteristics and feedback loops of the circuits of production in *A Million Penguins* are both constituted by and constitutive of network structures. The Wiki model is precisely that of a network of users developing and maintaining a network of pages, with real-time publication capabilities realized through the distributed communication network of the Internet. The degree to which the circuits of production were shaped by these networks, or how those circuits would in turn shape the distributed, network structure of the text were not reflected in Penguin Books's initial interest in publishing the final outcome in book form. The failure of *A Million Penguins* to conform, in various ways, to the conventions of book publishing has meant abandonment of plans to publish it as a book. However, this merely reinforces the fact that the particular characteristics of network narratives are in many ways distinct from those of novels, as we would indeed expect. Just as few readers would prefer to read *Jane Eyre* in wiki format, those who actively participated in the dynamic and networked experience of *A Million Penguins* are unlikely to find reading it in book form very appealing.

BurtonStory

BurtonStory (Burton & collaborators, 2010) is an experiment in collaborative storytelling that was hosted using the social media platform Twitter. Begun on November 1, 2010, *BurtonStory* was initiated in association with a retrospective exhibition on the visual art of filmmaker Tim Burton installed at the TIFF Bell Lightbox gallery in Toronto. The project was launched as *Tim Burton's Cadavre Exquis* with a simple, dedicated website, *BurtonStory.com*, where an initial line was tweeted using a dedicated Twitter user, @BurtonStory, and a corresponding hashtag, #BurtonStory. The website was visually laid out in harmony with Burton's distinctive, comically gothic aesthetic. Accompanying the initial tweet was an illustration of a Burton character, Stainboy, wearing a cape and with the letter "S" emblazoned on his midsection. The sardonic, anti-heroic Stainboy character had accompanied several poems included in an illustrated book of poetry created by Burton, entitled *The Melancholy Death of Oyster Boy and Other Stories* (1997). Twitter users and exhibition visitors were invited to "Join Tim Burton in a story-making adventure" (Burton & collaborators, 2010) predicated on the concept of the *cadavre exquis* or exquisite corpse method of creative production in which an initial phrase is continued by a succession of contributors until the exercise reaches a conclusion.

From a relatively simple starting point and with little investment of time and resources in a dedicated, collaborative, storytelling architecture, *BurtonStory* garnered a significant amount of participation and publicity during its period of activity from November 22nd to December 6th, 2010. The initial tweet used to seed the story and generate interest in it was: "Stainboy, using his obvious expertise, was called in to

investigate mysterious glowing goo on the gallery floor” (BurtonStory, 2010). During the course of the “story telling experiment” 13,054 tweets were submitted using the #BurtonStory hashtag (TIFF, 2010). From the tweets that were submitted, 87 were selected for inclusion and embedded within the story on the BurtonStory.com website. The selected tweets were submitted by a total of 74 participants (nine Twitter users had more than one of their tweets selected for inclusion). Each day, between 3 and 9 tweets with the #BurtonStory hashtag were retweeted by the @BurtonStory user. Typically, retweets occurred first thing in the morning and continued periodically until the mid to late evening. Retweets were spaced as little as 30 minutes and as much as half a day apart (the longer gaps were generally a consequence of overnight inactivity in retweeting), but more commonly there was a gap of 1-3 hours between retweets.

The narrative structure of *BurtonStory* was constituted, during its initial time frame, by a constantly growing network of tweets connected to each other via the #BurtonStory hashtag by weak, parallel ties. These nodes competed for a finite number of strong links to a central hub – the @BurtonStory user sponsoring the experiment. Nodal candidates for inclusion in the network narrative were identified by their authors and other participants through the use of the designated hashtag. Nodes or tweets became part of the hub upon being retweeted by @BurtonStory. Retweeting also sequenced the selected tweets within the narrative at a coordinated location in the network – that is, following the previously selected, user-generated phrase that a subsequent phrase was intended to link to.

The limited time frame for participation in effect created a boundary around the network narrative. Although in theory the number of Twitter users who could respond to the latest selected tweet with a new tweet within a few hours is limitless, in practical terms,

the relative immediacy required of responses constrained the quantity of submissions. Given that 87 submissions were ultimately selected for inclusion, and the total number of submissions received was 13,054, an average of 150 submissions per narrative node were candidates for selection. This number represents a significant range of narrative possibilities, even accounting for the rejection of inapt or poor quality submissions.

In *BurtonStory*, the feedback loops between reception and production, circulation, and reception are extremely tightly bound and the feedback loops are opened and closed rapidly. This dynamic relationship is set up in large part by the initial conditions for participation, which are presented in a remarkably compact way in the first tweet. In linguistic approaches to narratology, the key elements that set up a narrative are the “abstract” and the “orientation” (Toolan, 1988). The abstract provides a nutshell summary of the tale to come, while the orientation introduces character, setting, and plot before getting into any of the complicating action (Toolan, 1988, pp. 152-156). Abstracts and orientations are not necessarily provided by the teller of a tale. In fact, in oral narratives, an abstract may be provided to prompt the skillful retelling of a tale by another person as when someone is urged to “tell us that story about the time when you...”. The initial tweet for *BurtonStory* – “Stainboy, using his obvious expertise, was called in to investigate mysterious glowing goo on the gallery floor.” – very skillfully provides an abstract and orientation that sets a whole range of parameters and markers of genre, but is also open-ended enough to invite collaboration from a broad network of participants, many of whom may not know Tim Burton’s visual and cinematic aesthetic well enough to otherwise contribute appropriately.

The first line of the story telling experiment, posted on the home page of the *BurtonStory.com* website, is simultaneously open-ended and specific. It is specific in that it presents a reasonably well-formed character. From his cape and the “S” emblazoned on his chest in the accompanying illustration we know that Stainboy is a kind of absurd and comical superhero. Unlike the majority of comic book superheroes, Stainboy has a disproportionately large head and big round eyes, and his torso is supported by spindly legs. From the tweet we also know that Stainboy has investigative expertise. There is a specificity of setting, in that the goo is discovered on the gallery floor (this is also a thematic link to the relationship between the TIFF gallery exhibition and the *BurtonStory* project). Character is delineated (this is a story about Stainboy) and the genre is established as a kind of fantastic gothic comic mystery. The fact that this is an investigation by a character named Stainboy about glowing goo signals that this is a story that will not be mistaken for serious literature. Genre boundaries may seem very fluid, and they are, but the abstract seems to logically exclude, for example, a romantic, realistic, or historical approach. The narrative structure, as set out in the first line, already informs us that while we may have no idea how long the story will be, or what will happen in it, we know with relative certainty that the coda will address what the mystery was, and how Stainboy solved it.

The relative narrative certainty provided in the first tweet of *BurtonStory* stands in stark contrast to *A Million Penguins* (2007), seeded with the much less specific first line of *Jane Eyre* (Brontë, 2000). In part, because the first line of *Jane Eyre* is not a fully formed narrative abstract and does not adequately orient the reader (orientation does, of course, occur at the beginning of *Jane Eyre*, but over the course of a larger portion of the text than

the first sentence), participants developed their own ideas of what genre the work would be and became heavily invested in those decisions. In *BurtonStory*, there are enough cues, and a sufficiently complete narrative abstract, to ensure that most submissions will adequately adhere to the parameters set in the initial post. At the same time, there is ample room for creative interpretation of the story. Of course, the fact that only one tweet of many would be selected to follow the previously selected submission one also means that a pattern of appropriateness could be established by the project's organizers. A similar approach was neither practical for, nor desirable to the organizers of *A Million Penguins* given the greater complexity and larger scale of wiki interaction, and the longer time frame of the project.

BurtonStory, like *A Million Penguins*, is an emergent work predicated entirely on participatory processes: without participation, there is no network narrative. The narrative required an audience for its initial starting point, and sufficient interest in the principles of the work by its readership to prompt interactions that animate the feedback loop between reception and production. It is the link between reception and production – and the conversion of consumption into participation – that materially advanced and built up the narrative. In broadcasting over Twitter, the *BurtonStory* drew on the distributed network of Twitter users to productively interact with the @BurtonStory user and the #BurtonStory hashtag by posting related tweets. Readers had to be quite committed in order to participate in the project because of the specific requirements of individual submissions, and because of the short turn around for contributing meaningfully.

Participation in *BurtonStory* required sufficient commitment and attention to the story in its progressive, temporary states in order to maintain thematic, narrative, and

grammatical integrity at any given stage in the process. From a narrative standpoint, individual tweets were generally not long enough to both introduce and complete a plot event. Participants had to be relied upon to continue or complete an action that was still in progress. They also had to be familiar enough with the entire narrative to that point in order to compose something appropriate. Potential contributors who had not been following progress closely would have to read the narrative in its entirety to that point in order to contribute meaningfully – something that was entirely possible, given the compactness of the narrative. Every new retweet by the @BurtonStory Twitter user generated a new, publicly accessible, processual state of the emergent work. Familiarity with the current, provisional state of the narrative was a requirement for subsequent participation. Every retweet produced a new, albeit temporary work that was circulated, via Twitter and the BurtonStory.com website, and consumed by an audience of passive readers and active participants.

Another example in which participants remained cognizant of the need to maintain narrative integrity is in the provision of a coda. On December 6, 2010, the last day of the experiment, a paratextual reminder of the story's impending end was provided by the @BurtonStory user (BurtonStory [@BurtonStory], 2010). While there was no explicit call for an apt conclusion, participants proved familiar enough with narrative structure and the expectations of readers to recognize the need for a coda. Participant Sara Leme submitted the tweet that was selected to close out the story: "From this day he became known as Stainlessboy. The one who solved the case of the mysterious glowing goo on the gallery floor" (Leme, 2010). The tweet fulfills the requirements of a coda perfectly: it explicitly signals an end to the story through reference to the narrative's beginning (Toolan, 1988, p.

163). Narrative return is accomplished by confirming both the investigative abilities of the character and a solution to the initial complicating action. It also refers to the intermediary complicating action. The character's name change to "Stainlessboy" refers to the fact that Stainboy eats some of the goo and his stains disappear as a result. As the coda for *BurtonStory* demonstrates, successful participation (success being indicated by a retweet) in the collaborative story-telling project required involvement in the feedback loops linking production, circulation, reception, and subsequent cycles of (re)production.

In a number of instances, submissions also had to grammatically complete the previously retweeted contribution. Users at times composed complex sentences and deliberately left them incomplete. Contributor Sean Ryan, for instance, tweeted "The goo changed colour and started to pulsate. Stainboy looked down at his feet as the goo released its grip and" (Ryan, 2010). Ryan's compound sentence contains a coordinating conjunction but no subsequent sentence element to complete the construction. It is a functional grammatical requirement that the following tweet must syntactically complete the sentence by adding the missing element before adding additional narrative content to the sequence. In some cases, several incomplete complex compound sentence constructions occur in a sequence, as in this example (italics and bold are mine and indicate distinct tweets):

He knew it could all end here. But he wanted answers. He needed to know the truth.

*Breathing hard, Stainboy stepped towards the goo **and started to eat it. Knowing now that he was half made of goo, he knew it wouldn't kill him like it did his father. It was the key to his power, and his heroic obligation to stop it from harming anyone else. As he ate the goo, a luminescent green glow formed around him. He***

could feel his stains dissipating. It was curing him. No wonder his father was trying to inject the goo into his body. Stainboy watched with amazement as each stain slowly disappeared, leaving his body clean and dry. (Ramzipoor, 2010; @Burtonoeee, 2010; Cristiano, 2010; Parent, 2010; Strachan, 2010)

To be sure, *BurtonStory* has little of the complexity of a well-developed novel and this makes participation easier and less involved. All in all, the completed story constituted less than 1800 words. However, the network of nodes (individual tweets) that were selected and concatenated to produce this completed story could themselves, in turn, be concatenated in order to string shorter episodes into a longer, more complex narrative with deeper character and plot development. This approach would be comparable to the sequential, episodic structure of *The Silent History* (Horowitz et al., 2013) comprised of a large number of more or less self-contained narrative nodes (i.e. a single video blog entry, or a single testimonial).

In contrast to the contributions for *Flight Paths* (Pullinger & Joseph, 2007-), some of which would have been visible and accessible only via email messages sent to the creators, and unlike *A Million Penguins* (2007), where many contributions would have been buried in the history and revision pages, in the *BurtonStory* project, every single submission made during the course of the project was visible using the very same hashtag used to review the contributions and then retweet those selected for inclusion. In this sense, the ways in which reception feeds back into the production of the network narrative remains much more visible in the finished work because the process through which participation was solicited and submissions made – the #BurtonStory hashtag – is a persistent feature of the large, complex network of nodes that exist within Twitter. On the other hand, because a

user's tweets are deleted when a user's account is removed, quite a few of the tweets selected for inclusion in *BurtonStory* are no longer accessible on Twitter. The provisional, temporary nature of tweets (published, as they are, in a massive and proliferating network of impermanent nodes) mirrors the fluid nature of both authorship and the work that characterizes a Twitter fiction like *BurtonStory*.

Out My Window

Out My Window (Cizek, 2010) differs from other network narratives I discuss in that it is a non-fictional documentary. Produced by the National Film Board of Canada's interactive division, it is billed as an interactive 360-degree documentary. The project documents the socio-economic relations and community identities that coalesce within high-rise developments around the world. Multimodal narrative content is organized in a "sea-anemone" network structure (Ryan M.-L., 2006, p. 103). Social and geospatial relations are explored from intimate first-person perspectives and through the use of sophisticated panoramic digital video and imaging techniques. The global documentary production networks underpinning *Out My Window* are substantial and collaborative, with a participatory and emergent companion project that invites users to submit their own photos and stories.

The principal user interface for *Out My Window* (labeled "Spaces") displays a set of thirteen high-rise windows together in a visual pastiche representative of an apartment façade. Each window focalizes one of the documentary subjects from an external vantage point. The interface presents all of the subjects as participating in a common yet individuated experience of the world. Each window is the principal node of a cluster of multimedia stories that provide a snapshot of the documentary subject and her community.

The “Spaces” interface simulates the external façade of a high-rise, with each window standing in for the apartment itself, and the network of inhabitants and lives contained within it. Since each of the high-rise dwellers is, in fact, geographically dispersed around the world, the “Spaces” high-rise is a figurative representation of the relationship between high-rise dwellers around the world. The experiences of each of the high-rise residents that are depicted constitute a unique articulation of community. The same set of basic conditions, such as urban density, economic uncertainty, and limited access to resources, is evident in the distinct experiences shared by the documentary subjects in *Out My Window*. Collectively, the individual documentary subjects are the social expression of a characteristically 20th Century architectural form.

The narrative structure of *Out My Window* is distributed between thirteen clusters of nodes tied to the central hub of the central navigation portal. No particular reading path through the clusters or the 49 nodes is stipulated, privileged, or required, and the selection of any single node does not render any others inaccessible either initially or subsequently. All of the clusters are immediately accessible to the user from the main interface, as is each node from within its cluster. This distributed group of clusters is also accessed by two other, interconnected navigational options: “Faces” and “Places.” “Places” is a set of simplified line illustrations of the five inhabited continents displayed side by side, with markers for the thirteen urban locations documented in the project. “Faces” is a row of photographic thumbnail portraits of the principal subject of each documentary node.

These two latter navigational schemes are visually linked together in that hovering over a marker on the “Places” map renders the relevant “Faces” portrait image in colour (rather than the black and white of the off state). Hovering over a portrait in the “Faces”

section has the reverse effect of highlighting a location on the “Places” map. The visual relationship between these two navigational schemes – “Places” and “Faces” – links the network of a globalized world and the densely, collectively inhabited urban spaces within it to the individual documentary subjects featured in *Out My Window*. These interconnected navigational schemes emphasize that urban geography is always shaped by the distribution and concentration of socially inhabited spaces enlivened, cultured, and cultivated by individual subjects, or faces.

The three navigational schemes for accessing the clusters of documentary stories also reinforce the essential character of any residential high rise as an architecturally engineered network of nodes (apartments), clustered together by floor, and provisioned by infrastructural networks such as electrical circuits, plumbing and water supply, and telecommunications services. A residential dwelling is a network of function-specific spaces, such as the kitchen, living room, and bedroom, and it is also a domestic hub for a group of individuals embedded within broader cultural and social networks. When a user accesses an individual documentary subject’s cluster of stories, these social and functional aspects of residential units are reiterated in the 360-degree panoramic interfaces.

Photographic panoramas are formed out of a band of images loosely stitched together and they provide views of the interior furnishings and layout of the unit as well as views to the exterior and the building’s environs. Interior views often include the friends and family members who share the space with the principal documentary subject, and in some cases include multiple instances of the same people and thereby emphasize the extension of the living space over time. Between three and five hot spots load the individual stories associated with each cluster. Users click and drag the panorama to

discover all of the nodes associated with the building and the narratives that accompany them. This panoramic, spatial navigation requires that the user explore the apartment, roam throughout the living space, and gaze out the subject's window to get a visual sense of her domestic living experience. The user, within the technological constraints of a browser-based interface, actually experiences the world of the documentary subject.

Geospatial networks and the social relations that exist within and between them are expressed on a global scale in the individual documentary entries. Nations, capitals, megacities and ethnocultural regions are linked through social ties such as transnational kinship, linguistic exchange, and joint participation in multinational governing bodies, and these social ties generate and sustain political, economic, and cultural flows. Such flows are a recurring theme within *Out My Window*. In the narrative of Bangalore toddler Akshadha, for instance, the story "Ghost Buildings" (shared by her mother) explains that the vast number of idle, partially completed high-rise buildings in the region resulted from an international economic crisis that increased the cost of loans, the price of commodities, and inhibited investment. The gated community Akshadha lives in is occupied largely by residents that work in the information technology sector and that are employed, directly or indirectly, by multinational companies. Akshadha's father, we are told, is a vice-president for a global banking outsourcing firm. In Bangalore, the market for high-rise residential buildings, and the development and configuration of neighbourhoods is directly influenced by its relationship to globalized money markets and corporate multinationalism.

Phnomh Penh Cambodia's construction boom, as Tola and Horn's stories tell us, is, like Bangalore's, closely tied to global economic flows. Increases in tourism activity and an influx of investment capital into housing for foreign residents have significantly

contributed to new urban high-rise development projects. The economic boom in Phnomh Penh has also invigorated international and regional cultural exchange. The lure of high-rise construction jobs attracts agricultural workers who temporarily relocate to the cities in the shoulder seasons between sowing and harvesting rice crops. In large urban centres rural Cambodians encounter western cultural influences but also urban Cambodian cultures and lifestyles, as well as the distinctive rural cultures of their fellow construction labourers, who hail from throughout the country.

International and regional cultural flows represented in *Out My Window* also occur through communication networks. David, a resident of Havana, Cuba's Alamar public housing project explains in the story "Cradle of Hip Hop" that Alamar's altitude and proximity to Florida mean that reception of foreign radio signals is better than in other regions. As a result, musicians in Alamar have been exposed to non-Cuban performers and genres of music, and all of the most important hip-hop groups in Cuba hail from the housing development. American musical influences have been reinterpreted and refashioned by musicians in Alamar who subsequently inspire a generation of Cuban hip-hop artists. In this instance, radio communication networks initiate international cultural flows that in turn contribute to regional and local hybridizations of musical expression and to reconfigured cultural identities. Comparable processes of cultural exchange inform the diverse range of music featured in *Out My Window's* audio playlist.

In *Out My Window*, high-rise buildings are an important nexus of social relations, of spaces and individuals tied together into clusters by varied flows such as kinship, labour, ethnicity, and artistic and musical collaboration. Some of the high-rise residents who narrate their experiences in *Out My Window* take advantage of shared public space and the

proximity of individual residential dwellings to stage festivals celebrating creative practice and cultural exchange. David's narrative, "Underground Festival" describes participation by diverse artists and audiences in an underground poetry festival staged across seven apartments in a high-rise in Havana's Alamar community. Similarly, residents from a planned community in Amsterdam representing 138 different cultures join together to host some of the best known festivals of culture, food and music in Holland, as described in Zanillya's "Bijlmermeer" story.

Communities of high-rise residents are also described by documentary subjects as frequently working together at the local level for social change. The social bonds formed among residents are a key motivation and resource in these community-building and revitalization efforts. In a series of stories, John of South Africa describes such efforts occurring on a large scale in Johannesburg. John works for a community residential improvement group known as eKhaya that was formed to reclaim high-rise buildings hijacked by criminal groups. eKhaya also works to improve safety and security in the reclaimed buildings and to reconnect them to city and social infrastructures, and it fosters recognition of shared responsibility in the development and maintenance of neighbourhoods. In the absence of reliable security from government police forces, eKhaya shows how residents can build community networks, to identify shared needs and work together to provide them.

In Prague the revitalization of a neighbourhood of massive, socialist-era apartment blocks is linked to the reconfiguration of space. As Sylva recounts in the segment "Revolution," after the Velvet Revolution in 1989 residents began renting storage spaces and opening small neighbourhood shops such as bakeries and tailors and these small

businesses enhanced the relationships between residents and rekindled pride in the community. On an even smaller, interpersonal and social level, the communities that develop within high-rise developments can fill the breach in missing social services. This occurs in Ivaneti's story "Everybody's Baby" in which she describes her Sao Paulo, Brazil community caring for the infant daughter of a drug addict who, while leaving her child in the care of residents, is admitted to hospital. She returns weeks later to find that the community has rallied together to provide for the child in her absence, even collecting money for diapers.

There are also counter-narratives to such stories of community support. While communities and neighbourhoods are often enriched by the positive social bonds fostered between people living in close proximity to one another, this proximity can also contribute to social problems, cycles of poverty, criminality and physical decay. Donna's stories about the Cabrini-Green housing complex in Chicago, U.S.A. – "Friends Are Gone" and "Demolition" – lament the loss of buildings that once supported a tight-knit family dispersed in different units within the same complex. From a planning and policing standpoint the buildings proved too difficult to revitalize and reclaim from gangs and as a result were demolished to make way for a new planned community designed around a very different vision of residential housing.

Thematically, structurally, and visually, *Out My Window* emphasizes the relationships between distinct networks of geography, sociality, culture, and communication. The difference between a housing project and a community, we learn, is the strength of the ties between the people who reside together. These patterns of network organization are thematically present in the individual story nodes, as well as structurally,

in how the nodes are arranged in clusters of navigable, panoramic space, and in the interactive conventions for accessing the thirteen clusters. But it is important to recognize that *Out My Window* is also produced by a large, globally distributed network of writers, photographers, documentarians, videographers, and digital media producers. The efforts needed to coordinate these documentary activities around the world, and to even develop an awareness of relevant housing projects and identify potential subjects to anchor these clusters of stories itself requires a critical topological layer of network organization.

The production networks for *Out My Window* mirror the network structure of the narrative, of a central hub comprised of numerous clusters of nodes. Given the strongly multinational and intercultural focus of the stories presented within it, this is not surprising, but the scope and scale of the production is remarkable. More than 140 people contributed to the project in a variety of roles including photography, illustration, digital media production, art design and direction, videography and video editing, animation, sound recording, audio production, writing and research, general production and production coordination, technical supervision, performance and participation as documentary subjects. Contributors hailed from numerous film, photography, digital media, and video production organizations. Key personnel filled countless roles, such as director Katerina Cizek, who served as art director, story assignment editor, story editor, and also contributed to translation, audio research and editing. The thirteen documentary narratives feature more than 60 participants as documentary audio, photography, and video subjects.

To a large extent, the scope and complexity of the cultural production network required to design, research, document, translate, record, edit, and program *Out My*

Window is a function of the richness of the multimedia experience it provides. High-rise residents' experiences of living are documented in several different modalities. They are captured through auditory means, as ambient sounds, in recordings of live musical performances, and in the audio monologues of documentary subjects. Narratives are also captured visually, in both still and motion formats, in contemporary documentary and archival photography, in illustrations and line tracings, as well as in motion graphics. Narratives are conveyed in 360-degree video recordings of dance movements and musical performances and in 360-degree photographic panoramas. Experiences are also documented as text, as translated transcripts of the first-person narratives in the audio, and as background context and peripheral observations inserted into the individual story nodes of each narrative cluster.

High quality capture in so many modalities requires a substantial production network not only because of the recording expertise needed, but also to recombine these modalities in an intuitive, visually arresting, interactive interface. Photographs are not presented in a simple album format: they are stitched together to form 360-degree multimedia panoramas and blended into multimedia narratives. The panoramas function in turn as user interfaces for accessing multimedia, video-based photographic narratives that incorporate motion transitions, animated overlays, voiceovers and ambient sound audio tracks. The window interface of the main hub is not an austere grid of images, as one encounters in a photo-sharing site such as Pinterest (<http://www.pinterest.com>) or Flickr, it is painstakingly assembled in a layered collage that represents a diversity of architectural styles, rather than a single one. The hybrid design of the window interface conveys the pluralism of the documentary subjects in their global settings. Even the mouse position

while hovering over the windows triggers slight movements of the photo and corresponding shifts in perspective. This subtle user interface element prefigures the mobility provided to the user via the photographic panorama and expresses the varying perspectives offered by the individual story nodes accessed through the panorama.

Given the complexity and density of the production network and its cinema-oriented structure of directorial oversight, it is not surprising that *Out My Window* was released as a completed interactive cinema project rather than serially, in separate documentary entries. While it is one part of a larger, ongoing NFB Interactive project known as *Highrise*, there are no apparent plans to expand or update *Out My Window*. If the network's narrative structure and navigational schemes seem to accommodate an ongoing, thematically unified, emergent production cycle – and the potential to continue to distribute and circulate the network narrative over time – the elaborate interactive cinema production model makes it difficult, or at least prohibitively expensive to do so. The visually rich and sophisticated navigation, for instance, is Flash-based, and updating the navigation requires modification of the multimedia authoring files and subsequent output. That is far from impossible, and no more complex or involved than the production of new chapters for *Flight Paths*, but it certainly requires far more resources than reviewing hashtagged tweets and selecting one to retweet, (as in the case of *BurtonStory*) or that are required to handle the technical aspects of edits and amendments to a wiki site (as in the case of *A Million Penguins*).

However, the producers of *Out My Window*, recognizing both the expectation and value of emergent, additive participation created a companion project known as *Out My Window: Participate*. This project is in effect a separate, boundless, network of

proliferating micro story nodes, connected back to the principal project by a single link. Participants are invited to textually and photographically respond to the prompt “What’s out your window?” by submitting a photo and brief accompanying narrative via Flickr. The user-generated content, if approved for inclusion, appears in an interface that marks the project as a companion to the principal project. Contributed photos appear behind window frames that open and close when moused over, and that cycle through a carousel slideshow viewer. The window frames share the visual aesthetic of the apartment units in the “Spaces” navigator in *Out My Window*. Like the apartment units, the window frames within which the user submitted photos appear represent different architectural styles and are in differing states of disrepair. As the windows and the images revealed within them revolve, the frames slide, tilt, and pivot open to emphasize the connection between the interiority of the user’s viewing position, and the exterior depicted in the photograph. The process invites the viewer to take up the autodiegetic position of the photographer in the micro-narrative of a single image representative of lived experience.

Additional navigational tools enable users to filter through the massive pool of user-contributed images using the Flickr API. The “Words” tool displays tags applied to the photos in the form of a responsive tag cloud. Clicking on a tag generates a filtered display of photos described with the keyword. Tags relate to geography (Glasgow, Europe, London), to planned urban space (road, blocks, building), to events or actions (demonstration, demolition), to times of day (evening, sunrise, dawn), and to any other key features that the contributor deems important or relevant to others. Users can navigate the collection of user-submitted photos by colour as well, by clicking on individual swatches in a palette of twelve colours. Each of these navigational options is predicated on semantic,

geographic, temporal, and tonal linkages between distinct nodes in the collection of user-generated content, and every time the collection of contributions is filtered in this way, it reinforces different nodal clusters at distinct topological relations.

Contributions that are particularly strong are featured on the main *Highrise* website as photos of the week, and are considered for inclusion in the Director's Blog. However, while *Out My Window* clearly incorporates a participatory feedback loop, user-generated content is less essential to, less integrated with the principal content than in the other network narratives discussed in this chapter. This is explained in part by the use of sophisticated multimedia techniques that require relatively specialized audio, video, and digital media production skills. Integrating substantial volumes of user-generated content into painstakingly edited interactive documentary narratives may be prohibitively time-consuming and expensive, but doing so for thirteen stories comprised of 49 nodes is manageable. These production networks – and the constraints and limitations they introduce – indicate that extensively multimodal narratives require different production models than those of novels, where the author is the principal and primary creative producer of a work that is more or less complete, even if it requires significant contributions from editors, typesetters, designers, and other producers before it is ready for publication.

As *Out My Window* demonstrates, there are very close relationships between the topologies of distinct network structures layered within network narratives. Producing highly multimodal narratives that capture the experience of high-rise living around the world is a complex undertaking that requires an elaborate, globalized production network. These complexities are linked to not just the form, but also the content of the network

narrative and they have implications for the scope of the work. Participation is limited to a companion project, and contributions are constituted by a photo and description devoid of the audio, panoramic, animated and navigational richness of the principal narrative. *Out My Window* is also comprised of far fewer nodes than *The Silent History*, and has a much lower degree of integration for participatory contributions than *BurtonStory* or *A Million Penguins*. These works rely entirely on user-generated content, whereas *Out My Window* may be viewed as complete without the companion site and its open call for participation. Of course, in *Out My Window*, many participants are involved or depicted in the thirteen narratives, however their contributions are reliant on the coordination of a global network of multimedia producers – they are not produced and submitted by the participants themselves.

Network Narratives and Additive Participation

In the case studies I have presented, network narratives evince four principal characteristics that function synergistically. Particular, constellated formations of these characteristics, as expressed in network narrative works, enable and encourage specific modes of participation. Narratives that are, for example, structurally predicated on participatory contributions are generally less complex, of necessity, in terms of their multimodality. The inverse is also evident: Narratives that are highly multimodal are less participatory and channel contributions through a selective, curatorial, or editorial process, or by structurally isolating user-generated content in a companion project or island cluster linked to the main narrative hub by a single or very small number of ties. These structural

relations only emerge through an analysis of the network patterns that exist among narrative nodes, in thematic content, and within the circuits of cultural production.

As the five case studies presented in this chapter show, one of the key distinguishing features of network narratives is that they harness the potential of communication networks to facilitate additive participation. Participation of this kind provides readers and users the opportunity to make contributions that become present within the work as consumed and experienced by subsequent readers. Additive participation is not homogenous: Material contributions may be solicited in different forms, be integrated in different ways, over differing time frames and on different scales, as the case studies I have undertaken demonstrate. What is common to all of these approaches is that they destabilize production models in which reception is materially separate from production. The presence of this feedback loop is distinguishable from, for example, participatory culture as exemplified by fan fiction (Jenkins, 2006).

In Jenkins's conception of user participation the contributor is intervening in and disrupting normative economic circuits by producing alternative, derivative cultural works in a marketplace otherwise dominated by corporatized production in well-established fields of economic and cultural activity. Fan fiction writers draw on the cultural resources protected by intellectual property regimes (for examples the characters that appear across the *Star Trek* television and cinema franchise, or *Buffy Vampire Slayer* [Whedon, 1997-2003]) in order to produce works that, in principal, compete with the characters and franchises controlled by entertainment corporations. Similarly, bloggers may compete with traditional print news outlets and their online content delivery channels by posting breaking news, celebrity gossip, classifieds and other information that competes with or

provides alternatives to mainstream media information sources. In such cases, however, the operative term is alternative – fan fiction and blogs supplement, rather than replace or alter the works from which they are derived. To be sure, participatory culture may support or augment existing interpretative or consumptive activities. The bestselling *Twilight* series inspired a large derivative fan fiction community, one that led to the creation of the *Fifty Shades of Grey* book and cinema franchise. However, in these instances the integrity of the original work on which these derivative, participatory practices are predicated remains substantively unaffected. The additive participation that occurs in network narratives functions in a different manner however: it is not supplementary to the structure and content of the narrative work – it is integral to it.

This difference between Jenkins’s participatory culture and the additive participation that we find in network narratives also differentiates them from the procedural texts and games that Wardrip-Fruin investigates from the standpoint of “expressive processing” (2009). Works such as *Eliza* and *Tale Spin*, are like textual machines that employ procedural code and logical conditions in order to produce configurations of a narrative in response to a reader’s selections. These works do not function without a reader/user, and they incorporate interactive feedback loops in that each individual reading generates an ephemeral, improvisational performance of the operational rules of the system. However, the user’s interactions are not permanently incorporated into the data or the operational rules of the system and they are not subsumed into the work as it is experienced by subsequent reader or users. Procedural works are examples of what Aarseth calls “anamorphic literature,” and are not “unplanned, unbound or unbound and untamed” (1997, pp. 181-2). Network narratives, by virtue of

incorporating additive participation, are examples of “metamorphic literature.” They are works that are metamorphosed, to varying extents, through feedback loops that incorporate user-generated content.

Additive participation occurs in different forms. The modalities of participation that I identify as being particularly relevant to network narratives are: dialogic participation, socially mediated participation, self-organizing participation, and selective participation. Other modalities are less relevant but worthy of discussion. These include ludic participation, and polling. There are, to be sure, other modalities of participation relevant to digital forms of cultural expression – remixing and social sharing come to mind – however the ones I focus on are most relevant to network narratives. Significantly, these modalities of participation are also employed for informational purposes as well as fictional. Thus, they further bind the already fluid relations and imbrications between information and narrative in digital media environments. The modes of participation I describe are not discrete categories, and indeed the examples I provide from the case studies are clearly hybrids. *Out My Window's* participatory project is both socially-mediated and self-organizing, for instance, while *BurtonStory* is both socially-mediated and selective.

Dialogic participation. Dialogic participation is characterized by metacommentary on a network narrative by its readers. The metacommentary occurs during the production of the work rather than following its completion, and the dialogue is deliberately monitored by the producers and feedback is incorporated, through selection, into subsequent portions of a serialized, emergent work. Dialogic participation may be public

or private, and it may be extrinsic or intrinsic. Dialogic participation that is public is visible to other readers or users, while private dialogic participation is not. What makes participation dialogic is the implicit or explicit offer to include readers in the shaping of an emergent network narrative. It involves communication between producers and consumers regarding how a narrative might develop, and it is predicated on some aspect of the network narrative being incomplete and emergent, and therefore open to input regarding how it evolves. Simply submitting resources to a project with well-defined criteria, as occurs with photos in *Out My Window*, or *The Silent History* is not necessarily dialogic. Dialogic participation recognizes the creative agency of readers and incorporates ideas in a process of communicating about the network narrative. Readers are engaged in a discussion about how a story might evolve, what characters might look like, do, or experience and what events might occur. Contributions are not narrowly defined in advance (a photograph capturing the view out the apartment window where you live, or a written testimonial that meets a particular set of criteria and is attached to a particular geotagged location), and in fact, the very nature of the contribution is open to interpretation, selection, and the contributor's judgement. Contributions are defined in broad terms, by media types, or communication channels, rather than by defined inclusion criteria.

For *Flight Paths*, Kate Pullinger and Chris Joseph set up an entire online portal in order to solicit contributions to the still developing narrative. Since characters and setting straddle Middle Eastern and Western European culture, geography, language and ethnicity, the invitation to contribute is open and unstructured. Contributions include substantial portions of prose, audio captures of ambient noises (such as planes landing, or

supermarket sounds), video footage of airport lounges and taxiways, photos, and links to online resources. Some of the more substantial contributions offer detailed first person narratives of experiences loosely linked to the themes, characters and settings of *Flight Paths*. Until they are either accepted as is or adapted and included in the network narrative, the contributions of participants are extrinsic to the work, but publicly visible (those sent via email are extrinsic and private). Once incorporated into a chapter of the main narrative, dialogic participation is less conjectural: it becomes part of the narrative in terms of what characters see and do. Participation is converted from potentiality to actuality, and whichever resources have been incorporated are formally linked to the narrator and the narrator's position within the narrative.

The Web serial *Lonelygirl15* (Beckett et al., 2006-2008) is a series of YouTube video blog entries, centred around a character known as Bree, that was later expanded to incorporate vlogs (video blogs) for additional characters and live action scenes. In *Lonelygirl15* dialogic participation functions as an additive component within a feedback loop. Initially, the creators of the Web serial sought to maintain the illusion of reality in the Web serial. Bree was presented as an actual person producing a YouTube vlog about her real life. Her romantic interests and the complications of her personal life and family background were recounted in an aesthetically simple video blog filmed in an unsophisticated manner with a webcam and conventional lighting in Bree's bedroom. Video blogs by their very nature promote interactions with viewers, permitting users to leave comments or email the vlogger. The dialogue generated by intrigued viewers of *Lonelygirl15* provided producers with a treasure trove of information about the kinds of

dramatic content that was most appealing. In some instances, writers adapted to the specific, expressed interests of viewers in writing subsequent segments (Davis, 2006).

Here the conditions for dialogue emerge out of the communication channel selected – YouTube video sharing – the medium of the Internet, and the related expectations of interaction. Viewers commented on Bree’s vlog believing it to be real, embedded and naturalized, as it was, within a forum where such personal video blogs are common. Because Bree’s persona was performed through interpersonal communication by a writer, viewers contacted “Bree” to express their views or offer support and received responses they believed to be real. Dialogue also occurred between individual viewers as they offered theories regarding Bree’s backstory or expressed interest in particular details of her monologic vlog entries. This dialogue was not so much participatory as commentary in intent, with respect to the narrative Bree recounts in her video blog, as the narrator and narrative were presented as factual, not fictional. Dialogue generated about the narrative and between viewers and Bree was monitored by the writers and creators who adapted the narrative to the particular interests of viewers (Davis, 2006).

As a result of the monitoring, dialogue that was assumed to be extrinsic to the extradiegetic narrative in which Bree addresses and interacts with viewers, proved ultimately to be intrinsic to the narrative. In other words, viewers who were commenting on what seemed to be a clearly bounded, personal non-fiction narrative delivered via webcam uploads, were in fact potentially participating in the production of an entirely fictional narrative, perhaps even shaping the course of the story in fundamental ways. Viewers who were comfortable and even eager to interact with the narrator extradiegetically in a presumably non-fictional context, but not under fictional

circumstances, abandoned the project. However, hundreds of thousands of viewers still actively followed the Web serial, even after its fictional nature was revealed. Many viewers continued to interact with characters and participate in order to perpetuate their enjoyment of the drama, or carried on exchanging ideas and details about characters, settings and events.

Crucially, the conditions for developing an audience for a Web serial recounted in successive video blog entries are fundamentally participatory. The audience for a vlog will expect dialogue with the vlogger and discourse among viewers in the comment threads. In the case of *Lonelygirl15*, the creators recognized the importance of establishing a feedback loop between how viewers related to the narrative and the development of the narrative itself. The emergent properties of the network narrative were predicated on additive participation of a dialogic nature. Sustaining this circuit between viewers and network narrative seems to require at least a superficial or temporary claim of veracity, contemporaneity, and simultaneity. A narrative set noticeably in the past or future, for instance would, invalidate any implicit or explicit claims to veracity and thus prevent interactions based on the belief that the narrative is empirical rather than fictional (i.e. a non-fictional rather than fictional blog).

Socially mediated participation. Both *Flight Paths* and *Lonelygirl15* exploit social media as a communication channel through which to engage an audience in dialogue about the narrative, and to either implicitly or explicitly encourage participation in the emergent network narrative. Socially mediated participation solicits contributions via social media platforms and therefore must conform, on some level, to the communication form and

protocols of the social media it makes use of. If, as in the case of *BurtonStory*, a network narrative is reliant on Twitter to invite contributions, these contributions will adhere to the format of a tweet and have a limit of 140 characters. A participant will also need to have a Twitter account, understand the conventions and practices of the form, and even agree to Twitter's terms of use in order to produce a contribution that meets the requirements of the narrative. The fact that the parameters for participation are derived from social media links the interactions that contribute to the network narrative to everyday communication practices. The fictional narrative is embedded, from the outset, within a system for the exchange of personal, factual, and cultural information about the world.

This is in contrast to, for example, the customized interfaces of standalone multimedia narratives published as websites, programs or applications. In one section of Erik Loyer's *Chroma* (2001), for instance (developed as a Shockwave application), the user is prompted to mouse around the frame and arrange multimedia objects in order to reveal portions of the narrative. Experimental interfaces demand that users accept a certain amount of exploration and discovery in how a network of nodes is navigated. They have no analogue in the everyday digital communication practices of users, and therefore need to be learned in order to successfully consume the narrative. The key advantage of socially mediated participation is that participants who already use the relevant social media platform already possess the practical knowledge needed to contribute to a project from their own communication practices. They do not have to accustom themselves to the unique processes of an individual project, or create a new user to do so. Even a reader who is unfamiliar with the social media platform and must learn its conventions has acquired a set of competencies that are applicable in a wide range of network communication contexts.

This is not true of an idiosyncratic, customized interface for a particular narrative work such as *Chroma*.

Moreover, by virtue of being simultaneously part of a network narrative and embedded within everyday communications, links are established between different kinds of networks, and different membership and friendship groups. The network narrative is organically connected to the online world of its participants in a way that non-socially mediated forms of participation cannot be. By virtue of this integration, narrative cultural expression and networked information delivery also become intermingled. Cultural resources infiltrate informational data streams, while information exchange is adapted to and becomes a model for structuring cultural production.

A variety of social media platforms are used in the production of and participation in network narratives. *BurtonStory* makes use of Twitter, and Twitter fiction is itself an emerging family of new media literary genres. It has its own literary festival celebrating parody accounts, heterodiegetic fictional narratives, crowd sourced projects (such as *BurtonStory*) and poetry (#TwitterFiction Festival 2014, 2014). Twitter fiction has also been the subject of recent scholarship on forms of digital fiction (Thomas, 2014). The photo-sharing social media community Flickr has also been integrated into the participatory feedback loops of several network narratives. The principal creators of *Flight Paths*, Kate Pullinger and Chris Joseph, for instance, both sourced images for use within the project and solicited contributions from participants via Flickr, among other online communication and social media channels. Images included in the Flight Paths group in Flickr would simultaneously appear in the respective Flickr users' photostreams, as well as any collections, or other groups the images had been included in. Like a tweet selected for

BurtonStory, a photo selected and adapted for use in *Flight Paths* would at the same time be integrated with the tagging and discovery functionality in Flickr, and the content sharing activities of the photographer as a Flickr user.

Out My Window, discussed above, also harnesses Flickr's photo sharing capabilities to solicit contributions to the larger *Out My Window* project. Participants are invited to submit their photos to the Flickr group set up for the purpose. Photos must meet certain basic formal requirements, but these are easily met. Acceptable contributions are syndicated from the project's Flickr group to a companion Web page where they are presented individually within a carousel photo gallery with title, location, description, and tags. But the photos simultaneously exist within the participant's own photostream where they are presented alongside other visual documents of the photographer's social urban world, and where they are in turn linked to the Flickr user's network of followers and follows.

Self-organizing participation. Self-organizing participation occurs when there are few, if any rules or limitations regarding participation, or if these are so liberal or loosely defined that they permit highly unstructured and uneven contributions from a relatively unregulated group of participants. This model of participation tends to be constrained not by tightly defined rules shaped to the narrative structure or thematic content, but rather by containment or compartmentalization strategies shaped by the functional limitations, procedural apparatus, or structure of the application through which contributions are made. Participatory activity may be limited to the file types permitted on Flickr, the logical constraints of a wiki system, or in how a system has been configured as far as file size limits,

media types, or file types are concerned but beyond those system constraints affords free rein to participants in how they imagine the narrative's structure, characters, actions and themes.

A Million Penguins is a rare example of how self-organized participation can be the dominant mode of participating in a network narrative. In part, its highly self-organized structure is the outcome of the very limited narrative guidance provided by the project's initial conditions – a single sentence with little or no indication of genre, character, action, or setting. In practical terms, the only way an organized narrative can emerge out of such a limited set of initial conditions is for the participants to organize their (disorganized) contributions themselves. Yet the unconstrained options for participation also prevented an overarching narrative coherence from emerging. The completed narrative exhibited a noticeable tension between “order and creativity” (Mason & Thomas, 2008, p. 13) with creativity here denoting deliberate tangents, departures from existing narrative events, descriptions and characters. Relying too heavily – or even entirely – on self-organized participation imperils the potential for narrative coherence, which, depending on a project's aims and literary and visual aesthetic, may or may not present significant problems.

Self-organizing participation is generally more constrained than in *A Million Penguins*. It is frequently isolated to a separate cluster of nodes or activity. To return to the example of *Lonelygirl15*, the network narrative's emergent properties are due in part to the dialogic participation of the video weblog's viewers. In some cases, participants were not simply conversing online about the vlog's narrator, they were also organizing themselves in order to learn more about the main character, Bree, and her circumstances

and surroundings. Indeed, the show was revealed to be a fictional Web serial due to the organized investigative efforts of a small, coordinated group of participants (Davis, 2006). *Lonelygirl15* participants – as peripheral characters within Bree’s fictional narrative – are part of the narrative, even if less central to the narrative, and more distant from the narrator who takes up an autodiegetic stance (both positioned within the narrative and a central figure or hero. Because they can interact with the narrator, participants possess some ontological status within the narrative but are largely limited to an observer role and thus take up a homodiegetic position.

The dialogic participation of users, in addition to providing a kind of exoskeletal layer of activity that lent credence to the narrative’s initial nonfictional posture as a real world video weblog, also established the conditions for the self-organizing participation that ultimately forced the project’s creators to admit its fictionality. Self-organizing to solve puzzles and problems within a narrative is also a defining characteristic of alternate reality games, and other kinds of pervasive games that harness digital networks in order to enable communication between remote gamers (McGonigal, 2007).

Selective participation. Selective participation occurs when there is an editorial process involved in selecting some submissions and rejecting others. Selection is the process whereby a large number of submissions or potential inclusions are reviewed for inclusion in the publicly accessible project. Contributions that are selected are in a sense formally marked as being part of the narrative work, and they constitute additive participation, while contributions that are not selected for inclusion are not additive – they do not alter or become part of the network narrative. Participation that involves a selective

process is often filtered in some way in order to ensure narrative or thematic coherence with the project.

The *BurtonStory* example demonstrates how an open call for participation may be contingent on a process of selection. Unlike the other network narratives I have analyzed here, *BurtonStory* involved different contributors submitting components in a linguistic sequence where grammatical rules limited how a subsequent phrase could be structured. In many cases, a contribution had to complete a sentence clause initiated within the previous submission accepted for inclusion in the sequence. In these instances, participation was contingent on a selection process that included confirmation of grammatical coherence. The selection process was also, of course, shaped by the choice of Twitter, with its 140-character limit on tweets, as the publishing platform for the network narrative.

In comparison with a testimonial for *The Silent History*, or the typical text contribution made to *Flight Paths* or *A Million Penguins*, contributors to *BurtonStory* were contributing smaller textual units. As each of these contributions would be placed into very direct, syntagmatic, sequential relation with the other textual units, selection was essential to maintaining narrative coherence. By contrast, the wiki edits made in *A Million Penguins* are of variable length – as much as an entire wiki page, or as little as a minor edit or typo correction. Edits and additions to the network narrative were not limited to a particular syntagmatic relation (the sentence prior), and therefore participants had greater latitude in how and what they contributed – and what kinds of syntagmatic relations the contribution produced.

Flight Paths offers another example of selective participation. For the network narrative the creators solicited contributions from the public through a Netvibes portal and via email communication. While any submission made constitutes participation, only contributions selected for transformative re-use within a chapter by the principal creators function as additive participation. Selection then, in addition to transformation through digital production processes, is key to how additive participation operates in *Flight Paths*. *The Silent History* and *Out My Window* incorporate selective participation as well. Although selection is largely a function of meeting the defined criteria for inclusion, each project still involves a human editorial element in selection. In *The Silent History*, contributions must be approved before being included at which point they are pinned to the map interface for the network narrative. For *Out My Window*, selection is performed in either approving or rejecting a photograph for inclusion in the Flickr group dedicated to the project. Moreover, the contribution of a photograph and description, the producers promise, could, if of sufficient quality, lead to a more substantive role in the main project.

Selective participation appears to be a common and important process in incorporating user-generated content into network narratives. It is the principal mechanism through which narrative and thematic coherence is cultivated and maintained in the face of great diversity in the quantity, quality, and relevance of user-generated content received in response to an open call. The chaotic, confusing, and fragmentary qualities of *A Million Penguins* are arguably closely linked to the network narrative's deliberate lack of a selection process beyond the rejection of spam and pornography.

Other models of participation. Dialogic, socially mediated, self-organizing, and selective participation are particularly relevant to, and useful in the production of network narratives. Each represents a different aspect of the process of drawing readers, consumers, and users into a narrative work. These are methods of creating space for participatory involvement with additive potential – for contributions that become part of the work as it appears to other readers and users. However, these modes of participation should not be mistaken for an exhaustive set of categories that fully describe the forms of engagement typical of network culture. There are important modes of participation that are less relevant or applicable to narrative works specifically, but that are nonetheless quite predominant in other digital cultural forms and might be adapted to prose narrative fiction.

Polling, for example, is commonly used to add a dynamic, interactive element to static content, such as news articles. Sports news sites often poll readers for their opinion on whether one team or another has won a trade, which player or team is better, or who the best available player is in free agency. Current events news, and in particular politics, will often include a poll of readers as to which political party they intend to vote for, whether a particular municipal proposal should go forward, or whether a federal government should undertake a specific spending program. In entertainment, polling is a key audience hook in some reality television formats, such as *American Idol* (Fuller, 2002-), in which audience polling can determine which participant among a group of musicians is eliminated from competition.

Polling has not, however, proven to be a particularly compelling tool for developing fictional narratives. Polling might prove useful in developing less hierarchical methods for

implementing selective participation. Using polling in its simplest form – thumbs up or down, +1 or -1, vote up or down, like or unlike – may offer an alternative to more authorial selection processes by turning the basic editing and curation of a network narrative over to its contributing readership. In *A Million Penguins*, the only options available to contributors who chose to edit the work were to delete other contributions (by removal or replacement), or add new material. Perhaps a simple polling mechanism might have provided a less extreme and potentially less confrontational alternative. If a certain number of contributors vote down a contribution, then that text would be eliminated or relegated to a note in the wiki's version history.

Another mode of participation prevalent within network culture is ludic participation, or collaborative game play. Immensely popular massively multiplayer online role-playing games, or MMORPGs, such as *World of Warcraft* are shaped in large part by ludic participation facilitated through digital network communications. Alternate reality games, or ARGs, also involve extensive ludic participation, though typically with a real world element. Like MMORPGs, ARGs rely heavily on digital network communications in order to link up geographically dispersed or otherwise unconnected players together to solve puzzles or decipher the meaning behind particular elements of a game with a narrative structure.

Ludic participation has been critical to the development of cultural forms with highly networked structures, and strong narrative content, but focused more on interactive gameplay experiences than on the production of literary texts. The long running and highly successful MMORPG *EverQuest* (<http://www.everquest.com>), for example, is based on strategic gameplay directed through the performance of character avatars. Immersion in

and experience of the game world is predicated on interactive feedback loops, in which choices made by players affect the conditions of interaction for other participants. This process produces engaging fictional narratives, but the narrative is entertaining because of the player-to-player interactions rather than the inherent quality of the emergent stories. Reading an account of MMORPG gameplay, or even watching a comprehensive video walkthrough of live game play is unlikely to generate prolonged narrative interest for a non-player in the same way that a novel might. This is not to say a walkthrough is not of interest – gamer websites with such walkthroughs are enormously popular. However, the interest in these videos is based on their instructional value for how to complete sections of the game, or as a document of exemplary skill in game play and therefore focused on the navigation of the discourse layer rather than on the narrative quality of the discourse itself.

A participatory multimedia work such as *The Tulse Luper Journey* (Greenaway, 2006) straddles the divide between games and narrative in some respects, and imagines ludic participation in innovating and interesting ways. In it, game players (or researchers, as they are known) solve puzzles in order to open up 92 suitcases that document the life of principal character, Tulse Luper. Each suitcase, in turn, contains one of 92 fragments of a feature film created by Peter Greenaway. While the game lacks additive participation at the game play level (the suitcase puzzles were created by developers around the world using source multimedia resources created by Peter Greenaway), the collaborative, multimedia gameplay is anchored by a well-developed narrative.

Both *Everquest* and *The Tulse Luper Journey* are reliant on ludic participation. They are examples of what Aarseth refers to in *Cybertexts* as anamorphic literature (or solvable enigmas) and contrasts with novels (an ergodic text with no definitive resolution) and

metamorphic literature (“texts of change and unpredictability”) (1997, p. 181). Ludic participation, in each case, is not incidental to, but rather essential for narrative progression to arise. Cultural works in which ludic participation is central to the emergence of narrative are not, in my use of the term, network narratives, but rather network games. Ludic participation may nonetheless play an important role in network narratives, particularly in combination with other modes of participation.

Composite forms of participation. The modes of participation that I have identified are not manifest within network narratives as discrete attributes. On the contrary, they are often implemented in combination, as composite forms of participation and are not mutually exclusive. Virtually all of the examples discussed thus far involve several kinds of additive participation. The *BurtonStory* network narrative is both selective and socially mediated. All participation is mediated through social media as tweets submitted through Twitter using the #BurtonStory hashtag. From among the potential contributions, only a small number were selected for inclusion by being retweeted to all followers of the @BurtonStory user. The network narrative therefore simultaneously exhibits socially-mediated and selective participation.

The producers and creators of *Lonelygirl15* harnessed several modes of participation as well. By publishing the Web serial in the form of a video weblog on YouTube, dialogic participation was integrated into the extradiegetic frame narrative in which the narrator – Bree – addresses the reader and rationalizes the story. This dialogue was facilitated through social media and restricted to users with YouTube accounts. Using socially-mediated dialogic participation, the Web serial was naturalized as seemingly non-fictional

network discourse. The dialogic meta-commentary offered by participants proved in some cases to be additive participation as responses and ideas were on occasion reintegrated into the narrative via feedback loops. At the same time, the number of ideas that could practically be taken up and adapted into the narrative is limited, and therefore subject to a selective process. Over and above the socially mediated, dialogic, and selective modes of participation employed in the production of *Lonelygirl15*, the network narrative also initiated self-organizing participation as participants collaborated to solve the “mystery” of Bree’s identity and location, and ultimately also revealed the fictionality of the narrative.

Every network narrative incorporates one or more modes of additive participation, as this is a defining characteristic. *A Million Penguins* incorporates self-organizing participation, and is dialogic in that the Wiki talk pages support non-diegetic discussion about the network narrative’s content and structure, but it is notably not selective in that it is editable by any registered user. *Flight Paths* integrates socially-mediated participation through its use of Flickr and other social platforms for soliciting and aggregating contributions, but is also highly selective, since the creators determine which contributions are used, and how. It is neither self-organized, since the creators determine the structure and select the contributions, nor is it overtly dialogic, although the netvibes portal does invite some discussion of the network narrative in addition to soliciting contributions to it.

The Silent History’s field reports are contributed through self-organizing participation, as there is no direct management of which locations, geophysical features, characters, or narratives inform a user-contributed field report. However, they are also selective in that contributions must adhere to the guidelines before being approved and included. This process is not socially-mediated since it relies on email for the submission of

contributions, nor is it dialogic since there is no incorporation of discussion about the work within its architecture. Finally, *Out My Window*, like *Flight Paths*, uses the social photo-sharing platform Flickr to solicit and manage contributions, and is selective in which photos and descriptions are included in the group and thereby syndicated for display to the participatory component of the project. However there is no dialogic participation with the viewing public, nor do readers play a self-organizing, participatory role in the production of the network narrative.

Participatory modes are not implemented with the same intensity or commitment in each network narrative. In *Lonelygirl15* for instance, the integration of socially-mediated participation is more crucial to the narrative structure than it is to *Out My Window* because a video weblog requires active viewers and commenters to establish credibility with existing and potential audiences. In *Lonelygirl15* additive participation is essential to validating the video weblog format for viewers, whereas the bulk of *Out My Window* doesn't significantly rely on additive participation at all.

The case studies I have presented demonstrate that narratives adapted to network communication technologies evince four distinctive characteristics: they are distributed, emergent, multimodal, and participatory. These four characteristics often appear in conjunction with one another. Emergence is often, though not always, a function of participatory processes being integrated into a feedback loop between readers or consumers and authors or producers. Emergent network narratives often exhibit a distributed narrative structure in order to accommodate ongoing additions and alterations without undermining narrative coherence. The more participatory a network narrative is,

the less multimodal it tends to be, as integrating contributions from a variety of media presents challenges. In addition to their distinctive configurations of distributed, emergent, participatory, and multimodal properties, all network narratives are uniquely composed of one or more modes of participation. Both the broader characteristics and the particular participatory modalities of network narratives are linked to the network properties of their narrative structures at the story and discourse layers, and the circuits of production out of which the participatory story architectures develop.

By looking at how the characteristics of network narrative are constellated together, and how these configurations shape the narrative structure, thematic content, and production circuits of a work, it also becomes clear that there are particular modes of participation that are employed. When network communication technologies are used to solicit contributions from users and readers, these contributions may take different forms, or may require particular constraints or content management techniques. If the call for participation is too broad, in terms of medium, content, length, or structure, or if the barriers to participation are so low that a large number of contributions may be expected, the network narrative is likely to incorporate a process of editorial selection to ensure contributions are coherent and consistent with the narrative, or do not overwhelm it.

These, then, are the processual dynamics through which narratives exist of, and not on, a network. These are parameters that constrain the development of storytelling genres for network environments. At the same time, they are also a set of new or recalibrated strategies for authors, producers, and storytelling and reading communities to reinvigorate prose narrative fiction and literary practices online. By attending to the ways in which the distinctive characteristics and participatory production processes of network narrative

support particular narrative structures, character development, and thematic concerns, the literary techniques applied by authors to the production of novels may also be directed to the production of network narratives, and thereby assure the ongoing relevance of an important cultural form to audiences deeply accustomed to the affordances of network communications.

Chapter Six: Conclusion

Familiar binaries, often reproduced in popular news media and technology blogs, cast print communication media against digital communication technologies, the book and the page against the screen, the novel against the visual culture of television serials and cinema, and the deep attention required for reading novels against the itinerant scanning and surfing of information on the Web. Yet there is a constant and continuous reciprocity between literary culture and communication media. This dynamic interplay is underpinned by complex social, economic, and political processes embedded in contingent historical, geographical, and linguistic conditions. I have argued that the dynamism between literary expression and network communication in particular is acutely present in the type of works I describe as network narratives – narrative works that are shaped by and to the technologies and practices associated with network communications. A network narrative is, most simply, a narrative work that is of the network and not simply on it.

One of the ways in which the structural characteristics and production strategies of network narratives reveal broader social negotiations of the intersection of culture and communication technology is in the often inventive and experimental fusions of narrative and information as modes of cultural expression. As I assert in chapter three, the imbrication of narrative and information precedes the emergence of network culture. Narrative cultural expression exhibits many of the attributes associated with the modularity, database structure, and selective logic of information flow in that narratives are arranged in re-orderable narrative units or *lexia*. At the same time, the presentation and organization of information online often occurs in formats that are derivative of narrative cultural expression – to explicitly or implicitly “tell a story” through the use of

interface tools such as aggregators and chronological browsing interfaces that order and link together network discourse such as tweets, and articles or information published at different times and on distinct aspects of a topic in public discourse.

This interplay of narrative and information is also at work in each of the network narratives that I discuss. *A Million Penguins* harnesses the collaborative flexibility and non-hierarchical production model of a wiki – a format best known and most often used for informational purposes (as in the case of *Wikipedia*) to collaboratively author a novel starting from a single seed phrase taken from *Jane Eyre*. *BurtonStory* – one example of a twitter fiction – employs Twitter to solicit contributions to a simple narrative inspired by the cinematic and visual aesthetic of Tim Burton. Twitter, like wiki software, is typically used to communicate information such as breaking news, increase awareness of social issues, post links to topical articles, and broadcast the informational details of celebrity culture and the day-to-day life of Twitter users. *Flight Paths* strategically uses informational channels such as Twitter, and social audio and photo sharing services to invite and organize the submission of user-generated content.

The biographical documentary content of *Out My Window* is anchored by audio recordings of first person narratives, and the participatory companion project asks participants to upload a photo taken out the window of their high-rise homes and describe it: to provide information about their living conditions and then narrate it for others. And *The Silent History's* narrative structure builds on the documentary genre in being structured around 121 testimonials that fill a fictional documentary role. The frame narrative presents these testimonials as part of an informational archive documenting the widespread emergence of an aphasic condition, but these individual informational

documents are also the nodes in a narrative trajectory followed by the reader. Participants submit field reports that are by definition linked to geospatial coordinates and located within the informational grid of a mapping application.

The interplay of narrative information in these works is indicative of feedback loops between modes of knowing that are manifest on a widespread basis in digital cultural expression. Informational and cultural flows circulate together and permeate the communication protocols and practices of network society. For this reason, understanding narrative expression within digital communication networks requires analytical tools that can straddle and traverse different information scapes, cultural genres, and enable us to follow the evolution of prose narrative and the emergence of new narrative forms as informational and cultural flows move across generic and disciplinary boundaries. To limit study to a specific genre alone – such as blogs, Twitter fictions or Wiki novels, Web serials, interactive documentary, or Web-based hypertexts – would attenuate apprehension of the commonalities between works developed for communication networks.

The narrative structures, cultural production models and participatory feedback loops that characterize network narrative are unable to function without network communications. This presents significant methodological challenges as communication networks, cultural forms, cultural production circuits, and the particular thematic concerns and narrative structure of works function on different scales. The cultural, technological, material and social vectors that influence the structural characteristics of a single narrative work require a multi-layered, stratified analysis conducted from a variety of micro-, meso-, and macro-analytic standpoints. A number of methodological approaches must be taken into account and a *lingua franca* or conceptual bridge is needed to traverse the strata of

micro-, meso-, and macroanalysis. As developed in the case studies presented in previous sections, network concepts derived from graph theory provide one means to bridge the relations, differences, and structural analogies between thematic content, character networks, narrative structure, and cultural production models. This is akin to what Seth Denbo and Neil Fraistat (2011) have referred to as “scalable reading” – a way to move between hermeneutic close readings and what Franco Moretti refers to as “distant readings” (2005, 2013) of cultural works as embedded within larger social and economic phenomena.

Analysis of this kind clarifies how the particular narrative strategies, thematic concerns and production models that are present within the work evince and are connected to the broader patterns of social, technological and medial change that are occurring with the rise in network communication technologies. Comparative analysis of a variety of works – each of which distinctively articulate the relations between network structures among topological layers – can in turn yield insights into how large scale changes in communication technologies and social practices are reflected in circuits of network-specific literary cultural production.

I approach the study of network narratives employing concepts derived from digital media and the study of network topologies in the field of graph theory. Because network topologies may be described within distinct strata of network narratives – in the narrative structure, in the character networks and thematic concerns of a narrative, and within the circuits of cultural production – focusing on networks enables us to sustain analysis even as we move between these layers. Moreover, it provides a set of portable concepts that support comparative analysis of network narratives that are otherwise generically distinct, variably structured and functionally very different. Using this approach, it becomes clear

that at distinct layers, network narratives exhibit distributed, emergent, participatory and multimodal properties in differentiated, but interconnected ways.

As my application of network concepts and topological models to five case studies of network narratives demonstrates, regardless of how the specific network topologies of narrative and production networks are configured, the key feature of network narratives is that they incorporate additive participation into the work. Just as the topological layers that shape a network narrative are often distinct, so too are the modes of participation markedly different. Each network narrative invokes the potential for additive participation in unique ways, and participation can take many forms. The feedback loops that additive participation establishes impinge on thematic concerns, narrative structure, and cultural production models in ways that challenge the narrative and authorship conventions of the traditional novel form. At the discourse level of the story/discourse distinction, network narratives must incorporate new material through additive participation and therefore must be designed to accommodate such contributions. As a result, the stories told in network narratives are often assemblages of individual modular narratives such as testimonials, episodes, and weblog entries. They are presented with variable or multiple focalizations rather than as one single, unified tale recounted in a non-focalized manner, or with internal, fixed focalization.

The integration of additive participation also reveals a key feature of network narratives. In each of the case studies additive participation is incorporated in a manner that is contextually extrinsic to the network narrative itself. Whether via Twitter, Flickr, audio sharing communities, or geotagging, the modes of additive participation are modelled after everyday, digital network communication practices – the means of

participating have contexts outside of the work itself. Participation is not only additive, but also facilitated through vernacular user interfaces for digital communication and content sharing. Users are not compelled to figure out a specific way of interacting that is determined by the idiosyncrasies of an authorial process of multimedia creation, or that is specific to a digital content platform with marginal application in everyday communication. Instead, additive participation builds on the conventions for interacting over digital communication networks that users are accustomed to since the advent of Web 2.0 technologies and services (O'Reilly, 2005).

With the increasing integration, ease-of-use, and cross-platform accessibility of content production and sharing tools, the number of approaches that can be taken or explored for developing participatory digital literature is virtually limitless. The opportunities for reinventing the expression of prose narrative fiction, for doing so using lightweight, responsive technology solutions that do not require leading edge expertise or intensive software development processes – and for thereby reimagining the novel as a cultural form that might be of the network and not simply on it – have only recently begun to materialize. Analyzing shifting and changing forms of cultural expression, such as participatory network narratives, even as they disappear from the Internet, requires an approach that is agnostic to specific social media platforms and network communication technologies, but at the same time calibrated to the architectures and mechanisms by which they function.

By focusing on the structural features of network narratives as well as their thematic and narrative strategies, and by attending to the ways that networks are configured, layered and interconnected, I hope to have demonstrated how scholars may

study literary forms of expression that are specific to network communications technologies not only today but well into the future. As the relationship between literary cultural expression and communication media changes, a network-based approach to studying this relationship permits us to bridge close and distant readings, micro- and macro-analytic methodologies, and to understand the sociality of cultural and technological change over time. The novel can thus be placed within a broader continuum of constant literary transformation that does not terminate with the rise of the computer, the ebook, or of network communications but is, instead, still being actively adapted by authors and readers to the communication and media technologies that predominate today.

References

- #TwitterFiction Festival 2014. (n.d.). *#TwitterFiction Festival*. Retrieved June 11, 2014, from <http://www.twitterfictionfestival.com>
- [Burtonoeeee]. (2010, December 6). and started to eat it. Knowing now that he was half made of goo, he knew it wouldn't kill him like it did his father. It was the [Tweet]. Retrieved from <https://twitter.com/BurtonStory>
- 42 Entertainment, Microsoft. (n.d.). *I love bees*. (2004). Retrieved March 12, 2014 from <http://www.ilovebees.com>
- A million little lies: Exposing James Frey's fiction addiction. (2006, January 4) *The Smoking Gun*. Retrieved October 3, 2013 from <http://www.thesmokinggun.com/documents/celebrity/million-little-lies>
- Aarseth, E. (1997). *Cybertext: Perspectives on ergodic literature*. Baltimore: Johns Hopkins University Press.
- Aarseth, E. (2003a). Nonlinearity and literary theory. In N. Wardrip-Fruin, & N. Montfort (Eds.), *The new media reader* (pp. 762-780). Cambridge: MIT Press.
- Aarseth, E. (2003b). We all want to change the world: The ideology of innovation in digital media. In G. Liestøl, A. Morrison, & T. Rasmussen (Eds.), *Digital media revisited: Theoretical and conceptual innovations in digital domains* (pp. 415-439). Cambridge: MIT Press.
- Aarseth, E. (2007). Narrative literature in the turing universe. In *The novel: Forms and themes* (Vol. 2, pp. 839-867). Princeton: Princeton University Press.
- Album, n.2. (2011, March). In *OED online*. Retrieved May 16, 2011 from <http://www.oed.com>

- Alexander, B. (2011). *The new digital storytelling: Creating narratives with new media*. Santa Barbara, CA: Praeger.
- Amerika, M. (2007). *META/DATA: A digital poetics*. Cambridge: MIT Press.
- Anderson, B. (2006). *Imagined communities* (Revised Edition ed.). London: Verso.
- Anderson, N. (2007, February 5). Many minds, one novel? Wiki tries to create art. *Ars Technica*. Retrieved April 4, 2011 from <http://arstechnica.com/uncategorized/2007/02/8769/>
- Armstrong, N. (1999). *Fiction in the age of photography: The legacy of British realism*. Cambridge, Mass: Harvard University Press.
- Ashley, C. (1944). *The ashley book of knots*. New York: Doubleday.
- Austen, J. (2000). *Pride and prejudice* (3rd ed.). New York: Norton.
- Barabási, A.-L. (2002). *Linked: The new science of networks*. Cambridge: Perseus.
- Barney, D. (2004). *The network society*. Oxford: Polity.
- Baron, D. (2009). *A better pencil: Readers, writers, and the digital revolution*. New York: Oxford University Press.
- Barthes, R. (1975). *The pleasure of the text*. (R. Miller, Trans.) New York: Hill and Wang.
- Barthes, R. (1982). The reality effect. In T. Todorov (Ed.), *French literary theory today: A reader* (R. Carter, Trans., pp. 11-17). Cambridge: Cambridge University Press.
- Beal, W., & Lavin, S. (2011). Theorizing connectivity: Modernism and the network narrative. *DHQ: Digital Humanities Quarterly*, 5(2). Retrieved from <http://www.digitalhumanities.org/dhq/vol/5/2/000097/000097.html>
- Beckett, M., Flinders, M., Goodfried, G., & Goodfried, A. (Writers). (2006-2008). *Lonelygirl15* [Video Web log]. Retrieved February 22, 2011 from <http://www.lg15.com>

- Bell, A., Ensslin, A., & Rustad, H. K. (Eds.). (2014). *Analyzing digital fiction*. New York: Routledge.
- Beniger, J. R. (1989). *The control revolution: Technological and economic origins of the information society*. Cambridge, MA: Harvard University Press.
- Benjamin, W. (1969a). The storyteller: Reflections on the works of Nikolai Leskov. In H. Arendt (Ed.), *Illuminations* (H. Zohn, Trans., pp. 83-109). New York: Schocken Books.
- Benjamin, W. (1969b). The work of art in the age of mechanical reproduction. In H. Arendt (Ed.), *Illuminations* (H. Zohn, Trans., pp. 217-251). New York: Schocken.
- Benjamin, W. (2008a). The author as producer. In M. W. Jennings, B. Doherty, & T. Y. Levin (Eds.), *The work of art in the age of its technological reproducibility, and other writings on media* (E. Jephcott, R. Livingstone, & H. Eiland, Trans., pp. 79-95). Cambridge: Harvard University Press.
- Benjamin, W. (2008b). The newspaper. In M. W. Jennings, B. Doherty, & T. Y. Levin (Eds.), *The work of art in the age of its technological reproducibility and other writings on media* (E. Jephcott, R. Livingstone, & H. Eiland, Trans., pp. 359-60). Cambridge, Mass: Harvard University Press.
- Best, S., & Kellner, D. (1991). *Postmodern theory: Critical interrogations*. New York: Guilford Press.
- Birkerts, S. (2006). *The gutenbergs elegies: The fate of reading in an electronic age* (2006 Edition ed.). New York: Faber and Faber.
- Blahut, R. E., & Hajek, B. (1949). Foreword. In C. E. Shannon, & W. Weaver, *The mathematical theory of communication* (pp. vii-ix). Urbana: University of Illinois Press.

- Blizzard Entertainment. (2004-). *World of warcraft*. Retrieved March 16, 2015 from <http://us.battle.net/wow/en/>
- Bolter, J. D. (1991). *Writing space: The computer, hypertext, and the history of writing*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Bolter, J. D., & Grusin, R. (1999). *Remediation: Understanding new media*. Cambridge: MIT Press.
- Borges, J. L. (1962). The garden of forking paths. In *Labyrinths: Selected stories and other writings* (pp. 19-29). New York: New Directions.
- Borrás, L., Memmott, T., Raley, R., & Stefans, B. K. (Eds.). (2011). *Electronic literature collection vol. 2*. Retrieved May 21, 2011 from <http://collection.eliterature.org/2/>
- Bourdieu, P. (1993). *The field of cultural production*. (R. Johnson, Ed.) Columbia University Press.
- Bridle, J. (2011, October 5). The new value of text [Web log post]. *BookTwo.org*. Retrieved June 20, 2012 from <http://booktwo.org/notebook/the-new-value-of-text/>
- Brontë, C. (2000). *Jane Eyre*. New York: Modern Library. (Original work published 1847)
- Burton, T. (1997). *The melancholy death of oyster boy and other stories*. London: Faber and Faber.
- Burton, T., & Various collaborators. (2010, December 6). *BurtonStory – Tim Burton's cadavre exquis*. Retrieved April 4, 2011 from: <http://burtonstory.com>
- BurtonStory [BurtonStory]. (2010, December 6). Last day to be part of the #BurtonStory! Project ends today <http://burtonstory.com> [Tweet]. Retrieved from <https://twitter.com/BurtonStory/status/11786672324739072>

- BurtonStory [BurtonStory]. (2010, November 19). Stainboy, using his obvious expertise, was called in to investigate mysterious glowing goo on the gallery floor #BurtonStory [Tweet]. Retrieved from <https://twitter.com/BurtonStory/status/5694394896220160>
- Carey, J. W. (1984). The paradox of the book. *Library Trends*, 33(2), 103-113.
- Carey, J. W., & Quirk, J. J. (1989). The history of the future. In J. W. Carey, *Communication as culture: Essays on media and society* (pp. 173-200). New York: Routledge.
- Castells, M. (1996). *The rise of network society*. Oxford: Blackwell.
- Cayley, J. (1995). *Book unbound*. London: Wellsweep.
- Certeau, M. (1984). *The practice of everyday life*. (S. Rendall, Trans.) Berkeley: University of California Press.
- Cervantes Saavedra, M. (2009). *Don Quixote*. (J. Montgomery, Trans.) Indianapolis: Hackett. (Original work published 1605)
- Chamberlain, W. (1984). *The policeman's beard is half-constructed: Computer prose and poetry by racter*. New York: Warner.
- Chartier, R. (1995). *Forms and meanings: Texts, performances and audiences from codex to computer*. Philadelphia: University of Pennsylvania Press.
- Chase, D. (Producer). (1997-2007). *The sopranos* [Television series]. USA: HBO.
- Chatman, S. (1980). What novels can do that films can't (and vice versa). *Critical Inquiry*, 7(1), 121-140.
- Ciccoricco, D. (2007). *Reading network fiction*. Tuscaloosa: University of Alabama Press.

- Ciccoricco, D. (2012). The materialities of close reading: 1942, 1959, 2009. *DHQ: Digital Humanities Quarterly*, 6(1). Retrieved from <http://www.digitalhumanities.org/dhq/vol/6/1/000113/000113.html>
- Cizek, K. (Director) & Flahive, G. (Producer). (2010). *Out my window: Interactive views from the global highrise* [Interactive documentary]. Retrieved April 12, 2011 from <http://outmywindow.nfb.ca/#/outmywindow>
- Cizek, K. (Director) & Flahive, G. (Producer). (2010). *Out my window: Participate*. Retrieved April 12, 2011 from <http://interactive.nfb.ca/outmywindow/participate/php/#/outmywindowparticipate>
- Cohn, D. (1999). *The distinction of fiction*. Baltimore: The Johns Hopkins University Press.
- Coombe, R. J. (1998). *The cultural life of intellectual properties: Authorship, appropriation, and the law*. Durham: Duke University Press.
- Cortázar, J. (1966). *Hopscotch*. (G. Rabassa, Trans.) New York: Random House.
- Coté, M., & Pybus, J. (2007). Learning to immaterial labour 2.0: MySpace and social networks. *Ephemera: Theory and Politics in Organization*, 7.1, 88-106.
- Couldry, N. (2008). Mediatization or mediation? Alternative understandings of the emergent space of digital storytelling. *New Media & Society*, 10(3), 373-391.
- Cristiano, L. [leecristiano]. (2010, December 6). key to his power, and his heroic obligation to stop it from harming anyone else. As he ate the goo, a luminescent green glow #BurtonStory [Tweet]. Retrieved from <https://twitter.com/leecristiano/status/11795417570213888>
- Danielweski, M. (2000). *House of leaves*. New York: Doubleday.
- Darnton, R. (2009). *The case for books: Past, present, and future*. New York: PublicAffairs.

- Davidson, C. N. (1986). *Revolution and the word: The rise of the novel in America*. New York: Oxford University Press.
- Davis, J. (2006, Decemember). The secret world of Lonelygirl. *Wired*. Retrieved March 14, 2014 from <http://archive.wired.com/wired/archive/14.12/lonelygirl.html>
- DeLillo, D. (1985). *White noise*. New York: Viking.
- DeLillo, D. (1991). *Mao II*. New York: Viking.
- DeLillo, D. (1997). *Underworld*. New York: Scribner.
- Denbo, S., & Fraistat, N. (2011). Diggable data, scalable reading and new humanities scholarship. *Culture and computing 2011: 2011 second international conference on culture and computing* (pp. 169-170). Los Alamitos, CA: IEEE Computer Society.
- Dos Passos, J. (1938/1996). *U.S.A.* New York: Library of America.
- Doyle, J. (2012, March 26). Mad men and the triumph of television over books. *The Globe and Mail*. Retrieved March 29, 2012 from <http://www.theglobeandmail.com/news/arts/television/john-doyle/mad-men-and-the-triumph-of-television-over-books/article2379660/>
- Drucker, J. (2008). The virtual codex from page space to e-space. In S. Schreibman & R. Siemens, (Eds.), *A Companion to digital literary studies*. Retrieved September 12, 2014 from <http://www.digitalhumanities.org/companionDLS/>
- Drucker, J. (2009). A review of Matthew Kirschenbaum, *Mechanisms: New media and the forensic imagination* Cambridge, MA and London, UK: MIT University Press, 2008. *DHQ: Digital Humanities Quarterly*, 3(2). Retrieved from <http://www.digitalhumanities.org/dhq/vol/3/2/000048/000048.html>

- Drucker, J. (2013). *Graphesis: Visual forms of knowledge production*. Cambridge: Harvard University Press.
- Duguid, P. (1996). Material matters: The past and futurology of the book. In G. Nunberg (Ed.), *The future of the book* (pp. 63-101). Berkeley: University of California Press.
- Eco, U. (1994). *Six walks in the fictional woods*. Cambridge: Harvard University Press.
- Economist Staff. (2011, October 5). The first real work of digital literature? *The Economist*. Retrieved October 10, 2011 from <http://www.economist.com/blogs/prospero/2011/10/twitter-and-epic-poetry>
- Esquivel, L. (1994). *Like water for chocolate : A novel in monthly installments, with recipes, romances, and home remedies*. New York: Anchor Books.
- Facebook Inc. (n.d.). Introducing timeline. *Facebook*. Retrieved September 10, 2012 from <https://www.facebook.com/about/timeline>
- Farrelly, G. (2007, February 9). Can a million penguins typing away create the great novel? [Web log post]. *Webslinger: Glen Farrelly's explorations in digital media*. Retrieved April 4, 2011 from <http://glenfarrelly.blogspot.ca/2007/02/can-million-penguins-typing-away-create.html>
- Febvre, L., & Martin, H.-J. (1958, 1976). *The coming of the book: The impact of printing, 1450-1800*. (D. Gerard, Trans.) London: Verso.
- Flynn, G. (2012). *Gone girl*. New York: Random House.
- Folsom, E. (2007). Database as genre: The epic transformation of archives. *PMLA*, 122(5), 1571-9.
- Freedman, J. (2007). Whitman, database, information culture. *PMLA*, 122(5), 1596-1602.
- Freesound. (n.d.). *Freesound.org*. Retrieved April 2, 2014 from <http://www.freesound.org/>

- Frey, J. (2004). *A Million little pieces*. New York: Anchor Books.
- Fuller, I., Selwyn, P. (Producers), & Bejan, B. (Director). (1992). *I'm your man* [DVD]. USA: ChoicePoint.
- Fuller, S. (Writer). (2002-). *American idol* [Television series]. USA: Fremantle Media North America.
- Gallix, A. (2008, September 24). Is e-literature just one big anti-climax? *Books Blog / guardian.co.uk*. Retrieved April 26, 2011 from <http://www.guardian.co.uk/books/booksblog/2008/sep/24/ebooks>
- Galloway, A. R. (2006). *Gaming: Essays on algorithmic culture*. Minneapolis: University of Minnesota Press.
- Galloway, A. R. (2011). What is new media?: Ten years after the language of new media. *Criticism*, 53(3), 377-384.
- Galloway, A. R., & Thacker, E. (2007). *The exploit: A theory of networks*. Minneapolis: University of Minnesota Press.
- Gaonkar, D. P., & Povinelli, E. A. (2003). Technologies of public forms: Circulation, transfiguration, recognition. *Public Culture*, 15(3), 385-397.
- Garten, I. (2002). *Barefoot contessa family style*. New York: Clarkson Potter.
- Garvey, E. G. (2003). Scissorizing and scrapbooks: Nineteenth-Century reading, remaking, and recirculating. In L. Gitelman, & G. B. Pingree (Eds.), *New media, 1740-1915* (pp. 207-227). Cambridge, Mass: MIT Press.
- Gendolla, P., & Schäfer, J. (2007a). Playing with signs: Towards an aesthetic theory of net literature. In P. Gendolla, & J. Schäfer (Eds.), *The aesthetics of net literature: Writing*,

- reading and playing in programmable media* (pp. 17-42). Bielefeld, Germany: transcript Verlag.
- Gendolla, P., & Schäfer, J. (2007b). Preface. [Preface]. In P. Gendolla, & J. Schäfer (Eds.), *The aesthetics of net literature: Writing, reading and playing in programmable media* (pp. 9-16). Bielefeld, Germany: transcript Verlag.
- Genette, G. (1980). *Narrative discourse: An essay in method*. (J. E. Lewin, Trans.) Ithaca: Cornell UP.
- Genette, G. (1997). *Paratexts: Thresholds of interpretation*. (J. E. Lewin, Trans.) Cambridge: Cambridge University Press.
- Giesecke, M. (2002). Literature as product and medium of ecological communication. *Configurations* (10), 11-35.
- Gillespie, W., Marquardt, F., Rettberg, S., & Stratton, D. (1998-2001). *The unknown*. Retrieved March 20, 2014, from <http://www.unknownhypertext.com>
- Gitelman, L., & Jackson, V. (2013). Introduction. [Introduction]. In L. Gitelman (Ed.), *"Raw data" is an oxymoron* (pp. 1-14). Cambridge, Mass: MIT Press.
- Goldsmith, K. (2003). *Day*. Great Barrington, Mass: The Figures.
- Goldsmith, K. (n.d.). Uncreativity as creative practice. *Electronic Poetry Center*. Retrieved October 20, 2013 from <http://epc.buffalo.edu/authors/goldsmith/uncreativity.html>
- Gomez, J. (2008). *Print is dead: Books in our digital age*. New York: Palgrave Macmillan.
- Goody, J. (2006). From oral to written: An anthropological breakthrough in storytelling. In F. Moretti (Ed.), *The novel: History, geography, and culture* (Vol. I, pp. 3-36). Princeton: Princeton University Press.

- Green, J. (2005). *Late postmodernism: American fiction at the millenium*. New York: Palgrave MacMillan.
- Greenaway, P. (Producer). (2006). *The Tulse Luper journey*. Retrieved June 20, 2014 from <http://www.tulseuperjourney.com/>
- Grigar, D. (2008, December 28). Electronic literature: Where is it? *electronic book review*. Retrieved September 24, 2014 from <http://www.electronicbookreview.com/thread/technocapitalism/invigorating>
- Hall, S. (2006). Encoding/decoding. In M. G. Durham, & D. M. Kellner (Eds.), *Media and cultural studies keywords* (pp. 163-173). Malden, MA: Blackwell.
- Hartley, J., & McWilliam, K. (Eds.). (2009). *Story circle: Digital storytelling around the world*. Malden, MA: Wiley-Blackwell.
- Hayles, N. K. (2002). *Writing machines*. Cambridge, Mass: MIT Press.
- Hayles, N. K. (2007). Narrative and database: Natural symbionts. *PMLA*, 122(5), 1603-8.
- Hayles, N. K. (2008). *Electronic literature: New horizons for the literary*. Notre Dame: University of Notre Dame.
- Hayles, N. K. (2012). *How we think: Digital media and contemporary technogenesis*. Chicago: University of Chicago Press.
- Hayles, N.K., Strickland, S., Montfort, N., & Rettberg, S. (Eds.). (2006). *Electronic literature collection vol. 1*. Retrieved May 21, 2011 from <http://collection.eliterature.org/1/>
- Hayles, N. K., & Pressman, J. (Eds.). (2013). *Comparative textual media: Transforming the humanities in the postprint era*. Minneapolis: University of Minnesota Press.
- Helprin, M. (2009). *Digital barbarism: A writer's manifesto*. New York: Harper Collins.

- Hernández, J. (1974). *The gaucho Martín Fierro*. Albany, NY: State University of New York Press. (Original work published 1872)
- Hodge, R., & Kress, G. (1988). *Social semiotics*. Ithaca: Cornell University Press.
- Horowitz, E., Quinn, R., Derby, M., & Moffett, K. (2012). The silent history: Guidelines for prospective field reporters. *The Silent History*. Retrieved March 13, 2014 from <http://fieldreporter.s3.amazonaws.com/FieldReportGuidelines.pdf>
- Horowitz, E., Quinn, R., Derby, M., & Moffett, K. (2013, April 19). The silent history [Mobile application]. Cazadero, CA: Apple.
- Information, n. (2013, September). In *OED online*. Retrieved September 24, 2013 from <http://www.oed.com>
- Jenkins, H. (2006). *Fans, bloggers, and gamers: Exploring participatory culture*. New York: New York University Press.
- Jockers, M. L. (2013). *Macroanalysis: Digital methods and literary history*. Urbana: University of Illinois Press.
- Joyce, J. (1968). *Ulysses*. Middlesex: Penguin. (Original work published 1922)
- Joyce, J. (2012). *Finnegans wake*. Oxford: Oxford University Press. (Original work published 1939)
- Kilgore, C. D. (2013). Rhetoric of the network: Toward a new metaphor. *Mosaic*, 46(4), 37-58.
- Killeen, J., & Germon, G. (1991). *Cucina simpatica: Robust trattoria cooking*. New York: HarperCollins.
- Kirschenbaum, M. (2008). *Mechanisms: New media and the forensic imagination*. Cambridge: MIT Press.

- Kittler, F. A. (1999). *Gramophone, film, typewriter*. (G. Winthrop-Young, & M. Wutz, Trans.) Stanford: Stanford University Press.
- Kittler, F. A. (2002). The perspective of print. *Configurations*, 10(1), 37-50.
- Kline, S., Dyer-Witheford, N., & de Peuter, G. (2003). *Digital play: The interaction of technology, culture, and marketing*. Montreal: McGill-Queen's University Press.
- Kurzweil, R. (1992). The future of libraries part 2: The end of books. *Library Journal*, 117(3), 140-141.
- La Dolce Vita Cookbook: David Rocco. (2008, October 27). *Amazon*. Retrieved October 20, 2013 from <http://www.amazon.ca/Dolce-Vita-Cookbook-David-Rocco/dp/155468028X>
- Lambert, J. (2013). *Digital storytelling: Capturing lives, creating community* (4th ed.). New York: Routledge.
- Landow, G. P. (2006). *Hypertext 3.0: Critical theory and new media in an era of globalization* (Rev. ed.). Baltimore: Johns Hopkins University Press.
- Lanham, R. A. (1993). *The Electronic word: Democracy, technology, and the arts*. Chicago: University of Chicago Press.
- Lash, S., & Lury, C. (2007). *Global culture industry: The mediation of things*. Cambridge: Polity Press.
- Lee, B., & LiPuma, E. (2002). Cultures of circulation: The imaginations of modernity. *Public Culture*, 14(1), 191-213.
- Leme, C. S. [scacleme]. (2010, December 6). From this day he became known as Stainlessboy. The one who solved the case of the mysterious glowing goo on the

- gallery floor. #BurtonStory [Tweet]. Retrieved from
<https://twitter.com/scacleme/status/11813215482675200>
- Levi, P. (1984). *The Periodic Table*. New York: Schocken.
- Little, G. (2013). Introduction: What is the history of (electronic) books? Or, this page intentionally left blank. [Introduction]. *Papers of the Bibliographical Society of Canada*, 51(1), 11-17.
- Liu, A. (2011, May 10). Close, distant, and unexpected reading: New forms of literary reading in the digital age [Video file]. *The HUMlab Blog*. Retrieved March 10, 2014
<http://blog.humlab.umu.se/?p=3366>
- Loyer, E. (2001, February). Chroma. *The lair of the marrow monkey: Interactive art works by Erik Loyer*. Retrieved June 12, 2014 from <http://www.marrowmonkey.com/chroma>
- Lundby, K. (2008). Mediatized stories: Mediation perspectives on digital storytelling. *New Media & Society*, 10(3), 363-371.
- Lynch, D., & Warner, W. B. (1996). Introduction: The transport of the novel. [Introduction]. In D. Lynch, & W. B. Warner (Eds.), *Cultural institutions of the novel* (pp. 1-10). Durham: Duke University Press.
- Manovich, L. (2001). *The language of new media*. Cambridge: MIT Press.
- Manovich, L. (2012). Trending: The promises and the challenges of big social data. *Debates in the digital humanities*. Retrieved October 23, 2013 from
<http://dhdebates.gc.cuny.edu/debates/text/15>
- Markoff, J. (2008, January 15). The passion of Steve Jobs. *Bits Blog - NYTimes.com*. Retrieved January 27, 2010 from <http://bits.blogs.nytimes.com/2008/01/15/the-passion-of-steve-jobs/>

- Martin, J., & Magee, C. M. (Eds.). (2011). *The late American novel: Writers on the future of books*. Berkeley: Soft Skull Press.
- Marvin, C. (1988). *When old technologies were new: Thinking about electric communication in the late nineteenth century*. New York: Oxford UP.
- Mason, B., & Thomas, S. (2008, April 24). A million penguins research report. *Institute of Creative Technologies*. Retrieved March 15, 2011 from <http://www.ioct.dmu.ac.uk/projects/millionpenguinsanalysis.html>
- Mattelart, A. (1996). *The invention of communication*. Minneapolis: University of Minnesota Press.
- Maxwell, J. W. (2013). E-Book logic: We can do better. *Papers of the Bibliographical Society of Canada*, 51(1), 29-47.
- Mayes, F. (1996). *Under the Tuscan sun: At home in Italy*. San Francisco: Chronicle Books.
- McGann, J. (2007). Database, interface, and archival fever. *PMLA*, 122(5), 1588-1592.
- McGonigal, J. (2007). The puppet master problem: Design for real-world, mission-based gaming. In P. Harrigan, & N. Wardrip-Fruin (Eds.), *Second person: Role-playing and story in games and playable media* (pp. 251-263). Cambridge: MIT Press.
- McLuhan, M. (1962). *The gutenbergalaxy: The making of typographic man*. New York: Signet.
- McLuhan, M. (1964). *Understanding media: The extensions of man*. New York: New American Library.
- McLuhan, M., & McLuhan, E. (1988). *Laws of media: The new science*. Toronto: University of Toronto Press.

- McWilliam, K. (2009). The global diffusion of a community media practice: Digital storytelling online. In J. Hartley, & K. McWilliam (Eds.), *Story circle: Digital storytelling around the world* (pp. 37-75). Malden, MA: Wiley-Blackwell.
- Memmott, T. (2006). Lexia to perplexia. In N.K. Hayles, N. Montfort, S. Rettberg, & S. Strickland, (Eds.), *Electronic literature collection: Volume one*. Retrieved May 9, 2013 from <http://collection.eliterature.org/1/>
- Meurer, D. M. (2012). Towards network narrative: Electronic literature, communication technologies, and cultural production. *Dichtung Digital*, 42. Retrieved from <http://www.dichtung-digital.de/en/journal/archiv/?postID=593>
- Meurer, D. M., & Coombe, R. J. (2009). Digital media and the informational politics of appropriation. In G. Morrison, & F. Stables (Eds.), *Lifting: Theft in art* (pp. 20-27). Aberdeen, UK: Peacock Visual Arts.
- Miller, J. H. (1995). Narrative. In F. Lentricchia, & T. McLaughlin (Eds.), *Critical terms for literary study* (pp. 66-79). Chicago: University of Chicago Press.
- Montfort, N. (2003). *Twisty little passages: An approach to interactive fiction*. Cambridge, Mass: MIT Press.
- Moretti, F. (2005). *Graphs, maps, trees: Abstract models for a literary history*. London: Verso.
- Moretti, F. (2013). *Distant reading*. London: Verso.
- Morris, A., & Swiss, T. (Eds.). (2006). *New media poetics: Contexts, technotexts, and theories*. Cambridge, Mass: MIT Press.
- Moulthrop, S. (2003). You say you want a revolution? Hypertext and the laws of media. In N. Wardrip-Fruin, & N. Montfort (Eds.), *The new media reader* (pp. 692-704). Cambridge, Mass.: MIT Press.

- Mulkerns, H. (2011, May 8). A broadening landscape. *The New York Times*, p. 2.
- Murray, J. H. (1997). *Hamlet on the holodeck: The future of narrative in cyberspace*. Cambridge, Mass: MIT Press.
- Murray, J. H. (2012). *Inventing the medium: Principles of interaction design as a cultural practice*. Cambridge: MIT Press.
- Narrative, n. (2011, March). In *OED online*. Retrieved May 16, 2011 from <http://www.oed.com>
- Nunberg, G. (1996). Farewell to the information age. In G. Nunberg (Ed.), *The future of the book* (pp. 103-138). Berkeley: University of California Press.
- Nunberg, G. (1993). The places of books in the age of electronic reproduction. *Representations*, 42, 13-37.
- O'Donnell, J. J. (1998). *Avatars of the word: From papyrus to cyberspace*. Cambridge: Harvard University Press.
- Oliver, J. (2007). *Jamie At home: Cook your way to the good life*. New York: Hyperion.
- Ong, W. J. (1975). The writer's audience is always a fiction. *PMLA*, 90(1), 9-21.
- Ong, W. J. (1982). *Orality and literacy: The technologizing of the word*. London: Routledge.
- O'Reilly, T. (2005, September 30). What is Web 2.0: Design patterns and business models for the next generation of software. *O'Reilly*. Retrieved July 11, 2014 from <http://oreilly.com/web2/archive/what-is-web-20.html>
- Page, R., & Thomas, B. (Eds.). (2011). *New narratives: Stories and storytelling in the digital age*. Lincoln: University of Nebraska Press.

Parent, R. (2010, December 6). formed around him. He could feel his stains dissipating. It was curing him. No wonder his father was trying to [Tweet]. Retrieved from <https://twitter.com/BurtonStory>

Parikka, J. (2012). *What is media archaeology?* Cambridge: Polity.

Paulson, W. (1997). The literary canon in the age of its technological obsolescence. In *Reading matters: Narratives in the new media ecology* (pp. 227-249). Ithaca: Cornell UP.

Paulson, W. (2001). *Literary culture in a world transformed: A future for the humanities*. Ithaca: Cornell UP.

Pavić, M. (1988). *Dictionary of the Khazars: A lexicon novel*. (C. Pribičević-Zorić, Trans.) New York: Alfred A. Knopf.

Pavić, M. (1990). *Landscape painted with tea*. (C. Pribičević-Zorić, Trans.) New York: Vintage.

Penguin Books & De Montfort University (Producers). (2007, February 7). User: Sun Tzu. *A million penguins*. Retrieved June 10, 2007 from http://amillionpenguins.com/wiki/index.php/User:Sun_Tzu

Penguin Books & De Montfort University (Producers). (2007, February 12). About – [amillionpenguins.com](http://www.amillionpenguins.com). Retrieved April 4, 2011, from <http://www.amillionpenguins.com/wiki/index.php/About>

Penguin Books & De Montfort University (Producers). (2007, March 7). Alternative Novel 1: Revision history. Retrieved June 10, 2007 from http://www.amillionpenguins.com/wiki/index.php?title=Alternative_Novel_1&action=history

- Penguin Books & De Montfort University (Producers). (2007, March 7). Welcome – amillionpenguins.com. Retrieved May 12, 2008 from <http://www.amillionpenguins.com/wiki/index.php/Welcome>
- Penguin Books & De Montfort University (Producers). (2007, June 10). Alternative novel 1. Retrieved April 4, 2011 from http://amillionpenguins.com/wiki/index.php/Real_Novel
- Penguin Books & De Montfort University. (2007, June 10). Joseph Carlos Sandiego: Revision history. *A million penguins*. Retrieved April 4, 2011 from http://amillionpenguins.com/wiki/index.php?title=Joseph_Carlos_Sandiego&action=history
- Penguin Books & De Montfort University (Producers). (2007, June 10). Most linked to pages. *A million penguins*. Retrieved April 4, 2011 from <http://amillionpenguins.com/wiki/index.php/Special:Mostlinked>
- Pierre, D. (2003). *Vernon God little*. London: Faber and Faber.
- Piper, A. (2012). *Book was there: Reading in electronic times*. Chicago: University of Chicago Press.
- Pope, J. (2010). Where do we go from here?: Readers' responses to interactive fiction narrative structures, reading pleasure and the impact of interface design. *Convergence*, 16(1), 75-94.
- Poster, M. (2004). Consumption and digital commodities in the everyday. *Cultural Studies*, 18(2), 409-423.
- Postman, N. (2006). *Amusing ourselves to death: Public discourse in the age of show business* (20th Anniversary ed.). New York: Penguin.

- Powell, J. (2002-2003). *The Julie/Julia project blog*. Retrieved August 5, 2003 from <http://www.blogs.salon.com>
- Powell, J. (2005). *Julie and Julia : 365 Days, 524 recipes, 1 tiny apartment kitchen*. New York: Little, Brown and Co.
- Powell, J., Ephron, N., Child, J., Prud'homme, A. (Writers), & Ephron, N. (Director). (2009). *Julie & Julia* [Motion picture]. USA: Columbia Pictures.
- Pressman, J. (2014). *Digital modernism: Making it new in new media*. Oxford: Oxford University Press.
- Price, L. (2012). *How to do things with books in Victorian Britain*. Princeton, NJ: Princeton University Press.
- Propp, V. (1968). *Morphology of the folktale* (2nd ed.). (L. A. Wagner, Ed., & L. Scott, Trans.) Austin: University of Texas Press.
- Proulx, E. A. (1993). *The shipping news*. New York: Scribner.
- Proulx, E. A. (1994, May 26). Books on top. *The New York Times*. Retrieved July 12, 2013 from <http://www.nytimes.com/books/99/05/23/specials/proulx-top.html>
- Pullinger, K., & Joseph, C. (2007-). *Flight paths: A networked novel*. Retrieved April 11, 2011 from <http://flightpaths.net/>
- Pullinger, K., & Joseph, C. (Producers). (2008, November 20). Flickr: The flight paths pool. *Flickr.com*. Retrieved April 2, 2014 from <https://www.flickr.com/groups/flightpathsnovel/>
- Pullinger, K., & Joseph, C. (n.d.). How to contribute. *Flight paths: A networked novel*. Retrieved April 12, 2011 from <http://www.netvibes.com/flightpaths#Contribute>

- Punday, D. (2012). *Writing at the limit: The novel in the new media ecology*. Lincoln: University of Nebraska Press.
- Pynchon, T. (1990). *Vineland*. Boston: Little, Brown.
- Quaglia, A., & Quaglia, J.-F. (2007). *New world provence: Modern French cooking for friends and family*. Vancouver: Arsenal Pulp Press.
- Queneau, R. (1961). *Cent mille milliards de poèmes*. Paris: Gallimard.
- Ramzipoor, R. R. [quicksand186]. (2010, December 5). He knew it could all end here. But he wanted answers. He needed to know the truth. Breathing hard, Stainboy stepped towards the goo #BurtonStory [Tweet]. Retrieved from <https://twitter.com/quicksand186/status/11586115874062336>
- Resina, J. R. (2006). The short, happy life of the novel in Spain. In *The novel: History, geography, and culture* (Vol. I, pp. 291-312). Princeton: Princeton University Press.
- Rettberg, S. (2002). *Destination unknown: Experiments in the network novel*. Retrieved from http://retts.net/documents/rettberg_dissertation.pdf
- Rettberg, S. (2009). Communitizing electronic literature. *DHQ: Digital Humanities Quarterly*, 3(2). Retrieved from <http://www.digitalhumanities.org/dhq/vol/3/2/000046/000046.html>
- Rettberg, S., & Tomaszek, P. (Eds.). (2012a). Electronic literature communities, part 1 [Special Issue]. *Dichtung Digital: A Journal of Art and Culture in Digital Media* (41). Retrieved from <http://www.dichtung-digital.de/en/journal/archiv/?issue=41>
- Rettberg, S., & Tomaszek, P. (Eds.). (2012b). Electronic literature communities, part 2 [Special issue]. *Dichtung Digital: A Journal of Art and Culture in Digital Media* (42). Retrieved from <http://www.dichtung-digital.de/en/journal/archiv/?issue=42>

- Ricardo, F. J. (2009). Juncture and form in new media criticism. In F. J. Ricardo (Ed.), *Literary art in digital performance: Case studies in new media art and criticism*. New York: Continuum.
- Rocco, D., & Rocco, N. (Writers), Rocco, D. (Producer). (2004-). *David Rocco's dolce vita* [Television series]. USA: Food Network Telelatino.
- Rocco, D. (2008). *David Rocco's dolce vita*. Toronto: HarperCollins.
- Rocco, D. (2011). *Made in Italy*. Toronto: HarperCollins.
- Rocco, D. (n.d.). Avventura: Journeys in Italian cuisine. *DavidRocco.com*. Retrieved October 20, 2013 from <http://www.davidrocco.com/tvseries/avventura/>
- Rogers, R. A. (2006). From cultural exchange to transculturation: A review and reconceptualization of cultural appropriation. *Communication Theory*, 16, 474-503.
- Rosenberg, D. (2013). Data before the fact. In L. Gitelman (Ed.), *"Raw data" is an oxymoron* (pp. 15-40). Cambridge, Mass: MIT Press.
- Rubin, D., & Ramis, H. (Writers), & Ramis, H. (Director). (1993). *Groundhog day* [Motion picture]. USA: Columbia Pictures Corporation.
- Ryan, M.-L. (2001). *Narrative as virtual reality: Immersion and interactivity in literature and electronic media*. Baltimore: Johns Hopkins University Press.
- Ryan, M.-L. (2006). *Avatars of story*. Minneapolis: University of Minnesota Press.
- Ryan, M.-L. (2007). Narrative and the split condition of digital textuality. In P. Gendolla, & J. Schäfer (Eds.), *The aesthetics of net literature: Writing, reading and playing in programmable media* (pp. 257-280). Bielefeld: Transcript Verlag.
- Ryan, M.-L. (2009). From narrative games to playable stories: Toward a poetics of interactive narrative. *StoryWorlds: A Journal of Narrative Studies*, 1, 43-59.

- Ryan, S. [SeanTomRyan]. (2010, November 24). @BurtonStory The goo changed colour and started to pulsate. Stainboy looked down at his feet as the goo released it's grip and #BurtonStory [Tweet]. Retrieved from <https://twitter.com/seansshack/status/7443309450493952>
- Ryman, G. (1996). *253 or tube theatre, a novel for the Internet about London underground in seven cars and a crash*. Retrieved February 12, 2014 from <http://www.ryman-novel.com/>
- Saenger, P. (1982). Silent reading: Its impact on late Medieval script and society. *Viator*, 13, 367-414.
- Salario, A. (2012, November 30). Is The Internet the novel's saving grace? *Los Angeles Review of Books*. Retrieved December 3, 2012 from <http://lareviewofbooks.org/article.php?type=&id=1215>
- Samuels, M. (2004). *The spectacular past: Popular history and the novel in nineteenth-century France*. Ithaca, NY: Cornell University Press.
- Saporta, M. (1962). *Composition no. 1, roman*. Paris: Seuil.
- Sarmiento, D. F. (1998). *Facundo: Or, civilization and barbarism*. (M. Mann, Trans.) New York: Penguin. (Original work published 1845)
- Saussure, F. (1983). *Course in general linguistics*. (R. Harris, Trans.) Chicago: Open Court.
- Schäfer, J., & Gendolla, P. (Eds.). (2010). *Beyond the screen: Transformations of literary structures, interfaces and genres*. Bielefeld, Germany: Transcript Verlag.
- Scholes, R., Phelan, J., & Kellogg, R. (2006). *The nature of narrative* (Fortieth Anniversary ed., Revised and Expanded). Oxford: Oxford University Press.

Shannon, C. E., & Weaver, W. (1998). *The mathematical theory of communication*. Urbana: University of Illinois Press. (Original work published 1949)

Siegert, B. (1999). *Literature as an epoch of the postal system*. (K. Repp, Trans.) Stanford: Stanford University Press.

Simanowski, R. (2007). Holopoetry, biopoetry and digital literature: Close reading and terminological debates. In P. Gendolla, & J. Schäfer (Eds.), *The aesthetics of net literature: Writing, reading and playing in programmable media* (pp. 43-66). Bielefeld, Germany: Transcript Verlag.

Simanowski, R. (2010). Reading digital literature: A subject between media and methods. In R. Simanowski, J. Schäfer, & P. Gendolla (Eds.), *Reading moving letters: Digital literature in research and teaching. A handbook*. (pp. 15-28). Bielefeld, Germany: Transcript Verlag.

Simon, D. (Producer). (2002-2008). *The wire* [Television series]. USA: HBO.

Sinker, D. (2011, February 23). Rahm Emanuel @MayorEmanuel Your next motherfucking mayor. Get used to it, assholes. Chicago, IL [Tweet]. Retrieved from <https://twitter.com/@MayorEmanuel>

Siskin, C. (1994). Eighteenth-century periodicals and the romantic rise of the novel. *Studies in the Novel*, 26(1/2), 26-42.

Siskin, C. (1996). Epilogue: The rise of novelism. [Epilogue]. In D. Lynch, & W. B. Warner (Eds.), *Cultural institutions of the novel* (pp. 423-440). Durham: Duke University Press.

Smith, M. (Producer). (2009-2013). *Chef at home* [Television series]. Canada: Food Network Canada.

- Smith, M. (2011). Chef at home. *Chef Michael Smith*. Retrieved October 20, 2013 from <http://chefmichaelsmith.com/cookbooks/chef-at-home/>
- Sony Online Entertainment. (2014). *EverQuest*. Retrieved June 19, 2014, from <https://www.everquest.com/home>
- Stallybrass, P. (2002). Books and scrolls: Navigating the Bible. In J. Anderson (Ed.), *Books and readers in early modern England: Material studies* (pp. 42-79). Philadelphia: University of Pennsylvania Press.
- Stallybrass, P. (2007). Against thinking. *PMLA*, 122(5), 1580-7.
- Stanford University. (2013). *Mapping the republic of letters*. Retrieved March 12, 2014 from <http://republicofletters.stanford.edu/>
- Steinberg, S. (1974). *Five hundred years of printing* (Third ed.). New York: Penguin.
- Steiner, G. (1980). After the book? In G. Steiner, *On difficulty and other essays* (pp. 186-203). Oxford: Oxford University Press.
- Stendahl. (1972). *Scarlet and black*. (M. R. Shaw, Trans.) Middlesex: Penguin. (Original work published 1830).
- Sterne, L. (2003). *The life and opinions of Tristram Shandy, gentleman*. New York: Penguin. (Original work published 1759-1767)
- Stoker, B. (1997). *Dracula* (Norton Critical Edition). (N. Auerbach, & D. J. Skal, Eds.) New York: Norton. (Original work published 1897)
- Strachan, L. [Funkykitsune]. (2010, December 6). inject the goo into his body. Stainboy watched with amazement as each stain slowly disappeared, leaving his body clean and dry. #BurtonStory [Tweet]. Retrieved from <https://twitter.com/Funkykitsune/status/11805851786416129>

- Straw, W. (2010). The circulatory turn. In B. Crow, M. Longford, & K. Sawchuk (Eds.), *The wireless spectrum: The politics, practices and poetics of mobile media* (pp. 17-28). Toronto: University of Toronto Press.
- Striphas, T. (2009). *The late age of print: Everyday book culture from consumerism to control*. New York: Columbia UP.
- Su, B., Dunlap, M., Kiley, R., Bushman, J., Rorick, K., & Toole, A. (Writers), H. Green, & B. Su, (Producers). (2012-2013). *The Lizzie Bennet diaries* [Video Web log]. Retrieved March 2, 2014 from <http://www.pemberleydigital.com/the-lizzie-bennet-diaries/>
- Tabbi, J., & Wutz, M. (1997). Introduction. [Introduction]. In J. Tabbi, & M. Wutz (Eds.), *Reading matters: Narratives in the new media ecology* (pp. 1-24). Ithaca: Cornell UP.
- Taylor, M. C. (2001). *The moment of complexity: Emerging network culture*. Chicago: University of Chicago Press.
- Terranova, T. (2004). *Network culture: Politics for the information age*. London: Pluto Press.
- Thomas, B. (2014). 140 characters in search of a story. In A. Bell, A. Ensslin, & K. H. Rustad (Eds.), *Analyzing digital fiction* (pp. 94-108). New York: Routledge.
- Threadgold, T. (2005). Narrative. In T. Bennett, L. Grossberg, & M. Morris (Eds.), *New keywords: A revised vocabulary of culture and society* (pp. 230-2). Malden, MA: Blackwell.
- TIFF [TIFF_NET]. (2010, December 10). 13,054 tweets were submitted to the #BurtonStory for consideration! Congrats to all those who were chosen! [Tweet]. Retrieved from https://twitter.com/TIFF_NET/status/12528738411479040
- Toolan, M. J. (1988). *Narrative: A critical linguistic introduction*. London: Routledge.

- Trotter, D. (2013). *Literature in the first media age: Britain between the wars*. Cambridge: Harvard University Press.
- Tschofen, M. (2004). 'First I must tell about seeing': (De)monstrations of visuality and the dynamics of metaphor in Anne Carson's autobiography of red. *Canadian Literature*, 180, 31-50.
- Van Looy, J., & Baetens, J. (Eds.). (2003). *Close reading new media: Analyzing electronic literature*. Leuven, Belgium: Leuven University Press.
- Vershow, B. (2007, February 7). A million penguins: a wiki-novelty [Web log post]. *if: book*. Retrieved April 4, 2011 from http://www.futureofthebook.org/blog/archives/2007/02/a_million_penguins_a_wikinovel.html
- Vesna, V. (Ed.). (2007). *Database aesthetics: Art in the age of information overflow*. Minneapolis: University of Minnesota Press.
- Virilio, P. (2000). *Information bomb*. (C. Turner, Trans.) New York: Verso.
- Walker, J. (2005). Distributed narrative: Telling stories across networks. In *Internet Research Annual: Selected Papers From the Association of Internet Researchers Conference, 2004* (Vol. 3, pp. 91-103). New York: Peter Lang.
- Wardrip-Fruin, N. (2009). *Expressive processing: Digital fictions, computer games, and software studies*. Cambridge: MIT Press.
- Wardrip-Fruin, N. (2010). Five elements of digital literature. In R. Simanowski, J. Schäfer, & P. Gendolla (Eds.), *Reading moving letters: Digital literature in research and teaching. A handbook*. (pp. 29-58). Bielefeld, Germany: Transcript Verlag.

- Wardrip-Fruin, N., & Harrigan, P. (2004). *First person: New media as story, performance, and game*. Cambridge, MA: MIT Press.
- Watt, I. (1957). *The rise of the novel: Studies in Defoe, Richardson and Fielding*. New York: Penguin.
- Webster, F. (2006). *Theories of the information society* (Third ed.). London: Routledge.
- Weiner, M. (Producer). (2007-). *Mad men* [Television series]. USA: AMC.
- Whedon, J. (Writer, Producer, Director) . (1997-2003). *Buffy the vampire slayer* [Television series]. USA: 20th Century Fox Television.
- Wigley, M. (2001). Network fever. *Grey Room*, 04, 82-122.
- Wilhelm, R. (1989, 1923). *I Ching or book of changes*. (R. Wilhelm, Trans.) London: Penguin.
- Williams, R. (1977). *Marxism and literature*. Oxford: Oxford University Press.
- Winthrop-Young, G. (1994). Undead networks. Information processing and media boundary conflicts in Dracula. In D. Bruce, & A. Purdy (Eds.), *Literature and science* (pp. 107-129). Amsterdam: Rodopi.
- Winthrop-Young, G., & Donatelli, J. (1995). Why media matters: An introduction. [Introduction]. *Mosaic*, 28, v-xxiv.
- Wright, F. L. (1977). *An autobiography*. New York: Horizon Press.
- Wutz, M. (2009). *Enduring words: Literary narrative in a changing media ecology*. Tuscaloosa: University of Alabama Press.
- Zemeckis, R., Gale, B. (Writers), & Zemeckis, R. (Director). (1985). *Back to the future* [Motion picture]. USA: Universal Pictures.