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The New Place of Reading: Locative Media and the Future of Narrative

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Abstract

Locative technologies hold out the promise to transform literary space in all of its dimensions, including its represented spaces, reading interfaces, and the very spaces within which literature is produced and consumed. Yet, despite the growing use of location-based technologies, authors and readers alike have been slow to take to site-specific narrative due to limitations inherent in both the current design of locative media systems and our received notions of what constitutes the narrative experience.

This paper argues that new mobile reading platforms in general are altering conceptions of literary space in highly conflicted ways, by radically expanding the sites where narratives can be accessed and experienced even as they reinforce a residual notion of literary reading as a sedentary and decontextualized experience. Locative media likewise hold out the promise of increased mobility and contextual awareness, but confront several cultural and technological factors preventing such an enhanced emplacement of narrative, factors that current performance-oriented approaches cannot fully address. At the level of cognitive engagement, the conditioned expectation of being "transported" to a remote fictional world interferes with readers' appreciation of the locative narrative's close ties to the real world, as well as the contextual effects it elicits by means of transportation through the actual world. At the technical level, the discontinuous algorithms of place that inform the architecture of most locative media systems hinder the perception of narrative patterning and flow across more extensive spaces.

Locative media thus operationalize the spatial tension between conventionally sedentary modes of literary engagement and new modalities of mobility, a tension that is constitutive of our present mediality. The study concludes with a discussion of StoryTrek, a next-generation locative hypertext system designed to enable more complex, dynamic and fluid modes of embodied narrative spatiality. By encouraging the user to actively form complex narrative links between real and fictional spaces, StoryTrek enables utopian forms of spatial play that neutralize both the spatial limitations of current locative media design and the sedentary reading practices that continue to structure the experience of digital literature.

The Changing Spaces of Reading

Prognostications about the future course of technology will inevitably seem quaint in hindsight, but if the current convergence of handheld mobile devices, location-based services and eBook readers continues, then the future of reading will be less a matter of time than a matter of space. For well over a decade, artists and authors like Kate Armstrong and Teri Rueb, interactive audio installations like *Urban Tapestries*, *[murmur]*, *textopia* and *34 North 118 West*, and alternate reality game designers such as Blast Theory and 7scenes, have all successfully integrated locative media with narrative experiences in ways that challenge our very definitions of the literary. As artistic practice, locative media represent a productive hesitation between literary fiction, documentary, audio-visual installation, and site-specific theatrical performance; as cultural practices, they are located in the everyday sites of commerce and leisure within both natural and built environments, at the crux of the user's public and private identities. Site-specific digital literature is thus perfectly situated to engage large audiences who already adopt locative media for other purposes, including the massive global geocaching and alternate reality gaming communities, those who daily use GPS-enabled applications for activism, flash mobs and other civil disturbances, and anyone who uses new mobile location-based apps and services for shopping, wayfinding, tourism or recreation. Add to this install base the millions of book lovers who are embracing the explosion of popular mobile reading formats and platforms for eBooks and audio books, and the potential audience for locative narrative seems vast indeed.

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And yet, the growing use of location-based technologies in a wide variety of social contexts has not produced a sizeable audience for locative media storytelling. Locative narrative, like literary hypertext, remains an avant-garde and coterie practice, still largely unknown as an artistic medium, let alone as a popular fictional genre. Authors and readers alike have been slow to take to site-specific narrative due to limitations inherent in both the current design of locative media systems and our received notions of what constitutes a narrative experience. Even literary critics who take notice of locative texts have tended to underplay the medium's affinities with conventional literary narrative and apparently natural precedents such as epic poetry or the literature of place, choosing instead to trace the evolution of locative media from modes of cultural engagement having no necessary narrative content, such as games, psychogeographical "situations" or site-specific theatre. Locative theorists have de-emphasized the medium's narrative dimension while attending to its lyrical, archaeological and, most significantly, performative dimensions. For example, both Chris Eaket [Eaket 2008] and Rita Raley have rightly argued that locative media, like cybertexts generally, demand heightened degrees of performativity from their users, whom Raley describes less as readers than as embodied, multimodal "participants": "critical engagement [with mobile narrative] requires a range of cognitive and bodily activities, only one of which is reading in the sense of the visual processing of linguistic signs. That is, reading in the physical environment particular to mobile media quite often also involves seeing, moving, listening, touching. Participating in a mobile narrative is then precisely that — physical participation that is also understandable as performance" [Raley 2010, 303]. Raley's description perfectly captures the total environmental involvement demanded by many locative artworks, and also suggests an explanation for their lack of popularity, since literary enthusiasts are still more likely to approach reading as a sedentary mental activity at odds with the modes of embodied interactivity popular among gamers and geocachers. As empirical studies of hypertext users have shown ([Miall & Dobson 2001]; [Pope 2006]), not everyone wants to be forced to perform their own stories.

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Performance-oriented approaches can account for the uniquely embodied interactivity of locative media, but do less to account for the conventional features of printed literature which they retain, including a primarily textual emphasis; a narrative arc; a reliance on novelistic discourse, focalization and identification; and, most significantly for the present discussion, the experience of being "transported" to a fictional world, a phenomenon that occurs only in narrative media [Green et al. 2004, 313–4]. Understood as the cognitive and emotional process by which readers become absorbed into fictional worlds, *transportation* has been empirically demonstrated to operate through a complex blend of effects that depend on a reader's attention, awareness, identification and affect, but is usually explained by analogy to physical travel. In order to be transported to a fictional world, it is said that a reader first has to leave the real world behind: "At the core of the metaphor of being transported lie readers' subjective reports of having left the real world behind when visiting narrative worlds" [Gerrig 1993, 157]. Young readers are trained from an early age to inhabit printed fictions as spaces framed off from the real world, and to focus attention on these represented spaces while detuning their real-world contexts of reading. Even literary critics rarely attend to the relation between the settings and chronotopes (or time-spaces) represented within narratives, and those actual spaces in which readers are themselves situated.

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Because the metaphorical departure is experientially real, narrative transportation can interfere with the new mobility enabled by digital reading devices. The reader of a printed text might have to leave the real world behind in order to be transported to a fictional world, thereby "los[ing] access to . . . the world of origin" [Green 2004, 248]; but with locative narrative quite the opposite is true, as being transported to the fictional world is literally dependent on transportation through the real world. This study argues that locative media hold out the promise of an enhanced mobility and situational awareness, but fail to overcome the expectation of conventional narrative transportation that continues to structure narrative worlds as spatially contained and isolated from the real world. The readerly detachment experienced at the level of cognitive engagement is reinforced at the technical level by the discontinuous algorithms of place that inform the current design and implementation of most locative media systems, and which prevent users from narrativizing their physical environments. Far from representing "a challenge to the hegemony of words" [Raley 2010, 303], then, locative narratives mobilize printed literature's traditional mode of decontextualized engagement within new spatial contexts in ways that often interfere with the performance of place, foregrounding the productive tension between the traditional experience of fictional transportation and new modalities of mobility that constitutes our present medial condition. I conclude by describing StoryTrek, an innovative system for the authoring and reading of location-based narratives designed to elicit controlled artistic effects from the spatial tension between conventionally sedentary modes of literary engagement and more dynamic, continuous and complex models of spatial interaction. By putting both conventional literary transportation and new locative mobilities into play, StoryTrek neutralizes the tension between them, and opens a space for newly emergent narrative media.

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The Contexts of Mobile "Reading"

Although the mobile revolution certainly provides the broader context for locative media [Raley 2010, 301], neither the increasing familiarity of location-based services and mobile applications nor the growing popularity of reading apps for mobile devices have done much to enhance the popularity of locative storytelling. In fact, new eBook and audio book formats remediate reading habits and assumptions associated with printed literature that prevent a broader recognition of the literary potential of locative media. New eBook and audio book platforms are altering conceptions of literary space in highly conflicted ways, by radically expanding the sites where narratives can be

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accessed and experienced, even as they reinforce a residual notion of literary reading as a sedentary experience that "transports" the reader to a fictionalized space removed from the actual world. The case of audio books helps to demonstrate why new mobile reading platforms have done little to promote the wider adoption of locative narratives. The comparison is informative, as the majority of successfully implemented locative narratives to date have used portable audio devices tied to GPS receivers to trigger playback of pre-recorded story segments as the user approaches certain geospatial coordinates. This technical modality, which tends less toward literacy than a "second orality" [Ong 2002], has encouraged the emphasis on performativity in critical approaches to the locative.

An audio delivery format allows users of locative media to safely navigate the physical environment while building upon their personal engagements with popular mobile audio listening technologies. Portable audio books, including recordings of literary recitations as well as eBook devices that support mp3 format or text-to-speech, are enabling a culture of ubiquitous mobile (if not location-aware) "reading." Many now listen to audio books while walking, driving, mowing the lawn, or performing other activities not traditionally associated with reading. In a study of the effect of portable mp3 players on how people listen to music, Michael Bull characterizes the iPod as a device that enables the "accompanied solitude" of the individual listening experience combined with social proximity, providing listeners with "an intoxicating mixture of music, proximity and privacy whilst on the move" [Bull 2005, 343, 344]. He stresses that the same portable technologies that bind users to consumer culture also provide a background accompaniment to the "personalised narratives" they create while moving through their daily lives in order to aestheticize and bring sense to the unpredictable and chaotic urban environment, "spaces of freedom" within the culture of capitalism that help to manage individuals' utopian hopes and desires [Bull 2005, 351, 346–7]. Bull describes this activity as largely non-interactive, since the iPod enables a user to become absorbed in self-created narratives while detuning one's immediate surroundings, so that the "disjunction between the interior world of control and the external one of contingency and conflict becomes suspended" [Bull 2005, 353]. In this way, new recording and playback media are changing not only the customary spaces of listening, but the entire auditory experience.

If listening to music while strolling through the city allows individuals to reorder the contingency of the streets, the immersive attention and cognitive overhead required to follow and become lost in a previously scripted narrative are likely to preclude the creation of the sort of personalized narratives that Bull describes. Audio books likewise absorb the user into an alternate space, but it is a represented space that is less easily connected to the auditor's external environment. They offer a more complete detachment from capitalized urban space than that which Bull observes among music listeners, encouraging an even deeper withdrawal from communal space into a private literary realm.

In her pioneering study of audio books, Deborah Philips emphasizes that although iPods and similar devices allow literary texts to be experienced in the company of others, "[t]he literary culture that has been harnessed by that market remains strikingly unchanged by the technology. . . . [W]ithin the world of the audio book, the stratifications of high- and lowbrow, the 'classic' and 'popular' fiction remain stable," preventing a broader democratization of literary culture [Philips 2007, 299, 303]. Audio books have failed to produce new literary genres that exploit the dynamic, interactive, multiplayer and performative features that are so integral to the experience of hypertext literature, videogames and social media: "The websites and marketing materials for audio books make very little of the ways in which an audio book is a different commodity from a printed text" [Philips 2007, 300]. Whereas the downloadable mp3 track has changed not only listening conditions but also music production, fragmenting the album format for easier download and optimizing the musical composition itself for smaller headphones, the vast majority of audio books exist as spoken versions of printed texts — perhaps abridged, but otherwise unaltered in their linear structure, content and interactivity.^[1]

Locating the eBook

It is not surprising, then, that the coming of the eBook should be compared to the mobile audio revolution of recent decades: Amazon's Kindle eBook reader was hailed upon its arrival as "the iPod of books" [Pressman 2007], while recent months have brought widespread speculation about whether Apple's iPad will transform the book publishing industry in the same way the iPod revolutionized the music industry [Evans 2010, 8]. As with audio books, the mass appeal of eBooks is predicated precisely on their portability and ease of reading on the bus, the beach, in the coffee shop or in bed (even if their expense still makes reading in the bathtub a risky undertaking). As consumer technologies, eBooks are positioned within the general shift towards mobility, promising increased access to literary texts worldwide while making large personal libraries portable for ubiquitous access. The Amazon Kindle, Barnes and Noble Nook and iRex DR800SG e-readers all allow users to purchase and download books from anywhere with cellular reception, greatly multiplying the sites of literary distribution. Amazon expressly markets its Kindle reader as a device for collapsing distance: "Our vision for Kindle is to have every book ever printed, in every language, available in 60 seconds from anywhere on earth" [Amazon.com]. At the same time, its portability promises to increase the user's mobility: "You can send your documents directly to your Kindle and read them anytime, anywhere" [Amazon.com]. This expanded mobility reflects the demands of an increasingly flexible and globalized "creative economy," in which spaces of production and consumption blur, and both work and leisure become increasingly subject to time- and space-shifting. The very name of Amazon's new eBook reader software for Windows, Kindle Everywhere, cloaks the corporate goal of total market penetration in the usability ideals of ubiquity, interoperability and democratic access.

While eBook devices are already affecting production methods and distribution channels, there is less evidence of radical change in how literature is consumed. eBook readers arguably lend literature an expanded mobility, increasing the range and density of textual dissemination and reception, but do not fundamentally change how readers relate to and interact with these newly expanded sites of reading at the associative or cognitive levels. Even as they embrace digital media's portability and ease of dissemination, current eBook hardware and software are radically altering literary space at the levels of access and storage, while attempting to remediate the relative permanence and stability of conventional printed literature at the level of interface, content and experience. eBook readers are currently designed and marketed to remediate the form, scale and experience of a printed novel as closely as possible. These eBook readers take extraordinary measures to approximate the look and feel of a printed book. The Bookeen Cybook, for instance, features a wifi-enabled, grayscale e-ink display in a pocketbook format, bound together in a genuine artificial leatherette binding designed to emulate "the look and feel of tree flakes encased in dead cow" [Mitchell 1996, 56]. The iRex iLiad uses a metal bar to emulate the action of turning a physical page (moreover, you have to think of it this way to turn the page in the right direction, as clicking forward will by default move the story backwards). Even the Stanza iPhone app features an elaborate visual and haptic simulation of a turning page. Although implemented to enhance usability, these conventions inherited from the print medium in fact constrain the user's notion of what reading ought to be. In so doing, they hide the fact that reading in the digital age no longer need, or generally does, look anything like the solitary, sedentary and immersive practice demanded by printed books.

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Megan Benton has traced this social obsession with the look and feel of the printed book to the 1920s, showing how books became especially important in this period as signifiers of cultural capital. At this time, she observes, there were two kinds of Americans: those who valued books for their own sake, and those who treated them as "things," commodities to provide amusement or impress the neighbours, like a new radio or automobile. In a growing commodity culture, spawned by new industrial methods and advertising, editors, publishers and critics took notice of what some called "domestic bookaflage," the selection and presentation of books in one's home so as to project the cultural persona that others would perceive [Benton 2000, 17–20]. However quaint such notions may seem today, the fact is that Cybooks, Kobos and Kindles are all so much domestic bookaflage, updated for digital consumers; only instead of acting as camouflage for a lack of literacy, eBook devices disguise our contemporary *hyperliteracy*, our constant engagement with reading and writing across new media and modalities in new spaces and social contexts. As Katherine Hayles has shown, the idealized detachment and disembodiment of the literary experience results from a long history involving social and legal definitions of literary work and property. The kind of close, immersive reading that has come to define both scholarly and casual engagements with "the literary" demands a certain detachment from one's own immediate, embodied setting, and disconnection from the world of commerce and mere "information" [Hayles 2005, 143–7]. Current eBook readers are designed to remediate this conventional experience of disconnection, encouraging transportation while carefully curtailing the kinds of connectivity and situational awareness that characterize other mobile devices.

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eBooks do not change existing conceptions of literary space so much as they extend them outside of traditional reading settings. Mobile devices have radically altered the sites at which people read while not only continuing to ignore the user's context and situation in the world, but promising to overcome it entirely through ubiquitous product distribution. eBooks, like audio books, do not generally connect narratives to new locations or change the spatial contexts of reading so much as they recreate this learned sense of disconnection, encouraging mobile readers to decontextualize and "leave behind" ever more real-world locations. Even when taken on the road, narratives experienced on Kindles and iPods reproduce the sense of "placelessness" demanded by immersive reading, setting them apart from the growing number of mobile apps that use GPS or wifi to sense the user's location in order to provide contextually specific and geographically relevant information. For instance, LibraryThing's Local Books app for iPhone will find libraries, bookstores, literary readings or book fairs near the user's current location; by contrast, neither the eReader Pro, Stanza nor iBooks reading apps offer any locative awareness, all tending instead to enable conventional immersive reading in ways that obviate the effects of locality. Ignoring one's immediate context while engaging in immersive reading allows a reading subject to ignore his ephemeral, quotidian or grossly material historical and geographical situation, while attending instead to supposedly "timeless" literary knowledge and values. Gutenberg elegists may bemoan the rise of "distracted" modes of reading encouraged by online news sources, blogs, twitter feeds and other social media, but eBooks still await the "casual" revolution that will liberate them from the constraints of literary transportation, and reconnect them to the world of information.^[2]

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The Place of Reading and the Reading of Place

Locative narratives provide precisely the interactive and performative element that is currently missing from eBooks and audio books, which may explain why they have not gained a wider appreciation. To begin with, most locative narratives must be experienced *in situ*, running directly counter to the model of mass dissemination that governs both printed literature and eBooks. Of course, it is precisely this site-specificity and contextual awareness that give locative narrative the potential to utterly transform our understanding of literary space. As Jeremy Hight puts it, locative media allow us "to move narrative from the printed page and literary journals to alternate spaces and new possibilities of dissemination, audience and community. Publication now can be signal, air, a spot of land. It can be on maps, and it can be only transcribed by a person as they move. . . . 'Place' is semantically read more as a point,

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a specific designation or end point, while 'space' is read more as an open area, place of storage, an area to be filled" [Hight 2010, 322]. While Hight evokes the expanded catalogue of narrative locations enabled by locative media, his distinction between isolated "places" and extensive "spaces" only emphasizes what I argue to be the locative's most serious technical limitation. Most locative systems function only within specified locales, and are furthermore designed to respond to relatively isolated geospatial coordinates. Anne Galloway rightly warns that it is "impossible to reduce locative media to discrete (or stable) objects of computation, or to singular representations" [Galloway 2010, 30]; nevertheless, it is fair to say that most locative apps and artworks alike remain technically limited to a punctuated model of spatial interaction. Locative systems typically provide set feedback at specific coordinates on the model of geospatial tagging, leaving the user to infer the spatial and narrative connections between isolated points of interest (POIs), a design model they share with the commercial navigation systems that guide users to their destinations through turn-by-turn directions by way of rest stops and service stations. By breaking down our subjective experience into easily commodifiable atoms of time-space, and positioning us in relation to local sites of commerce and exchange as tokens of our medial progress, such devices allegorize our contemporary obsession with the here-and-now, and our inability to perceive any socio-political organization beyond capitalism.

Likewise, most locative narratives function by connecting discrete narrative moments to specific points on the grid, such that audio clips or text lexia are activated whenever a user reaches a particular location. The system knows where the user is at any given moment, but does not understand how she got there, or the implications of her particular path, approach, or style of navigation. Such works tend to privilege the node over the edge and site over duration, presenting not a story so much as a tour of disconnected sites.^[3] While users will inevitably perceive connections between the narrative segments triggered at distinct waypoints, such locative systems do little algorithmically to encourage either their authors or readers to make these schematic connections more explicit. They are incapable of responding to more complex patterns in the user's physical context, ever-changing style of motion, or embodied interactions with the environment. Just as reading practices inherited from print literacy continue to encourage readers to disconnect the fictional narratives they read from their actual spatial environments, so design conceptions borrowed from navigational and location-based services limit the interactivity, responsiveness and spatial awareness of locative narratives.

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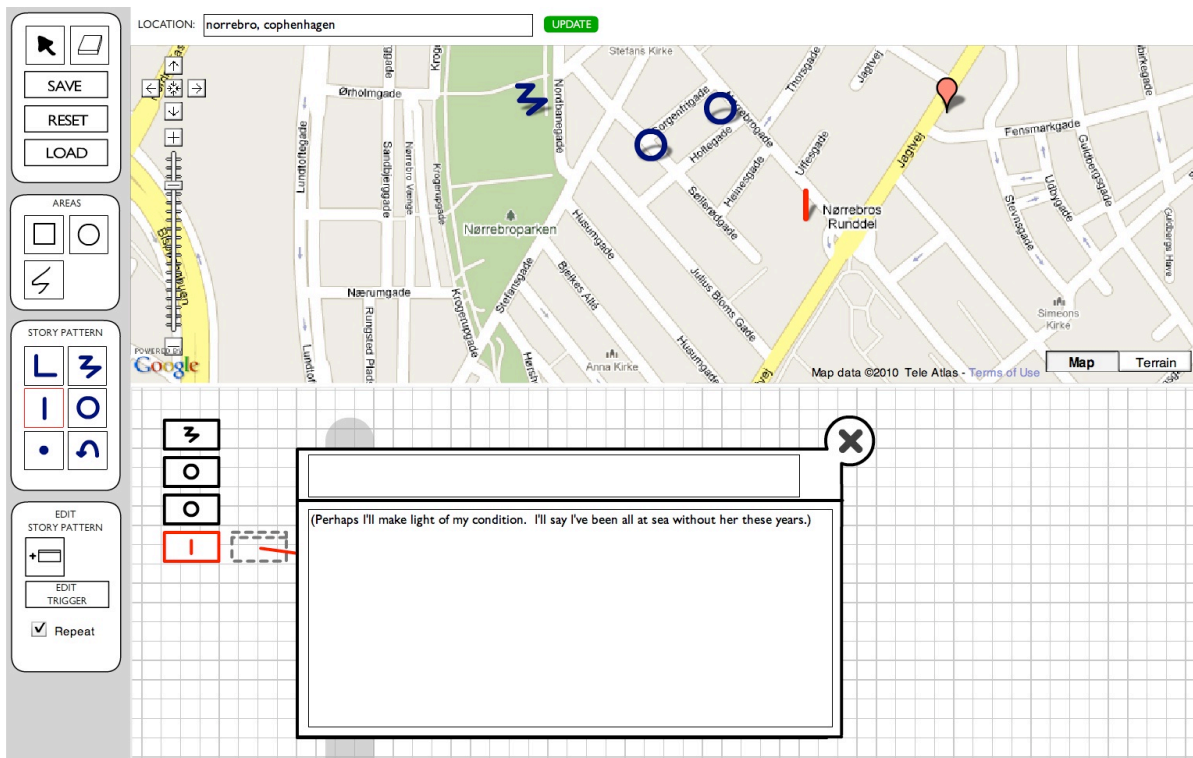
This situation is beginning to change, with locative works like *InterUrban* [Spellman & Knowlton 2004], *URBAN ENCOUNTER* [Giles et al. 2009] and *The Interpretive Engine for Various Places on Earth* [Knowlton et al.] offering a narrative experience that taps into the dynamic, context-specific and communal sensibility enabled by new networked media. In the same spirit, we have developed StoryTrek, a prototype authoring and reading tool for locative hypertext that breaks out of the design specifications currently limiting site-specific narrative. Our system represents a departure from the "waypoint and graffiti" model of interaction offered by most locative and augmented reality applications. Such applications know where you are at any given moment, and can provide information about your immediate surroundings - the digital equivalent of a road sign or memorial plaque - but have no idea how you got there or where you might go next.

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Instead of linking geospatial points to static narrative segments, the StoryTrek authorware enables the creation of spatial stories that respond in real time to the vector of the user's physical movement and ever-changing geospatial context, providing narrative patterns matched on-the-fly to the user's location, route and style of navigation. The authorware enables the creation of locative narratives, or *storytreks*, by layering story patterns (inspired by Mark Bernstein's structural "patterns of hypertext" [Bernstein 2003]) over Google maps, while the reading tool tracks the user's physical movement through these areas, matching her motion pattern with any number of relevant story patterns. Users navigate our system simply by walking through an urban or natural environment with a GPS-enabled mobile device in hand, while the story follows along, tacking and turning in response to the reader's unstructured motion. With conventional hypertext narratives, readers can to some extent direct the path of the story by choosing from a series of in-text hyperlinks, although numerous theorists have questioned the degree to which the reader is actually freed to choose his own path, rather than merely choosing from among multiple rails laid down by the author. StoryTrek frees readers from the confines of the link, setting them loose to follow any path in the world while the story tags alongside, transforming the act of linking into an even more eventful, agential and contextualized process.

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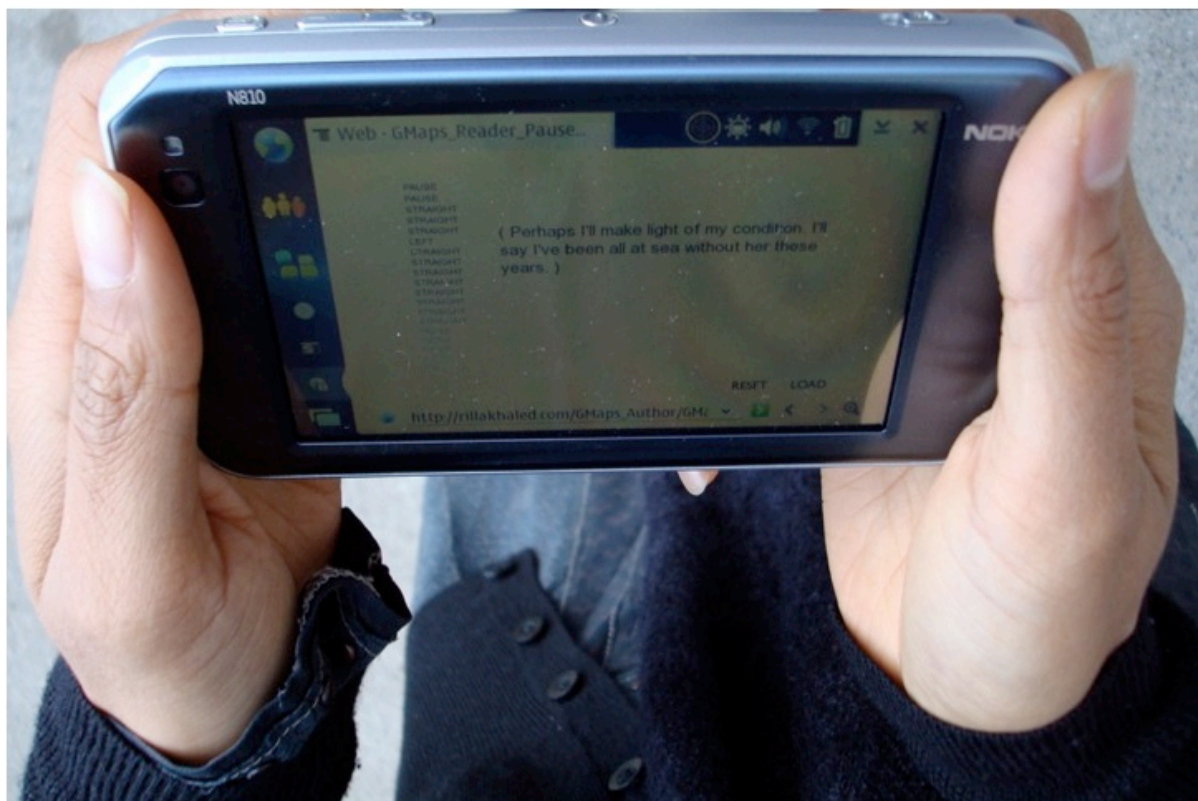
Figure 1.



The StoryTrek Authorware.

For our initial test implementation, Pippin Barr of the IT University of Copenhagen created *Crisis 22*, a suspense/horror narrative that focuses on a character's repeated experience of a traumatic event enacted through space, in homage to Michael Joyce's *afternoon: a story* [Barr 2008]. This surreal love story documents the inner turmoil and regrets of a solitary narrator as he wanders through a landscape that appears realistic and allegorical by turns. As you move forward through the streets, the system returns a present-tense narrative of walking through a city toward a rendezvous. Turning around and backtracking in this particular storytrek fills in the protagonist's backstory, while turning away from a straight path yields digressive actions taking place around him. Pause, and the system knows that you are lingering, and triggers an interior monologue. Wherever you decide to go, the system presents a coherent but dynamically changing narrative cued to your relative location and movement. The narrative experience arises from the interactions of the story's internal logic with the reader's immediate physical environment and activity over time.

Figure 2.

Pippin Barr's *Crisis 22*.

Crisis 22 was built atop a Google map of Carleton University in Ottawa, but its fictional and functional settings are ambiguous. Unlike other locative systems tied to specific geospatial coordinates, our system is designed to respond to narrative and navigational patterns, allowing stories produced and set in one particular location to be experienced in any given place the user happens to be. This unique locational layering feature allows specific locative narratives to be widely disseminated and experienced by users in a variety of spatial contexts, greatly enhancing the medium's mobility over "place-bound" approaches [Løvlie 2009]. It also multiplies the story's settings: the fictional setting of the story, the implied geophysical setting for which it was originally produced, and the specific user's physical context all interact to produce an entirely new kind of narrative spatiality. In her survey of the various uses of maps in digital narrative, Marie-Laure Ryan describes four different types of textual spaces upon which hypermedia literature relies: the space of the textual world; the spatial architecture of the text; the material space of the textual representation; and the spatial environments in which the texts actually reside, be they in libraries or in databases [Ryan 2004]. These levels are not strictly hierarchical, and frequently overlap even in non-adaptive hypertext narratives. They can also be further subdivided: for instance, the space of the textual world combines the various spatial attributes of language with the conventions governing narrative chronotopes, while the material space of the textual representation comprises the spatial attributes of the interface along with the semiotics of iconography, typography, spatial layout and page design. In practice, StoryTrek foregrounds the interfaces and overlaps between all of these spatial levels, moving between questions of how space gets into narrative and how narrative gets back into space.

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StoryTrek has significant implications for the authoring and structuring of locative media, for the concept of the link, and for the "worlding" effects of digital narrative and games. The system repurposes readerly disorientation as the basis for a richly contextual experience, transcoding the navigational barriers of conventional hypertext (random jumps, drifting, backtracking, and so on) into a meaningful form of input. This sense of embodiment and agency at times enhances the user's experience of narrative immersion: after all, walking is a natural form of interactivity that tends not to interfere with the user's immersion in the story world to the degree that interacting with a mouse does. And yet, traveling with StoryTrek does not always make it easier to become lost in a fictional world, as when reading a novel on a train; on the contrary, our preliminary observations suggest that novel and unexpected effects occur as the user "toggles" her attention between the storyworld and the real world. Qualitative user tests reveal that when the represented space of the textual world corresponds closely to the actual spatial environment of the text, it sometimes functions as a welcome navigational aid that encourages narrative immersion and conventional transportation, while at other times proving highly disorienting and disruptive to the immersive experience. The system complicates and redefines spatial description, spatial deixis, focalization and identification, processes that are not fully understood even where printed narratives are concerned.

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StoryTrek constantly raises tensions between real and represented spaces; for instance, some users who wanted to

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emulate the spatial action of the story were prevented by busy road traffic or impassable physical terrain. These users reported real anxiety and frustration at this inability to enact the story bodily, one mark of the tension between habitually sedentary reading habits and the emergent performativity of locative media. Our system requires readers to abandon their decontextualized reading habits and develop new strategies for linking real and textual spaces. Catherine Emmott has shown that readers construct "mental representation[s]" of the "spatio-temporal context[s]" of narratives by combining general knowledge of the world, in the form of "basic perceptual schema about how the world works," with "text-derived" knowledge [Emmott 1998, 177]. We have observed StoryTrek users drawing on perceptual cues of their immediate environment as a third source of knowledge about the story, using phenomenal data about the world around them to help fill the "gaps" in the fictional world. Users have playfully identified passers by with characters in the story, an imaginative repurposing of serendipitous encounters that Bull also documents among iPod users [Bull 2005, 351]. We have witnessed StoryTrek users run away from invisible threats, join a group of children at play when "instructed" to do so by the text, and even dip a toe in the nearby river to engage with the story while testing how responsive the system is to her specific location and actions. These embodied performances add a new dimension to the act of narrative linking, and present an alternative to the aesthetic of fragmentation and montage characteristic of so many hypertext narratives.

Figure 3.



Sarah and Celine read *Crisis 22*.

Figure 4.



Celine tests the boundaries of StoryTrek.

From Spatial Play to Spatial Politics

This simple act of dipping one's feet has far-reaching implications for digital narrative. According to Ryan, readers of conventional narratives tend to operate through "the principle of minimal departure": except where explicitly told otherwise, readers will assume that the fictional world closely resembles their own world — that the fictional sky is blue and that humans need to eat and breathe [Ryan 1980]. StoryTrek readers tend to follow a different principle, attempting to forge unusually close links between the real and fictional worlds, yet without necessarily leading to either immersion or the one-to-one mapping characteristic of conventional realism. Instead, meaning is created through the reader's self-conscious linking of different layers of space and context. If conventional transportation allows readers to leave their "public self-consciousness behind" [Green et al. 2004, 317], then storytreks encourage them to enact their experiences of the narrative world publicly and self-consciously. In our user tests so far, readers have gone out of their way to create interpretive links between the text and the real world and to perform them publicly, binding their reading experiences to those of a larger community of users. Green et al. assume that readers require a strict boundary between the real and represented worlds in order to be transported, noting that where situational factors affect narrative transportation at all, they primarily do so in negative ways. Real-world distractions can call a reader back to the real world, just as negative environmental factors may encourage a reader to escape to a fictional world [Green et al. 2004, 321]. Green et al. project that new media could enhance transportation

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to a fictional world [Green et al. 2004, 321]. Green et al. project that new media could enhance transportation through interactivity, but only by allowing users "to easily leave their physical and psychological realities behind and become fully immersed as an active participant in the narrative of an alternate, 'virtual' reality" [Green et al. 2004, 323]. However, our experience with StoryTrek shows how real-world factors might well produce an enhanced form of transportation that allows readers to keep one foot in the real world (if not always in the river).

Janet Murray has argued that in artistic representations, "[t]here is a discomfort in not knowing the limits of the illusion," and that the experience of immersion in a fictional world is maximized by the "combination of tremendous immediacy with a clearly demarcated border," the "digital equivalent of the theater's fourth wall" that "will allow us to surrender to the enticements of the virtual environment" [Murray 1997, 120, 103]. StoryTrek denies such surrender to an immersive aesthetic by constantly encouraging users to cross the border between the real and represented setting, turning the discomfort of porous borders into a source of transgressive pleasure. These potentially disruptive effects raise several key design issues surrounding the spatial experience of hypertext narrative, including user (dis)orientation, navigational aids, and the relationship between cognitive, textual and virtual maps; at the same time, they can encourage the development of critical perspectives regarding the user's spatial situation within a global context. Whitson et al. have described the shift by some videogame producers away from the traditionally immersive first-person shooter perspective (which is closer to the experience of literary transportation than some dare to admit) [Whitson et al. 2008]. In order to encourage social gaming, "neo-immersive" games like those produced for the *Wii* use a combination of gestural computing and group play to emphasize the embodied nature and social context of digital gaming. Such games encourage users to divide their attention between immersion in the represented game world and interactivity with other players in the real world in a way that enriches both experiences and enables critical self-reflection. StoryTrek brings this neo-immersive aesthetic to literary narrative, using locative awareness to disrupt the reader's immersion in the story and enable a newly situated critical awareness.

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The urge to transform one's decontextualized reading into a publically performed interpretation suggests the storytrek's potential as a political and utopian art form, which ultimately may have less to do with the unfolding of time than a creative interaction with space. From its very inception, the utopian genre was less a blueprint for the perfect society than a rhetorical structure or toolkit for playing with and reconfiguring social space. As Louis Marin has famously shown, Thomas More's "minutely detailed description . . . of the [Utopian] city's space" reveals many "blind spots and empty spaces . . . the political places [of Renaissance society] that have been erased from the map" [Marin 1984, 131]. *Utopia* describes a shifting, indeterminate space in which several competing residual social structures (monasticism, feudalism, communism) overlap, effectively cancelling out or "neutralizing" one another, and thereby clearing a space for new social formations that could not yet be fully articulated in More's day.

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StoryTrek enables a similar utopian "spatial play" by permitting the reader to participate in an ergodic "point-by-point negation or canceling" of her lived social context [Marin 1984, 85], thus opening up real space to imaginary alternatives. Whereas printed utopias achieve such spatial play discursively and rhetorically, StoryTrek invites the user to enact utopian negations through a "procedural rhetoric" [Bogost 2007] that takes full-body motion as input. Readers stroll, run, leap and zigzag across their physical terrain, activating fictional worlds through their mobile devices. As is characteristic of utopian spatial play in general, these fictional worlds do not replace the real world outright with fully formed utopian alternatives, but rather engage reality in a dialectic, neutralizing it point-by-point to prepare the ground on which new social configurations might emerge. At the same time, StoryTrek neutralizes the sedentary reading practices that continue to structure the experience of digital literature: the labour of reading can no longer be described as a purely leisurely activity, but instead becomes a profoundly social act in which the reader actively and publicly forms interpretive links between her fictional and actual contexts.

24

While the StoryTrek authorware does not dictate the themes or content of the spatial narratives that users create, its emphasis on mapping and mobility encourages critical reflection on socio-cultural borders, the politics of space and travel, uneven global development, and the migration of populations, or what David Harvey calls the utopian "spaces of hope" that mediate between individual bodies, collective identities and global processes [Harvey 2000, 49]. We are currently hoping to exploit the system's potential for location-aware utopian spatial play through several ongoing projects that open rifts in space within which to imagine social alternatives. One such initiative involves the creation of an "archival atlas" of New World utopias that maps historical fictions, photos, plans, blueprints and visionary descriptions of urban spaces onto actual geospatial sites. By turning national archives inside-out, liberating these forgotten and dispersed literary traces from their storage boxes, we hope to infuse geographical sites with historical context - in particular, the indigenous, immigrant, environmental, and other "minor" histories effaced by imperialism and the project of modernity. We are using the city streets themselves as a *dialectical interface* that layers residual social structures onto emergent configurations, and links historical images and accounts of social migration, upheaval and urban renewal to more recent cartographies of uprising. If locative media "involve persistent tensions between pasts, presents, and futures that make certain identities and objectives possible or probable, and others impossible or improbable" [Galloway 2010, 32], then they also present the opportunity to contour those possibilities toward social progress.

25

Other storytreks likewise engage the user in ludic explorations of emplaced social alternatives. Valerie Bherer, Cindy Ma and Elise Vist used StoryTrek to create *Isolation U.*, an Alternate Reality Game in which you play a zombified undergrad at a post-apocalyptic campus, trying to survive the fast-spreading conformity virus. The game

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combined undergrad at a post-apocalyptic campus, trying to survive the fast-spreading conformity virus. The game bears some similarities with *ZombieTruth.com* and *Zwatch.org*, collaborative alternate reality games that write an imaginary zombie virus (H1Z1) into the fabric of official government pandemic websites, in a viral exploit that piggybacks an alternate reality onto actual biopolitical databases. However, the embodied and locative dimensions of *Isolation U.* set it apart: the game uses motion-awareness to enact a physical quest that explores ideas of individual and collective agency through the symbolic landscape of the campus. As the user explores the campus, a story unfolds through the StoryTrek reader from the perspective of a newly arrived student who only wants to meet people and fit in. This fictional avatar's descriptions of the near-future campus, in which a private corporation has replaced all vestiges of traditional academic governance structures, are mapped onto the user's own perceptions of the actual campus. Walking into particular areas of campus will activate fictional advertisements for commercial products and services, or trigger encounters with corporate executives and groups of students happily consuming the recommended commodities; exploring other areas will lead to run-ins with student radicals, non-player characters who will try to convince your avatar that the university is brainwashing students through a zombie virus that compels conformity in purchasing habits. Although based on the history and geography of our own university, the game will work anywhere with functional GPS access, encouraging users to recreate the actual campus through spatial play, replacing the familiar spaces in which they live and work with contextualized, hypothetical and experiential alternatives [Greenspan 2011]. *Isolation U.* thus forces reflection on how private interests are colonizing public spaces of learning by targeting students at the very sites in which they work and play. At the same time, the game's kinetic algorithms allow users to repurpose the socio-technical networks through which capitalism and locative media alike operate, and to "win" actual geophysical space back from corporate sponsors in order to unlock the school's mystery.

Salaam Copenhagen, currently in development by Rilla Khaled and Pippin Barr, is based in the daily experience of immigrants living in Nørrebro, the largest Muslim quarter of Copenhagen. It integrates a number of narrative strands, each presenting the perspective of a particular Muslim character or avatar associated with a certain street. The user's varying movements through the streets yield different storylines that reflect the character's interactions and struggles with mainstream Danish culture, some positive, others less so. The narrative's primary goal is to help young Danish users identify with and understand the specific challenges faced by the local Muslim population, in the most embodied way possible [Khaled & Barr 2010]. We anticipate that the added agency afforded by the StoryTrek interface will make the social barriers that face the user's avatars all the more poignant. We are also planning to test this storytrek with users in other cities far removed from its fictional setting, to see how well its intercultural insights travel to other socio-political contexts.

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These narratives all demonstrate how we might give narrative direction to locative media and location-based services, instead of just taking directions from them. Galloway argues that we need to look squarely at the present of locative media in order to assess how predictions about its future can create "alliances and obligations" that realize certain paths of development while precluding other visions [Galloway 2010, 34]. StoryTrek narratives allow readers to apprehend their location within cultural, political and technical alliances, and to forge pathways toward new kinds of community. While it is unlikely that such locative narratives will soon replace eBooks and audio books or alter decontextualized reading practices, they do point the way out of the locative's emphasis on the here-and-now, and toward more embodied, dynamic, collective and multiply contextualized applications.

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Notes

[1]Although interesting advances have been made with interactive audiobooks [Röber et al. 2006], there are also signs that mobile technologies are starting to explore new conceptions of the literary. For instance, *Electric Literature*, a bi-monthly literary anthology billed as the first literary app for iPhone, features animated trailers for stories as well as Single Sentence Animations, a mode of cinematic ekphrasis in which artists interpret a single sentence from a featured author's text; and Simon & Schuster has issued similarly "enhanced" eBooks for the iPad that embed scalable video within the text. eBook publishers have yet to explore the locative dimension, however.

[2]Of course, reading is never actually a "placeless" phenomenon. New research into the cultural geographies of specific reading locales offers some evidence that the supposed "placelessness" of reading may depend upon its exact opposite: that is, privileged access to specific sites of reading as well as the leisure time in which to visit those sites. For example, in her study of the reading habits of young adults in a rural Canadian community, Paulette Rothbauer shows that for rural youth with no access to sites of reading or clear articulations to a local print culture, reading is literally a placeless activity that occurs outside of any reading community.

[3]This limitation perhaps explains the technical and conceptual reliance of rich locative narrative works such as 34N113W, John Klima's Saint Joe or Teri Rueb's TRACE on linear modes of transportation (be it subways, trains or

hiking trails) for narrative constraint.

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