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ICIDS Art Exhibition

LOOKING FORWARD, LOOKING BACK: INTERACTIVE DIGITAL STORYTELLING AND HYBRID ART APPROACHES

Carnegie Mellon ETC Press

CONTENT

INTRODUCTION

Rebecca Rouse and Mara Dionisio

Story and Art. Over time, and across different groups of practitioners and theorists, the terms 'story' and 'art' have ranged in relationship from the nearly synonymous to emphatically separate. At one point in Western art history, representational storytelling was the most aspirational mission of painting. Armed only with canvas, brushes, and paint, artists sought to portray the grand drama of human existence. Today, the artist's toolbox has expanded to include not only pigment and surface, but also digital possibilities, extending expressive realms in ways that have encouraged a myriad of transformation, as well as continuation, in creative practice.

One effect of the digital in art at large is the accessibility of tools and distribution platforms, which while not as democratizing as was initially hoped perhaps, have resulted in an extraordinary number of creative events, objects, and artworks that can be shown, created, re- mixed, and shared. And with digital tools, as with previous analog innovations, new media continue to reference, borrow, and make new out of old, or "remediate" as media theorists Jay David Bolter and Richard Grusin have described the process. For example, Frieder Nake's 1965 computer generated artwork, "Hommage a Paul Klee" makes use of this this creative borrowing from the earlier medium of painting to explore new expressive possibilities afforded by the computer.

However, there is no "story" in the example from Nake -- which is reflective of some strands of contemporary art having turned away from narrative, following a Modernist tradition particularly associated with painting, but influential on many expressive forms, from the 1920s onwards. Art critic Clement Greenberg is cited as a major figure in the Modernist movement, which continues threads of influence even today, in deployment of a medium-centric lens for justifying art creation. Greenberg and others sought to delineate between high and low art, identifying engagement with mass culture and representationalism as 'kitsch,' whereas abstract art that purported to exist only to exemplify the essential qualities of the medium was true art, or 'avant- garde.' While important in identifying an alternate path for artists, particularly for painters in the face of the rise of photography, Greenberg's and the Modernists' influence has reverberated across multiple mediums, creating a divide between high art (abstract) and low art (representational) that has in some ways marginalized storytelling.

Nevertheless, storytelling as a communication means and an expressive art form persists, reinventing itself in each new medium that arises, taking on new forms and producing new genres, and new audiences. In recognition of the centrality of storytelling to human existence, and the new opportunities afforded to storytellers with interactive digital technology capabilities today, the International Conference on Interactive Digital Storytelling (ICIDS) is entering the start of its second decade. ICIDS brings together artists, engineers, scientists, theorists, and historians to explicitly focus on storytelling through a variety of interactive digital media and approaches. The conference has developed over the past decade to include not only a traditional conference paper track, with demos and posters (published as proceedings in Springer's Lecture Notes in Computer Science series) but also an Art Exhibition.

Since 2013, the ICIDS Art Exhibition has been chronicled online, as well as documented in a printed catalogue (links to previous exhibition websites are appended below). This volume documents the 2017 exhibition, held in conjunction with the

ICIDS conference at M-ITI Madeira Interactive Technologies Institute, Funchal, Madeira, November 14-17, 2017. This volume represents the first time the ICIDS Art Exhibition catalogue has been published, and it is also the first time the catalogue has been expanded to not only document the work presented, but also collect textual scholarship from a subset of the artists involved, reflecting on a range of challenges and questions in the field. The blended nature of this volume, including contributions across traditional scholarship and theory as well as research-creation art practice helps to expand notions of knowledge production by highlighting and bringing together these multiple approaches in the interactive narrative field. In addition, the wide range of creative works exhibited here pushes the boundaries of what 'counts' as interactive narrative. These two moves toward expansion (expansion of what research means; expansion of what is defined as interactive narrative) are meant as productive and generative provocations for the field.

The 2017 exhibition's theme of Time&Tempo encouraged artists to explore the time-based qualities of interactive narrative, user rhythms, and storytelling themes that incorporate history, time travel, and other playful engagements with time. 'Tempo' in Portuguese means 'time.' However, the word 'tempo' came into English by way of Italian, tracing all the way back to the Latin 'tempus' -- meaning 'time.' Initially used to describe the timing of music, tempo is also used to refer to pace or speed in general. The 2017 exhibition documented here highlights the eleven selected works that engage the concepts of Time & Tempo across disciplines, languages, cultures, technologies, and histories.

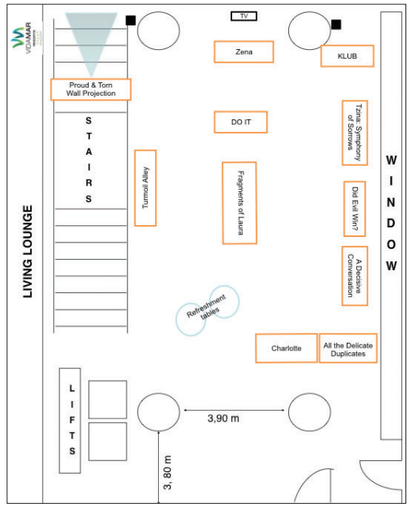
To give an overview of the exhibition selection process, all submissions received were reviewed independently by three members of the selection jury, after which each submission received a meta-review analysis from the curators. Submissions were scored across the following categories: Creativity, Strength of Concept, Relevance to the Theme, Feasibility, and Durability. Scores were averaged across all reviewers for the meta-review and final decision. We are deeply indebted to our Jury Members for their invaluable assistance in this process:

Maria Engberg – University Malmö
Arnau Gifreu – University of Barcelona
Hartmut Koenitz – HKU University of the Arts Utrecht
Alex Mitchell – National University of Singapore
Ben Samuel – University of New Orleans
Suzanne Scott – University of Texas at Austin

In developing the catalogue into the larger, published work presented here, artists from the exhibition were invited to submit longer, scholarly texts addressing current challenges and opportunities in the field of interactive narrative. We have grouped these texts, along with the catalogue entries describing the exhibited works, into three themed sections: Digital Poetics and Literature; Digital Cultural Heritage; and Urban Space and Politics. We provide a brief introduction at the start of each of the three sections to help contextualize the works for the reader, and the volume concludes with a postscript reflecting on the book design process from graphic designer and layout artist, Jana-Lina Berkenbusch.

To provide some context for readers who were not present at the art exhibition in November 2017, we share here images from the exhibition event, as well as a layout diagram that illustrates the manner in which the artworks were displayed.

Exhibition space from above during opening reception.



Layout diagram of exhibition space at VidaMar Resort, Funchal, Madeira.

Exhibition crowd during opening reception.

Small group of exhibition attendees discussing work displayed.

In conclusion, as curators we have chosen to move in this new direction with publication of the catalogue and accompanying scholarly texts to not only enable a wider dissemination of the works, but also in recognition of the emergence over the past decade of ICIDS (and the Art Exhibition in particular) as a hybrid space, or generative platform for integrated art practice, new technology, scientific research, and critical reflection. This evolution of the ICIDS Art Exhibition is in step with a larger trend globally toward an understanding of artistic research creation as a set of deeply entangled, interdependent processes that combine art practice, scientific research, and critical scholarship [Gosselin 2006; Hirt 2008; Cisbani 2014; Chapman et. al. 2015]. We hope this new initiative in the form of published proceedings for the ICIDS Art Exhibition encourages artists, scholars, and curators who are facing the challenges of navigating this hybrid space by sharing examples of projects, lessons learned, and critical writing reflective of both the field's histories, and emerging directions for the future.

Acknowledgements

We wish to express our thanks to Jana-Lina Berkenbush for the design of this volume, and Drew Davidson and Brad King for supporting this exciting new partnership with Carnegie Mellon ETC Press. In addition, we also thank the ICIDS 2017 organizing committee: Valentina Nisi, Ian Oakley, and Nuno Nunes.

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Documentation of Previous ICIDS Art Exhibitions

[ICIDS 2013] Art Exhibition Theme: Connecting Narrative Worlds
URL: http://gamesandnarrative.net/icids2013/exhibition

[ICIDS 2014] Art Exhibition Theme: Remembering/Forgetting
http://narrativeandplay.org/icids2014/exhibition.html

[ICIDS 2015] Art Exhibition Theme: Fragmentation
http://icids2015.aau.dk/exhibition/

[ICIDS 2016] Art Exhibition Theme: Field of View
http://icids2016.ict.usc.edu/exhibition/

[ICIDS 2017] Art Exhibition Theme: Time & Tempo
https://icids2017.m-iti.org/?page_id=865

SECTION 01
DIGITAL POETICS AND LITRERATURE

Rebecca Rouse and Mara Dionisio

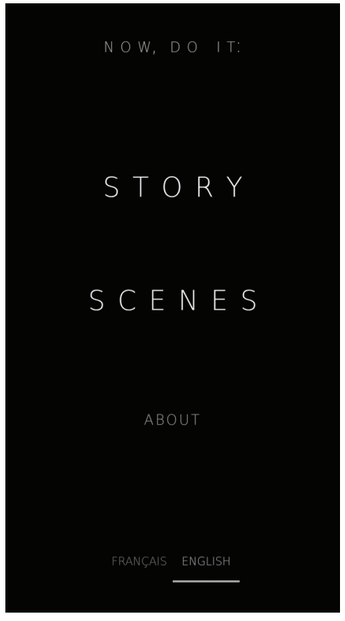
Reflecting the embodied turn in digital practices, with emphasis pulled away from the screen and instead focused on the relationship between bodies both human and non-human, these works of digital poetry and literature provide the reader/enactor with an experience that is both textual and physical. Serge Bouchardon's mobile application "DO IT" builds both on poetic and longer-form text storytelling, in combination with performative directives suggested to the reader, which must be physically enacted to advance the narrative. Bouchardon reflects further on the role of gesture in the digital reading experience in his accompanying chapter "Digital Literature: A Gesturality Specific to the Digital?" which discusses the role and nature of gesture in meaning-making in digital literature, as well as related digital literature strategies of defamiliarization, dislocation, and polysemy.

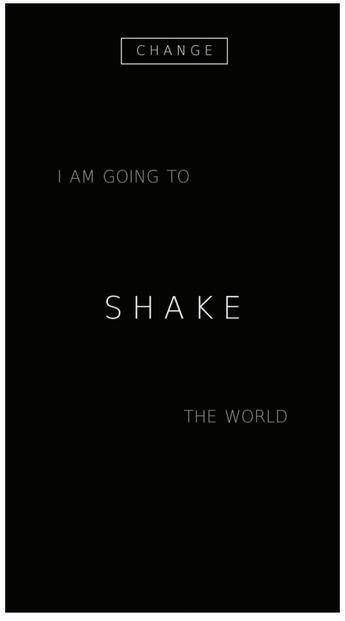
Similarly focused on designing a sensory reading experience, "KLUB" is a mobile augmented reality application with both geo-located site-specific components as well as a series of augmented books lead by Lissa Holloway-Attaway, Lars Vipsjö, and Patrik Erlandsson. This multi-site heritage project aims to engage young readers with local history and cultural heritage by providing an embodied, performative reading experience. Holloway-Attaway's chapter, "Transformative Culture/Trans*medial Practice/Postdigital Play: Exploring Augmented Reality Children's Books, Local Cultural Heritage, and Intra-active Design" connects this field of practice to larger philosophical themes in postdigital culture, including a focus on the non-human 'oddkin' we come into relationship with in human-technological practice, as well as questions of participation and authorship, heritage, and identity.

Finally, two narrative based games provide creative, poetic reading experiences for players, set in complex 3D environments filled with multiple vectors for reading engagement. Mez Breeze's and Andy Campbell's "All The Delicate Duplicates" digital fiction provides the reader with a nested, cyclical reading experience using game technologies and Breeze's poetic vocabulary, "Mezangelle." The player explores a house and landscape environment through multiple time periods to piece together the impacts of a set of mysterious objects from a family, combing through a mosaic of texts across many formats including emails, manuscripts, newspapers, and text messages. Elizabeth Goins' "Charlotte" is a fascinating game-based adaptation of the classic literary short story, "The Yellow Wallpaper," by Charlotte Perkins-Gilman. Set in the same fictional mansion in which the short story takes place, "Charlotte" uses the overarching narrative of "The Yellow Wallpaper" to draw players through a rich spatial and textual environment, filled with examples of material culture and ephemera that illuminate the social forces both shaping women and shaped by women during the late 19th Century.

1 DO IT

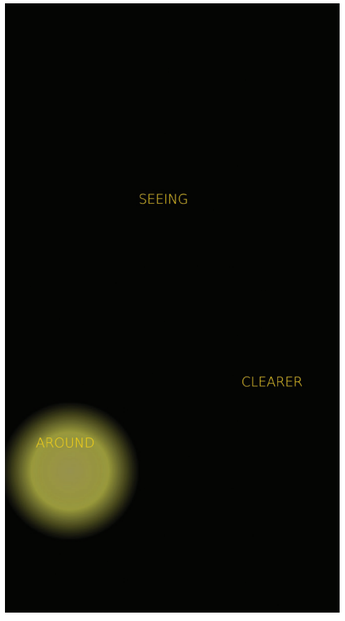
Serge Bouchardon

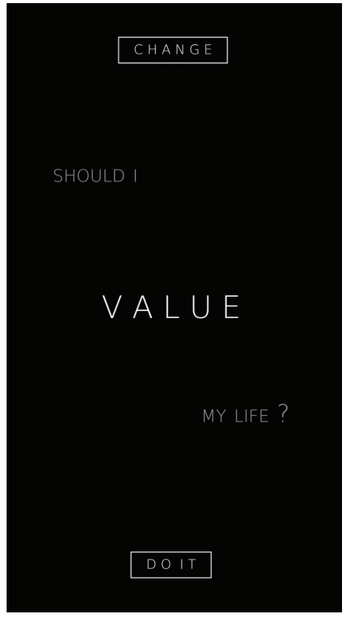




This digital creation offers four interactive experiences: adapt, rock, light up and forget. Each scene comes as an answer to contemporary injunctions: being flexible, dynamic and mobile, finding one's way, forgetting in order to move forward... You will have to shake words—more or less strongly—in the Rock scene, or to use the gyroscope in the Light up scene. These four scenes are integrated into an interactive narrative (Story). They can also be experienced independently (Scenes).

If fiction is the expression of society, it also proposes models for us to identify with. The great apprenticeship novels of the eighteenth and nineteenth centuries (for instance The Life of Marianne by Marivaux or Wilhelm Meister's Apprenticeship by Goethe) have thus been able to give their readers





a "narrative identity" (Ricoeur) centered on the construction of the individual.

Today, new ways of working and of organizing society (increasingly emphasizing the notions of network or mobility) and a new relationship to temporality (immediacy, events-based life) could more than ever justify other forms of narratives.

The interactive narrative DO IT tells the story of someone who is struggling against the acceleration ot time and the injunctions to move always forward, faster and faster. The original music (composed by Hervé Zénouda) emphasizes the contrast between the reflections of the character, who aspires to slowness, and the injunctions given to him to go always faster and to accelerate the tempo.

DIGITAL LITERATURE: A GESTURALITY SPECIFIC TO THE DIGITAL?

Serge Bouchardon

The gesture of manipulation in digital literature

In the domain of digital or electronic literature[1] , interactive works have already existed for several decades. In an interactive creation, manipulations by the readers are often required so that they can move through the work (for instance in hypertextual narratives). Such manipulations, in these interactive digital creations, are not radically new and there are many examples of literary works which require physical interventions on the part of the reader; for example in Raymond Queneau's Cent mille milliards de poems the reader must construct sonnets from a number of individually printed lines of poetry. Espen Aarseth proposes the term "ergodic literature" to describe this kind of work, arguing that "in ergodic literature, nontrivial effort is required to allow the reader to traverse the text" (Aarseth 1997, p.1). Yet while some print works do require that the reader provides some physical input, what is somewhat new in interactive digital works is the fact that it is the text itself, and not only the physical medium, which acquires a dimension of manipulation. A digital text, as well as being a text provided for reading, can also provide an opportunity for manipulation. This dimension of the manipulation of the text, but also the whole range of semiotic forms, opens a large field of possibilities in interactive digital creations.

But to what extent can one speak of a gesturality specific to the Digital? I will focus on three of my own creations to try to answer this question.

Gesture and materiality

Since 2013, a research and creation project has been conducted in partnership with the ALIS company and the University of Technology of Compiegne in France (UTC). The project builds on an artistic practice invented by Pierre Fourny, founder of ALIS, entitled *Two Half-Words Poetry* (or Cutting-edge Poetry...). This particular practice makes it possible to create sequences based on the idea that words[2] which are halved horizontally, contain the half of other words. This poetry is meant to be performed on stage (Figure 1). Within the context of the project, several interactive applications (for PC and smartphone) have been developed (Figure 2).
In the application entitled Separation[4] , the users can experience cutting edge poetry in two ways. They can play with poems. In the example below (Figure 3), there are three different gestures (with the mouse on a PC or the finger on a smartphone or tablet) and three different animations. With the Guillotine font, the users can cut a word in half (in figure 3, the word "separation" is being cut and the word

[1]Digital or Electronic Literature : "The term refers to works with important literary aspects that take advantage of the capabilities and contexts provided by the stand-alone or networked computer " (Electronic Literature Organization, http://www.eliterature.org/about).

[2] http://www.alis-fr.com/site/?q=node/26

[3]http://webtv.utc.fr/watch_video.php?v=W88H2AUD42RA, http://webtv.utc.fr/watch_video.php?v=2M8DS6709WHN (video presentations in French).

[4]http://i-trace.fr/separation/index.php, Video capture of the interactions: https://www.youtube.com/watch?v=0dQEOF3misE

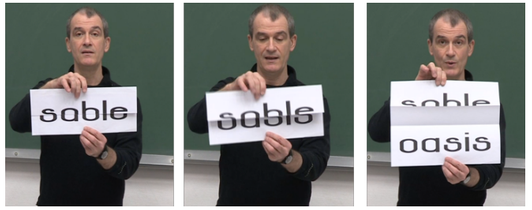


Figure 1 Pierre Fourny in a demonstration of Two Half-Words Poetry : in "sable" ("sand" in English) is hidden "oasis"[3] .

Figure 2 From the word "utc" (University of Technology of Compiegne) emerges the word "art", the two words sharing the same lower half.

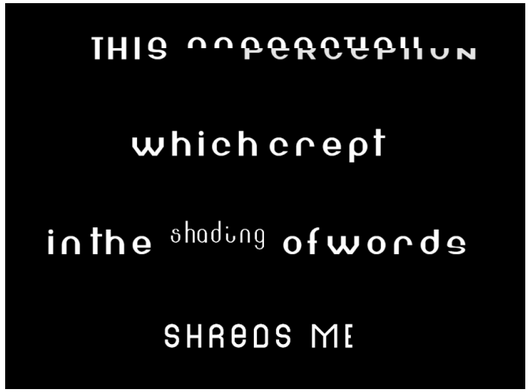


Figure 3 The Separation application : an example.

Figure 4 The Separation application : the menu.

"perception" takes its place). With the shadow font, they rub a word to let another word appear. With the central font, they tear the word apart. The users of the application are also able (in the "Lab" and "Editor" sections, Figure 4) to play with their own words and texts. A software program returns results dynamically for any word. They can compose their own texts and share them.

The conception and the development of this application, under the form of a prototype, has opened up new avenues about gestures and the production of meaning, especially on interactive mobile screens (smartphones and tablets). The interactive application acts as a call for gestures to be renewed and shared by the users. The semantic choices and gestures of Pierre Fourny, who unveils one word after another on stage, are displaced in the interactive application by the semantic choices and gestures of the user. The user makes the words appear and a poem unfold. The nature of the gestures themselves is no longer the one that Pierre Fourny has been experiencing so far in the physical space of the stage. The user triggers another realm of possibilities in the tactile digital space. It is impossible indeed in the physical world to cut a word with a simple movement of the finger (Figure 5).

This raises the question of tangibility and the role of materiality in digital writing. We can often experiment on the screen (in the animations of cutting edge poetry) a pragmatic loss of the poem. This loss can be partly compensated by a dramaturgy emphasizing the appearance / disappearance (with movement and speed), important for the perception of the targeted poetic effect. There are also pragmatic gains on the screen, with various possibilities of decomposition of the action that may lead to a more complete perception of the visual process.

Beyond the question of animation, different forms of tangibility can be noted when switching from paper to screen. The gesture of cutting a word in two halves gives the user the illusion of perception through touch. Thus, cutting a word with his/her finger, dragging it to the left or to the right, controlling the speed at which he/she does it, gives the user the impression that his /her finger is actually magnetizing one half of the word.

However, in the Separation application, it may not be appropriate to speak of tangibility in the full sense of the term because there is no mobilization in the interaction of the actual physical constraints and properties of the object: impenetrability, weight, friction... Speaking of tangible user interface would be a misnomer: the idea of tangible user interface is usually to give the user the ability to interact with digital objects through direct manipulation (a reproduction of touching where there is no mediation between the body and the object). But in the smartphone interface application, there is an illusion of tangibility: the user moves objects with his/her fingertip as he/she would move some physical objects (for example a pawn on the squares of a game board). Even though they are not fully tangible, words in the Separation application are manipulable in their materiality.

The exploitation of materiality in digital writings, theorized notably by Katherine Hayles (Hayles, 2008), allows us to do away with the immateriality of the digital. With the digital, it is possible to manipulate the medium but also the content, insofar as the content is calculable: materiality found in the digital medium may thus have different properties than in other media. Digital writing leads us to a conception of materiality which is primarily action-based.

Gesture and meaning

Yves Jeanneret (2000) claims that the simple act of turning the page of a book "does not suppose a priori any particular interpretation of the text. By contrast however, in an interactive work clicking on a hyperword or on an icon is, in itself, an act of interpretation" (p.113). Jeanneret further suggests that the interactive gesture consists above

Figure 5 The word ABRACADABRA is cut in the Separation application.

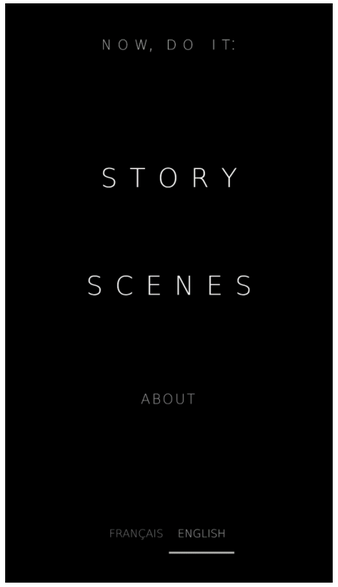
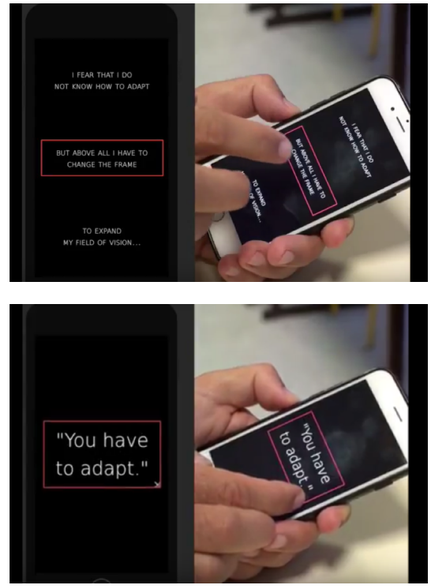


Figure 6 DO IT: the menu.

Figure 7 and 8
DO IT:the Adapt scene.



all in “an interpretation realized through a gesture” (121). However, the distinction that Jeanneret proposes between turning a page and clicking on a hyperlink is not necessarily obvious and could be criticized. Moreover, we are stretching the limits of interpretation quite dramatically if we really accept that all clicking is interpretative. Despite these caveats, we can nevertheless point out that, in an interactive work, the gesture acquires a particular role, which fully contributes to the construction of meaning.

This is the case in the interactive narrative DO IT[5], presented in the ICIDS Art Exhibition 2017. This digital creation offers four interactive experiences: adapt, rock, light up and forget. Each scene comes as an answer to contemporary injunctions: being flexible, dynamic and mobile, finding one's way, forgetting in order to move forward... These four scenes are integrated into an interactive narrative (Story). They can also be experienced independently (Figure 6). The interactive narrative tells the story of someone who is struggling against the acceleration ot time and the injunctions to move always forward, faster and faster. The original music emphasizes the contrast between the reflections of the character, who aspires to slowness, and the injunctions given to him to go always faster and to accelerate the tempo. At each stage of the story, the gestures of the user contribute to the construction of meaning. Let us take the examples of the first two scenes. In the Adapt scene[6], the character wants to” change the frame to expand [his/her] field of vision” (Figure 7). The user can thus play with a red frame to enlarge it and make the text appear on screen (Figure 8). In the Rock scene, the character has to prove that he/she can be dynamic. The user can then shake the mobile phone - more or less strongly - to shake words and let other words appear – with a more or less negative meaning (Figure 9 and 10). In this example, we can see that the user’s gestural manipulations can fully contribute to the construction of meaning.

Gesture and figures of (gestural) manipulation

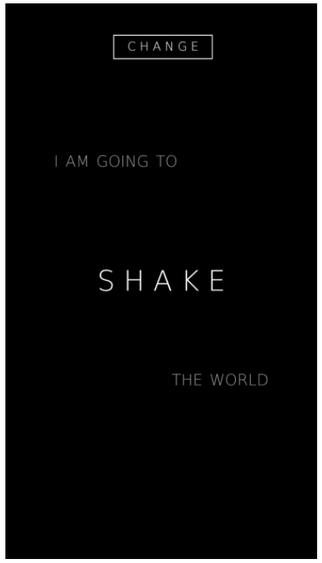
Numerous interactive works of digital literature, notably interactive narratives, do largely call upon what we may call figures of manipulation (Bouchardon, 2014). Since Antiquity, the figures have been a significant part of rhetoric, even though rhetoric should not be reduced to rhetorical figures. Figures are generally divided into four main categories: diction (e.g. anagram and alliteration), construction (e.g. chiasmus and anacoluthon), meaning (tropes, e.g. metaphor and metonymy) and thought (e.g. hyperbole and irony). The rhetorical figure is traditionally defined as a “reasoned change of meaning or of language vis-a-vis the ordinary and simple manner of expressing oneself”[7]. Jean-Marie Klinkenberg (Klinkenberg 2000: 343) defines a rhetorical figure more precisely as “a dispositif consisting in the production of implicit meanings, so that the utterance is polyphonic". In interactive and multimedia writing, the polyphonic dimension of the figure also relies on the pluricodal nature of the content.

I have identified rhetorical figures specific to interactive writing: figures of manipulation, meaning gestural manipulation (Bouchardon, 2014). It is a category on its own, along with figures of diction, construction, meaning and thought (Bouchardon & Heckman, 2012). Let us illustrate this point with the short digital fiction Don’t touch me[8].

[5]DO IT (2016) is an interactive app. freely available on:
- Google Play: https://play.google.com/store/apps/details?id=com.tx.agir
- App Store: https://appsto.re/cn/WDN8fb.i

[6]Video captures of the interactions : https://youtube.com/watch?v=u6UOq-j_ZJ4.

[7]Quintilian, De institutione oratoria, IX, 1, 11-13.



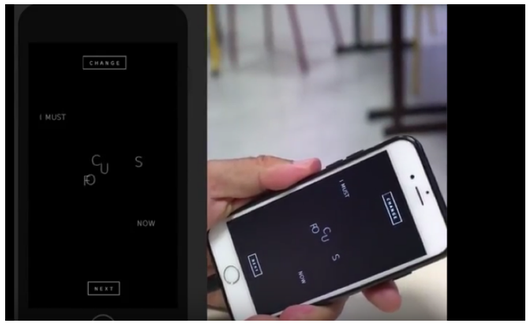


Figure 9 and 10
DO IT: the Rock scene.

This work displays a photograph of a woman lying on a bed (Figure 11), as a voice - that of Annie Abrahams, the author - starts telling a story. The narrative is about a dream that Annie Abrahams had when she was a teenager. This dream can be interpreted as the sometimes painful transition from teenage to adulthood about a young woman exposed to the gaze and the desire of men. Being passive, looking and listening without using the mouse is not always easy for the interactor, often prompted to click compulsively. If the interactor rolls the cursor over the image, the image seems to resist the reader. Text immediately appears on the screen expressing the woman’s refusal ("don’t touch me"), the woman changes her physical position and the vocal tale immediately stops and restarts from the beginning. On the fourth attempt of a caress with the mouse, the window closes.

The story Don’t touch me has a vocal, visual (the woman displayed) and written-textual dimension (the three messages of refusal). It also has a gestural dimension: it is through the action of the user that the vocal narrative makes sense. This is an interactive story that is based on a play between interactivity and narrativity (Ensslin, 2012). Interactivity prevents narrativity insofar as the gesture of the user stops the narrative. The author also plays on the apparent incompatibility between narrativity and interactivity to teach the user to resist his desire to click, but also to apprehend differently the representations - especially online – of the female body. The vocal narrative can only be interpreted through the gesture of the user: it makes sense because it is interactive.

In the piece Don’t touch me, we can identify a gap between the expectations of the interactor when he or she moves the mouse cursor and the result obtained with this manipulation (until the final white screen). The caress on the picture of the woman with the mouse cursor only interrupts and then brutally stops the course of the piece, giving

[8]Abrahams Annie (2003). Ne me touchez pas/Don’t touch me, http://bram.org/toucher/index.htm.

rise to a figure of manipulation that could be called a figure of interruption.

Numerous interactive digital fictions indeed play on the expectations of the reader by resorting to non-conventional couplings between the gesture and the result on screen, which can be analyzed in terms of figures. Let us now focus on an entire digital fiction. Loss of Grasp[9] is an online interactive narrative in five different languages. In this creation, six scenes tell the story of a character who is losing grasp on his life. In the first scene, the reader unfolds the narrative by rolling over the sentences which appear on the screen. Each time a sentence is rolled over, a new sentence is displayed. But after a while, when the sentence "Everything escapes me" appears, the mouse cursor disappears. The reader can keep rolling over each sentence, but without the reference point of the mouse cursor. Through this "non-conventional media coupling" (Bouchardon, 2014), the reader experiences loss of grasp with his/her gestures.

The second scene stages the meeting of the character with his future wife, 20 years earlier. While the character "ask[s] questions to reveal her", the reader can discover the face of the woman by moving the mouse cursor. These movements leave trails of questions which progressively unveil her face. The questions themselves constitute the portrait of the woman (Figure 12).

In the third scene, 20 years later, the character can't seem to understand a note left by his wife: "love poem or break up note?" The reader can experience this double meaning with gestures. If he/she moves the mouse cursor to the right, the text will unfold as a love poem; if he/she moves the cursor to the left, the order of the lines is reversed and the text turns into a break up note (Figure 13).

In the fourth scene, the character's teenage son asks his father to read an essay he wrote on the notion of "hero". But the character cannot focus on the words and "can only read between the lines". If the reader clicks on the words of the essay, sentences appear – made up of letters from the text itself – such as:

I don't love you.
You don't know me.
We have nothing in common.
I don't want anything from you.
You're not a model for me.
I want to make my own way.
Soon I will leave.

Paradoxically, the gesture of focusing on the text makes it fall apart and lets an implicit meaning appear (Figure 14). In the fifth scene, even the character's own image seems to escape him. Via the webcam, the image of the reader appears on the screen. He/she can distort and manipulate it. The character/reader so "feel[s] manipulated".

In the last scene, the character decides to take control again. A typing window is proposed to the reader, in which he/she can write. But whatever keys he/she types, the following text appears progressively.
I'm doing all I can to get a grip on my life again.

I make choices.
I control my emotions.
The meaning of things.
At last, I have a grasp...

[9] Bouchardon Serge and Volckaert Vincent (2010). Loss of Grasp, http://lossofgrasp.com.
This creation won the New Media Writing Prize 2011: http://newmediawritingprize.co.uk/past-winners/.
It has been exhibited at ICIDS 2016 in Los Angeles.

Figure 11 Dont't touch me by Annie Abrahams: a figure of interruption.

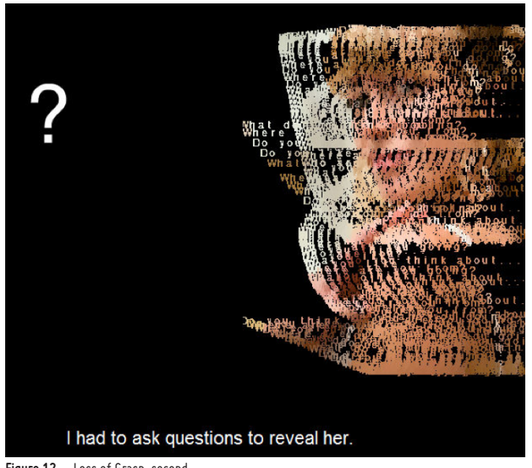


Figure 12 Loss of Grasp, second scene.

Here again, the reader is confronted with a figure which relies on a gap between his/her expectations while manipulating and the result on screen. Thus through his/her gestures and through various figures of manipulation – which could as a matter of fact appear as variations on a figure of loss of grasp – the reader experiences the character's loss of grasp in an interactive way.

Conclusion

The examples analyzed above raise the question of the gesture and more largely of the engagement of the body in digital literature. Gestural manipulation is certainly inherent in writing and reading devices; however, the Digital results in a passage to the limit by introducing computation into the very principle of manipulation (Bachimont, 2008). What can happen when the user makes the gesture of typing a letter on the keyboard? Another letter may be displayed instead[10], or the typed letter may leave the input field and fly away, or that gesture can generate a sound, run a query in a search engine, or even turn the computer off (all these examples are to be found in digital literature)... From this simple gesture, the realm of possibilities exceeds the anticipation inherent in the gesture. Because of the arbitrariness and opacity of computation, the Digital introduces a gap between the user's expectations based on his/her gestures and the realm of possibilities offered.

The Digital makes it possible to defamiliarize the gestural experience inherent to reading and writing, to make it unfamiliar and even strange again. Defamiliarization is of course the project of many avant-gardes and literary approaches (and more generally art approaches). But one could argue that there are particularities to the digital mode of defamiliarization. In literature, defamiliarization concerns the linguistic aspect. In digital literature, Roberto

[10] Cf. the last scene of Loss of Grasp: http://lossofgrasp.com/

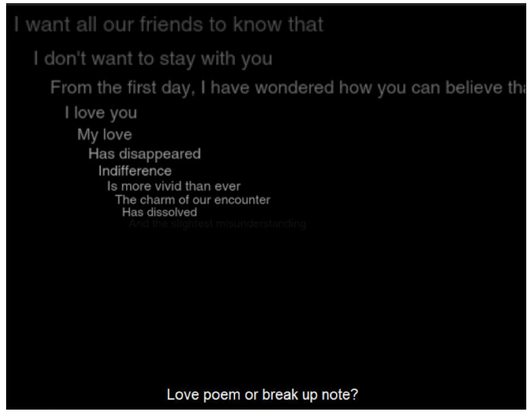


Figure 13 Loss of Grasp, third scene.

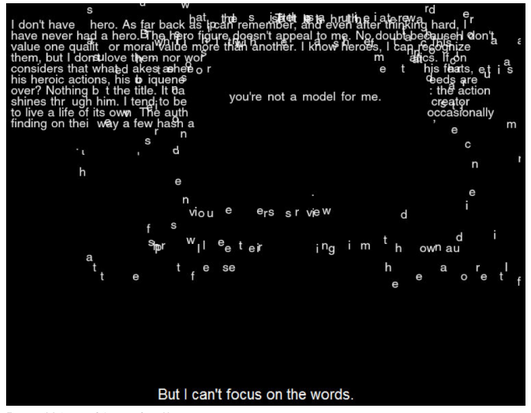


Figure 14 Loss of Grasp, fourth scene.

Simanowski claims that "the concept of defamiliarization needs to be applied beyond the realm of linguistics to the entire cyber" language", including the visual and acoustic material as well as the idiosyncratic features of digital media such as intermediality, interactivity, animation and hyperlinks. A more general definition therefore characterizes the literary as the arranging of the material or the use of features in an uncommon fashion to undermine any automatic perception for the purpose of aesthetic perception" (Simanowski, 2010).

Defamiliarization thus concerns not only the linguistic dimension, but also the iconic and sound dimensions, as well as the gestural dimension. However, there is one difficulty: how can defamiliarization be identified in a system of expression that is so recent and still evolving that it has not yet established familiar and common ground? It is undoubtedly through the question of gesturality that the experience of defamiliarization can be made explicit, insofar as a repertoire of gestures has begun to stabilize with digital devices (PC and tactile devices).

As said previously, with the Digital, the interactive gesture and the interactive gestural manipulation are defamiliarized thanks to the opacity of computation: the Digital can introduce a gap between the user's expectations based on his/her gestures and the realm of possibilities offered. In interactive digital literature, defamiliarization is based on computation. In this sense, one could speak of a gesturality specific to the Digital, which is particularly well highlighted in digital literature.

The role played by computation, by digital programs and interfaces, must be taken into account to analyze gestural manipulations and to grasp their specificities. Hypothesizing that there is a gesturality specific to the Digital entails the necessity to sensitize and train users to the role of gesture in the construction of the meaning of a digital creation. It is indeed important to understand and analyze the semiotics and the rhetoric specific to these gestural manipulations when teaching digital literacy. Understanding gesturality through digital literature should be part of digital literacy teaching.

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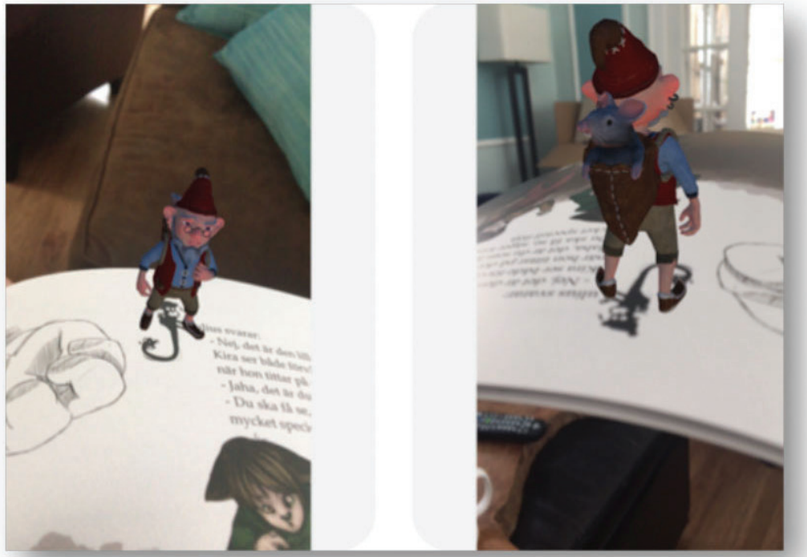
2 KLUB

Lissa Holloway-Attaway, Lars Vipsjö, Patrik Erlandsson

By its very definition and essence, Cultural Heritage is an inter- generational, multi-time-based narrative practice that merges and con/fuses past-present realities: It creates the illusion of being both here and there through participatory and collaborative acts with stimulus objects (artifacts) to displace those that encounter them to new realms of experience. Artifacts and their attendant stories merge objects and viewers and defy space and time. Cultural Heritage is, then, no less than time travel.

With the incorporation of digital technologies within Cultural Heritage encounters (in museums, at site-specific historical locations, and within other re-constructed locales and story worlds) the complex layers of space, time and narrative deepen. Particularly with the use of mobile Augmented Reality (AR) technologies, users are brought into increasingly complex relationships with the artifacts they encounter. Using personal smart phones to come into relationships with historical objects and sites through participatory and performative narrative acts engage the sensory body of the viewer/user and rely on affective response to stimulate the desired, necessary, time travel on which heritage depends. In our exhibition work, we share an on-going Digital Cultural Heritage transmedial storytelling project (“KLUB”, or “Kira and Luppe’s Bestiary”) focused on re-telling the past history of the Skaraborg region in Western Sweden through a traditional children’s book series and an Augmented Reality mobile application.

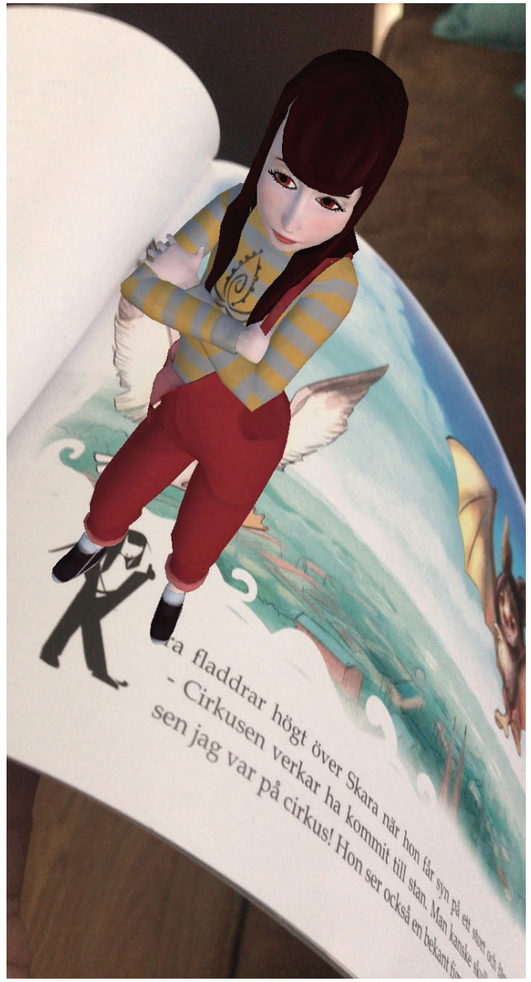


KLUB is a sub-project within the KASTiS Project (in English the “Cultural Heritage And Gaming Technology in Skaraborg” project) and is funded (from 2015-18) by a number of municipal and cultural partners within the region, including the Skaraborg Municipality (“Skaraborgs kommunalförbund”) and the Games Education at the University of Skövde in Skövde, Sweden. *KLUB* is based on the collaborative development of a series of traditional children’s books with an accompanying mobile AR application that incorporates the local histories and heritage sites of several municipalities within the region. The intended readers/users of the stories are primarily youth, but ideally also, their families who read/travel together to visit heritage locales referenced by the stories and interact with them via the application.

The books are collaboratively created with researchers and students from the University of Skövde, along with heritage experts, local schools and libraries to encourage both reading skills and knowledge of local history. In this way the stories embrace the idea of time travel through embodied, interactive and performative narrative experiences

Each book traces and follows a tale of ancient trolls and other mythical beings (based, in part, on ancient Swedish folktales), including an evil circus ringmaster, a troll hunter and researcher, and the lead characters: Kira (a girl-vampire) and Luppe (a boy-werewolf). Across the many inter-connected books and tales, Kira and Luppe work to hunt down the mythical “beasts” who have escaped from a circus. The characters and stories are distributed across many of the books, but are also supplemented with a mobile AR application that interacts both with figures in the books, bringing characters to life through animated 3D images in, but also on location at heritage sites in the region. Readers/Users of the books and application “collect” characters in their phones and then learn more about them in the application’s “Bestiary”, the mythical catalogue of beasts. The book series also hearkens back to earlier media forms, while building interaction with contemporary media. Partly based in design on Medieval Illuminated Manuscripts this book series uses decorated initials — letters that blend pictures and text to tell stories — as trigger images for the Augmented Reality experience. Particular letters are associated with specific characters and repeated throughout the book series. Users can download the associated “Bestarium” application (from Google Play or the App Store) and then by using their camera phone, they aim at the images in the book to collect the characters in their own compendium, or Bestarium, on the application in their smart phone or tablet. To date, eight books are completed and four more are in development. The mobile application continues to develop in tandem with the new books and stories.

We believe our exhibition of elements from the *KLUB* project, both in the physical books and virtual environments of tablets and smartphones ,can reveal how history, time, and space can converge to tell new/old stories in new co-located environments.



Lissa Holloway-Attaway, Lars Vipsjö, Patrik Erlandsson
Children’s Books with an accompanying Mobile AR, 2016
Google Play or the App Store

TRANSFORMATIVE CULTURE/TRANS*MEDIAL PRACTICE/POSTDIGITAL PLAY:

Exploring Augmented Reality Children's Books, Local Cultural Heritage and Intra-active Design

Lissa Holloway-Attaway

Between the dry world of virtuality and the wet world of biology lies a moist domain, a new interspace of potentiality and promise. I want to suggest that Moistmedia (comprising bits, atoms, neurons, and genes) will constitute the substrate of the art of our new century, a transformative art concerned with the construction of a fluid reality. This will mean the spread of intelligence to every part of the built environment coupled with recognition of the intelligence that lies within every part of the living planet. This burgeoning awareness is technoetic: techne and gnosis combined into a new knowledge of the world, a connective mind that is spawning new realities and new definitions of life and human identity. This mind will in turn seek new forms of embodiment and of articulation.

Roy Ascott from Art, Technology, Consciousness: mind@large (2000)

Trouble is an interesting word. It derives from a thirteenth-century French verb meaning "to stir up," "to make cloudy," "to disturb." We— all of us on Terra— live in disturbing times, mixed-up times, troubling and turbid times. The task is to become capable, with each other in all of our bumptious kinds, of response. Mixed-up times are overflowing with both pain and joy— with vastly unjust patterns of pain and joy, with unnecessary killing of ongoingness but also with necessary resurgence. The task is to make kin in lines of inventive connection as a practice of learning to live and die well with each other in a thick present. Our task is to make trouble, to stir up potent response to devastating events, as well as to settle troubled waters and rebuild quiet places.

Donna J. Haraway from Staying with the Trouble: Making Kin in the Cthulucene (2016)

Troubled Times: a teaser

Our early 21st century media ecology is in a state of deep transformation and flux. Hybrid and ontologically complex virtual and material forms (worlds, bodies, devices) are mutually activated, and they circulate among us to sustain complex forms of meaning-making, signification, and inscription within culture. In this state of mixed(-up) reality, interfaces are continual transformed, changing tempo and shifting and moving across material/technical agents to mediate posthuman and more-than-human expression. Authorship is no longer considered singular or purely human-centric and reading requires multimodal, polysensual, and performative literacies (Braidotti, 2013; Drucker, 2012; Emerson, 2014; Rouse, Engberg, JafariNaimi & Bolter, 2015; Hayles, 2012; Parikka, 2010). In concert, stories and games too have converged in new formulations that radically transform the ways that we read and interact with them, as well as the characters, settings, and narratives they convey. We now encounter them in non-traditional settings and spaces, off the page of the book and beyond the domain of the computer and/or game console, and we interact *differently* with their materials, in newly troubled forms of embodiment and hybrid design, in story-games.

Increasingly we find such story-games (that is narratives that utilize play as embodied forms of reading and writing in interactive virtual/material worlds) in social and cultural contexts such as art galleries, museums and heritage sites. Here, storytelling, as with the KLUB project, is often co-located, interactive and experiential, and it includes for example 'pervasive,' 'augmented,' 'locative,' and 'affective' forms for engagement. Together these media forms reflect intricate design challenges requiring interdisciplinary expertise from computing, cognitive science, user-experience, interaction design, narrative and literary studies, and game design. Thus, the act, and the art, of storytelling require new analytical modes and design practices to accommodate these difficult, troubled affordances and mixed-up media times. Not merely interactive by nature, now we must recognize the intra-active, hybrid, and deep material entanglements they convey.

To that end, in this reflection I offer a long view of the times that these new media forms recall from the past, and call to in the now and future media that move us forward and backward, at once. I position myself, then, in solidarity with Donna Haraway who at the core of her recent book *Staying with the Trouble (2016)*, claims that it is time to find our relations and to define our relata with our "oddkin," our almost-relations, who are not our traditional "godkin and genealogical and biogenetic families," but who are rather our monsters, or our "Chthonic ones" (p. 2): Chthonic ones are monsters in the best sense; they demonstrate and perform the material meaningfulness of earth processes and critters. They also demonstrate and perform consequences. Chthonic ones are not safe; they have no truck with ideologues; they belong to no one; they writhe and luxuriate in manifold forms and manifold names in all the airs, waters, and places of earth. They make and unmake; they are made and unmade. They are who are. (p. 2)

I suggest that these too are the "multicritters" at the spirit-core of the KLUB project (p. 2). Like the Chthonic ones Haraway imagines, the books, contexts, characters, and modes of use for KLUB are simultaneously "both ancient and up-to-the-minute" (p. 2). They are a mash-up of traditional and new media and systems for use: they are books, mobile application, localized history, and fluid folkloric agents to engage users in play. As such KLUB, and its attendant oddkin resemble the Chthonic one Haraway imagines as "replete with tentacles, feelers, digits, cords, and whiptails" (p. 3). They transgress time and space, and they affiliate, with no single allegiance to form or function. Collectively the media, users and interfaces they employ represent the layered virtual/material relational components that comprise these new emergent 21st century media forms.

I stand too in solidarity too with Ascott's promotion, made at the cusp of the 21st century, of the "moist domain" as an exemplary model for the future—one to support and inspire transformative technological creations (deeply mixed and hybrid media types) and inventions, comprised of human and nonhuman agents—that is of mixed-up "bits, atoms, neurons, and genes" (p. 2). In this context, and with Haraway's claims in view, we can explore KLUB from its literal and figurative dimensions. Literally KLUB is a children's book series about local histories that includes a mobile Augmented Reality (AR) component. But if we consider the many virtual, imaginative, fanciful and other complex material dimensions that comprise its interface, we may also recognize it as much more: it is fantasy and fiction, history and folklore, located and mobile, and ultimately human and non-human; it is a host of multicritters and its agencies move intra-actively among all components. Moving one, then the other, and sometimes many at once, into focus, it operates like a kaleidoscope of lighted shapes and forms that come in and out of view. Full of shifting symmetry, and with a firm twist of the hand, the worlds they reflect are multidimensional, dynamic, and elusive. As such, I recommend that if we take the time as, Haraway suggests, to stay with its trouble and to unpack the host of layered interspaces that Ascott also affirms as the "substrate of the art of the new century" (p. 2), we can discover new hybrid forms that complicate and converge, like a kaleidoscope, our haptic agency, our perspectives, and our desire to keep art in action. Here, there, we might also find in it a example of a new interdisciplinary critical form of transmedial and transformative boundary play, driven forward by its

multiple intra-activities, its twists and turns, and 21st media more-than-human aesthetic desires.

Digital Humanities and Digital Cultural Heritage: new allegiances

How might we begin then to recognize KLUB, and its potential oddkin (its future mutant, twisted offspring) as indicative of new directions for production and critical intervention? One critical entry point might be to consider contemporary discussions in the Digital Humanities (DH) that recognize media not only in their formal constructions, but rather as sets of interactive and performed experiences. As with Ascott's technoetic state, where human consciousness and technology mutually adapt, resisting technologically deterministic perspectives, we can see mixed reality approaches to Digital Cultural Heritage (DCH) as similar to new practices and theoretical perspectives ongoing in DH studies. DH research has moved away from considerations of static texts that require deeper analysis by computing tools and other technologically enhanced interventionist practices to reveal newly discovered truths. This is the old "humanities computing" approach where texts and the computing tools that work on them are discrete binary agents that work together, but separately and differently, to expose new data sets. Now the field of DH has grown to include more interdisciplinary sources and subjects and it is frequently recognized as comprised of more fluid and mutually adaptive set of human-machine processes that move beyond simple divisions as these. (Holloway-Attaway, 2018).

Matthew Gold, in *Debates in the Digital Humanities*, for example characterizes new DH approaches to scholarly research as driven by more affective, expressive and constructivist principles. For Gold, and for others like Johanna Drucker, media instability (media in perpetual transformation) is a source for new research into design practices and a core issue for humanistic inquiry as it moves into alignment with computing technologies. It is also stimulation to uncover research perspectives that can characterize the always transforming, kaleidoscope-like, shifting dimensions. Drucker claims DH now works at a "performative, not mechanistic" level (Paragrah 13) and that the multimodal texts in creation and under analysis must be studied holistically from their inception, not only in their product-phase when encountered by users:

> The challenge is to shift humanistic study from attention to the effects of technology (from readings of social media, games, narrative, personae, digital texts, images, environments), to a humanistically informed theory of the making of technology (a humanistic computing at the level of design, modeling of information architecture, data types, interface, and protocols). To theorize humanities approaches to digital scholarship we need to consider the role of affect, notions of non–self-identicality of all expressions, the force of a constructivist approach to knowledge as knowing, observer dependent, emergent, and process-driven rather than entity-defined (Paragraph 7).

Both Drucker and Gold identify truly transformative texts as ones where subjectivity is also complicated. For them, non-self identicality (elusive subject-agents and subjectivities, from texts to authors to characters) actively perform their semiotics and come into unique begin when they are acted upon, and with designers, users and multiple other agents: "No text is self-identical; each instance or reading constructs a text; discourses create their objects; texts (in the broad sense of linguistic, visual, acoustic, filmic works) are not static objects but encoded provocations for reading" (Drucker).

This kind of shiftiness is what Mark B.N. Hansen in *Feed-Forward: On the Future of 21st Century Media* claims is central to formulate a "radically environmental perspective" for emerging media (p. 2). Drawing inspiration from Andrew Galloway and Eugene Thacker's perspectives on new networks, at the end their book *The Exploit*, for Hansen this means we must view media as elementally comprised, that is made beyond only-human form and agency. They may be broken down into micro and macro constitutive parts that reassemble on the fly, after natural states of undoing. Following Thacker and Galloway, Hansen says, "we must rethink agency as the effect of global patterns of activity across scales in networks, where absolutely no privilege is given to any particular individual or node, to any level or degree of complexity" (pp. 1-2). These patterns of activity suggest media are adaptable to circumstance and must be malleable and robust in their interface and intra-active design possibilities. Further, they are driven forward by their ability to engage, process, and release data and experience so it may be processed in the now, but then reinvigorated and re-contextualized for future operations. Hansen "associate[s] the technical transformations that lie at the heart of twenty-first-century media—and that witness a full-scale installation of a calculative ontology of prediction—with distinct modifications in the structure of experience" (p. 186). These media are multi-dimensional and take into account a host of features and operations beyond pure cognitive, human processing: They are "indelibly and inseparably technical, performative, affective, experiential, and sensory" (p. 186). They are indicative of what others have termed a form of "networked affect" where technologies and our expressive feelings about them, as well as our desire to replicate and to process them have become inseparable and so vital (Hillis, Paasonen, & Petit, 2015).

N. Katherine Hayles in *How We Think: Digital Media and Contemporary Technogenesis* (2012) further supports finding new theoretical models to explicate change and adaption in DH studies, and she outlines at length in her review of contemporary DH and Digital Media studies the complex temporalities of human/machine interactions. She characterizes the new multimodal and interdisciplinary texts after the first wave of Humanities Computing initiatives, and after the first wave of Internet-influenced text production (of hypertext and hypermedia, for example), as more deeply evolutionary than first encountered. Ascott's moist, technoetic forms, then, for Hayles are framed as an adaptive human-machine interaction model she calls technogenesis: this formation is "about adaptation, the fit between organisms and their environments, recognizing that both sides of the engagement (humans and technologies) are undergoing coordinated transformations" (loc. 1641). Here there is deep and continual time flux:

> Obviously, the meshing of these two different kinds of complex temporalities does not happen all at one time (or all at one place) but rather evolves as a complex syncopation between conscious and unconscious perceptions for humans, and the integration of surface displays and algorithmic procedures for machines. The interactions are dynamic and continuous, with feedback and feedforward loops connecting different levels with each other and cross-connecting machine processes with human responses (Chapter 1, paragraph 25).

Posthuman and Non-Human Matters: new intra-activities

This kind of model is one also embraced by and theoretically adjacent to Posthuman, Nonhuman and New Materialism approaches which also seek to de-centralize human agency and to find dynamism and vitalism in other networks and processes. (Although media is not always an overt subject of these considerations that often seek wider paradigms for considering material culture in general.) Collectively these

models may also be used to understand the deep time and deep space transformations at play when we consider a Digital Cultural Heritage and story-game work like KLUB that attempts so many boundary crossings and transformations. Rosi Braidotti, for example, in The Posthuman (2013) recognizes in contemporary techno-media culture a force similar to Ascott's technoesis and Hayles technogenesis based on what she qualifies as a self-organizing principle of mutual adaption between nature and culture:

> My point is that this [Posthumanist] approach, which rests on the binary opposition between the given and the constructed, is currently being replaced by a non-dualistic understanding of nature–culture interaction. In my view the latter is associated to and supported by a monistic philosophy, which rejects dualism, especially the opposition nature–culture and stresses instead the self-organizing (or auto-poietic) force of living matter (p. 3).

For Braidotti the influence of technological development and of new scientific approaches and interventions in the social sphere make for a very cloudy, troubled context in which to understand the effects of media, and of its political import, one where the call to investigate the deep, foundational paradigm shifts is essential:

> The boundaries between the categories of the natural and the cultural have been displaced and to a large extent blurred by the effects of scientific and technological advances. This book starts from the assumption that social theory needs to take stock of the transformation of concepts, methods and political practices brought about by this change of paradigm. Conversely, the question of what kind of political analysis and which progressive politics is supported by the approach based on the nature–culture continuum is central to the agenda of the posthuman predicament (p. 3).

Braidotti's posthuman mission (or predicament) then is to challenge the forces of human exceptionalism that separate the world into clear binaries in order to mediate the boundaries between two simply defined worlds: sophisticated human culture and the raw matter of untamed nature. Media in this context is an attempt to translate the raw into the refined. Braidotti, and the many who follow this posthuman condition—where multiple affordances for non-dualistic constructions offer transmutations, transformations (hinting of transmediality) in favor of other translations are generative in the context of emerging media. As with Hayles and Hansen, Ascott and Haraway, and so many more, the power of transfigurations and their many relata (or trans* principles as we might characterize them), is in the acceptance of multiplicity and of the more-than-human agencies, the oddkin. And we might find it deep within the timely designs and mixed-up media forms of projects like KLUB.

Such trans* power is particularly overt for Jussi Parikka in *Insect Media: An Archeology of Animals and Technology* (2010) where non- and more-than-human dimensions are characterized, as his title indicates, by the imaginative power of another set of multicritters: insects. For Parikka, the subject-matter of insects as actual material for analysis in reference texts from the 19th century forward, as well as their metaphoric resonances in the current cultural imagination are useful as models to study media technologies. For Parikka, *"insectlike models of media"* are more than metaphors for technically-enhanced networked formations (like the Internet), swarms (social media hive-life), or other vast assemblages of interactive dynamic agents (databases, Internet of Things) associated with insect life. Contemporary descriptions of insects with media cultures have more profound elemental and radical environmental connections (to recall Hansen). And so "insects as media" ("Introduction," paragraph 9) is then a much deeper configuration that Parikka also qualifies as multiply trans-figured. In fact the aim of his book, he declares, "is not to write a linear history of insects and media but to offer some key case studies, all of which address a transposition between insects (and other simple forms of life) and "media technologies" ("Introduction," paragraph 9). Elsewhere in the book, including the "Epilogue," specifically titled "Insect Media as an Art of Transmutation," he qualifies the rich, affective processes that circulate across and among contemporary media and material culture when we recognize its trans* potential which is also then an acknowledgement of the power of the multicritter, or that which Parikka names, the "bestiality of media technologies as intensive potentials" ("Introduction," paragraph 10) (Such bestial affiliation is one clearly accounted for in the KLUB AR application where creatures and characters from the book are collected in the Bestiary. This is a story-fied database where reader/users both capture the book figures in their tablets and smart phones after scanning figures in the books and landscapes, but also learn more of them and their imaginative powers and potentials.) For Parikka, these affective bestial possibilities (time traveling agents for the future) are not found in mere translation—that is using the "metaphoricity of technology" merely to interpret insect models ("Introduction," paragraph 10). Instead they are seen as more intra-active and interpolative:

> [N]ot merely as denotations of a special class of icky animals but as carriers of intensities (potentials) and modes of aesthetic, political, economic, and technological thought. Translation, then, is not a linguistic operation without residue due but a transposition, and a much active operation on levels of nondiscursive media production. ("Introduction," paragraph 10.)

These Posthuman, Nonhuman, and New Material approaches offer finely nuanced consideration of materiality to support DCH investigations in the design and use of transmedial artifacts, such as KLUB. When we can consider mixed media and transmedial design properties, where live action, print texts, material artifacts, and AR/VR content might be combined, we are considering not only a plethora of content choices translated into different media and storytelling modes. We are also confronting a re-circulation of their non-discursive properties, of embodied affects and performative properties that elementally change the environments (disciplinary, institutional, social) where we encounter media and we are changing the notions of how we see time and its affects through its processual unfolding. As Parikka suggests, this is a storytelling that depends on a deep understanding of non-human transmissions but also how to record and pass time in non-human terms: "Stones and geological formations are recordings of the slow passing of time and the turbulence of matter-energy. Plants and animals constitute their being through various modes of transmission and coupling with their environment" ("Introduction," paragraph 11). This happens when we, for example, create locative experiences in historical sites at the center of ancient folkloric traditions (as with many of the KLUB books). Here we are asking users to consider the power of the landscapes to tell their environments: We ask the ancient Viking burial grounds of Falköping (in the Jättinnan KLUB book) to give up their dead as part of the narrative, who've become part of the earth, and to allow them to be potentially recovered again in the smartphone application; Readers/Users can stand in place and look out over the wide watery perspective from the shores of Lake Vättern in Mariestad, pictured in the book, and call, like Kira and Luppe, to the mythical sea creature (as they are invited to do), to the Vätterjungfrun, a creature known mostly to just the locals who live on this lake, and entice her in. But she won't necessarily appear. Elementally made of the water

and its other sea creatures and at home in her reported, but undiscovered sunken ship, she is a hyper-specific in her localized history, but an elusive figure who resists human desire. She might appear, but more than likely only comes into view only when she wants to, or is forced to (such as when the circus director hauls her up in a fishing net). But even then she is able to escape. She follows her own time and exists outside the requirements of human desire. And, as such, she can be said to represent the kind of elemental, distributed storytelling that plays with space and time and crisscrosses many boundaries in 21st century media forms

For Parikka, the kinds of insects as media (or Vätterjungfrun as media) offer much more than pure representation in human historical terms: "[T]here is a whole cosmology of media technologies that spans much more of time than the human historical approach suggests" and accordingly we must learn to design for it ("Introduction," paragraph 11).

KLUB at the Nexus of Time Travel: Entangled Trans* Design for the Posthumanities and Beyond

In an effort to explicate some of nuances of this unfolding cosmology, and in the context of these troubled, cloudy waters of 21st century media, I can now place the KLUB project at the center of my discussion. KLUB is a collaboratively composed augmented reality (AR) and traditional children's book series focused on engaging with the local cultural heritage in the small towns and villages of the Skaraborg Region in Western Sweden. I believe that KLUB, and its process of making and intra-activities exemplify the transformative and transmedial practices addressed by Ascott and Haraway in their respective epigraphs that frame this discussion. Developed and designed as it is as a kind of cooperative, with faculty, students, local librarians, and historians, and heritage experts, it is a work that is intra-disciplinary, but also transcultural. It moves in and out of many institutional domains and finds allegiance with many "masters" and knowledge-keepers, refusing a singular authority. The work itself has been exhibited in local libraries, but museums and universities have also hosted talks and lectures about its development and it has been the center piece for workshops with children from local schools to "play" with the AR components and inspire their own creations. Deliberately open and active, it is more than its content, and rather part of a performative cosmology of use.

One can discover its resonances also in the contemporary reflections on DH, DCH, Post- and Non-Human theories, and New Material studies that allow us to explore 21st century media, deep in transition, historically, formally, and culturally. It is important that we find ourselves again on a cusp of invention, in a state of in-between-ness where we accept that times are rapidly changing and media too then requires a new attentiveness. Ascott, who writes at the very beginning of the 21st century, responds to a new digital wave of invention driven forward by the explosive potentialities of the 1990's Internet. For him, the WWW births new knowledge forms and hyper-connects users to virtual worlds beyond their own familiar understanding and articulation capacities. But ultimately, for Ascott, virtuality leads him back to the contemplation of the material "living planet" to wet biology and moistworlds—not hardware and software exclusively (p. 3). He resists the impulse, as had many others who embraced the move towards pure virtuality as a marker of freedom from a myriad of convention (space, time, art, identity) and reminds us that matter, in fact, matters, and we should look to new forms of embodiment to express its presence. Only a decade and a half into the 21st century we find ourselves again at a new stage of media development and transition when AR/VR technologies have become commercially accessible and digital tools are ubiquitous and accepted in cultural sites, such as museums. Museum studies scholar Ross Parry, for example, in *Recoding the Museum: Digital Heritage and the Technologies of Change* has argued, museums exemplify a "postdigital" age where digital tools are not only a regular part of exhibition spaces and interactive experiences for visitors, but they are expected. Given this expectation, the focus has moved from increasing digital tools and establishing IT personnel in museum and heritage settings to enhancing the critical practices surrounding their use, we find ourselves in an important time for new critical models:

> Postdigitality in the museum necessitates a rethinking of upon what museological and digital heritage research is predicated and on how its inquiry progresses. Plainly put, we have a space now (a duty even) to reframe our intellectual inquiry of digital in the museum to accommodate the postdigital condition. (Parry, 36).

Incorporating a work such as KLUB into heritage environments, as well as library and school settings requires then a critical focus to match the complexities of the times it engages.

Haraway, writing only a decade and a half later, is also deeply affected by the time complexities emerging from the first wave of digitization and cyber invention that she claims re-arranged our modes of self-perception and knowing. This is similar to that "technoetic" time that Ascott addresses, and one predicted in her own initial cyborg fantasies of freedom in her "Cyborg Manifesto" (Haraway, 1991) in the 1990's that foreshadowed other 21st century revolutions. But she clearly connects time to space and is also inspired to explore more fully the next wave of deeply intertwined worlding practices (where time and space and matter come together to perform dynamic states of existence). First contemplated by Heidegger in *On Being and Time* (1927) this is a state of ongoing and generative presence in the world. And now Haraway writing at the onset of the Anthropocene, the current geological epoch defined by the affects of human activity on the environment and climate and its new attendant temporalities, sees new possibilities to understand worlding, including through technical devices. In this time, Haraway says, "it remains important to embrace situated technical projects and their people" (p. 1). This is a time of the deep present, a time of now, but also of the past and future, one of layered configurations:

> Staying with the trouble does not require such a relationship to times called the future. In fact, staying with the trouble requires learning to be truly present, not as a vanishing pivot between awful or edenic pasts and apocalyptic or salvific futures, but as mortal critters entwined in myriad unfinished configurations of places, times, matters, meanings. (p. 1)

This too is a kaleidoscope time, and at the core of the intra-active design process I imagine for these times, and one exemplified by a work like KLUB, is a desire to draw into conversation a number of these mixed-up theoretical and practical processes. I believe we might figure out what exactly we are doing and being and mattering by investigating and applying these disruptive principles engaged by trans- and post- perspectives. Engaged in these states, we are able to identify and deploy a series of complex media entanglements that keep the kaleidoscope turning , as it were, keeping elemental matters of all shapes and colors in dynamic view.

We can also work toward claiming the essence of the deep present as a core principle for design and development, when we recognize the power of being knotted together in naturecultures (non-binary) states of being, not ones imposed by media translation models. These deep material entanglements in the context of media development are evident too in the agential realist approach developed by Karen Barad in *Meeting the Universe Halfway: Quantum Physics and the Entanglements of Matter and Meaning* (2007). As with Haraway, Barad too sees worlding as a series

of inter-linked performative potentialities. For Barad, our aim must be to invest in practical and theoretical processes that demonstrate these dynamic acts of material becoming (P. 11) Such performances become themselves scientific demonstrations of the viability of the process towards meaning making, not on a valorization of the technology to reveal some truth. “The move toward performative alternatives to representationalism changes the focus from questions of correspondence between descriptions and reality (e.g., do they mirror nature or culture?) to matters of practices or doings or actions” (p. 28). Seen intra-actively - a neologism for Barad that intensifies and multiplies inter-actions—as within the non-binary processes engaged by DH, DCH and posthumanism, for example—the performing matter comprising the phenomena of the world is in an emergent state of becoming and it serves to negotiate and transform (in its deepest trans* sense) purely discursive, representational practices.

In a work such as KLUB where reader/users are encouraged to find and activate, bring to life, the decorated initials associated with characters and creatures in the books (combined picture-texts that act as trigger images for the AR application) they do not merely replicate in a different form the characters from the books. Many of the AR representations offer alternative 3D and 2D versions of the characters. Some have animations associated with them, and some reveal early sketches of what the figures once were, in process. Here the story and game elements are not defined by, or comprised of, their clear finished technical and/or aesthetic properties. They are not replications (translations) of book content, products to reveal meaning. Nor are they discursive cultural materials that overlay the natural world to tell or translate its story, or folkloric and actual histories, to bring them to life in contemporary forms. Rather these complex and vital materials keep their representational values in process, moving across time registers, to keep telling the stories in varied ways, using the oddkin method to engage curiosity, affect and surprise. (One needs only to watch the users of the AR application the first time they see the figures appear on the phones or tablets after activating the trigger images to see their delight and curiosity for more exploration. It’s a visceral response that bears little relationship to wanting to learn more about historical facts in traditional, pedagogical interactions).

These kinds of intra-activities reveal the intersectional dimensions evident in the design, production, play, engagement with, and analysis of such phenomena. They also illustrate the non-human, human, natural, cultural, creative, performances (and a myriad of other forces at work) at the center of any media encounter of this kind. The work emerges when seen and enacted through its differing material constellations, and like a kaleidoscope, it does not operate via static mediation, by displaying a singular entity in a unitary perspective, and it certainly does not teach local history though an accounting of facts. These are Chthonic multicritters in action, and the affective dimensions of KLUB are also evident in the ways that it attempts to teach local history through an embodied sense of play (collecting characters from the books in the AR app via the books but also through on-site visits to historical locations where one is encouraged to look for AR markers.) Here there is a mixing of fact, fiction, myth, and history and of reading, play, and physical discovery. Across the whole of the KLUB book series many different legends, histories, and landscapes are invoked and mixed together. Readers/users are urged to to discover them in multiple ways, through imagination, but also through practical exploration of historical sites in proximity to the towns, which they might not otherwise have found. In many Swedish heritage locations within the Skaraborg Region, as with its many ancient petroglyph and rune stone sites, for example, the historical materials are unmarked, and they may seem quite innocuous and underwhelming if one just sees them from the roadside. Especially to a child, but also to many adults, an iron age petroglyph site might look like rocks in a field, blending in to the normal countryside with little fanfare. One could easily see them each day and miss their historical relevance. Of course many archeological sites have been well developed through scientific investigation, and they are formally documented and incorporated into museum and heritage locations. KLUB purposefully draws from both of these sources and encourages investigation of all types, illustrating history can be formally discovered, but also in process, open for further investigation. Sometimes it is right in front of you, accessible on a ride to the bank, or behind a fenced cow pasture, and sometimes it is formally institutionalized. All kinds are included in KLUB.

This mixing of elements is quite evident in the Lindormen book for example, set in the real town of Tidan, where a time-traveling theme is overtly used. In this book the main protagonists Kira and Luppe travel back in time (ca. 400-600 AD) with the help of two talking Ravens, Hugin and Munin. Well-known figures in Norse Mythology (from the migration period, at least) these figures might be known to many Swedish children, although one might not expect to find them in such a little town within the region. When Kira and Luppe follow their instructions form the Ravens and leave the present time, they confront King Rane, another well-known figure, but this time mostly from more local Swedish mythology. long associated with the region in the area of Tidan. Discovering King Rane through the help of the Ravens, and entering a magic portal found at the site of a mysterious gathering of Rune stones, called the Stone Ship (or the “skeppssättning” in Swedish, an actual location outside Tidan), they work to free his buried treasure with the help of a magic water serpent, the “Lindorm,” for whom the book is named. Because some of these characters and settings are known from broad Nordic myths and some from hyper-local legends, and others are discovered in previous books in the series, the reader/users move among many planes and registers of reality and imagination. But they also move from reading activities to physical activity and playful exploration should they be encouraged (as they are in the books and the app.) to further explore the landscapes, museums, and heritage sites in the region. And for children, this means too they must do so with parents or other adults, encouraging collaborative exploration. Once on the move, there is even more to discover. In the case of the Stone Ship, for example, reader/users can not only activate AR figures from the decorated initials in the book connected to the site, but when they travel to the actual locations, more history is available on signs and plaques. But additional AR trigger images, recognizable form the books are also found in situ, and they can be activated through the AR application. When these particular figures are animated, different content (textual and graphical) from what they find in the books is also revealed. This way the story operates in a configuration of performances and encourages many modes of activation.

These sorts of mixed up materialities suggest that some learning is found through knowing (comprehensive discovery of fact), but other kinds are set in place via more physical, embodied states of being and doing. Once again, these states are accounted for in the some of the work of Barad when she addresses the importance of moving beyond models of pure rational understanding as a mode for innovation and discovery. (Given the fact she is based in the scientific discipline of Physics, one might see this as a more radical departure or claim than in other fields.) Barad’s proposed intra-activities, designed to support innovation and discovery of the material world, are always connected to affective states—those states beyond cognitive, rational knowledge production. They are seen as an intrinsic part of worlding (re Haraway) but also of mattering in/and/with phenomena. Intra-actions with phenomena begin with an intentionality of movement, what she refers to as an “agential cut” (p. 140), but that intentionality is not imposed externally to reveal some pre-determined meaning, and it certainly does not come only from human intervention and

desire. These cuts may operate with a twist of the wrist, as with a kaleidoscope, an initial movement to stir things up (to trouble) matters, but such intentionality is seen as a natural result of the designed affordances of the device in union with the more human wrist action. Kaleidoscopes are meant to be twisted, but the desire to activate that movement is not only found in the affordance of the human wrist; it is also intended in the affective delight and promise of the dancing colors and shapes placed in tantalizing view. It is designed in the desires of the function of the apparatus to redistribute its matter. And its agency is fulfilled by the many other more-than-human elements (light, force, perception, emotion, reception) that must ally to make a kaleidoscope work. Here too KLUB is designed for such mattering, allowing many different access points along its dynamic interface to entice users to play with the forms and to find desire in its multiple worlding entanglements and shape-shifting ways.

For Barad, this worlding is a kind of physicalized state, but it follows too an onto-epistemological trajectory (one comprised of being and knowing) found in all the elements, agents, atoms, of the universe. Universally, matters circulate in time-space configurations, in networked, swarming visions and they are inseparable from meaning: "They are inextricably fused together, and no event, no matter how energetic, can tear them asunder" (p. 7) Because knowledge is not pre-determined, experimentation is key to discovering new processes and new impacts as matter is circulated (as in media content, for example). The urge for innovation is not to reflect the world as it is, but rather to defract it, to scatter it, and to operate from a state of difference (p. 3). Inspired by Haraway, who sees diffraction as "an optical metaphor for the effort to make a difference in the world, Barad goes even deeper and explores it from the perspective of a quantum physicist, as much more materially/naturally situated and impactful:

> Mattering is simultaneously a matter of substance and significance, most evidently perhaps when it is the nature of matter that is in question, when the smallest parts of matter are found to be capable of exploding deeply entrenched ideas and large cities." (p. 3)

From this perspective, emergent transmedial experiences like KLUB, experimental by natureculture, may release new visions and align in politically and ideologically surprising and open ways, but also in innovative material ones. And for Barad they cannot operate only on intellectual levels: "To theorize is not to leave the material world behind and enter the domain of pure ideas where the lofty space of the mind makes objective reflection possible. Theorizing, like experimenting, is a material practice" (p. 55). The agencies deployed by such intra-activities are further materialized in the post-, non- and more-than- human bodies that they circulate and ascribe to defy pure human subject positions. As forms of disruptive resistance (to traditional media, history, and storytelling), convergent transmedial experiences like KLUB, do not then easily fall into the domain of human understanding and translation. The reader/user (or player) of this media type is not set apart from the technical apparatus, the affordances for interaction, or the affective flows released in the experience of playing or encountering its content, which is in-book, in-game, and in-world and its mattering is therefore wide-spread and materially consequential. KLUB moves from the space of the book to the many located heritage sites it includes in its story form, and it engages its participants through active and embedded learning, following the lead, literally, of its protagonists. The main characters, Kira and Luppe, are involved in a chase (after the evil Circus Ringmaster who has captured a host of creatures and forced them to perform in his circus). A central conceit of the stories, repeated across each of the books which are each located in a different town or village, is to keep on the move and to find new but related experiences in each of the books. Each town/book holds a new adventure and one discovers it by giving chase, by racing against time to free the creatures from imminent threat and danger. The real challenges the KLUB materials pose when they ask us to play with them is to suspend our disciplinary understanding of the body of the work as some (or one) representative thing we can clearly recognize; instead we must see their extended influences across a range of sectors and physically, intellectually, and affectively engage its content.

In this way, we might even find grounding with feminist technoscience positions, as with Nina Lykke in *Feminist Studies* (2010) who has classified a theoretical process that she terms feminist corpomaterialism. From this view, feminist approaches to materiality and corporeality work to undo essentialist definitions of the body—as gendered, human, and with biologically ascribed characteristics, for example. Extended in the work of others, like Stacy Alaimo in *Bodily Natures* (2010), the concept of trans-corporeality further conceives of understanding human bodies as mutually constitutive with their environments. These kind of (non-) human embodiments are "entangled territories of material and discursive, natural and cultural, biological and textual" (p. 238). For Alaimo the material world includes "human actions and intra-actions, along with intra-actions of man-made substances, all of which intra-act with natural creatures, forces, and ecological systems as well as with the bodies of humans" (p. 259). And in her recent work, *Exposed: Environmental Politics and Pleasures in Posthuman Times* (2017), she also evokes the Anthropocene age as a time for troubled, twisted critique, not one for sorting out. She declares in the opening sentence of her book that this is no time for natural propriety:

> "The anthropocene is no time to set things straight. The recognition that human activity has altered the planet on the scale of a geological epoch muddles the commonsensical assumption that the world exists as a background for the human subject. New materialisms, insisting on the agency and significance of matter, maintain that even in the anthropocene, or, especially in the anthropocene, the substance of what was once called 'nature,' acts, interacts, and even intra-acts within, through, and around human bodies and practices (p. 1).

And although perhaps it seems silly and somewhat lofty to place this set of AR-enhanced children's books, about a small and little-known region in Western Sweden, in the critical context of global geological transformation and Anthropocene, can we be at least intrigued by its twisted impulses? I wonder what might happen if we make/see/play DCH story-games in the spirit of vast environmental relata we encounter in the bestial oddkin world of KLUB. How might we activate and recognize these trans* practices and design ideologies?

One way here has been to look more elementally at KLUB, to uncover its troubled methods for keeping things twisted and to embrace its bestial media potentialities in the times and tempos it utilizes. We might find one twist in its situatedness/dislocation with concerns of re-telling, re-playing heritage content and local histories in order to find new contexts and resonances where they may be revitalized via connections to new affective assemblages. KLUB offers a connection to the past in the present, from both a content and a technical dimension. It uses the timeless appeal of mythical creatures (of trolls, sea creatures, fairies, mermaids, vampires and shape-shifters) as hooks to engage interest and to set the scene for cultural imaginaries which can be discovered together, by families, for example, but also by siblings and grade-school classes who are introduced to the books in workshops an interactive library

events. By so doing it bypasses the premise of reading as a private act (as with traditional books, if not children's books). But it also rejects the logic of reality as part of an historical heritage encounter for users. It sets the books in familiar contemporary and normal everyday places (grocery stores, banks, and bus stops), but it draws on fairytale and folklore as a device to deliver mixed-up messages (familiar, and yet not quite true). In this way it is diffractive, not reflective in its semiotic and material meaning-making. It's important, for example, that users find the actual library in Skara depicted at the center of the first book ("Trollforskaren" or "The Troll Researcher"). The Library is set at the center of the town in the book (just as it is in the center of the actual town of Skara). But it is also at the center of the trans* metaphoric action, an agent for discovery for all the other creatures who are ultimately revealed throughout the KLUB books, but who are first found in the research texts and ancient volumes in the Skara library stacks.

It's important too that KLUB uses an AR application in conjunction with a traditional media form, the picture book. In this way it draws the differing media into allegiance, without trying to make them the same, and yet extends the experiences into new transmutations. Using the diffractive rules of Haraway and Barad, and the model of "insects as media," it fittingly places them in the AR Bestiary. This modern repository for accessing new multimodal knowledge (images, audio, text) time-travels too, and it recalls the 12th century texts, the ancient Bestiaries that mixed fact and fiction, human and animal, and which inspired their 21st century design resurrection in the KLUB project. Putting this kind of multicritter media at the center of a performative, affective nexus in KLUB is the kind of twisted design choice that is imperfectly suitable for the mixed-up imperatives of new DCH game-stories.

Transmedial Literacies, Postdigital Play and Transformative Culture: Looking Forward (and Backward)

How might we move from here, then? I believe we can further these transformative media practices and trans* design practices by researching and nurturing their eco-systems. These rich, mixed, trans-corporeal networks for exchange support meaningful intra-actions that deeply engage culture. We can follow, for example, Mary Flanagan and her central premise in *Critical Play*, that is to find the transformative power in media designed for cultural intervention when it is re-situated: "Critical play is characterized by a careful examination of social, cultural, political, or even personal themes that function as alternates to popular play spaces" (p. 6). Flanagan recognizes games as complex "cognitive and epistemological environments" that may support users advancement of meaningful actions if designed within a "critical game-design paradigm" (p. 6). Drawing on the influences of the early 20th century avant-garde art movements (another tradition that emerges on the transformative and troublesome cusp of a new century). Flanagan considers games as ways to disrupt traditions, evoke political reflection and promote social change. Along with the Anthropocene imaginary and with other trans*corporeal materialists, post-digital design allows for a deeply transformative way of re-thinking the networks and contexts for, and at play within current postdigital DCH projects.

Brian Schrank in his *Avant-garde videogames: playing with technoculture* (2014) also recognizes the power of games and playful forms of active and embodied storytelling that can be transformational for ideological revolutions. Schrank also explores the connections between the political motivations of the avant-garde art movements, and their relationship to the cultural systems that engage them. Like Braidotti and her investigations of posthuman nature-cultures, Schrank, identifies "technoculture" as a sphere of powerful transformation, and he imagines it as a site for radical play one of deep convergence and interdependence between culture and technology. As such his impulses are trans* figurative, temporally dynamic, and resistant to human-centric models. He too finds the access to moistworlds, to the oddkin, when moving within media cultures in states of transition and transformation, when moving toward Chthonic invention and away from technical determinism. Thus, avant-garde videogames for Schrank are powerful vehicles to engage users in the affordances for change through disability and difference:

> Each game becomes a microcosm of technoculture itself. Games teach players how to engage and optimize systems as well as how to manage their desire in a contemporary world. This makes the world of games a principle site to expose, unwork, and rethink the protocols and ritual that rule technoculture. (p. 4)

Following Flanagan, Schrank, and the many others who believe that games create deep, compelling and complex environments for players to engage with culture and radically transform it, I urge us to embrace the unstable media forms we find in new DCH story-games and work to undo them. From such disarray, we can enact the agencies of these complex material eco-systems and open up their affective and fluid dynamics. We can find the mutual relationalities that emerge in critical play when trans* and post- ideologies circulate in entangled and twisted matters.

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A Theoretical Bestiary (or Glossary of sorts) for 21st Century Media

*Note: As with any Bestiary, references and definitions are loosely formulated and tenuously attributed; as such, these contents may be insufficient to satisfy the aspirations of the reader seeking truth. “Here Be Monsters.”

Term(s), Potentialities, Intensities	**“Definitions, ” Provocations, Necessary Placeholders**	**Origin Stories, Legacies, References**
Affect/ Affective Media	Visceral and vital forces, intensities experienced beyond emotional response and/or pure cognition, affect circulates among all the things of the world, leaving evidence of states of in-between-ness, beyond pure human knowing or control; non-binary and organic, excessive and more-than, affect emerges among bodies set in motion within networked assemblages. Digital interfaces and performative encounters with contemporary media and other human-machine relations become affective media	Hansen 2006; Hillis, Paasonen, and Petit, 2015
Anthropocene	A geological epoch, proposed as the current time, where human impact or human influences are a defining factor for geology, other earthly systems and and ecosystems (such as climate change).	Haraway 2016; Alaimo, 2017;
Oddkin (vs. Godkin)	A challenge to the notion of natural kinship and relatedness, Oddkin remind us of the many non-genealogical ways the matters of the world are brought into relation. Defying the concept of Godkin, naturally and rightfully proclaimed relationships and proper associations, Oddkin invite us to seek out others, to question our connections, and to uncouple our ethics and cultures, Oddkin support multispecies and more-than-human assemblages.	Haraway, 2016
Insectmedia/Insects as Media	Insectmedia allows one to find transposition (not translation) between insects and media. They are not a metaphoric category wherein one views media as like insects, a mirrored representation of them. Instead, insects as media, offers a model to see entities like insects as deeply transfigured potentialities that impact aesthetic, political, and technological development and design. Under analysis, they reveal media (like insects) to be a contraction of earthly forces, revelatory of environmental relationships and elemental milieus. One must study the hive in situ.	Parikka, 2010

Term(s), Potentialities, Intensities	**“Definitions, ” Provocations, Necessary Placeholders**	**Origin Stories, Legacies, References**
Intra-actions/Intra-activities	Intra-actions are encounters with the phenomena of the world tied to states of embodied, ontological knowing. Beyond cognition, traditional modes of representation and semiotic systems, intra-actions are primitive relations with the matters of the world, and they are experienced and produced through performative practices (science experiments, art and Tweeting, maybe).	Barad, 2007
Mixed-Up Media (Time)	Mixed-(Up) Media are affiliated with mixed media realities and devices—those that are both material and virtual in their matters and interfaces. As a descriptor for the 21st C media age, the evocation of this time assumes a deep, elemental set of entanglements with no promise or desire to be fixed or straightened. It defies a sense of linear time and/or history, and is therefore suitable for DCH game-stories.	Holloway-Attaway (here)
Multicritters/Chthonic Ones	Time-defiant monsters, these kinds of beasts resist singular definition and symmetry. They defy ideologies and are found in the past/present/future all at once. They are as likely to have tentacles as extra digits, and they challenge our sense of what is right and true. And they are everywhere. Look for them, but don’t try to comb their hair or wash their face(s). Look for some in the KLUB books and Bestiarium.	Haraway, 2016
Moistworld/Moist Domain	Moistworlds remind us that technologies are not hardware alone and that organic bodies are not the only ones that bleed. Somewhere between the virtual and technical domain lies a Moist Domain, and digital art, a smartphone, or a tablet-assisted museum artifact, can take you there. Bring towels and Kleenex. Maybe a hammer or a book.	Ascott, 2000
Naturecultures	Naturecultures remind us that “nature” and “culture” binaries are artificially separated and are created to support patriarchal and hierarchical agendas. Seen as one, they do not erase these divisions, but they work on, within, and against the tensions to trouble them.	Haraway, 2016

Term(s), Potentialities, Intensities	“Definitions, ” Provocations, Necessary Placeholders	Origin Stories, Legacies, References
Non-Human/More-Than-Human	Non-Human and More-Than-Human perspectives directly counter theoretical positions that privilege human-centric models for analysis and design. They favor theoretical and practical models that account for the affordances of many kinds of bodies and materials. In fact, they insist on them.	Haraway 2016; Parikka 2010
Postdigital (Museum)	In Postdigital times, digital media is ubiquitous and expected. The focus is not on the presence/use of technology; rather it is on designing modes of intra-action with users at the center who are familiar with digital media, possibly even suspicious of it, or bored with it, or too expert for their own good. One must surprise them, make them tingle. Think Pokemon Go or The British Natural History Museum with a dinosaur-enabled smartphone. History is hip and now and monsters are in your iPad.	Parry, 2010; Holloway-Attaway & Rouse 2018
Posthuman	Posthuman perspectives bypass human-centric or structuralist approaches to knowing and doing. Instead they privilege ‘other’ avenues to understanding. Human bodies are not the natural starting point for dividing the world into insides and outsides and/or organic and technical matters. Rocks have feelings too. Ask a fossil to tell you a story.	Braidotti 2013; Hayles, 1999
Story-Games	Story-games feature storytelling and narrative as central and elemental to their design, but they unfold those dimensions through deliberate and playful interactions with users: readers become players, images become playable objects, and historical artifacts fight back when you try to know them. Also swiping right may lead to heartbreak.	Holloway-Attaway (here)

Term(s), Potentialities, Intensities	“Definitions, ” Provocations, Necessary Placeholders	Origin Stories, Legacies, References
Technoetic	Combined of Techne—an active display of craftsmanship—and Gnosis—a supreme display of knowledge—Technoetic approaches combine making and doing with knowing. Crafty-doing leads to the embodied articulation of something secret and divine. Crocheted tea cozies are deeply entangled with histories of female domestication and boredom, and finger painting reveals childhood secrets about what your cat really looks like without rules.	Ascott, 2000
Technogenesis	Like Technoetic approaches, Technogenesis presumes humans and technologies mutually adapt and co-evolve. Humans do not ‘invent’ technologies without environmental input and ecological resonances. Weather patterns influence GPS design and rainforests guide us through touch interface design. Monkeys know why we made cameras.	Hayles, 2012
Trans*/Trans* Design	Trans* states are flux states: dynamic, defiant, non-discursive, and anti-representational. Trans* Designs have multiple interfaces, and they are polysensual and disloyal to media traditions. They don’t like metaphors, and they refuse translation. Affect is welcome.	Holloway-Attaway (here)

3 ALL THE DELICATE DUPLICATES

Mez Breeze, Andy Campbell

Mez Breeze, Andy Campbell
PC Game, 2017
https://youtube.com/watch?v=v6YoBKGICnQ

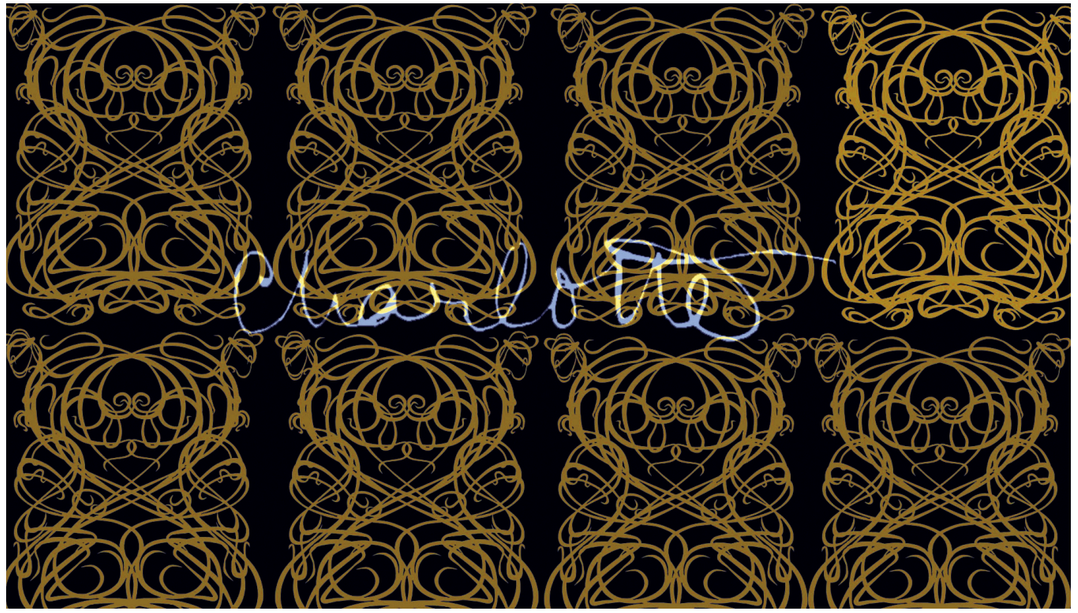
All the Delicate Duplicates is an indie game/digital fiction experience created by Mez Breeze and Andy Campbell. Inspired by the possibilities of fiction, digital poetry and experimental digital art, "All The Delicate Duplicates" tells a complex psychological story through game engine technology. The work challenges traditional storytelling within games by spanning multiple time periods, incorporating animated and transitional texts as physical manifestations within the gameworld, and leaving the story wide open to multiple revisits and interpretations.

The poetic, hybrid language Mezangelle (a poetic-artistic language developed by Mez Breeze in the 1990s: https://en.wikipedia. org/wiki/Mezangelle) forms a central part of the non-linear language in the game. It remixes the basic structure of English and computer code to create language where meanings are nested inside each other. Players will need to read, re-read then re-re-read again in order to piece together the narrative: scientific concepts and visuals are an integral part of the story's structure.

"All The Delicate Duplicates" is a short single player first-person narrative game that toys with the concept of time: reality isn't stable or linear here, but unfurls across a storyworld that bends, flexes and (in some instances) duplicates.

4 CHARLOTTE

Elizabeth Goins



Elizabeth Goins
Exploration/Walking Simulator Game, 2016
https://www.extinctangel.com/games.html
PC, Headphones/Speakers, Mouse and Keyboard

Charlotte is an exploration/walking simulator game that allows players to explore the history and culture of 19th century women through the short story, The Yellow Wall-paper and the life of its author, Charlotte Perkins Gilman. Players are put in the role of a woman trapped by the rest cure for hysterical tendencies so that they may empathize with the character's feelings of powerlessness and frustration. “Charlotte” allows players to step back in time to late 19th century America. The setting, a mansion described in the short story The Yellow Wallpaper, is a metaphor for the mind of Charlotte Perkins-Gilman. Perkins-Gilman was an important American suffragist and the author of the story. Each room represents an aspect of Perkins-Gilman life and contains ephemera that describe the influences surrounding her at the time. There are two timelines in the game: the narrative timeline of the fictional story arc of The Yellow Wall-paper and the narrative of Charlotte’s life which is frozen in time, a memory palace

SECTION 02
DIGITAL HERITAGE

Rebecca Rouse and Mara Dionisio

The works collected in this section engage with a wide variety of digital technologies in service of interactive narratives for cultural heritage and tourism, both complexifying historical and cultural narratives as well as working to preserve and promote local cultures. “Proud & Torn: A Visual Memoir of Hungarian History,” created by Bettina Fabos and and collaborators, tells the autobiographical story of Fabos’ own Hungarian heritage, set within the larger historical contexts of Hungarian, European and American history from the mid-1800’s to today. The project draws from film, animation, poetry, and museum display traditions, all exhibited through an interactive web interface that allows for multiple pathways of navigation through the complex and layered histories. The personal and global are intertwined in an engaging mosaic that complicates dominant narratives of both Hungarian history and the American immigration narrative. In the chapter, “Proud & Torn: A Visual Memoir of Hungarian History,” Fabos along with co-creators Kristina E. Poznan and Leslie M. Waters reflects on the development process in designing the project, focusing on how themes of collective memory and visual storytelling intersect with interactive web technologies to create the engaging memoir experience.

“Fragments of Laura & Há-vita” is a transmedia storytelling project designed by the Beanstalk Team at Madeira Interactive Technologies Institute (M-ITI) to educate and promote the unique ecological heritage of the island of Madeira. The project includes story nodes accessed through mobile augmented reality, virtual reality, and a mobile accessible website. Users are introduced to historical sites of interest but also the ways in which the remarkable biodiversity of the island is tied to its cultural heritage, and the current movement to preserve and protect the island’s environment. Co-authors Mara Dionisio, Paulo Bala, Valentina Nisi, and Sandra Câmara reflect on a particular challenge when developing such complex, locative work in their chapter “Bringing Locative Media Indoors: Strategies for Remediation.” Building on the theory of remediation and concept of media ephemerality, this chapter suggests specific strategies and techniques for re-curating locative digital heritage works for presentation and dissemination in a wide variety of contexts, while working to maintain the meaning-making opportunities found in the original setting.

Finally, “Zena: An Interactive VR Film” created by Maria Cecilia Reyes and Serena Zampolli uses the interactive 360-degree film format to provide users with exposure to the ancient city of Genoa, Italy, which is a world heritage site. A time-traveling main character, Lorenzo, acts as a link for the viewer between the history of Genoa and today, with multiple pathways providing the viewer opportunity for engaged interaction in the narrative. Filmed in live action on site, “Zena” represents a creative blending of cinema, immersion, interactivity, and heritage. In the accompanying chapter from Reyes and Zampolli, “Shooting an Interactive Virtual Reality Film: Zena’s Production Case Study,” the authors discuss their creative process in depth and reflect on lessons learned developing for this new medium, sharing a set of best practices across the writing, production and editing phases of the project, as well as challenges for future research.

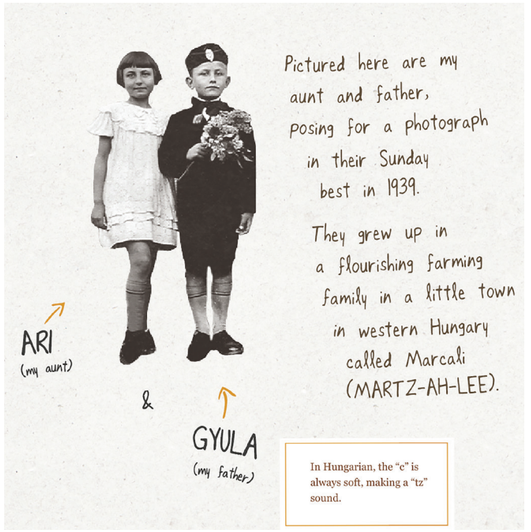
5 PROUD & TORN: A VISUAL MEMOIR OF HUNGARIAN HISTORY

Bettina Fabos, Dana Potter, Jacob Espenscheid, Collin Cahill, Isaac Campbell,
Leslie Waters and Kristina Poznan

"Proud & Torn: A Visual Memoir of Hungarian History", is an animated, digital timeline that tells the story, across time, of a Hungarian farming family who, as serfs, worked the land of the Carpathian basin and both prospered and floundered under the economic conditions and political decisions of "great men" in power. The story of this rural Hungarian family—a "nobody" family— is a refreshing critique of Hungarian nationalism, the dominant narrative of Hungary. Narrated by the American daughter of a Hungarian émigré, the work contains over 1,000 photographs, maps, graphics, and looping film clips that together create a rich tapestry of visual storytelling controlled by the user via horizontal and vertical parallax scrolling that continuously anchors back to the beautifully layered and interactive timeline interface. *Proud & Torn* stylistically combines the genres of timeline, photomontage and graphic history and celebrates amateur photographs. As such, the work is setting new standards for what is possible through historical texts in terms of visualization and the reinterpretation of history.

Reinterpreting History through an Interactive Timeline

The historical interactive timeline is an incredible rhetorical tool for communicating complex stories about our past. Combining the power of visuals—paintings, photographs, maps, video, and animation—with the logic of chronology,



Bettina Fabos, Dana Potter, Jacob Espenscheid, Collin Cahill,
Isaac Campbell, Leslie Waters, Kristina Poznan
Reinterpreting History through an Interactive Timeline, 2016
https://proundandtorn.com

we can chart changes over time in a rapidly accessible, provocative, and comprehensive way.

Most historical timelines, however, resort to a top-down history that typically chronicles the powerful people and the events of political states. This is the history portrayed by the collections at National Museum in Budapest: an endless parade of noble Magyar men, with just two women allowed into the narrative, the Habsburg Empresses, Maria Theresa and Elizabeth (who are not even Hungarian). These prominent figures, and the historical discourses that perpetuate their significance, dominate the way we understand Hungarian history.

As an alternative to the hegemony, the *Proud & Torn* timeline is populated by a typical family from the Hungarian countryside. It spans the years 20-1956CE, and each date is marked by a family member's "character marker" whose life one follows at a particular moment in Hungarian history. János (a serf) received a small bit of swampland after the 1848 revolution; István fought on the Italian front in 1914; Gizi lost her mother to tuberculosis in 1918; Pista was tortured under the Communist regime in 1949. Ari and Gyula, who are the central characters of *Proud & Torn*, lived through some of the most turbulent years of the 20th century. Their family story—dramatic to American ears—is sadly a typical one for Hungarians. But beyond being typical, their story is helpful in that it resides resolutely in the middle of the larger narrative of Hungary's economic growth and modernization, nationalism, and social struggles. They were neither consigned to poverty, nor privileged as nobility. They were not flag-waving Magyar nationalists, but

were relieved of being an oppressed minority ethnic group (e.g., Germans, Slavs, Jews, Roma). They were enemies of the state—enough to be tortured—but not enough to be killed. From the middle perspective of the Fábos family, *Proud & Torn* explores and measures the extremes of Hungarian society. And, from the perspective of this family with a sister and brother of similar age, it explores the expectations and limitations of gender as well.

Our production team has divided the timeline into sixteen chapters that begin before Hungary was even a country (20CE) and end when my father and aunt and were separated (1956), he escaping to America and she staying in Hungary. The clean interface lends itself to exploration and the photographs and animations increase engagement; a user can explore the chronology as a linear or non-linear narrative, and neatly leap to the Family Tree, the Epilogue, or scholarly perspectives on the project.

Our goal in constructing *Proud & Torn* has been to produce a public memory that is, at its heart, democratic. To this end, we combined Fabos's personal understanding of my family's history, the experiences of other ordinary Hungarians she researched and interviewed, and the more traditional ("great men and events") interpretation of Hungarian history into one integrated narrative based on time. Our desire is to fill in blanks and create a platform for the cultivation of other collective memories—images and stories—of Hungarian history. Interactive timelines that showcase the archival images of everyday life are one way in which to create more democratic, bottom-up social histories—emotional and cognitively compelling— and make them widely available through the web.

They were living in shoddy buildings that were missing essential features like window seals, insulation, and proper lighting fixtures. Many of these buildings, like the school Gyula had helped construct, had flimsy, three-centimeter-thick floors and terrible ventilation. These buildings were built on productivity quotas; like so many parts of the Hungarian economy, quality was the lowest priority.

They were standing in endless lines with ration tickets in hand, hoping to buy a brick of lard or some flour to make bread, often coming home with nothing except feelings of anger.

COMBINING PHOTOMONTAGE, GRAPHIC MEMOIR, AND INTERACTIVE TIMELINE TO TELL THE HISTORY OF HUNGARY

Bettina Fabos, Kristina E. Poznan, and Leslie M. Waters

Proud & Torn: A Visual Memoir of Hungarian History [proudandtorn.org] is an interactive timeline that visualizes Hungarian history up to the year 1956 using archival photographs, maps, illustrations, and short film clips gathered through historical research in more than twenty Hungarian, European, and other image archives. The narrative explains how two siblings and their ancestors experienced the dramatic and sometimes horrific events of Hungary's history: multiple revolutions, two World Wars (and the Holocaust of WWII), forced labor, and a host of social, political, and economic instabilities in communist Hungary. The family narrative perspective explores history from the ground up (rather than the top down), utilizes family photos and primary documents alongside archival findings, and challenges the dominant and narrow portrayals of Hungarian and European history by placing a greater emphasis on rural and agricultural history. Fresh visual sources from amateur and underutilized collections, both digital and archival, complement the text and do much of the storytelling in the project.

The timeline stylistically combines the genres of photomontage and graphic memoir and presents the content interactively and chronologically with parallax scrolling, a special web coding technique that makes background images move slower than foreground images, creating an illusion of depth and a more immersive visual experience. Parallax, a relatively recent web capability, allows users to control text speed and activate animation and video with the vertical scrollbar, allowing for the sophisticated delivery of complex chronology without disrupting narrative flow. *Proud & Torn* extends horizontally as a dynamic three-layer photomontage, and gives access to sixteen vertical "drop-down" chapters, all developed with parallax animation. Each of the chapters involve about fifty images (there are over 950 images in the project overall), which are often artistically animated as looped videos and include numerous short archival film clips and maps that are activated on the scroll; it is the user's choice to slow down and explore, or to continue moving downward. Through this project, we see that the combination of timeline history and parallax imagery can be a powerful tool in digital storytelling and for other applications in the digital humanities.

In documenting the story of a typical farming family that was impacted by world events and the decisions of European and Hungary's official lawmakers, *Proud & Torn* offers a more complicated and thoughtful understanding of everyday Hungarians' lives. In building this alternative web history, we have taken historian and educator Sam Wineberg's directives to heart: to "question the past" and "illuminate the present" using best practices in new media technology.[1] We hope that the immersive and visualized reading experience of *Proud & Torn* will give readers a wholly engaging and alternative narrative, and stimulate historians, educators, visual artists, and journalists to build visualized histories of their own using public digital archives.

The point of view of *Proud & Torn* is a woman in the present exploring how her father came to leave his family and country to migrate to America in 1956. To fully understand the story, the narrator investigates the larger context of European history and the "proud" story of the Hungarian nation. The double theme of "proud" and "torn" permeates the overall narrative, as national pride very often interfered with the stability of Hungary, leading to multiple revolutions, Hungary's fateful involvement in two World Wars, and a long relationship with communism. The project's prologue sets the stage for this story as the narrator introduces her father and aunt with a photograph from 1939, when the two siblings were eight and nine, respectively: (Figure 1)

The narrative continues: "*Proud & Torn* is a history of Ari and Gyula and previous generations of their family. Through them, it is also a history of Hungary. My Hungarian family's personal lives, as remarkable or unremarkable as they were, were drastically impacted by the decisions and actions of world leaders."

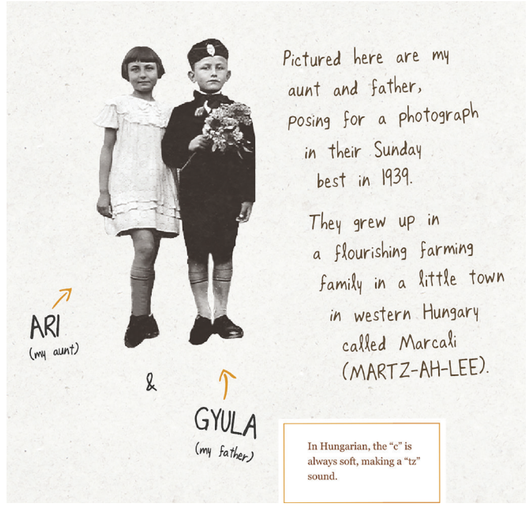


Figure 1 Detail of the Prologue, which introduces the story's main characters, Ari and Gyula.

Figure 2 Detail of photomontage element in *Proud & Torn*, chap. 13 (1949)

A Study in Collective Memory

Focusing on the story of one typical farming family, but also featuring competing stories of other families living in the same Hungarian town, the project incorporates collective memory to tell the larger history of Hungary and twentieth-century Europe. "A collective memory perspective," writes visual rhetoric scholar Carole Blair, "reminds us to think about how any message alters its context and speaks back to messages that have come before. And because of its focus on what and how we remember, it prompts us to think clearly about what is not said, as well as what is, for forgetfulness is a central operation in the process of constructing coherent and communicatively powerful memories."[2] For poststructural and multicultural critics, revisionist social historians, and scholars of collective memory, the idea of a singular, objective and authoritative "History" became "increasingly (and rightly) untenable," argues rhetorical

[1] Wineburg, Sam (2001). Historical Thinking and Other Unnatural Acts: Charting the Future of Teaching the Past. Philadelphia: Temple University Press, 132.

[2] Blair, Carole (2006). "Communication as collective memory." In G.J. Shepherd, J. St. John, & T. Striphas (Eds.), Communication as...Perspectives on theory (pp. 51–59). London: Sage.

criticism scholar Kendall Phillips. “Scholars turned to the notion of memory, or perhaps more accurately, 'memories,' as a way of understanding the complex interrelationships among past, present, and future”.[3] Collective memory discourses, played out through books, documentary films, museums, monuments—even in fictional plays and film narratives—have successfully helped us understand the complex interrelationships among past, present, and future. Visualizing collective memory is another matter. Today we have online access to non-commercialized, easily searchable digitized photographic collections (plus maps, illuminated manuscripts, prints, drawings, lithographs, etchings, and cartoons) in nearly every library and museum institution, from small town historical societies to large federal archives. This digital revolution in archival media has opened up access to previously unknown images and the possibility that these images could broaden and transform historical thinking. The U.S. Holocaust Memorial Museum (USHMM) and the Women in Military Service for America Memorial (WIMS) in Washington, D.C., for example, are notable in both privileging the memories of regular people and telling these stories through powerful photographs unearthed from personal archives. Rather than selecting famous figures on which to base their narratives, they represent social movements as evolutionary and they emphasize, through everyday rather than “official” photographs, the collective memories of regular people. Both of these museums are refreshing antidotes to nationalist mythmaking.

Proud & Torn is likewise rooted in a careful attention to collective memory scholarship and visualization. The narration constantly identifies Hungary’s national myths and comments about what and whose history is missing from them. The rich selection of photographs accompanying the story points to the palpable reality of everyday people living out the political decisions that led to either greater democracy or greater social oppression. What sets *Proud & Torn* apart from other alternative visual histories is its unique combination of three visual genres: photomontage, graphic memoir, and interactive timeline.

Photomontage

Photomontage, a method involving the excision and reassembly of photographic images, is consciously employed as the main mode of visual presentation in *Proud & Torn*. It is an important symbolic strategy on multiple levels. First, photomontage was established as a modern art form from the 1880s to the 1930s in central Europe—the time period and location of much of the *Proud & Torn* narrative. Almost as old as photography itself, photomontage came to life in the satirical or fantastic postcards common in central Europe from the late 1800s. From 1918 to the 1930s, photomontage fired the imaginations of hundreds of progressive artists across Germany, Austria, Czechoslovakia, Hungary, and Poland. German artist John Heartfield, who used photomontage as a political weapon against the Third Reich’s military agenda, is perhaps the most well-known of this group.[4]Soviet artists also embraced photomontage, launching Constructivism as a significant movement in graphic design. The technique became a symbol of modernity through its use in magazines, newspapers, advertising, and book covers. (Figure 2)

Second, as a technique built on recycled image fragments, photomontage embraced “lowbrow” photographic culture in the same way that *Proud & Torn* embraces history from below.Disdained by serious photographers, photomontage’s method of production also used the impersonal, collective enterprise of assembly and was geared for presentation to mass audiences. The socialist impulse in photomontage is germane to the content of the *Proud & Torn* narrative, which traces the political destruction, fragmentation, and reconfiguration that led from feudalism to capitalism, socialism, and communism in Hungary and other parts of Central Europe.

Third, photomontage was widely used to comment on and comprehend the trauma of mechanized warfare during World War I, in which human beings were being torn apart and then reconstructed into a semblance of fitness through crutches, amputation, and prosthetics. The photomontage method of the time mimicked this absurd reconstruction of torn bodies, while simultaneously visualizing torn identities, torn towns and cities, and a tumultuous redistricting of Europe. All of these themes are evident in *Proud & Torn*, which captures the rips and reconstructions that marked early-twentieth-century Central Europe.

The photomontages in *Proud & Torn* make extensive use of the trove of family photographs and previously unpublished archival photos from Hungary. The Fáboses purchased a German camera in the 1940s to document life on the farm, capturing relatively rare images of agricultural production and everyday rural tasks. These family photographs are placed in conversation with images collected from Fortepan, an open access collection of amateur photographs from Hungary from 1900 to 1990, and archival sources, like the archive of the Hungarian Policeman newsletter and of Hungary’s national Museum of Ethnography. Designer Data Potter’s photomontage layouts layer photographs in blue and brown tones, adding to the multidimensional look of the site. The horizontal stretches of photomontage throughout *Proud & Torn* encourage viewers to wallow in these rich archival photos and the narrative power they yield through their juxtaposition.

Beyond drawing inspiration from important photomontage movements, we have been influenced by a number of more recent artistic works that rely on photomontage. Among them were the whimsical and often surreal collage-based animations of Terry Gilliam, which he developed for Monty Python’s Flying Circus.[5] Gilliam combined cutouts of Victorian-era photographs with his own art (hand-drawn feet, monsters, frogs) and colorful gradient backgrounds. Our animations, designed by animator Isaac Campbell, are more subtle than Gilliam’s and specialize in isolating and animating parts of a photograph, such as an official’s clapping hands, a communist supporter’s pumping fist, a bureaucrat’s typing fingers, or, on a larger scale, a family member riding past a field on a tractor or a skater gliding across an ice rink. The resulting animations add an element of surprise and interest as one works through the visual narrative. Two documentaries, A Short History of the Highrise, developed by Katarina Cizek for the New York Times,[6] and RiP!: A Remix Manifesto, an open source documentary by Brett Gaylor[7], also influenced our work, with their ability to combine and animate photographic elements to better communicate or dramatize a concept.

Graphic Memoir

With its roots in the commercial comic strip, the graphic novel form (and its subgenre, the graphic memoir) is one of the most exciting and evolving new categories of publishing.

[3]Philips, Kendall R. (2004). Framing public memory. Tuscaloosa, Alabama: University of Alabama Press.

[4]Zervigón, Andrés Mario (2012). John Heartfield and the Agitated Image: Photography, Persuasion, and the Rise of Avant-Garde Photomontage. Chicago: University of Chicago Press.

[5]Gilliam, Terry (1979). Animations of Mortality by Terry Gilliam. New York: Methuen.

[6]Katerina Cizek (2013). “A Short History of the Highrise,” Op-Docs/New York Times. http://www.nytimes.com/projects/2013/high-rise.

[7]Gaylor, Brett (2008). Rip: A Remix Manifisto. National Film Board of Canada/EyeSteelFilm. https://vimeo.com/8040182.

[8]Spiegelman, Art (1991). Maus I: A Survivor's Tale: My Father Bleeds History. New York: Pantheon.

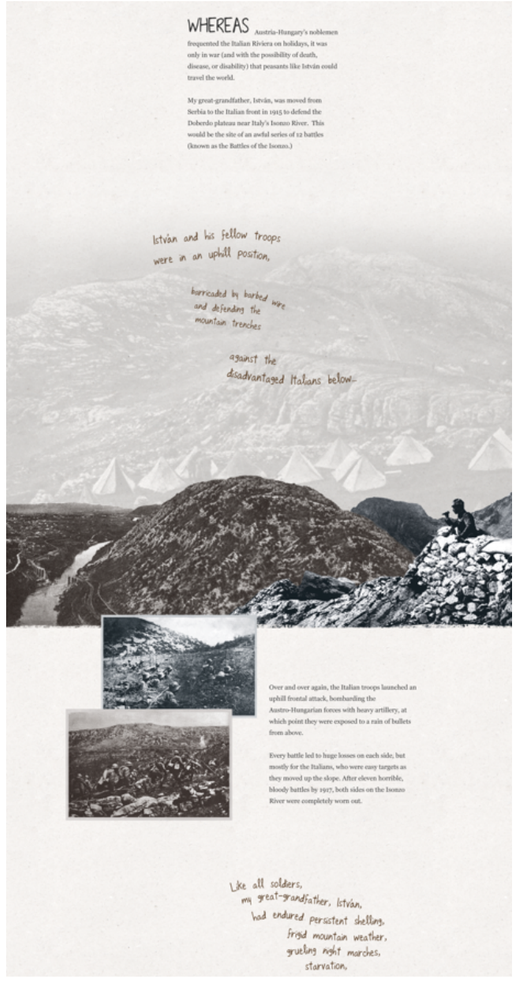


Figure 3 Detail of Proud & Torn, chap. 5 (1914)
Figure 4 Detail of Proud & Torn, chap. 6 (1918)

Figure 5 Detail of *Proud & Torn*, chap. 16 (1956)
Figure 6 Detail of *Proud & Torn*, chap. 16 (1956)

Starting with the publication of Art Spiegelman's Maus I: A Survivor's Tale: My Father Bleeds History (which won a Pulitzer Prize in 1992)[8], graphic memoirs have moved from a niche market to mainstream acceptance in the last two decades. Notable works include Raymond Briggs's Ethel & Ernest: A True Story,[9] about his English parents throughout the twentieth century; Marjane Satrapi's Persepolis,[10] about her life in Iran; Alison Bechdel's Fun Home: A Family Tragicomic,[11] about growing up with her secretly gay father; Maira Kalman's And the Pursuit of Happiness,[12] a personal investigation of American democracy and its workings; Mary and Bryan Talbot's Dotter in Her Father's Eyes,[13] about two father-daughter relationships; and Joe Sacco's Palestine, Footnotes in Gaza, and Journalism,[14] about his personal experiences in war-torn Palestine and Bosnia. All of these works make complicated history accessible through powerful visuals and a subjective and provocative point of view. Similarly, *Proud & Torn* puts an unassuming personal story at the center of the project and weaves a questioning, feminist, and consciously subjective voice throughout the story. Everyone's story, the narrator suggests, is significant. (Figure 3, 4, 5 and 6)

Instead of the hand-drawn illustrations of most graphic memoirs, each drop-down chapter is illustrated by powerful photographs (many of which are selected from their original background or subtly animated), narrative commentary formatted in a handwritten font specially designed for the project, looped animated gifs, background information boxes, and short video clips automatically activated by scrolling. The parallax technique applied to every chapter (as well as the timeline interface itself) makes all components float as if in 3D, visually enlivening each image.

Interactive Timeline

The combination of photomontage and graphic memoir within an interactive timeline has never been undertaken on as great of a scale as *Proud & Torn*. We are testing this combination to tap the enormous potential of historical interactive timelines for conveying visual rhetoric, public memory, and complex events. The immersive 3D parallax scrolling experience is also unique to the interactive timeline environment. The narrator begins the chronology in ancient times (Chapter 1: Backstory), moving briskly through (and critiquing) the country's foundational myths and introducing the narrator's first traceable family members (serfs working on a nobleman's estate). The subsequent fifteen chapters, from 1848 to 1956, tell Hungary's history through multiple generations of the Fábos family, advancing the timeline through the evolving cast of characters as they grow up, age, pass down the farm, and survive numerous revolutions, World Wars, the onset of communism, and complete disruption to their way of life.

Two interactive timeline projects influenced the development of *Proud & Torn*. The first is the timeline developed by the Anne Frank House in Amsterdam as an online companion to its museum.[15] The image-laden project is an excellent and inspiring example of what is possible

[9]Briggs, Raymond (2001). Ethel & Ernest: A True Story. New York: Pantheon.

[10]Satrapi, Marjane (2014). Persepolis: The Story of a Childhood. New York: Pantheon.

[11]Bechdel, Alison (2007). Fun home: A Family Tragicomic. New York: Mariner Books.

[12]Kalman, Maira (2010): And the Pursuit of Happiness. New York: Penguin Books.

[13]Talbot, Mary M. and Bryan (2012). Dotter in Her Father's Eyes. Milwaukee: Dark Horse Books.

[14]Sacco, Joe (2001). Palestine. Fantagraphics, Seattle; (2010) Footnotes in Gaza. Metropolitan Books, New York; (2013) Journalism. Metropolitan Books, New York.

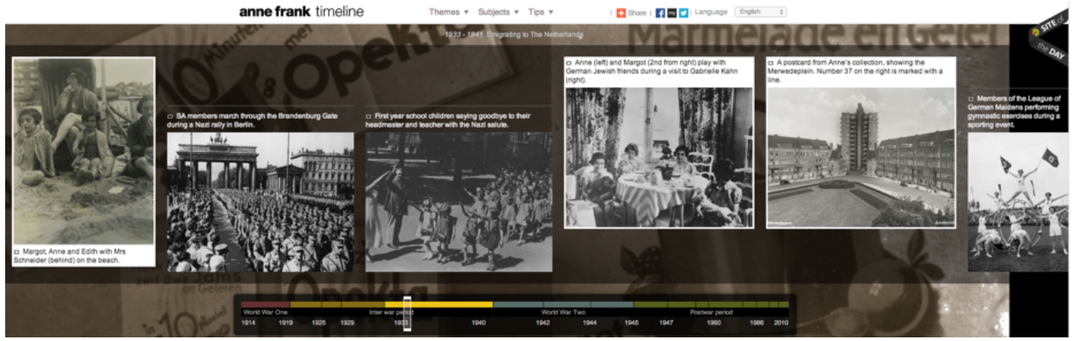


Figure 7 A screenshot image of the Anne Frank Timeline: http://annefrank.org/en/Subsites/Timeline.
Published with permission from the Ann Frank House.

[15]The editor of the Anne Frank Timeline, Gerritt Netten, has also created two similar adaptations to the first timeline: "Amsterdam of Anne Frank," http://annefrank. org/amsterdam, which focuses on the city of Amsterdam, and the interactive Anne Frank exhibit, which is housed at Google's Cultural Institute: http://google.com/culturalinstitute/exhibit/anne-frank/wQi4lSIy. (There is an app for that as well, which is found on the Android and iPhone by searching repudo).

Figure 8 Three representative sections of Proud and Torn's horizontal timeline, with character markers that lead to full-length vertically-scrolling chapters.

online with chronology, photographs, and memory (Netten, 2010). By combining the story of Otto Frank and his family in Amsterdam (most notably Anne) with the larger context of cultural memory and archival photographs reflecting the everyday experiences of real people, we gain a deeper, more profound, and more memorable understanding of World War II and the Nazis' rise to power. We are also given greater insight into how such a normal family dealt with the nightmare of their terrifying situation.

Appearing horizontally, the Anne Frank timeline is divided into sixteen segments, with the first ten detailing a different period of the Frank family's life and the final six focusing on the history of the Anne Frank House. The entire timeline is controlled by a color-coded timeline scrollbar, which allows users to interact with a stream of horizontally placed photographs, all of which are clickable and lead to a more in-depth description. For example, the fifth segment (1933-1941), shows images of a waif-like five-year-old German girl (Anne), who we learn has recently arrived in the Netherlands with her family after fleeing an increasingly anti-Semitic Germany; she is overwhelmed by a strange new culture and doesn't speak a word of Dutch. The images selected in this part of the chronology illustrate the family's discomfort in their new environs: Anne plays outside her new housing development, stands for a school class photo in the back of an all-Dutch classroom, and shares tea with new friends. These images of personal discomfort are juxtaposed with the insidious images of everyday anti-Semitism synchronically taking place throughout Germany: gymnastic performers incorporate a Nazi flag in their routine; a Jewish man is publicly castigated for dating an "Aryan" woman; schoolchildren march in procession while giving their headmaster a Nazi salute. The explanations that link these photographs together offer a rich understanding of life under the Third Reich. (Figure 7)

To progress through this chronology is to experience the Frank family's repeated attempts to get away from the encroaching threat of Nazi Germany and the enthusiastic, normalized, and increasingly horrific assaults on Jewish life and culture that intensified throughout Europe. Through these juxtapositions of "everyday" (the everyday of Anne's family, and the everyday of Germany, and then Holland) come a more complex understanding of German Nazi identity and historical truth: the SS men led by Hitler did not alone "cause" the Holocaust, and the German people were far from oblivious to the annihilation of Jews. By placing Anne Frank's story in the context of larger social movements across Europe, and including gripping archival photographs to tell this story, this timeline succeeds dramatically in communicating public memory. We aimed to mimic much of this approach in *Proud & Torn*.

The second influential timeline inspiration was the tightly edited magazine piece "Arab Spring Break," written by Joshua Davis and developed by Upperquad for the online magazine Epic: True Stories.[16] The timeline is built across nine short chapters that document the story of twenty-one-year-old math major Chris Jeon, who abruptly left a comfortable and prestigious paid internship in San Francisco for a "real" experience fighting with the rebels in Libya. The design of "Arab Spring Break" is astonishingly beautiful. The timeline has two directions -- a subtle interchange from vertical (when the story takes place in California) to horizontal (when the story switches to Libya), going back and forth multiple times, with the vertical scroll always controlling the parallax. We also appreciated how floating parallax elements, with foreground elements often pinned while background images move horizontally, moved the story forward. Upperquad captured tactile 3D photo elements on a light table rather than scanned them as flat images. These images are either animated (e.g., a crumpled dollar

[16]Davis, Joshua (2015). "Arab Spring Break." Epic: True Stories [Online]. Available: http://epicmagazine.com/arab-spring-break.

bill, opening up and crumpling back) or floated across the screen (e.g., a cigarette butt, a bullet, handwritten notes on a piece of cardboard, a wrinkled letter written in Arabic). We incorporated all these elements, to various degrees, in *Proud & Torn*.

Like "Arab Spring Break," we also incorporated short, looped videos, lasting only five to ten seconds, which act like moving photographs and offer a sense of dynamism and interest to the project; because of their short length, they don't require any time commitment on the viewer's part and have no issue with load-up times.

Taking all of these elements into account, we designed the *Proud & Torn* timeline interface as a sweeping horizontal photomontage that contains three independently moving layers (clouds, middle layer, foreground) ,and provides a visual overview of the entire history of Hungary. Sixteen character markers indicate each chapter, and users activate the timeline's horizontal movement by scrolling vertically on the right hand scroll bar, making the project immediately and intuitively interactive. A user can also scoot along the timeline by choosing any of the chapter numbers in the navigation bar at the top of the interface. Each chapter drops down to vertical stories about the family and their town at each chronological point in the timeline (Prologue, Backstory, 1848, etc., 1848, 1867, 1900, 1914, 1918, 1920, 1930, 1940, 1944, 1945, 1946, 1949, 1950, 1953, 1956, and Epilogue), conveying the story of Hungary (and much of Europe) in the process.

The chronological dimension of *Proud & Torn* pulls the project together and helps ground the narrative in the sweeping turmoil of Hungarian history and broader European and world events. The medium of an interactive timeline, used strategically, makes this complicated story accessible, engaging, and memorable. (Figure 8)

6 FRAGMENTS OF LAURA & HÁ-VITA

Beanstalk Team (Valentina Nisi, Mara Dionisio, Paulo Bala, Claudia Silva, Rui Trindade, Sandra Olim, Dina Dionisio, Ana Bettencourt, Duarte Texeira)

Fragments of Laura (FoL) & Há-vita is a transmedia project inspired by the natural capital of UNESCO's World Natural Heritage Laurisilva Forest of Madeira. The project will allow the audience to experience different historical times of Madeira's cultural and natural heritage.

In "FoL", the narrative takes place in the 19th century and the user has the chance to follow the story while interacting with the environment, as they can unlock new content on each historical landmark included in the experience. In "Há-vita", the content is presented in a web-platform, designed to create a bridge between the locative playable fictional story with journalistic style interviews providing more in depth information about the local heritage in the current days.

In this way, we find the experience related to Time and Tempo, as it allows the audience to time-travel to the 19th century and experience a story that touches upon local natural heritage. The user gets to learn about the outstanding relict of Laurisilva forest, through the eyes of a 19th century naturalist (the heroine of the fictional story) who just discovered the wonders of the forest's biodiversity. Then browsing in the "Há-vita" Web Platform, the audience travels back to current times, where they are able to interact with new content and hear from today's scientists and locals about the value of Madeira's heritage. Furthermore, the experience brings awareness on how now we have to act to preserve, protect and cherish all the biodiversity we have before it's too late.

"Fragments of Laura" is a fictional narrative delivered to its audience through a custom made location-aware mobile application that uses location-aware sensing to guide the audience to discover a fictional story developed around seven touch points, specially designed to deliver information about Madeira island's natural capital and its

value. The “FoL” mobile app was designed with the intent of making the audience discover certain locations in the historical part of Funchal to unlock parts of the story. The story is presented in the form of audiovisual content (2D motion comics), and interactive virtual reality scenes. At the end of each plot point, an interview clip, synthesized from in-depth recorded conversations with local scientists and local knowledge holders, is proposed to the participant, who can choose to watch or save it for late viewing. Furthermore, the full version of the interviews can be followed in the “Há-vita” web platform, which collects a variety of scientific facts about the island natural heritage, collected and edited as video clips and available online. The “Há-vita” portal is designed to foster the intersection of the locative playable fictional story with journalistic style video interviews. In this way we have a transmedia experience, composed of two interconnected components: an online participatory portal (“Há-vita”) and the mobile context-aware story ("Fragments of Laura").

Beanstalk Team (Valentina Nisi, Mara Dionisio, Paulo Bala, Sandra Olim, Rui Trindade, Dina Dionisio, Duarte Texeira, Claudia Silva, Ana Bettencourt) Transmedia Project, 2017
https://havita.m-iti.org/fragments- of-laura/
Smartphone Application, Web Platform, Virtual Reality

BRINGING LOCATIVE MEDIA INDOORS: STRATEGIES FOR REMEDIATION

Mara Dionisio, Paulo Bala, Valentina Nisi, Sandra Câmara

Introduction

Remediation, the representation of one medium in another medium, is a crucial concept to understand the emergence of New Media, and its relation to its predecessors (Bolter, Grusin, & Grusin, 2000). The concept of remediation offers a new lens to understand the emergence of Locative Media. Initially, the term 'Locative Media' defined the study and the practice of how GPS and wireless location-based networking affects people's notions of space and social organisation within space ("International Workshop 'Locative Media,'" 2003). GPS services can be understood as remediation of maps; not only are you able to access the same information a map would allow, it also, pinpoints your spatial position in relation to it. Later, the term 'Locative Media' became a synonym for media that blurred the barrier between the physical and the virtual world, using mobile media that augments experiences in real places through relevant geo-tagged information (Espinoza et al., 2001; Kjeldskov & Paay, 2005; "Proboscis," 2003). Therefore, works on Locative Media grow from being merely the remediation of GPS services, to include remediation of other mediums, such as cinema, augmented reality, and gaming, among others. In a way, Locative Media is constantly growing as it remediates new mediums into it.

Remediation is often inspired by a specific need stemming from the medium itself. For example, the digitization of books not only allows for widespread distribution of knowledge but also safeguards against the ephemerality of the medium, by actively playing a part in the curation and preservation of the work. Locative Media also encounters the issue of ephemerality, in particular in relation to the context that it is experienced. As opposed to most New Media, which uses the virtual space as representational context, Locative Media adopts a critical approach towards the "decorporealized" screen-based experience, claiming the physical world as their territory, therefore being strongly site-specific. Although Locative Media is normally supported by a technological framework that is not ephemeral (or at least robust), the reliance on location as a medium or as context, makes Locative Media, ephemeral in nature. For example, sand paintings, sculptures made of organic materials that are designed to disintegrate, graffiti and guerrilla art (London, 2013), all use location as a medium, and therefore are highly depended on its ephemerality. The location can also be used to create context, where the visual link between digital media and physical locations can help generate what has been identified by Reid et al (Reid, Hull, Cater, & Fleuriot, 2005) as a "magic moment", a moment when the user experiences excitement or joy in overlapping the world they are living in with the world of the story being told. On one side, location and its ephemeral quality are a novelty/attractiveness factor to Locative Media experiences, since an "expiration date" creates urgency around the content and motivates participants to experience it. On the other side, most Locative Media works that use location as a context, are short-lived or limited time projects, due to the difficulty in maintaining the same conditions that make the project successful in the first place (Crow, Longford, Sawchuk, & Zeffiro, 2009).

While the site-specific nature of Locative Media as a core component of the work can be easily recognized, artists and researchers, often need to showcase their work outside the location to where it was designed for. This need highlights the necessity of remediation strategies to deal with the change of location as medium and context. However, this fails to address issues such as conservation and documentation of ephemeral Locative Media. Therefore, in this chapter we explore how we can use remediation strategies to transpose the Locative Media art from the location where it was designed for, to a location where it is showcased or documented (such as art galleries, public events within conferences or museums). To address this need, throughout this paper we reflect on locative storytelling projects and artworks that we developed and the strategies utilized to adapt them to different contexts. Firstly, we provide some background on locative storytelling, namely, Location-Aware Multimedia Story (LAMS), a subgenre that our work falls into. We also look at the ephemeral nature and challenges in curating such works. Secondly, we review existing LAMS experiences and strategies we used to remediate them to be shown in different contexts. Finally, we conclude with a reflection on such strategies.

BACKGROUND

Remediation

Remediation (Bolter et al., 2000) is distributed along the dual logic in between immediacy and hypermediacy; both poles hold the intention of making the representation seem real. While immediacy tries to erase the media itself to achieve authenticity, hypermediacy on the other side inflates the media to achieve authenticity and a feeling of fullness. The extent of the remediation leads to different categorizations of the process. In a transparent remediation, the new medium is used to represent the old medium without adding to it (e.g. digitized text based on a book). In translucent remediation, the difference between the old and new medium is emphasized to highlight the superiority of the new (e.g., you can electronically search a document faster than its physical counterpart). In hypermediated remediation, the old medium is presented alongside the new (e.g., a website image gallery). In aggressive remediation, the new medium absorbs the old medium (e.g., a digital interactive narrative that counters the passiveness user experience of cinema). Finally, in refashioning remediation, the new medium refers to the old medium, such as when, a film borrows the same composition from another. Common to all of these is the central statement that all media is understood in relation to other media, therefore, the uniqueness of New Media refers to the ways that we reuse mediums or technology in different contexts to create different experiences.

Location-Aware Multimedia Story (LAMS)

"Location-Aware Multimedia Story (LAMS) systems are a subgenre within the wider field of Locative Media" (Nisi, Oakley, & Haahr, 2008). Locative Media can be seen as the type of media in which the position and the change of position within a particular space is essential to their conception. Nisi et al. in their work (Nisi et al., 2008) defined LAMS as: "Cinematically rendered narrative content related to specific locations and embedded in real spaces through the use of location-aware mobile technologies. LAMS combine the mobility of the audience with the spatial distribution of the story contained in interactive, multi-threaded narrative experiences, to create a sense of place from otherwise unknown spaces."

In the work "Towards a Language of Mobile Media" (Dovey & Fleuriot, 2011), a dimension called "Arbitrary Mapping<>Meaningful Mapping" describing the nature of an application related to the physical/social/cultural landscapes it pervades. For example, an application when is arbitrarily mapped onto a landscape, there is no semiotic or meaning-making necessary between landscape and application for it to make sense. While for a meaningful mapped application, the content relates to specific parts of the location and it would not make sense to run the application else-

where. Therefore, LAMS are encased in the Locative Media concept where a meaningful mapping occurs as the stories presented are strongly related to the locations. These spaces become "hybrid spaces", digitally layered spaces where social interaction and communication patterns traverse through physical, digital, and a mix of both spaces (De Souza e Silva, 2006). While the strong mapping between LAMS and locations is beneficial to the creation of the story world, the ephemeral nature of locations endangers the resilience of LAMS.

Media Ephemerality

Historically, the term "ephemeral" has been used to describe things that do not endure (London, 2013). Ephemerality, has recently regained attention and popularity with the appearance of ephemeral communication platforms (e.g., Snapchat, Instagram Stories, and Facebook Stories) (Cavalcanti, Pinto, Brubaker, & Dombrowski, 2017) and the ephemeral nature of these types of media leave users experiencing different types of loss. For example, Snapchat users experience media loss (the loss of an artifact), meaning loss (the loss of emotional and social significance of shared content), and context loss (lack of understanding of the conversation's flow) (Cavalcanti et al., 2017).

In technology, most discussions of ephemerality revolve around the user's limited exposure to media. This is, however, different in other areas leading to the separation of ephemeral work and ephemeral medium. While, an ephemeral work can be seen or heard only once (London, 2013), the ephemeral medium deals with the fragility of materials and harsh environments in which the works are presented and stored (London, 2013). In Locative Media, particularly in LAMS, we find a combination of issues of ephemerality. Initially, back in the early 2000s, LAMS were highly dependent on custom devices as a support framework[1 2 3] (Collins, 2013). Eventually, the move to mobile technology that is more accessible and popular, gave rise to technology support frameworks that are more robust and easy to maintain (Avouris & Yiannoutsou, 2012; Bilandzic & Foth, 2012). As technology rapidly evolves, we risk obsolescence of the work, so the threat of ephemerality is always looming. A common strategy is to have LAMS artwork that is often only available for a limited amount of time, akin to performance art. This is intentional on the part of the creators to capitalize on the "urgency" of work, even though they risk making it inaccessible for future reach. Moreover, the spatial and time nature of LAMS is dependent on an ever-changing atmosphere of the location that it is designed for. The ephemerality of the context/location is a constant risk for the experience of LAMS. For example, if for some reason the location or ideal time of the day is not available, the experience might be sacrificed. All these risks to the significance and experience of LAMS, accentuate the need for preservation and curation of Locative Media.

Curating locative artwork

> *"The term locative art itself already points to a state of closure - locative is location-based and site-specific and thus implies access limitations"* (Cook, 2008)

The temporal aspect of an art piece and deals with the fact that a locative work used to become a permanent part of the environment or only exist there for a limited period

[1]http://polakvanbekkum.com/done/majorgps-projects/amsterdamrealtime

[2]http://terirueb.net/place_names/

[3]http://yolandeharris.net/?nk_project=sun-runsun

(Dovey & Fleuriot, 2011). This limitation affects the artist's design decisions. It is far easier to have higher levels of technical support for a unique event than for a year-round installation. However, like Graham (Graham, 2011) points out in "Snapshots from Curating Mobility", there is a gap between documentation and reality, and the occasional equally strange gap between artwork and audience in mobile artworks. As artists, we must also facilitate and work together with curators to increase the life spam of the work. An absence of collaboration would be problematic for a curator to deal with the locative work without any specialist knowledge from the local community that the work relates to (Harding, 2003). Artists are the closest people to the conception creation of the art piece; its meaning and message. It is usually in the artist best interest to make the art piece as easy to curate and document as possible. When discussing LAMS, these tasks become an extension of the artwork itself, and the solution for this requires the inventiveness of the artists to pull together the factors of time, space, and a sense of context in recreating the artwork in the absence of those factors.

REMEDIATION STRATEGIES FOR LAMS

Due to years of experience working and developing LAMS projects, the need to move and showcase the work outside the locations that they were developed for, became pivotal. Furthermore, we identified the need for curation and preservation of locative projects. Over the next sections, four LAMS projects are discussed, alongside strategies taken to remediate the work, in the absence of factors such as time, space, and sense of context. Such approaches are aiming at remediating site-specific mobile interactive storytelling projects from the place where they were designed to be experienced into art galleries, public events within conferences or museums. The resulting work should not be seen as an extension of the work; rather, we defend that this remediation should be considered as an extension of the process of designing LAMS.

7 Stories: A location-based narrative experience set on Madeira Island.

Madeira, a small island in Portugal, has a very rich traditional culture full of superstitions and folktales, alongside a booming tourist market unaware of its lore. This provides a rich context to design and produce, 7 Stories, a mobile application, treasures traditional folklore and makes it available to locals, foreign residents, and tourists. Santa Maria Street was chosen as an appropriate setting for the experience, for being a long and straight path, easy to navigate by non-locals, still maintaining its traditional atmosphere. After collecting old anecdotes and folktales from the local tradition, these were scripted and adapted into multimedia productions. These story fragments are connected to the locations through the visuals of the video material. An example of this is the use of a real window and balcony in the street as referred by a narrator during the recounting of the story of Santo Antonio, to function as an anchor point in the setting where the audience experiences it. GPS technology triggers the narrated general introduction to the stories, while visual markers were placed as close as possible to specific architectural features related to the content of the story; each marker indicates the location of a story. The audience using the map-based mobile application, guided by the narrator voice, walk along the old street, and scan each visual marker to access the multimedia content. (Figure 1)

[4]http://art.wayne.edu/jacob-gallery/past-exhibitions.php

Figure 1 Participant using the 7 Stories application in Santa Maria Street, Funchal, Madeira

Figure 2 7 Stories in the Deep Design collective exhibition in Detroit, United States
Photo Credits: DetroitSEOExpert (@DetroitSEOExprt) and Elaine L. Jacob Gallery Wayne State University

Figure 3 Lucid Peninsula Original Physical Art Installation

Figure 4 DreamScope: Viewer (Top) and Catcher (Down) in original art set up

Remediation of 7 Stories

Since its completion, the project had been extensively showcased and published nationally and internationally (Dionisio, Nisi, & Leeuwen, 2010; Dionisio, Nisi, & van Leeuwen, 2011; Dionísio, 2015; Nisi, Costanza, & Dionisio, 2016). However, when the project was invited to participate in the "Deep Design – an exhibition about pace, place and personhood" collective exhibition at the Elaine L. Jacob Gallery Wayne State University, Detroit, USA[4], a redesign of the experience was needed in order to make the experience a meaningful one for a public that knew nothing about Madeira Island, its culture urban spaces and aesthetics. A remediation was necessary that allowed for the exposition of the content, as well as the aesthetics of the interactions, for an enclosed space. The folk stories presented had a deep relationship with the location where they were presented, Santa Maria Street; by taking the experience off-site this relationship would be lost. In order to portray Santa Maria's ambience and allow the user to experience the history and cultural background of Funchal's downtown community, large posters with images of the related locations and visual markers (that unlocks dialogs and videos) were used. Similarly to the real setting, to uncover the site-specific stories, the user captures the visual marker displayed on the large posters by interacting with the mobile application. The interaction of capturing the visual markers remains the same as originally design, the adaptation focus on showing the original pathway and in giving context of the actual locations with photos. Posters are displayed along the gallery walls one per each physical location. One extra poster explains briefly how to interact in the experience and use the mobile phone. Mobile phones with the application installed were made available for visitors to use. To uncover the stories, visitors have to move along the posters capturing and visualizing the stories, as shown in Figure 2.

This remediation focused on using old mediums (posters/photos) alongside the new medium, to deliver hypermediation, using the sense of "fullness" to achieve authenticity. In this way, Madeiran folk stories were portrayed abroad and instill the curiosity about Madeira and its culture among the visitors. This art installation has given the visitors of the gallery the opportunity to "travel" to one of Madeira's most authentic streets, meet our characters and their personal life struggles.

Dreamscope: Locative narrative in lucid peninsula futuristic world

DreamScope is the interactive, stand-alone, self-contained portion of a larger art installation named Lucid Peninsula[5]. The goal of the Lucid Peninsula art installation is to immerse participants in a dreamlike, post-apocalyptic story world where changes to the Earth's atmosphere have led to the emergence of new species, conditions, and ways of life, working as a pointer to our careless depletion of our planet's resources. The artwork (Figure 3) was conceived as part of an EU-funded Project, led by Time's Up arts collective[6] . The interactive DreamScope system was part of this installation. DreamScope is a Locative Media experience that complemented the physical installation, and reinforced the story world. DreamScope itself is composed of the Viewer and the Catcher. On one side, the DreamScope Viewer binoculars (Figure 4, Top) enable participants to see a VR representation of the Lucid Peninsula fictional world. After exploring the Lucid Peninsula through the Dream Viewer device, the audience could use specific mobile devices (DreamScope Catchers), adventure outside the gallery space and "catch" the dreams of the inhabitants of the peninsula. The visitor goes outside the room of the physical installation and with the help of a simple map is challenged to find three different locations (a restaurant, a library and a garden) seen in the DreamScope Viewer. These sites are within walking distance of the installation. Carefully placed visual markers indicate the presence of content in the physical locations. Upon scanning the visual marker, the device loads a 360º VR environment representing the specific Lucid Peninsula location. In Figure 4 (Down), an example of the garden location can be seen. Participants can also touch the mobile device screen to create portals to see how the Lucid Peninsula world looked like before the changes in atmosphere affected the world; at the same time, audio narrations recounts dreams and memories of the inhabitants past. The Lucid Peninsula full installation was successfully exhibited in Austria and Romania, in the context of the exhibition "Intime Raume 2014" by IMA and Future Fabulators exhibition by AltArt[7] [8].

Remediation of Dreamscope

DreamScope was conceived as integrating part of the Lucid Peninsula physical installation, we quickly came across the challenge of having to adapt the work to be showcased separately from the full physical narrative installation (as some of the artifacts were too big or fragile to transport, Figure 3). The difficulties in maintaining a meaningful context emerged. A first remediation was made within the scope of Creativity and Cognition (C&C) 2015 Art-Exhibition (Dionisio, Bala, Trindade, Nisi, Hanna, et al., 2015), where a recreation of the Lucid Peninsula physical installation with a limited amount of physical artifacts was done. Particularly challenging was the adaptation of DreamScope Catcher to indoor space, as we no longer had the locations within walking distance to the exhibition venue; this was achieved by placing the visual markers inside the Lucid Peninsula physical installation (Figure 5). This remediation used physical artifacts to achieve hypermediation, but these artifacts are not used to authenticate the real world, but rather to authenticate the story world.

Later on, a second remediation was made to the piece in order to showcase DreamScope as a demonstration at ICIDS Art-Exhibit 2015[9] and in Interactive Tabletops and Surfaces in 2015 (ITS 2015) (Dionisio, Bala, Trindade, Nisi, Nunes, et al., 2015). In the first case, the venue of the exhibit was The Diesel House Museum (Figure 6). Similarly to the C&C set up, the installation setup was complemented with a limited amount of physical artifacts and with a large panoramic image of the Lucid Peninsula landscape to provide context to DreamScope Catcher. The large poster was positioned on a wall near the Viewer device; on the poster, the audience found special icons placed near the depicted locations where dream activity should have been detected (through the previous visual scanning of the landscape with the Dream Viewer). The poster served not only as a way to attract visitors to the experience but also, and more importantly, to provide a link between the locations, the visual markers and the 3D environment. This remediation again uses both physical artifacts and the poster to create a hypermediated experience, and aim at authenticity for the story world.

[5]https://futurefabulators.m-iti.org/projects/DreamScope/

[6]https://timesup.org/LucidDreaming

[7]https://futurefabulators.m-iti.org/lucid-peninsula-cluj-napoca/

[8] https://futurefabulators.m-iti.org/767/

[9]http://icids2015.aau.dk/exhibition/screen-shot-2015-11-14-at-06-34-47/

Figure 5 Top: DreamScope set up at Creativity&Cognition 2017
Middle: Participant using the DreamScope Viewer
Bottom: Participant using the DreamScope Catcher

Figure 6. Setup of DreamScope installation at ICIDS Art-exhibition 2015

Figure 7 Left: Participant using the Yasmine Adventure's application in Berlin, Germany;
Right: 3D and 2D content of Yasmine Adventure's

Yasmine's adventures: Mixed reality story trail through the Mehringplatz neighborhood in Berlin

Yasmine's Adventures (YA) is a Locative Media experience designed to engage visitors of the renowned Jewish Museum in Berlin, in getting to know the streets and multiethnic community of surrounding areas. In this work, the audience explored the neighborhood in search of Yasmine, a fictional character, whose adventures are depicted as 2D multimedia animations embedded in a 360º Virtual Reality reconstruction of the surrounding neighborhood. Community members identified attractions or potential issues, marking them as pleasing, disagreeable, or potentially transformational therefore, the issues and places highlighted by the community members served as a backdrop for the story of our Locative Media experience. Based on these points of interest (POI), a trail was designed through the neighborhood connected to the story of Yasmine. In each POI, a visual marker was placed in such a way that it is safe and accessible for the visitors to stop, capture and view the content; the audience was required to find and capture these markers with their mobile phone cameras in order to progress with the story of Yasmine (Figure 7). Once detected, the markers triggered a 3D navigable landscape, mirroring the landscape where they are viewing the content. As participants navigate that particular landscape, they unlock 2D animation clips corresponding to fragments of the story. The story was designed to be experienced sequentially.

Remediation of Yasmine's adventures

As Yasmine's Adventures was completed, once again, there was a need to showcase the project indoors, for conference demonstrations and exhibitions (Dionisio, Barreto, Nisi, Nunes, Hanna, et al., 2015; Valentina, Dionisio, Hanna, Ferreira, & Nunes, n.d.). Far away from Mehringplatz, the issue was to immerse our audiences in the locational context, create curiosity and interest in our story and the neighborhood, while being elsewhere. A similar strategy to the 7 Stories project was taken by having some of the most relevant locations of the physical streets of Mehringplatz represented through large size posters. The size posters display specific points, where the markers were originally placed: outside the Jewish museum, the playground, the construction site, and so on and allow the users at the exhibition to capture these markers, and experience a 3D environment representing the real streets of the neighborhood. The original experience and the remediation engage the participants in the 3D environment that reproduces the Mehringplatz neighborhood accurately, giving the audience the possibility of navigating the streets and stories of Berlin from a remote location. The 3D environment gains a new meaning in the remediation: while in the original, it was meant to challenge the visitor in finding the content, in the remediation, it also contributes to the creation of context alongside the photo posters (Figure 8).

Fragments of Laura: A locative media tour inspired by madeira's cultural and natural heritage

Fragments of Laura (FoL) is a transmedia project inspired by the UNESCO's World Natural Heritage Laurisilva Forest of Madeira, allowing the audience to experience different historical times of Madeira's cultural and natural heritage. FoL contains a Locative Media fiction, as well as a website (Há-Vita) designed to create a bridge between the locative playable fictional story with journalistic style interviews that provide current in-depth information about the local heritage. In FoL locative tour, the narrative takes place in the 19th century and follows the life of a young woman championing the importance of the local biodiversity and the Laurisilva forest. Both the locative tour and the web platform aim to create awareness about how we have to act to preserve, protect and cherish biodiversity.

Motivated by the design of conventional location-aware multimedia stories, "Fragments of Laura" is delivered as a mobile application, which makes use of a map interface, guiding the viewers to encounter meaningful content in seven specific locations of the city of Funchal (Figure 9). Each location is associated with one of the story plot points and a natural or cultural heritage phenomena and its icon is representative of this association. Bluetooth beacons along the way unblocked the story content, point by point. Six touch points of the story are realized as 2D video animations, while one is an interactive 3D reconstruction of Laura's pharmacy/laboratory dating back to the 19th century. Additionally, 6 audio clips (distributed across the main story path) serve to fill in background details of the story, in the form of gossips between supporting characters. After each location, a small clip referencing the content of the Há-Vita platform can be viewed.

Remediation of Fragments of Laura

Fragments of Laura was remediated to be shown in ICIDS 2017 art exhibition[10]. The original mobile application was designed to trigger the content upon the arrival of the audience at specific locations by using a combination of GPS coordinates and Bluetooth beacons. For the adaptation to be effective physical tokens, designed in laser cut, were used to encase the Bluetooth beacons. The tokens depicted the real physical building that they were representing (Figure 10). A map of the city center was used as the base for the physical tokens. The visitor of the gallery could use the mobile application to scan the tokens placed on the map and trigger the appropriate story content (2D animations, Audio Gossips and VR interactive Scene).

Alongside the map, a computer displayed the Há-vita website, providing further scientific facts about the biodiversity of the island. We believe this set up design provides our audience with a rich engaging experience of the transmedia intervention, triggering interest about the natural capital of Madeira island while providing the means to delve deeper into it by browsing the web documentary available beside the installation.

Inspired by Virtual Reality's immersive power, and "VR is not a technology; it's a destination" (Biocca & Levy, 1995), Fragments of Laura in VR is being developed to be used in future exhibitions. The incorporation of VR allows for an aggressive remediation, as the use of the new medium absorbs the old medium and creates a new experience. This is supported by VR's power as metamedium, a medium that can encapsulate all others (Biocca & Levy, 1995). MappingFragments, building on the previous installation's use of maps, uses a Virtual Reality Head Mounted Display (HMD) to immerse the participant in the experience. The participant, by wearing a Samsung Gear VR HMD, is placed beside a multilayered topographical map, and placed in the middle of a virtual room. The goal is to recreate virtually the actual locations where the locative tour takes place. The 3D virtual reality map is then augmented with buttons placed exactly where the stories are located in the real world. When selected, the buttons unlock the story content. Participants can explore the map in two levels: "Room level" and "Map level" (Figure 11). The first, "Room level", allows the participant to walk around and over the map, getting a bird's eye view of the landscape. The second level, "Map Level", places the participant in the map itself, being able to virtually walk. Currently we are analyzing how additional media (panoramas, videos, and images) could be added to enrich the virtual world in agreement to the real world in order to promote a deeper connection with the location. This would allow for hypermediacy in the remediation, creating authenticity in the representation of the context.

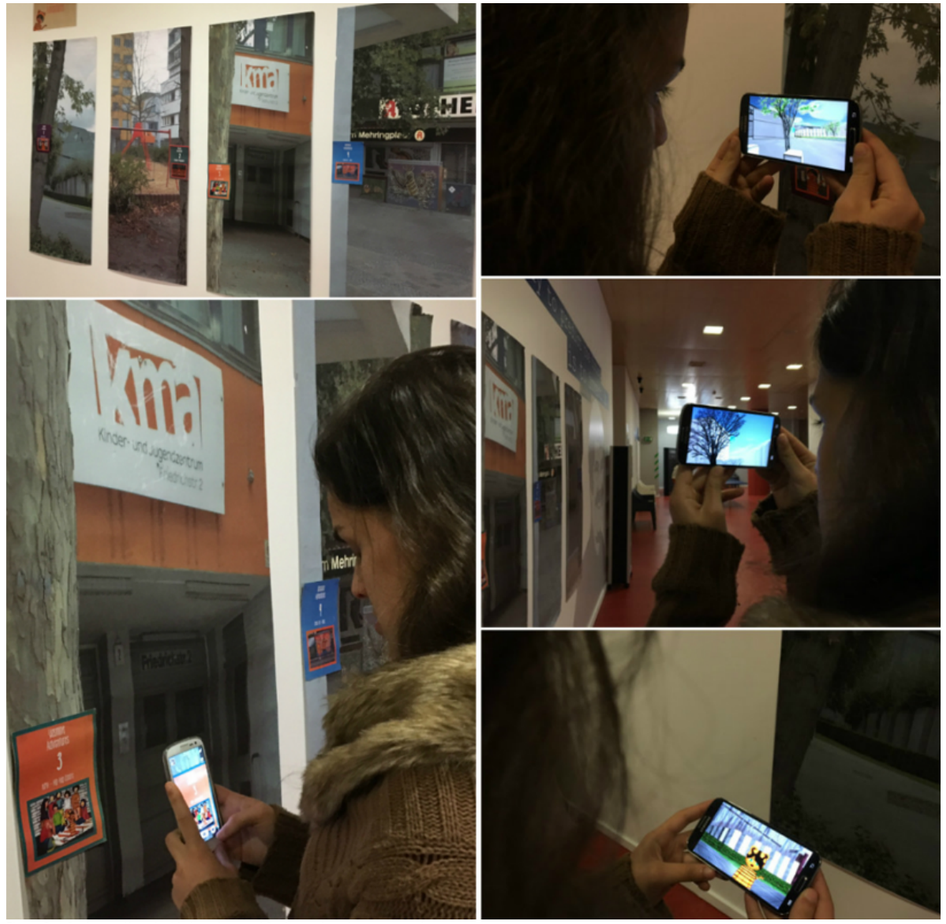


Figure 8 Posters with embedded markers and Participant capturing a visual marker (left side) and interaction with the Yasmine's Adventures mobile application (right side)

Figure 9 Participants using the Fragments of Laura application in São Pedro parish, Funchal, Madeira

Figure 10 Fragments of Laura installation at ICIDS 2017

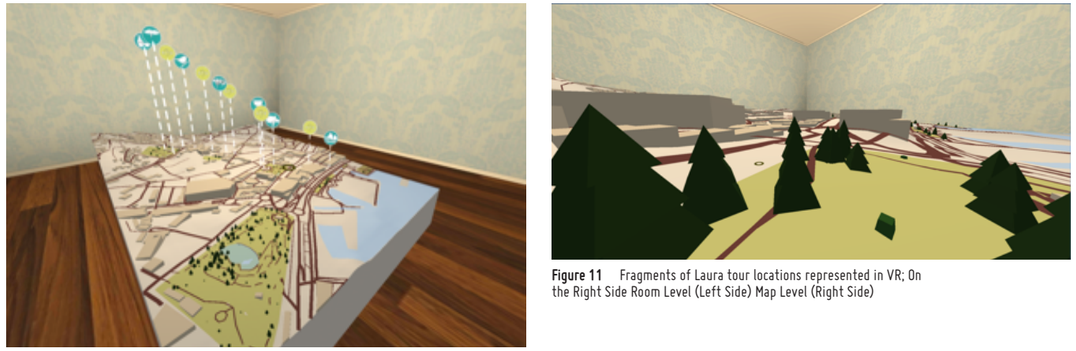


Figure 11 Fragments of Laura tour locations represented in VR; On the Right Side Room Level (Left Side) Map Level (Right Side)

REFLECTING ON LOCATIVE REMEDIATION STRATEGIES

As artists and researchers, developing artworks in the field of Locative Media, a need to think beyond the site-specific installations has emerged; in other words, there is a need to think of ourselves as curators as well as creators. With locative technologies becoming widespread, concerns shift from the endurance of the digital artifact to the conservation and meaningful display outside the original locations.

The challenge in curating Locative Media is on how to preserve the original meaning of an experience, which is meant to be complemented by a specific physical space, its colors, atmosphere, noises and architecture. In the case of Locative Media artwork, this is quite a complex endeavor since the curator might not be familiar with the original context of the work. Most locative artworks are constructed to be mediated around a specific place and its characteristics; when the place changes, the work has to be deconstructed, remediated and still deliver the same experience for the audience. While it might not be always possible to authentically recreate the same experience elsewhere, thoughtful documentation can be already designed from the moment of the creation of the work to support the process of remediation when needed. Therefore, the artist should be available during the curatorial process as they have first-hand knowledge of the original context; this ensures the durability of the art piece, if some unpredictable event (e.g. a flood or fire) occurs in the original location.

We applied remediation strategies to locative artwork to deal with the change of location as medium and context, as well as, the technological support framework. We consider location as medium when we use the physical characteristics of the urban environment to foster interactions (e.g., a graffiti that unlocks content; a series of GPS coordinates that guide the participant through a path). Furthermore, we consider location as a context, as the social, cultural and environmental mood where the Locative Media is placed. Each remediated artwork explored different remediation strategies applied to location and technology, resulting into different outputs of Locative Media artworks, with not only different ephemeral qualities, but also with different curating and scaling qualities.

Strategy 1: Remediating location as a medium and as a context

In all of the presented projects, location as a medium was remediated either through: the use of average size posters with photos of the locations in the case of 7 Stories; human size posters and 3D virtual representations of the locations in the case of DreamScope, Yasmine's Adventures and MappingFragments; physical map and reactive tokens in the case of FoL (first remediation). Different approaches revealed some pros and cons. For example, the large posters offer a good sense of place and connection between the location and the available content. However, this might not be suitable for Locative Media projects with many locations, as it would require a large installation space. On the other side, accurate/detailed virtual representations of the location offer an immersive alternative to the real urban location. As a caveat, they are time-consuming to develop unless they are automatable generated (e.g. by using Google Street View or tilemap services).

The location gives context to the work itself and achieving a remediation of it might suffice, but other times, extra content needs to be crafted in order to complement the work and deliver a meaningful interaction for the audience. For example, in the case of DreamScope Catcher, the fabrication of the poster (Figure 6) not only served to show the virtual world to participants but also made connections between mediums as the poster connected the virtual locations, the visual markers and the interaction with the DreamScope Catcher. Adding the poster and placing the visual markers next to the locations allowed of a contextualization of the content, as well as, a clearer connection between mediums.

In summary, when exhibiting a Locative Media artwork indoors, we recommend the artists/curators to carefully contextualize the project and provide a clear explanation to the viewers of how to use the medium, before initiating the interaction with the work. When artists can serve as hosts, they can directly provide the context and help participants to engage with the work when needed, but when this is not possible additional material is required. For example, in 7 Stories ("Deep Design" exhibition), an extra poster explaining the project and giving instructions was designed and placed before the artwork, explaining context, medium, and purpose of the work. This was instrumental for viewers to engage and understand the exhibit.

Strategy 2: Remediating technology

GPS technology is one of the most used technologies for Locative Media projects that take place outdoors. However, when remediating the experience for indoor exhibition, the GPS technology, only working for outdoors spaces, must be substituted. In 7 Stories, DreamScope and Yasmine's Adventures, visual markers were used as anchors of the content. Other types of technology can also be used to achieve this. For example, the use of Bluetooth beacons can reduce one step in the interaction flow, as participants are no longer required to "capture the marker" to access the content. These differences can bring about important changes in the user experience and need to be carefully thought through. For example, in FoL, the participant only needs to approach to the physical token with their phone in order for the content to be automatically triggered. While in Yasmine's Adventures we decided to maintain the markers as triggers, as taking pictures in the neighborhood context was part of the desired experience we had designed for the viewers. Moreover, in MappingFragments, locative technologies are completely replaced by VR, making the experience easy to curate and available from basically anywhere. In this remediation, the use of VR allowed for an aggressive remediation with a deep change in the interaction between participant, location and content.

There are pros and cons in the remediation of locative artwork. On one side, we recognize the ephemeral nature of the original Locative Media artwork as creating special experience for the participants. On the other side, there is value in having a curated experience and being able to preserve it. Specifically, since Locative Media art is currently not preserved and cannot be collected, to the eyes of the art world it is hard to put a commercial value to it, as one would do for a physical item like a painting. The recognition of Locative Media artwork as collectable might be important to further develop these types of works and attract more artists to create them.

As reflecting on this topic, we should note the irony that often LAMS artwork curates content to prevent it from vanishing, such as oral history or folklore (Bilandzic & Foth, 2012; Ciolfi & McLoughlin, 2012; Kwiatek, 2012; Nisi, Oakley, & Haahr, 2006), but the artwork itself is not curated. During our endeavors in searching for strategies on how to adapt locative artworks to be exhibited and curated indoors, we came across many locative efforts but a vast majority of them could not be experienced anymore. Their essence was lost either because of technological obsolescence, loss of context or change of context. This aligns with the need for artists to preserve, curate and remediate locative artworks for future generations. While some scholars are embarking in commendable efforts to preserve and document locative media(Packer, Hargood, Howard, Papadopoulos, & Millard, 2017), we hope that the approaches described in this paper, act as a stepping stone in inspiring other creators in remediating past, present and future Locative Media artwork.

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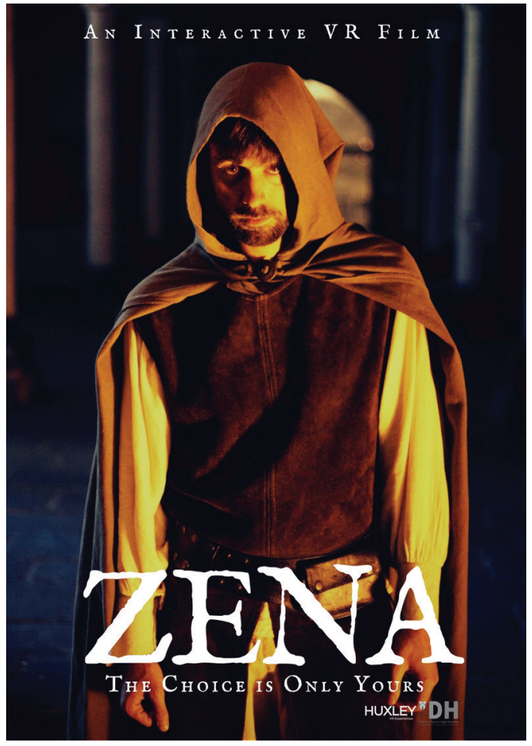
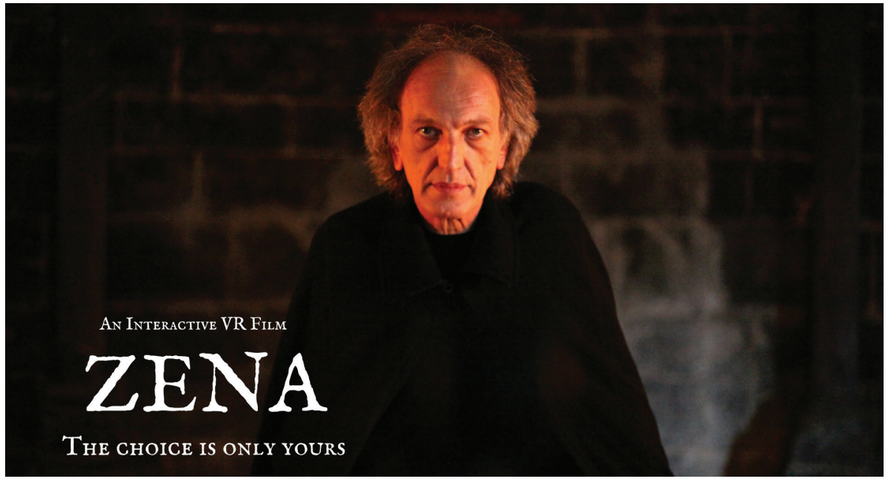
7 ZENA — AN INTERACTIVE VR FILM

Maria Cecilia Reyes, Serena Zampolli





Maria Cecilia Reyes, Serena Zampolli
Interactive VR film, 2017
https://www.xehreyes.net/zena
Samsung Gear

Zena—which means “Genoa” in genovese dialect—is the first immersive and interactive film set in Genoa. The story unfolds in a 360º environment created through Live Action. In ZENA the user plays an active role inside the narrative by interacting directly with the story: she/he decides which way to go, if she/he wants to follow or ignore the advice of a character, or access extra information that contributes in the understanding of the story.

Its narrative structure is inspired by the labyrinth of alleyways in the historic center of Genoa (World Heritage Site), where walkers come face to face with choices that lead them to interact with different environments and people. In “ZENA”, users will help Lorenzo during his travel to the future, yet the responsibility to choose the right path will not fall on Lorenzo's shoulders, but on yours.

Time and Tempo are two important factors inside “ZENA”: The plot of the story is a travel in time, and protecting Time is the reason the main character embarks in this journey. The story starts in the XIV century in Zena, where we meet Lorenzo: a young apprentice of Alchemy and a member of the ancient Order of Saturn Knights. To save the magic clepsydra that belongs to his congregation, he will have to travel 500 years in the future, to the modern Zena. To save the clepsydra, he will have to pay special attention to details, because in Zena, things are not always what they seem. Lorenzo storyline is decided by the user, and the travel in time becomes also a travel in tempo. Interactive Storytelling works as a system of parallel universes: all the possibilities are contained in a suspended tempo, that becomes a real sequence of events as a consequence of human choices. In the game of sliding doors which is life, it is not possible to live all the possibilities the world has to offer, but in “ZENA” yes, it is possible. The user can experience the story a first time, engage with one storyline, and then, when the story ends, can decide to start again and follow a different path.

SHOOTING AN INTERACTIVE VIRTUAL REALITY FILM: ZENA'S PRODUCTION CASE STUDY

Maria Cecilia Reyes, Serena Zampolli

Introduction

ZENA is an immersive and interactive film set in Genoa, Italy. The story unfolds in a 360º environment created through 360° high-definition video capture developed to create virtual reality experiences such as Cinematic VR (cVR). In ZENA, the user plays an active role inside the narrative by taking part directly in the story: s/he decides which way to go in a Maze type structure (Ryan, 2015), if s/he wants to follow or ignore the advice of some character, or access extra information that contributes to story understanding. The narrative structure has been inspired by the labyrinth of alleys in the historic center of Genoa, where passersby come face to face with choices that lead them to interact with different environments and people. ZENA, which means Genoa in genovese dialect, was recorded inside the historical center of Genoa (Old Town), which is a World Heritage Site. The scenes, that develop in the alleys and in some important palaces in the Old Town, show these environments for the first time in VR.

The main objective of ZENA is to bring together an interactive film narrative inside a 360º environment to be enjoyed with a Head Mounted Display (HMD), in order to create an interactive and immersive cinematic experience: an Interactive VR experience similar to hyperfiction, in which the user rearranges a choice of story fragments into different configurations (Ryan, 2009), placing him/herself between a passive reception, as it is the case with cinema, and a highly active role, as in videogames. In this paper, the shooting process of ZENA is reported, highlighting the main challenges we faced and hindsight gained. For the production of ZENA, we based our methodology on the traditional cinematography production workflow, being cinema the audiovisual art form closer to this type of experience, but adapting it to Interactive Narrative (IN) (Dettori, 2016) and the immersive nature of Cinematic VR.

Screenplay for an Interactive VR Film

In order to keep the narrative flow and the empathy of the user towards the story, ZENA is based on a screenwriting framework (Reyes, 2017) that combines the cinematographic classic structure (Field, 2005) with an interactivization (Koenitz, 2016) of the Hero's Journey (Campbell, 2008), so the dramatic tension of the experience is ensured and the climax of the experience is independent of people choices. The result of this process is a mind map (Figure 1) that shows the narrative structure of the cinematic interactive VR experience. The map is composed by Narrative Nodes (NN) that are linked with each other (External Links) or have multimedia contents (images, text, music, videos) enriching the narrative (Internal Links). Each narrative node can correspond to a single scene or to a sequence, i.e., a group of scenes that are edited together. The word scene is used in its cinematic sense, a fragment of the story that takes place in a specific location and time (Field, 2005); a change of location or time corresponds to a change of scene.

The NNs in ZENA correspond to different stages of the Hero's Journey, as a put-into-practice of one of the most frequently used narrative structures of classical cinematography (Mackey-Kallis, 2001; Vogler, 2007). ZENA's experience is articulated through 20 NNs that offer different navigation paths, whose interlacing is determined by user's choices.

The shortest route allows the user to cross ZENA in 10 minutes, while the longest road lasts 20 minutes.

Once the mind map is designed, with a logline that describes what occurs in each narrative node, the second stage consists in the writing of the literary screenplay, which includes the detailed description of what happens in the scene: the characters, their actions, their movements in space and their dialogs (Field, 2005). In traditional linear cinematic screenplays, a heading is assigned to each master scene to show: the scene number, if it is shot in interiors (INT) or exteriors (EXT), the main location in which the scene develops and if it occurs at day or night. Underneath, the body of the scene is included, together with the detailed visual description of the stage, the emotional state of the characters, their movements, and their words. At the end of each scene, the type of cut that connects the master scene with the next one is written on the right margin.

In ZENA's interactive screenwriting process, once each scene was fully written and carefully narratively connected with the other scenes, we had to adapt the screenplay so as it could work for both cVR and IN. In the cVR case, we took into consideration the need to think about the scene in a 360º space by inserting visual and auditory elements (characters, extras, props, or interactive elements) that enhance the experience in the whole visual space. From the IN point of view, the screenplay needs to take into consideration that one NN can be both destination and starting point of multiple nodes. The new script should be able to lead the production crew during the shooting.

The interactive screenplay establishes two main differences from the traditional cinematic screenplay. On the one hand, it needs to clearly specify the path that the story is following: the current NN, but also the possible previous and the next NNs. On the other hand, crew and actors need to know how interaction occurs inside the NN: the type of interaction (visual, auditory, internal or external) and when and where the user will be allowed to react. In Table 1, we are proposing the Master Scene Heading format that we use to shoot ZENA: it is composed by the number of the scene, a short description of it, the location, the number of shots that form the NN, which characters are participating, the precedent NN (Inputs), the sequent NNs (Outputs), a space for the description of the audio setting, and the types of interaction.

Due to the nature of 360º video, we felt the need to insert a new item that would help the cinematographer to know where to place the camera: The Narrator Type (NT). This item indicates who is the viewer inside the scene, following the framework proposed by Cleanth Brooks and Robert Penn Warren (1943), used also by Gerard Genette for drawing the concept of Focalization (1976) that describes the different types of narrator in literature.

In our adaptation (Table 2) the narrator is replaced by the user of the VR experience, allowing us to identify four types of user roles inside the storytelling. The role of the viewer inside the story defines how the camera will be placed into the stage, in accordance with the director's intentions. In ZENA, we used all types of NT, even though in most scenes we used type 2 and type 3, in order to test the visual flow by changing points of view.

The screenplay is completed by the body of the scene, which describes the actions of the characters, their dialogs, their physical and emotional states, as well as the physical space. It reports what can be seen or heard and also the movements of the characters inside the stage. At this point, the screenwriter must take into consideration the whole space in 360º when locating characters and props, so as to create a rich scene for the viewer to explore. The body of the interactive screenplay (Fig. 2) reports the interactive choices and how they are presented to the user, e.g. if they include text or only visual symbols. To write the body of the scene, we used the typing guidelines of traditional movie screenplays.

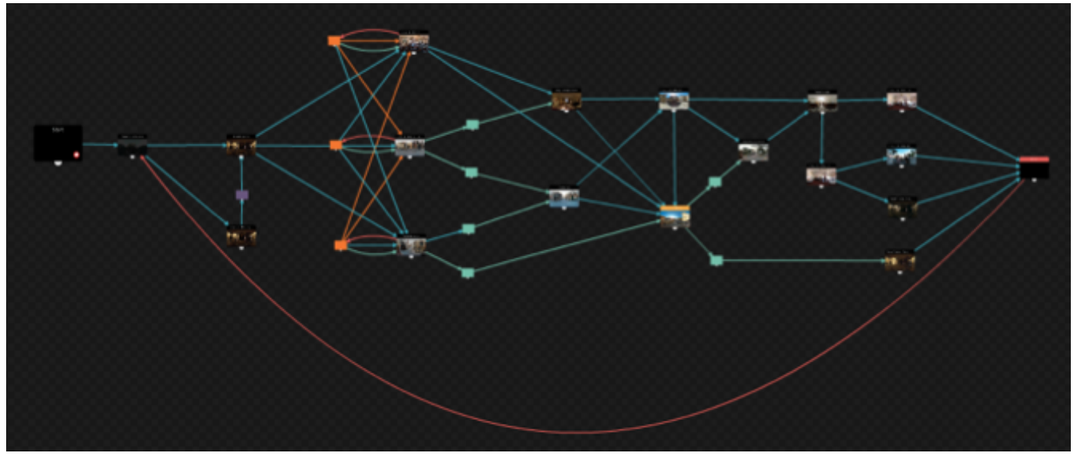


Figure 1 Mind map of Zena made with Wonda VR

NN	6	Description	Enemy
Location	Vico dell'amor perfetto	Narrator Type	3
Nº Shots	3	Characters	Lorenzo - Sercan
Inputs	3. New World	Outputs	7. Oracle 8. Wrong Approach
Audio	Dialogue – Binaural Mic	Interaction Type	n.2 Visual Hotspots n.1 Return Visual Hotspot

Table 1 Interactive Screenplay Heading used in ZENA

Shooting in 360º: The Scene is The Stage

For the creation of this interactive cVR experience, ZENA was shot in 360º video with two cameras with a field of view of 180º each, binaural microphones on the ears of Lorenzo -the main character- and a bidirectional microphone situated in the same axe of the camera for ambient audio and wild tracks. VR stories are usually short films with a average length of seven minutes, due to the visual fatigue and discomfort that some people can experience (Lin et al., 2002). ZENA was built with a longer duration in order to give the feeling of a film, and to test if experiences of a duration that exceeds the average 7 minutes can entertain without generating discomfort. Thereby, ZENA's length is longer than most of currently available VR short films and documentaries, being the longest path 20 minutes long. It means that each NN is on average one minute long. Some NN includes more than one scene, hence a single scene in ZENA has a length of one minute or less. In this section, we will describe how we conducted the shooting of ZENA, taking into consideration the 360º nature of the project and the interactive screenplay: the location of the camera according to the screenplay and the recording of the scene passing through the rehearsal on set.

The crew of ZENA had experience in theater and traditional video production. For most of actors and crew, however, ZENA was their first time with 360º videos. Even though our experience in both theater and cinema gave us the grounds to work on this production, we felt that some initial preparation was necessary to allow the team involved to get a first contact with the equipment and the workflow.

Shooting in 360º requires a different approach to space: everything is being recorded and therefore, every single angle will be seen by the user. There are no hidden spaces. The frameless image frees viewers' eyes and gives them autonomy to explore the space, but from an authorial point of view a common question that emerges is: how to lead viewer's attention to what the author wants them to see? We propose two ways of solving this issue: by the position of the camera and its distance from the key situation, and by the management of the stage (actors' movements, key elements, sounds and situations inside the 360º space).

The Camera: Director's Eye – Viewer's Eye

One of the main fears that traditional filmmakers and videomakers face when working with 360º is the disappearance of the frame (which is frequently related to a possible disappearance of the direction role), but the director's intentions in a 360º environment can have a greater reach on the viewer's experiential level. The sense of presence (Barfield, 1995; Murray, 1997) gives the creator the possibility of transmitting embodied perceptions of the world, that is the standing point from which the "real author" (Chatman, 1989) experiences the being. The camera is not only the eye of the viewer, but its location will also be the location of the viewer inside the scene. The director has to experience in first place the point from which s/he wants the viewer to experience the story.

The Narrator Type, seen in Table 2, offers a first indication about the position of the camera. The horizontal axis of the table indicates if the user belongs to the story or not. In NT 1 and 2, the location of the camera has the key role to personify the main character and the other characters will interact with the camera. Locating the camera as a "live" character has technical consequences: it requires a special rig to be placed on a person or object in a way to recreate the embodiment of the first person's point of view. In NT 3 and 4, the camera/viewer does not belong to the story, but its involvement in the story depends on how much infor-

	Internal Analysis of the Events	External Observation of the Events
User is a character of the story	1 - User lives her own story	2 - User and main character interact
User is not a character of the story	3 - User is analytical regarding the story, having access to characters' feelings and thoughts, or having information that is unknown to the characters.	4 - User observes the events without participating

Table 2 Types of users in VR storytelling. Adaptation from Brooks & Warren (1943)

Figure 3 Frames of the NN 4 "Internal Confusion" at the decision-making moment

NN	4	Description	Internal Confusion
Location	iazza Scuole Pie Church	Narrator Type	3
Nº Shots	1 Square 2 Inside Church	Characters	Lorenzo - Sercan
Inputs	3. New World	Outputs	7. Oracle 8. Wrong Approach
Audio	Dialogue	Interaction Type	Hotspot on characters

EXT/DAY – PIAZZA SCUOLE PIE
Lorenzo arrives in Scuole Pie Square. He looks around with hard breathing. In front of him there is the church.

CUT TO: INT/DAY – CHURCH
Lorenzo is seated in one of the pews of the church meditating in silence. An old lady is cleaning around. She notices him and talk to him with curiosity.

OLD LADY (talking to Lorenzo)
— Did you lose your way, young man?
While the woman talks to Lorenzo, a drunkard walks into the church and seat just behind Lorenzo.

OLD LADY
— Those like him have no salvation. But I can say from your eyes, that you have so many things to do, important things. Always seek the light. Always remember to walk towards the light.
The old lady walks away, continuing with her work.

DRUNKARD
— I know what your problem is. You just need some love. Go to the Holy Sepulcher street. Trust me. Do not listen to that woman.
The drunkard stands behind Lorenzo, looking at him while he makes a decision. The hotspots are located on the characters. Lorenzo has to choose one of them.

Outputs:
Drunkard: 7. Oracle
Old Lady: 9. Wrong Approach

Figure 2 Interactive Screenplay with heading and body

mation the viewer can get from it, if h/she is totally external to what is happening, or has some hints about the internal feelings of the characters, or gets information that the characters don't have. NT 3 and 4, unlike NT 1 and 2, in which the camera embodies a character, the screenplay takes the main role, deciding to give or not to give information that allows the viewer to be analytical about the story.

The position of the camera can have different implications as it happens with the type of shots in cinema and their semantic meanings. Here is where Director's intentions and point of view can be made clear. We have identified the following types of camera positions, as evidenced by the following frames of the film:

Viewer Protagonist NT1 (Figure 4): First Person Shot or Point of View (POV) Shot. The back camera is located directly over Lorenzo's right eye, so the front camera gets the feeling of being one of Lorenzo's eyes.

Height of the camera

Natural Eye line (Figure 5) For the natural eye line we chose a camera height of 1,65 m, in order to give a realistic feeling of someone with an average stature. This height worked very well in relationship with ZENA's actors' stature.

Below the Eye line – Low Angle Shot (Figure 6). During Scene 2 of NN 9 Lorenzo speaks directly to the camera, asking for help to the magic cane that he carries. The magic cane corresponds to NT 3, a companion to the protagonist, and it corresponds consequently to viewer eyes. The intention of this shot is to create an emotional bond between Lorenzo and the user, through eye contact. The height chosen is the natural height of the cane. In relation to Lorenzo, the position of the camera gives us what in cinema it is called a Low Angle Shot.

Above the Eye line – High Angle Shot (Figure 7). In Scene 1 of NN 10 Lorenzo lives a magical revelation that can help him, depending on user choices, to succeed in his mission. The scene was shot inside a medieval tower. Lorenzo listens to a voice that says to him to go to the top of the tower to live the revelation. He goes up but he is afraid. During this scene, we are using NT 3, that corresponds to the magic cane that Lorenzo carries in his right hand and always in front of him. In Figure 7, the image allows us to see that the camera/magical cane is located above the level of Lorenzo's head, creating a cinematic High Angle Shot in relation to his face and body. This shot makes Lorenzo look smaller, and therefore, in relation to the narrative, fragile and scared.

Distance of the Camera from Key Elements (Fig 8): The distance of the camera from the key actions, characters or elements of the scene can be compared to close up shot, medium shot, wide shot or panoramic shot. In Scene 1 of NN 7 Lorenzo encounters the oracle. Camera is in NT 3, and it is located in order to give the user the sensation to be seated with them in the table. In this case, we miscalculated the height of the camera and it is slightly above characters' heads, which gives a strange embodiment for the user.

During ZENA, we shot the scene "Death of Lorenzo", that was not included into the final project due to an error in continuity. The scene, however, allowed us to experiment with non-natural positions of the camera. The scene was shot from a 4th floor window, locating the front camera towards the ground, where the scene was developing, and the back camera towards the sky. The camera was hold by a man that was observing the scene from his window, making him a subject that belongs to the storyworld. The monopod of the camera was hold by the man in a horizontal axis.

Nadir and Zenith Shot (Fig 9). Nadir shot is taken from the ground level. Zenith shot is made from "above" an object, location or subject.

Horizontal Axis (Fig 10) The location of the camera in horizontal position with respect to the ground can give a feeling of flying, lying on the ground or falling. This choice is very delicate. The loss of the horizon and the sense of

Figure 4 Frame of NN 1 Scene 2 "Premonitory Dream". Example of First Person Shot.

Figure 5 Frame of NN 12 Scene 2 "Ordeal". Example of Natural Eyeline Shot.
Figure 7 Frame of NN 10 Scene 1 "Revelation". Example of High Angle Shot.

Figure 6 Frame of NN 9 Scene 2 "Wrong Approach". Example of Low Angle Shot.
Figure 8 Frame of NN 7 Scene 1 "Oracle". Example of Medium Shot.

being on the ground can lead some people to suffer from motion sickness. During the scene “Death of Lorenzo”

On Set: The Scene is The Stage

The shooting approach changes radically from the cinema logic. Shooting in 360º gets close to stage management in theater. The scene is the whole stage and at the same time what is happening within it. In the case of ZENA, the workflow consisted in:

Setting (Figure 11): The configuration of the set and the location of the camera according to the description of the scene, designating the location of the key elements, characters and key action within the spherical environment according to the position of the camera. For the shooting of ZENA, we used two cameras with a field of view of 180º each, giving us one stitch zone, the area in which the image of both cameras merge. For the setting, it is important to take into consideration the stitch zones so as no key element will be located on it. Figure 9 shows the position and height of the camera in the stage, and the position of the character. The front camera is directed towards the place where the central action of the scene will take place. The back camera is directed towards the area where Lorenzo will enter into the scene/stage. Lorenzo’s final position will be next to the Master, who is already in place.

ZENA was recorded on the streets of Genoa during day time; sometimes it was allowed to people not involved in the film to pass through, as it happens in the daily life of a city, some other times, especially during the scenes with dialogue, we closed the entrances to the zone in which we were recording.

Because of the novelty of the media, most of passerby were not able to identify the camera. Therefore, in the moments when the actors were not performing the scene, they would cross the scene without reacting. This would preserve the life-like sense of a scene set in the trafficked old alleys of Zena. On the other hand, when a scene was being acted out, most of the time they would react to the character’s actions. They could see something “strange” was happening but they would not understand what was going, because they could not identify the object they recognize as “a camera” neither an audience attending a performance. Again, this would often help and enhance the scene. The times this did not work were those in which passerby understood something was happening and would stop and stare. This could not fit in the narrative we created, and the scene would have to be repeated.

Measuring Distances (Fig 12): Once located the camera, we used a meter to check if the distance between the camera and the characters was consistent with the director’s intentions and the description of the scene. The distance between the starting and destination points were slightly marked on the ground. These marks had two functions, (1) to give the actors a guide to move in the space, and (2) to keep a record of the audiovisual consistency among scenes.

Rehearsal on Set (Fig 13): Having all prepared, we needed to rehearse on set, for one main reason: without a real time monitor to check the scene while it is being recorded, or a place to hide inside the scene to watch what was happening during the recording, all the team had to leave the set except the actors. In some cases, we did have a place to hide from the camera so we could look if the scene was fine or not, but many times this was not the case. The actors rehearsed not only for performance purposes but also to show to the director and the crew how the scene was going to develop, especially in those scenes that were designed for the actors to move across the stage so the viewer is forced to move around following the characters.

Action!

Once microphones, audio and camera recorders, as well as actors and crew, were in position, the Action! was given. The actors had the instruction to give at least 30 seconds before and after the action was developed, if the scene didn’t contain an interactive moment, i.e., the moment to choose among different paths. In that case, actors were asked to keep the emotion of that final moment, especially the avatar character, in ZENA’s case the main character Lorenzo, the one who follows user’s choices. Lorenzo expressed the moment of choice with his face and body movements, e.g. by pointing gesturally where the hotspots were located or showing indecision between two characters, while the other characters were holding the last emotion or situation. The icons for interactive options were then set in post-production.

In ZENA’s case, we had to trust our actors in those scenes in which the crew did not have a chance to directly check the development of the performance. The actors helped the director to know if the scene was as rehearsed, not having the possibility to check the material on set. Even though we protected our locations from external interferences (e.g. street loud sounds or people passing through). Nonetheless, as one of the intentions of ZENA was to give a sense of the real city inside the experience, we kept some scenes with passers-by, talking on the phone or looking at Lorenzo with perplexity.

Conclusions

ZENA’s final experience is an interactive cVR hero’s journey, that can take from 10 to 20 minutes, composed by 17 NNs and 25 scenes, recorded in 13 different locations of the old town of Genoa. The shooting, that took 3 and a half days, allowed us to understand how to move into the space and work efficiently. The first scenes were the most difficult to set, while the crew got used to the new filmmaking workflow; after three or four scenes, all members of the crew were very quick to adapt to each location and to perform their work properly, using the interactive screenplay and understanding the requirements of each scene. From this experience, we can identify positive outcomes and some challenges to face in next productions:

The Interactive Immersive Screenplay Heading: The new composition of the Master Scene Heading allowed the crew to work efficiently; it was easy to understand for any production role. In particular the items: Narrator Type and Interaction Type, as well as for the Input/Output items.

(1) The Narrator Type (NT) item in the Master Scene Heading allowed us to understand the position of the camera, its height and location.

(2) The Interactive Type item supported understanding for both crew and actors of where and how the end of the scene would be conducted.

(3) The annotation of the Inputs (previous nodes) and Outputs (successive nodes) helped the crew to organize the shooting plan and to have a clear idea of the scene under development, since the scenes were not recorded in the chronological order of the story, but following the production needs of setting the shooting according to the geographic references of each location.

The Frameless Image and the Director Role: A 360º virtual environment where user chooses where to look at has been one of the main issues that traditional video/film makers face when trying to experiment with cVR: How can I (author) focus the attention of the viewer to what I want them to see? In the first place, there has to be a switch between the traditional logic to the cVR logic. In cVR the user is surrounded by the audiovisual image and the director

Figure 9 Death of Lorenzo. Unused Scene. Zenith shot from the frontal camera. Back camera is a Low Angle Shot of the neighbor that observes Lorenzo's death from a window

Figure 10 Death of Lorenzo. Unused Scene. View of the street from the horizontal axis.

Figure 11 Setting the scene. Backstage of NN 1 Scene 3. The front camera is directed towards the main action of the scene.

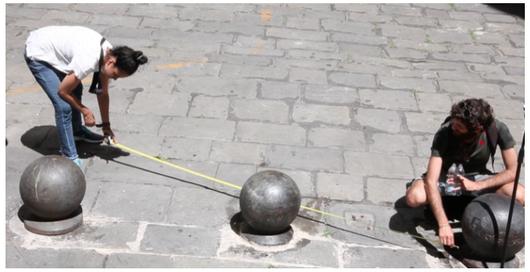


Figure 12 Measuring distance from the camera to the actor's position. Backstage of NN 10 Scene 1.

Figure 13 Rehearsal on set. Backstage of NN 13 Scene 1. Actors are rehearsing on their final positions while director gives some instructions.

Figure 14 NN3 Scene 1. Arrival to the New World. Director giving the last instructions to Lorenzo before the Action!. Lorenzo is holding the camera/magic cane as NT 2 indicates for this scene.

needs to take into consideration not only the audio and visual inputs but the whole embodied experience of presence in the scene.

Technically, from the audiovisual point of view, we propose two ways for overcoming this issue:

(1) Position of the camera: The position of the camera should take into account the Narrator Type. The NT will determine where the camera need to be situated and if it will stay for a character inside the storyworld. In addition to the NT, the height and distance of the camera from key characters, objects, sounds or situations determines semantic similarities with different types of shot on framed audiovisual narratives. The semantic meaning of the position of the camera expresses director's intentions.

(2) Management of the stage/scene: In cVR the stage is the scene, actor movements, key elements, sounds and situations inside the 360º space should be carefully designed to enrich the scene. Even small details, like someone looking through a window on the 4th floor, add narrative density to the scene.

The Shooting Workflow: When working with a budget, a group of people, and a story to tell, it is important to know how to manage time and resources. In order to meet the production plan and create the scene according to the script and director's intention, it is necessary to consolidate a clear work dynamic for the team, which can be applied in each location. Our workflow takes into account the low-cost equipment that we used to shoot and the lack of a monitor for the director -and crew- to follow the scene in real-time without being physically present on the stage. Once the equipment was set up (batteries, memory cards, etc.) and in place, the location prepared and the actors ready, we followed a three steps workflow:

(1) Measuring Distances: the task of measuring and annotate the distance between the camera and the characters, situations or key elements (visual or auditory), and the height of the camera from the ground, helps to keep record of the actors' movements and the location of the main action, so as the first visual element that the user finds in the following scene is related to the last movement on the previous scene, assuring a flow between cuts. The annotation of the height of the camera in each scene grants no unexpected visual jumps between scenes, unless it is intentionally part of the narrative.

(2) Rehearsal on Set: it is important for the actors and crew to know the stage and what will be visual and audible shown on it. During the shooting of ZENA, we tried to use space as much as possible by writing actors movements that cover different zones of the sphere. All these movements were marked indicating the initial and final position of an actor's movement. In absence of a monitor to control the developing scene in real time, the rehearsal on set helped the crew, and especially the director, to understand how the scene would be developed.

(3) Action! Moment: once the Action! is given we suggested to our actors to wait at least 30 seconds to start the action and when the scene is over all the crew waited a prudent time to give the Cut!. However, the screenplay takes into account when there is a change of location. In these cases, the scenes start very slow in order to give some time to the viewer to explore the new location.

(4) Decision-making moment: when the user has to choose where to go, or which character to follow, the actors have to keep the last emotion on going, like if they were in holding mode. In this moment, the avatar character, can express indecision between the choices. Its body movements can indicate where the hotspots are

located in the space. For some scenes, we shot the face expression of the avatar character after the decision was taken by the user, so the next scene starts the video clip in which the character goes in the chosen direction or with his face accepts the user decision.

Challenges: From the shooting point of view we faced some technical issues that should be taken into consideration when writing the screenplay. Even though they can be managed by technical meanings, a conscious screenwriting process can facilitate the technical work for production and postproduction.

(1) Adding interaction to recorded videos is still a problem in order to create interactive cVR experiences. The main issue is the decision-making moment: this part of the shooting needs a prudential time so the user can have enough time to make a conscious choice. Being this time given by the duration of the video, this duration has to be carefully measured during the screenwriting, or “hold” or “looped” in post production.

(2) The first person shot or POV is a narrative choice that can lead to difficulties during the shooting. Due to the absence of proper low-cost rigs to set on a person or object, it is difficult to adapt the camera to the eyelevel of the character that is being personified by the camera, or to the object where the camera is located. This issue is indirectly related to the need to have a body that some people feel during VR experiences. Even though Narrator Types 3 and 4 do not require a body, since the user -and consequently the camera- is external to the storyworld.

Further research includes the test of the interactive immersive screenplay model by videomakers and filmmakers both with or without experience in 360º video and interactive video, in order to have feedback about its usability during the shooting of an Interactive VR film.

CAST
Lorenzo: Lorenzo Caviglia
Maestro: Pier Renzo Ponzo
Sercan: Eduardo Losada Cabruja
Simonetta: Serena Zampolli
Church lady: Beatrice Tassara
Oracle: Margherita Friburgo
Drunk man: Leonardo Briata
Hopeless man: Luciano

TEAM
Creator: María Cecilia Reyes
Art Director: Serena Zampolli
Interactive Screenplay Advisor: Giuliana Dettori
Screenplay Advisors: Eduardo Losada Cabruja, Massimo Frattarolo
Original Music: Piero Ponzo
Still images and behind the scenes: Sandro Bozzolo
Binaural Audio: Alessio Dutto
Field Producer: Massimo Frattarolo
Catering: Leonardo Briata

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SECTION 03
URBAN SPACE AND POLITICS

Rebecca Rouse and Mara Dionisio

This section brings together works that develop interactive narratives exploring urban spaces, with a particular emphasis on the politics and power relations entangled in these places and the people who inhabit, invade, immigrate, or otherwise move through them. Tensions between fictionalization, documentary, journalism and interactivity can be seen at work across these projects, with creative results. “Tzina: Symphony of Longing” from Shirin Anlen and collaborators uses the 360-degree VR interactive film format and documentary techniques to tell the story of the demolition of Tzina Dizengoff Square in Tel Aviv, Israel. Anlen’s accompanying chapter reflects on the influences on the project, the aims of spatial documentary, and themes of loneliness, loss, and preservation. Maria Engberg’s and Per Linde’s piece “Turmoil Alley” likewise focuses on interactive storytelling around a now absent site, Larmgränd, in Malmö, Sweden -- a vibrant working class city neighborhood street from the mid-1800s until the 1970s when it was demolished. Engberg and Linde’s work utilizes mobile augmented reality, along with an approach to fictionalizing historical material they discuss as “fableing” in their accompanying chapter, “Turmoil Alley & the Fableing of Cities.”

Finally, two projects from the Dutch interactive journalism collective, Lighthouse Reports, bring interactive narrative strategies to bear on current complex stories around conflict, peace, violence and issues of citizenship in Ludo Hekman’s “A Decisive Conversation” and Klaas van Dijken’s and Adriane Ohanesian’s “Did Evil Win?” Hekman’s project brings the user into contact with asylum seekers being interviewed for immigration status in the Netherlands. Complex tensions are highlighted between the human struggles of migrants fleeing conflict and oppression, and policies and laws governing who ‘belongs’ and who cannot enter. Van Dijken’s and Ohanesian’s “Did Evil Win?” revisits the conflict in Dafur, Sudan over 10 years after the international campaign to stop the violence and genocide there, to assess what progress (if any) has been made, what challenges remain, and the complex, intersecting reasons why change has been so difficult in this case. Both works of interactive journalism, these pieces deftly leverage interactive narrative’s capacity for complexification to communicate about difficult current political events in compelling ways.

8 TZINA: SYMPHONY OF LONGING

Shirin Anlen

Tzina: symphony of longing[1] is a poetic, interactive webVR documentary in which the residents of the run-down Dizengoff Square in Tel Aviv muse on love and things that are no more. This paper introduces the project while reflecting on the creative decisions that were made behind the scenes.

At the beginning of 2017, Tzina Dizengoff square, one of Tel Aviv's emblematic sites, has been demolished. The square became a home for the lonely and marginalised characters of the area. This project tells the story of the people who gravitated toward the square and spent their days in it, sitting on the same benches around the monumental fountain sculpture in its center. Different reasons led them there. They seem to be flocking to the square, merging with it in an almost symbiotic relationship. Finding comfort in their shared loneliness with the ever-moving urban landscape. This is a setting, a feeling, a place, that the project wanted to capture and preserve. In this interactive webVR documentary they talk about their lives and the square. Tzina invites for a physical exploration within the virtual square, combining elements of fantasy, while experiencing the square in different times of the day. It is a song for lost love and things that have passed.

[1]Tzina website: https://tzina.space

Shirin Anlen, Or Fleisher, Avner Peled, Ziv Schneider, Laura Juo-Hsin Chen, Udi Ben-Arie
Documentary, Animation, WebVR, 2017
https://tzina.space/
WebVR for HTC Viv, Chrome Browser

Tzina is a room-scale webVR for HTC VIVE, a platform that echoed the tension between lost, memory and control. In time when the web gives us a sense of control lost; swiping from tab to tab, delving deeper into the matrix—losing time, but still in control of space - 3D spatial stories are now asking something new of us. In order to benefit from them, to truly see them and understand what is happening around us—we need to release control over time and space. To truly get lost. To give up the sense of control. In spatial VR humans have more opportunities to expose themselves and to be vulnerable. We can let ourselves get aimlessly lost in a virtual space, like children, as well as to play and to explore—things that have almost vanished from our routine as Western adults. Technology is in a stage of reminding us what it means to be human. Inspired by the web Tzina is a multi-viewers documentary - each viewer is represented by a pigeon, walking inside the virtual square. That way, the viewers can be alone, yet together in the square, just like the characters themselves.

Related work

Tzina was greatly affected by DepthKit[2], a tool that was developed by James George and Alexander Porter. DepthKit is a 3D recording and rendering tool for filming volumetric videos. This tool has a profound impact on volumetric filmmaking and its visual aesthetics became the hallmark of the entire field. The project Clouds[3] – an interactive documentary that explores the art of creative coding, filmed using DepthKit's capturing software and developed entirely using open-source software – was a source of inspiration in developing and designing Tzina. In 2015, the first version of The Enemy[4], by Karim Ben-khelifa, was premiered at IDFA DocLab where we experienced the enormous effect in which the combination of walking VR and real life 3D characters can have. Another project that worth mentioning is A- Way- To- Go by Vincent Morisset[5]. The poetic exploration within a 360 web environment wided our mind and imagination.

3D Live Documentary

From day one, Tzina was considered as a 3D spatial documentary. The thought of letting the viewers walk around the protagonists and to offer them the chance of sitting next to them was magical. Kinect with DepthKit was the chosen tool to capture live action 3D characters. Work using this filming technique on documentary subjects in open field conditions was difficult and bordered on creative sadism. An 18-meter power cable was pulled out, two computers, a Kinect, Black Magic, a tripod and portable sound equipment. Sometimes we waited for a whole day, sometimes two. Sometimes a character just wasn't in the mood to be filmed, another was sick and one got cold feet and disappeared for a while, so we just packed and came back the next day.

The project's characters were not committed to or responsible for it and creating the complex filming infrastructure on a daily basis, when in some days no documentary subject showed up—not to mention the effects of the surroundings, both in terms of noise and light—was difficult and often frustrating. And still, these were necessary steps to take in ensuring the authenticity of our documentary content as well as our desire to keep the characters in the documentary space which Tzina attempts to imitate. Furthermore, the gap between the intimate and sensitive nature of the content (love, loneliness) and the technological challenge was an interesting one as an interactive artists. In total, There are thirteen different characters, spread over five episodes. Each episode in the experience represents a different part of the day - from dawn to dusk, linking the episode's protagonists to a specific theme that emerges from their personal story.

Working within technological constraints

One of the first references for the style of the project was the short animation film Ryan, directed by Chris Landreth[6]. The idea of remaking a vivid portrait of memories and feelings influenced our creation and was a source of inspiration.

[2]DepthKit website: http://depthkit.tv/

[3]George J. and Minard J., Clouds, 2014, http://scatter.nyc/clouds/

[4]Ben Khelifa K., The Enemy, 2017, http://theenemyishere.org/

[5]Morisset V., A- Way- To- Go, 2015, http://a-way-to-go.com/

[6]Landreth C. Ryan, NFB, 2004, https://www.nfb.ca/film/ryan/

Using one kinect gave us ~180 ° of depth. We looked at our 3D interview materials as bodies that needed to be filled and as an opportunity to give life to our protagonists' emotions. By this action the animation affects both the viewer and the character's body, with the hopes of creating a connection between them in an intimate space.

One of the project's cornerstones was our approach to work within technological constraints. We did not act to hide the limitations we worked within, but rather adopted them as an ideology, as they represent the point in time in which the project was made and may have the potential to be chronologically unique. We also saw a lot of creative potential in completing the characters' bodies using animation. We saw that animation within the 3D world had the ability to bridge the experiences of the protagonists and the viewers and to momentarily create a shared experience which reveals the uniqueness in the "everyday" story of a stranger. It was another dimension for the viewer to get lost in. The 3D animation allowed us to create sub-worlds within the bodies of the virtual characters themselves, should the viewer choose to literally stick their head inside of them. We wanted to create the feeling that as you let your curiosity about a specific story grows, the character telling it gives you more.

This action raised multiple moral dilemmas, because the animations were personal interpretation of the characters' stories, accentuating externalized elements in the character and treating their body as raw material to be manipulated. In addition to classical film editing, we were adding other forms of interpretation: weaving virtual extensions of the interview subjects' bodies, distortions of the body by means of effects and shaders, positioning in the virtual environment according to the story's orientation and not the person's, and so on. There was a constant struggled with these questions, debating them back and forth, committed on the one hand to give these people's stories a noticeable emotional effect, and on the other to respect their bodies.

Choosing webVR platform

This platform was chosen for several reasons: public accessibility, open source infrastructure, the tension between a technological platform that is still being constructed and established against a physical space that is fated to be demolished, the ability to integrate multiple viewers at one time in order to invoke a feeling of being "alone together" in the digital space, the desire to be part of the movement to rebuild and reimagine the web—a world which is beginning to transcend the borders of the screen—and a strong artistic desire to push the technological envelope as far as possible in order to examine our own place within it.
The biggest challenge we faced in this project was maintaining 90 FPS consistently, whilst still rendering a complex 3D setting in real time in a web environment. The lead developer, Avner Peled, and the technical director, Or Fleisher, ended up developing many shaders for our 3D characters and environmental elements in order to meet these requirements.

Creative rules

The choice of a 3D spatial experience was also made in order to distance the project from everyday web/digital experiences like browsing and accessing email as far as we could. Tzina is a fully immersive digital project, in which no clicks are made and no interfaces outside of the viewer's body are utilized. The mouse click's association with mundane web activities, it also serves as a reminder of the viewer's existence outside of the movie. Instead of allowing them to immerse themselves and forget about the outside world, clicks and artificial body extensions, such as the Vive's controllers, do not challenge one's conception of reality enough. This decision made for a constant struggle throughout the work process and encouraged the use of unconventional solutions. For example, because of the need to prevent a sit-

uation in which the viewer teleport themselves into another space within the square (because of the Vive's movement limitations), coupled with our desire to create a constant state of motion (like we have in cinema), we created a mechanism by which movement between episodes is symbolized by rotating the characters sitting on the square's benches towards the viewer. This mechanic created an interesting spatial dynamic which received positive reactions.

We decided that we would design the user experience in identical ways for both the web and VR platforms, and that we would treat these two separate platforms as one hybrid platform during development. As a digital native creator, It was a challenge thinking about UX as identical across two disparate sensory platforms. Naturally, these seem like two platforms that do not "like" each other and which cannot easily interface. The Web platform is not yet ready—or may even actively be resisting—the basic technical elements required for storytelling in a fleshed out 3D world, and the VR space is very limited in comparison to that which could be accomplished using other tools (arranging eleven characters and sixteen "extras" in a 3X3 area was exceedingly difficult.)

We've tried to turn the project's world into an internal one by creating a surplus of "is" using symbols, metaphors and decorations in order to process the 'seen' as originating and driven by the internal worlds of the characters. This decision was very interesting from a documentary point of view because it led to a form of generic hybridity between the genres of fantasy and documentary. There were moments when we knocked our heads against the wall because everything was too heavy on the platform. Since we needed to come up with "light" solutions to handle the technical challenges we came up with the idea of representing "extras" in the square as Point-Clouds people. The result was mesmerizing—dancing pixels shaped like holes and colorful humans.

Conclusions

Tzina is a story about lost love and loneliness. It's like a non-feeling that can be challenged only by an honest encounter. Since the results of the volumetric captures were full of noise, we positioned the characters in a way that forced the viewers to look for the angles in which the digital characters look more human. We wanted to affect their physical body as well and to encourage them to go down on their knees when they interacted with the characters. To be equal, as humans. We weren't sure what effect this would have, but we witnessed connections that became more tangible and sensitive. We also witnessed how difficult it was for people to release their body. This is the engine which drives the drama in Tzina—how much can you let go? The more you let go, the more the project will give back.

The comfort in shared loneliness is an essence element in Tzina. The pigeons in the square are all, in fact, avatars of viewers that are online and watching Tzina at the same time. If one focuses on a pigeon, one can see where it is from in the world. This is a relatively simple multi-user mechanism, but the emotional effect it has on the square is immense, and fitting when discussing the emotional effect of partnership in loneliness with strangers. When the viewer realizes that the pigeons in the square are people too, the space's proportions can suddenly change. They may suddenly feel small again in comparison to the square, and the experience of following a pigeon around, letting it act as your guide and knowing that it is another user, offers an additional layer of meaning.

Credits

Shirin Anlen, Director and Producer
Or Fleisher, Technology Director
Avner Peled, Lead developer
Ziv Schneider, Design Director
Laura Juo-Hsin Chen, Creative code
Udi Ben-Arie, Script Editor and UX Expert

On the project clip: https://goo.gl/B9GUHk
Behind the scene clip: https://goo.gl/Lm6DSx

9 TURMOIL ALLEY | LARMGRÄND

Maria Engberg, Per Linde, Doris.tech

Maria Engberg, Per Linde,
Johannes Karlsson,Sebastian Bengtegård
Interactive Exhibition, 2017
https://app.larmgrand.se
Mobile Device (iPhone), Argon 4 App,
Headphones (optional)

Turmoil Alley | Larmgränd is an interactive exhibition that uses mixed media as a storytelling vehicle. The work consists of two large-scale posters depicting photographs of houses from Malmö, Sweden. In a patchwork fashion, the houses form a street: Larmgränd (in English Turmoil Alley) which once existed but has long since disappeared from Malmö's cityscape. The houses on the posters function as a canvas for story fragments about people in Malmö between 1900 and 1925. While the stories are truthful— in the sense that they could have happened in the way we tell them—the characters who inhabit "Larmgränd" are fictive amalgams of real events and people. To access these stories, the visitor uses Argon, a mobile Augmented Reality application for iPhone and Android smartphones. Argon was created by the Augmented Environments Lab at Georgia Institute of Technology with whom we have collaborated.

Turmoil Alley is part of an artistic research project that reflects on the role of fiction in participatory engagement and how the remediation of historical events can provide input for public debates that address the relationship of everyday life to larger political and cultural events. Our approach takes seriously the potential of fictionalization, narratives, and possible worlds explorations through methods of what we in our artistic and design work have called "fableing". In Turmoil Alley the fableing is performed upon historical material from Malmö, 1900-1925.

Turmoil Alley's characters become a mirror of life in Malmö during years of social, political and cultural changes in Sweden. That time—the first decades of the 20th century—has much in common with Malmö today, in the first decades of the 21st century. The stories in "Turmoil Alley" echo the cyclical nature of time and history's peculiar insistence on repeating itself, with slight differences in scale and tempo. Then and now, the changing nature of the social contract in a society marked by urbanism and increasingly precarious work situations are impacting Malmöites' everyday life. New opportunities for activism and civic engagement appear. New media forms emerge. In the midst of these changes, we find resonances between their lives and our own in questions of work and leisure, love and friendships, in the stories of human life that we hear and the stories that we tell.

TURMOIL ALLEY & THE FABLEING OF CITIES

Maria Engberg, Per Linde

As digital media increasingly become entangled with urban culture, new cultural practices emerge and affect how we understand and experience contemporary cities (Mattern, 2017). The experience of place alongside digitally mediated content has been a particular focal point for media artists and researchers working in the field of locative media in the past decade. The term locative media refers to how interactive media is bound to a specific location, or in McCullough's words how digital media moves into "sites and situations of everyday urban life" (2006). McCullough's definition moves beyond the common understanding of locative media as bound to geographical site-specificity, and takes us into a realm of experience. Locative media, then, is understood from a specific location but can also gravitate towards the ways in which everyday life is permeated with stories, media, objects and historical facts. Departing from this notion of urban media questions arise around how city narratives are made and mediated. How is a city mediated through city walks, blogs, films and exhibitions, for example? How do we understand the multiple layers of architectural, geological, social and media-delivered experiences and impressions that we encounter in our everyday lives? These challenges form the starting point for the project Turmoil Alley (Larmgränd, in Swedish), which in turn grew out of a three-year research project, City Fables, funded by an artistic research grant from the Swedish Research council (2013-2016). The City Fables project explored how stories about urban life in contemporary cities are negotiated, remediated and circulated, in both contemporary and historical contexts.

The larger backdrop for our project on urban narratives has been the ongoing processes of urbanization, digitalization and mediatization (Couldry & Hepp, 2013). Cities and Megacities across the globe continue to grow. The urban trend has since the industrial revolution been constant. Globally, more people live in cities than rural areas today. The harbor city Malmö has grown more than any other city in Sweden since the end of the 1990s after a time which is referred to as a long period of post-industrial depression. Like many harbor cities, the city of Malmö had to reinvent itself. The metamorphosis was not unique. While it did have its local flavor, the change followed a typical pattern seen in many post-industrial cities, many of them not seldom harbor cities. This reinvention of cities produces and highlights an abundance of contested and relationally conflicting narratives. Dalia Mukhtar-Landgren (2005:122) has shown how the city of Malmö through its policy and marketing produces a dual city. Referring to Massey (2005), Mukhtar-Landgren argues that "political processes and descriptions of reality do not happen in the city – they produce the city" (Mukhtar-Landgren, 2005:122). These productions, however, are not to be understood as singular or unified productions. Rather, this narration of cities involves a series of iterative productions and reproductions, some incompatible with each other. Furthermore, the role of history is often either underappreciated or misunderstood. In City Fables, and particularly in Turmoil Alley, our starting point was, what is happening today has in some shape happened before and will most likely recur in the future.

Fableing: A strategy for the reuse of digitized cultural heritage material

The City Fables project's methodological stance was related to design research: how collaborative design and art processes are activated and how questions, interventions and productions are negotiated through these processes. The focus of City Fables, as the name suggests, was fictionalised storytelling as a vehicle of representation and as a possible agent for awareness. The activities in City Fables centered around the notion of site-specific or locative narratives (Raley 2010; Engberg 2011). The sites for most of our productions were placed in Malmö as one example of urban spaces that are persistently negotiated and re-negotiated through public debate, historiographically constructed pasts and the multiple and conflicting stories of the present. We asked: what are the stories told about a city, and who gets to tell them?

Using the "fable" as organizing metaphor, we have aimed at inhabiting the shadowlands between fiction and documentary as the site of mapping strategies and counter-strategies for highlighting critical phenomena in the contemporary computerized, digitized, and quantified proceduralized city. The fable as fiction, from the latin *fabula*, story, discourse, narrative (Fable, 2018) is central. But rather than a fiction intended to deceive or fool, it is meant to convey a lesson, share a short story, give insight into a person or a place. The fables of cities are made up of layers of stories—truthful and false. We suggest that the city can be understood as a heteroglossia (Bakhtin 1981), made up of hybrid utterances, traces and influences. These became our canvas for the observations and interventions we wished to make throughout the City Fables project. Fableing, as a process of understanding and using historical and contemporary material as well as a design process, allowed us to ponder the role of fiction in participatory engagement and how the remediation of historical events can provide input for public debates that address the relationship of everyday life to larger political and cultural events. Our approach takes seriously the potential of fictionalization, narratives, and possible worlds explorations through cultural heritage material, personal archives, and other historical sources. In particular, historical moments have the potential to serve as a counterpoint to the stories and realities of contemporary cities, and works with fictionalizing characters and events as a way of nourishing public debate. We especially stress how constituting publics foregrounds an engagement with authority structures (Le Dantec & DiSalvo, 2013). From this perspective, official archives can be seen as one such authority structure, providing specific facts and viewpoints. By contrast, remediating and fictionalizing in public settings creates an experimental zone, one which does not rely on one actor, such as the formal archive's structure, but integrates the translations of a multitude of structures. This understanding of publics highlights knowledge creation, knowledge sharing and agency in a similar way as design labs (Smördahl & Stuedahl, 2015).

Convinced that the first decades of the 21st century in Malmö—and elsewhere—share many features with the first decades of the 20th century, we applied our "fableing" concept to historical Malmö and began exploring the city archives of Malmö in search of human stories, images, facts and artefacts of Malmö then. Our aim was to create a more general, slightly fictionalized story that could resonate with a contemporary audience while keeping larger historical facts intact. Malmö, Sweden in the early decades of the 20th century was in many ways a very different city from Malmö today. As the rest of Sweden, Malmö was transforming radically during these years. Malmö grew to become an industrial city, and between 1860 and 1920 the inhabitants grew from 19,000 to an astounding 113, 500 (Nyzell, 2005). As people moved into Malmö from the agricultural countryside, Malmö became a city of industry workers: men and women who fought to find work, a place to stay, food and a sense of

security in a city that grew exponentially as new areas were built to accommodate the growing population. These years, 1900-1930, saw other advancements and innovations: these are the years when newspapers grow strong and become important vehicles for information and debate, cinema houses with the new moving pictures are built and going to the movies become a popular pastime. Practically, the process of using fableing as a creative principle required us to spend time searching through physical and digitized archives to learn more about that time, and learn more about people's lives, individual citizens' histories, events, streets, social and political life and so on (figure 1). Not constrained by weaving a historically accurate and complete picture, we approached the archives as an incomplete but intriguing mosaic out of which we could borrow elements that later became the characters and vignettes that made up the life of "our" Turmoil Alley.

Denizens of Turmoil Alley: amalgam characters and events

While the stories of *Turmoil Alley | Larmgränd* are truthful—in the sense that they could have happened in the way we tell them—the characters who inhabit *Turmoil Alley | Larmgränd* are fictive amalgamations of real events and people.

The overall truthfulness of Turmoil Alley as a narrative experience was of utmost concern to us; truthful as in the fact of being realistic or true to life, but not "unqualifiedly stateable truth" (Williams 2002: 1). From this point of departure, we created, over time and as we learned more from archives and historical research, a set of amalgam characters and events put together from many pieces. As an example, the story of our character Emil Nordström, a young printer shop worker who is laid off after he has been marked by the police as politically radical and who later emigrates to America, was created even though this name and person exists in the archive. Emil Nordström in Turmoil Alley is inspired by a registration card found in the archives of the Detective Police of Malmö. This historical person also named Emil Nordström (figure 2) was born in Kristianstad, southern Sweden, in 1887 and was taken in for questioning by the Malmö police in 1908. These registration cards, of which we found many, were primarily for political registration. The young men whose faces look back at us were registered as young socialists, presumably after having engaged in so-called agitation activities. While we know very little about the historical Emil, our fictionalized Emil decides over the course of three short films that life would be better elsewhere and as many Swedes at this time, he emigrates with a friend to America.

The characters we created—Emil, Gustav, Estrid, Nils, Josefina, August, Karl—appear in short films, vignettes of everyday life situations in which work and leisure are entwined. The everyday of our characters resonates with the larger historical events of Malmö as they occurred: strikes, political demonstrations, the emergence of cinema and so on. Themes such as the precarity of work, the influx of new inhabitants into the city, emerging workers' and women's rights, new mass media forms resonate in the short films. All movies have a voice-over providing short accounts of the characters, most often in mundane situations such as being at home, writing a postcard, going to the movies or worrying about economic issues etc. The visual material in the movies are combinations of authentic historical photos from Malmö, film snippets, music or radio recordings, advertisements from the time and so on. None of the movies are longer than two-three minutes, making it possible to view several clips during a short period of time. The choice of shorter movies was intentional. The ambition was not to provide longer individual immersion in a long-form narrative; rather, we aimed at giving an impression of *Turmoil Alley | Larmgränd* as densely populated, allowing the viewer to be able to quickly browse among the different stories.

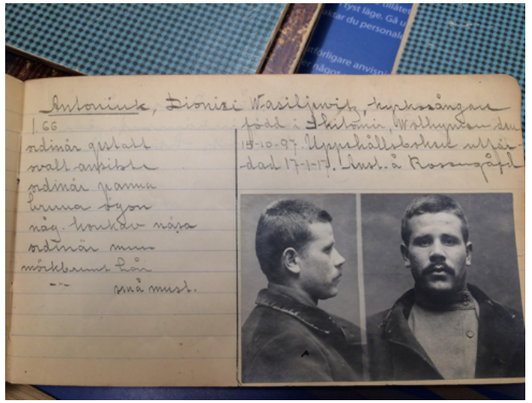

Figure 1 Photo of ledger in the Malmö City Archives (photo: the authors)

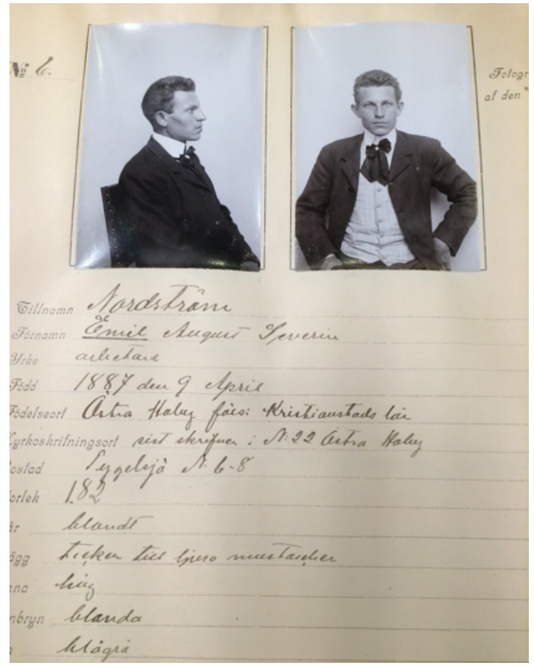

Figure 2 Photo of ledger in the Malmö City Archives (photo: the authors)

Perhaps even more important is that the short and fragmented stories provide a labyrinth-like structure where different associations between the characters and actual events provide nodes that act like crossing (or forking) paths, i.e. different characters and stories are linked to the same events. Addressing the same events, for example the General strike in 1909, makes it possible to span out the narration and to provide different points of view that can provide reflection of diverse meaning-making of specific political or cultural events and potentially recurring patterns and decisive moments in history.

An example of character snapshots is from a film featuring August: "August turns and twists the postcard…he's not a man of words and better if his wife Ylva takes care of the greeting to his mother and father living on the countryside. Ylva is with their kids at a communal park. She has time for that now that she has been sacked from her job at the wool factory." This short account gives several potential associations, to his wife, the children and his parents, to the factory and the communal park. At the same time an object is introduced in the form of a postcard which might appear in other stories. No overall closure is provided in the fragmented narrative and even though there are no interactive hyperlinks between the movies, because visitors can view them in any order the potential for interactive storytelling emerge.

Mediation and design: The Turmoil Alley Mobile Augmented Reality application

Early in our creative process, the idea was to overlay, or reveal as it were, history in the contemporary cityscape of Malmö. In an often used move to connect the here and now with past events, seen in applications such as What Was There and the Museum of London's Streetmuseum app, we wanted to create a mobile experience that allowed historical people and stories to come to life as one walked through the city. Streets and parts of town where houses and streetscapes are still reminiscent of what it looked like a hundred years ago became our canvas. We decided to work with a mobile Augmented Reality framework called Argon, created by the Augmented Environments Lab at Georgia Institute of Technology. Argon operates with geolocation and image recognition as key functions to place virtual content in relation to the real world. Using the Vuforia image recognition feature embedded in Argon, we created the Turmoil Alley application together with the design company Doris. However, lighting conditions and changing visual elements in the street landscape make it notoriously difficult to work with image recognition outside. Inspired by work such as Highrise, a multimedia web documentary, we began thinking of creating a semi-fictional street that could "house" our stories: Turmoil Alley emerged.

The Turmoil Alley posters are made up of photographs of various houses that existed in the 1910s and 1920s in Malmö. We photographed and edited individual houses, removing features that either seemed out of place or disturbed the image recognition software, and then combined them into two sections of a street (Figure 4 and 5).

Exhibiting Turmoil Alley | Larmgränd

Turmoil Alley | *Larmgränd* has been shown twice as an interactive exhibition using mixed media as a storytelling vehicle. The centerpiece of the Turmoil Alley exhibition consists of the two large-scale posters and the AR application. In a patchwork fashion, the houses make up a fictionalized street, and the images of the houses on the posters function as a portal of sorts for the story fragments about people in Malmö between 1900 and 1925 that we have created. To access these stories, the visitor uses Argon, a mobile Augmented Reality browser for iPhone and Android smartphones, and enters the URL for Turmoil Alley into the AR browser

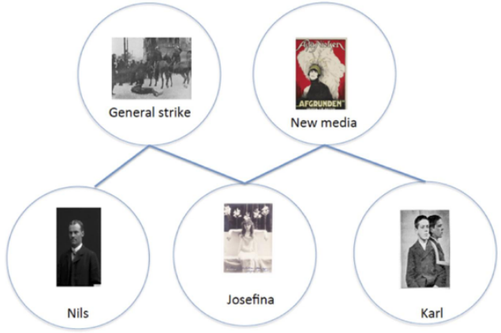

Figure 3 Example of nodes in the narrative creating an amalgam of fictive characters and actual events. (illustration: the authors)

Figure 4 The first poster, approx. two meters wide.

Figure 5 The second poster, approx. three meters wide

Figure 6 Layout of the museum exhibition (photo: the authors)

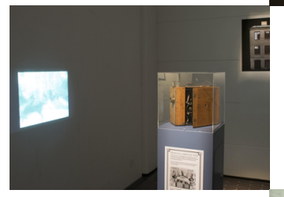

Figure 7 Above the camera, to the right, the film showing the three king meeting (Above photo: the authors; the right: a film still from the 1914 film)

(app.larmgrand.se). The AR browser opens the camera and as you direct the phone to the poster houses, it recognizes the shapes and plays the film associated with a particular house. There are in all 14 short movies associated with the images on the posters and an additional 4 movies linked to the postcards that were produced for the exhibitions as a take-away item (Figure 8).

In early experimentation we tried to merge the AR experience into a reactive room, where visitors' explicit choices (triggering movies) were combined with the room's autonomous playing of media, video and sound, through measuring the visitors' body movements, ie being close to specific objects or places in the room. The technical infrastructure was pretty complex and the dependency on iBeacon technology made it hard to work in rooms of smaller size. As a first exhibition opportunity in a museum space was offered to us we had to let go of that idea, instead focusing on making the wall-sized posters work in a seamless way together with our Argon application. But remaining from those early experiments was the idea of including physical objects, which is an interesting aspect not least for museums. AR is most often seen as a technology to geo-locate specific digital material in place, outside. The integration of AR as a mixed media and mixed reality experience alongside other media and physical objects remains underused. The layering of media, all chosen and placed in a curated room (orchestrated by us) within the larger setting of the curated museum exhibitions speak to an embeddedness of the experience we created.

During the first exhibition, Larmgränd, at Malmö museums the films were all in Swedish. The exhibition space was in one room, with sparse lighting (see figures 6 and 7). The posters' matte surfaces allowed us to use spotlight lighting and to create a curated environment in which wall projections of two films associated with the Larmgränd application were always running.

Technology-focused exhibitions profit from a set-up that provides a rich experience even without the technology, a mixed media approach that many a researcher wished they had incorporated once they encounter the all too familiar bugs in the code of an application or network problems that render the applications inoperable. For Larmgränd we decided to include some physical objects and media in the form of a more general looping film clip projected on one wall, a table with postcards that visitors could take with them (figure 8), a looping video of a historical meeting that took place in Malmö in 1914 between the three Nordic kings, around the same time as many of our stories, and, finally the vintage film camera that actually filmed the three kings' meeting (Figure 7).

The camera was placed on top a purpose-built pedestal, which had a hidden projector placed inside that displayed the film of the Kings' meeting in front of the camera. The effect was a bit peculiar and viewing the film as it were projected from the camera that actually recorded the film made at least some visitors engage in conversation with us during the opening day. The postcards included instructions on the back for how to use the Argon app. The front of the postcards was either of houses from Larmgränd or were reproductions of old Malmö postcards; all were image targets, possible to use with the Argon application to reveal one of the movies. Thus, a visitor could try out the technology outside of the context of the museum exhibition and still be able to view movies attached to that specific house. This became a kind of "take-away museum" that turned out to be very popular; all the postcards were gone before the end of the exhibition.

The second exhibition, the one which this book is focused on, was the ICIDS art exhibition. The exhibition's theme, Time & Tempo, echoed our own preoccupation in Larmgränd with the complex, unfinished and motley layering of history with the present in the urban environments. Larmgränd became Turmoil Alley, and the translated films now in English were shown at the ICIDS art exhibition for an international audience (figure 9).

There are by now many museums and cultural heritage institutions that experiment with reality media technologies (Engberg & Bolter, 2017) such as augmented and virtual reality experiences, often alongside regular exhibitions. Many present compelling and interesting designs using digitized cultural heritage material. However, there remains much work to establish design processes for site-specific design, beyond one-off applications. While remaining a limited experiment, *Turmoil Alley* | *Larmgränd* challenged us to reflect on the process of using and curating digital heritage material to create fictionalized yet historically relevant stories for a present-day audience. Apart from the extended use of rich media, of which mixed realities technologies is but one example, it has been observed how museums and archives are changing from being collection-centered to being community-centered and for the public (Vermeeren et al, 2018). Dialogical formats with visitors are preferred, formats that lends themselves to other kinds of engagement by extending the physical visit or through concrete involving the public in different rearrangements of collections (Vermeeren et al, 2018). One example is the Dutch Rijksmuseum in Amsterdam, that allows visitors to play with the paintings on display by "hijacking" their content via an augmented reality app. By re-appropriating the painting in this way, art gets closer to the individual, and it acquires a meaning that is more personal and may, therefore, resonate longer in the visitor's memory (Vermeeren et al, 2018).

In the early experiments, as well as in a student project that created a prototype experience (figure 10), we tried out some models for participation with promising results. On that occasion visitors were asked to associate stories from their own life to the stories they were confronted with in the exhibition. A possible alternative for coming work could be to collectively continue to grow the population of *Turmoil Alley* | *Larmgränd* together with visitors, on or offline, over a longer period of time.

We see the participatory dimension of cultural heritage as a potentially strong candidate for creating public debate around archived collections, particularly since they have become digitized and shared via websites or APIs. On the one hand the changing role of spectatorship in contemporary culture has given rise to expectations on participatory action and engagement that transcends the traditional settings of archives and museums where "visiting" and "passive observation" direct the code of conduct rather than active engagement. But as already Dewey highlighted in his distinction between the art product and the work of art, the former being the physical and potential, and the latter being what is experienced as people engage with the art product, successions of interpretations, re-mediations and speculation form integral part of experience of art or exhibited objects (Dewey, 1933). It is highlighted by Dindler (2010) how this aspect has been echoed in the writings of Berleant and how the process of appreciating a painting requires us to imaginatively enter and explore the world of the painting. Berleant's notions of participatory engagement thus form a proposition that people not only appreciate situations as observers, but actively invest their resources, beliefs and prior experiences in the environment (Berleant 1970 as cited in Dindler, 2010). Although this referred to art what is at stake is a transactional process between people and environment in which there is a continuous exchange. Berleant also extended the general argument to encompass nature as well as the built environment (Berleant 1992) and we think that archived objects can be included in that environment.

The lines of argumentation presented above are also gaining more and more focus in the participatory design community. Participatory design is a practice of participation and it evolves through cycles of making, telling and enacting (Brandt et al, 2013). For supporting organization of

Figure 8 The postcards (photo: the authors)

Figure 9 The ICIDS art exhibition space. (Photo: Vanessa Cesário)

Figure 10 An early student -made prototype.

the social and collaborative discourse around specific topics the PD community has for a long time explored formats of engagement, taking emerging language games as a starting point rather than rational descriptions (see Ehn 1990). For example, the early work in using card-board mock ups as printer screens provided a fictional space in which participants could express aspirations on desirable futures, frame complex contemporary phenomena or negotiate the meaning of relevant pastime. Narrative dimensions have been strong already at the outset of the Scandinavian tradition. In the recent years the concept of design fiction has grown strong as a way of making design inquiries. Design fiction has emerged as a uniquely productive approach to speculative inquiries (Wakkary et al, 2015). In relation to participatory design it has been suggested that they enable critical reflection and inspire action relating to design inquiries that deal specifically with re-shaping or suspending established conventions (Dindler, 2010). Further, Dindler argues that fictional space emerges as participants in design engage in games of make-believe mediated by props that give mandate to imagination and serve as both anchoring and transcending elements. Objects and media from cultural heritage archives can take on the role of such props while at the same time providing both anchorage and transcendence.

So, complemented with the theme of fictionalizing, platforms for co-authoring and negotiating the meaning of facts relevant for urban life can then be created. Such experiences may come close to the shadowlands between fiction and documentary that we aimed at populating through our concept of "fableing," with the further ambition to highlight critical phenomena in contemporary mediatized cities.

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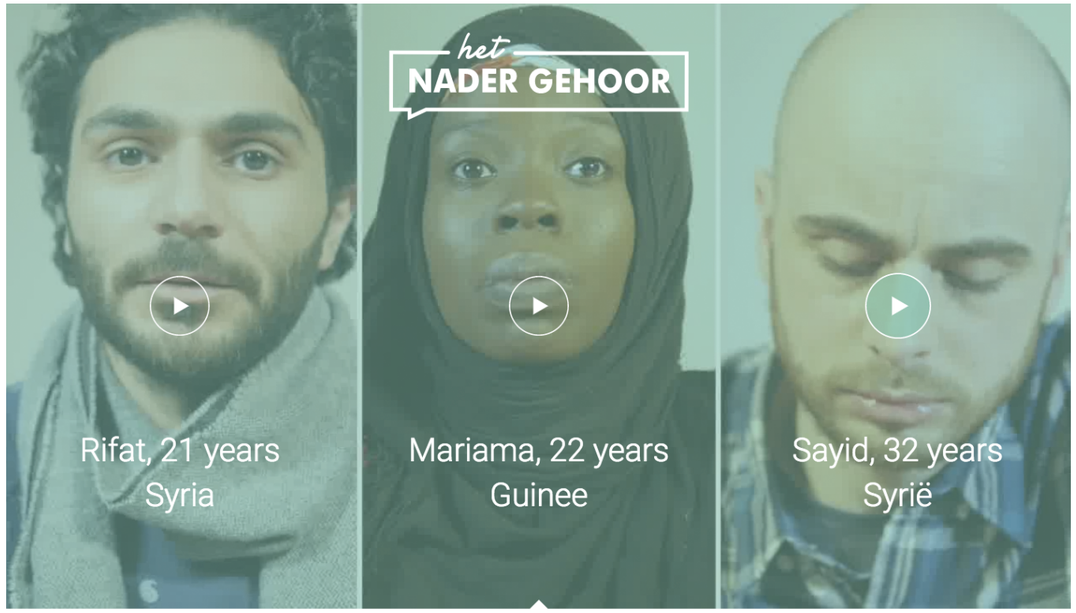
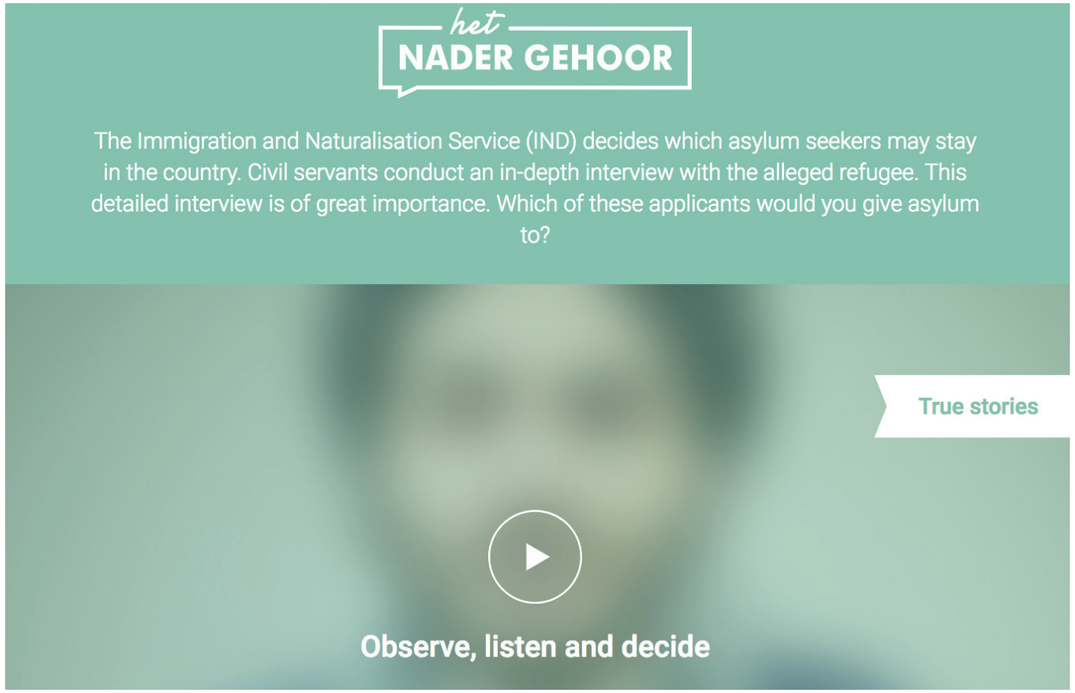
10 A DECISIVE CONVERSATION

Ludo Hekman



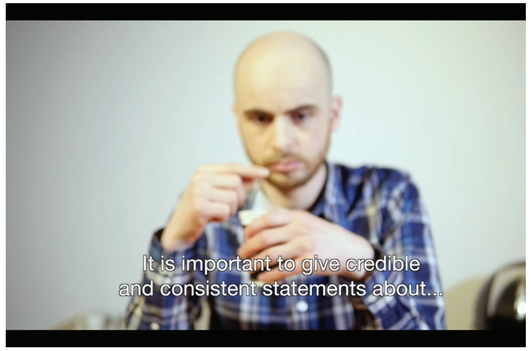
Choose a story and

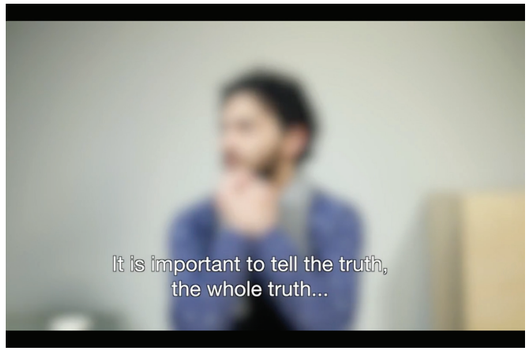


Ludo Hekman Interactive Film, 2016
https://en.nadergehoor.nl/
Headphone, Screen

An interactive film in the Netherlands puts people in the interviewer's chair at the asylum agency. Its producers discuss the importance of new forms of storytelling in breaking down barriers to understanding.

Who is entitled to asylum status in the Netherlands? Who will be welcomed as a refugee and who will be rejected? The outcome of these questions is highly politicized, but the process by which they are made is poorly understood by the public. As a society, how do we decide who stays and who does not? What if we could put ordinary Dutch people in charge of making a decision like this, what would they learn? These were the questions we had in mind when we decided to bring this decisive conversation to life in the form of an interactive documentary for smartphones called A decisive conversation.





Like many countries in Europe, Holland is receiving an enormous number of asylum applications. At Lighthouse Reports we investigated how the process works with a view to providing new perspectives and new ways of telling stories.

New means of storytelling are called for because of tensions surrounding the topic in Holland. People tend to see asylum seekers as either freeloaders or victims. In order to make people aware of the complexity of accepting or rejecting someone, we decided to make an interactive documentary—a documentary that enables them to experience the tension between a human story and the policy rules. If someone's papers aren't sufficient for the authorities to make up its mind, the decision to grant or reject some asylum is based on an in-depth interview. Our research showed us that the manner of the interview relies heavily on the official involved. Some civil servants are comforting and soft; others can make it feel like an interrogation. In both cases, it's the intention of the interviewer to collect as much information as possible, to inform their decision. We felt it would be great if we could explain not only the dynamics of this interview but also enable you feel to feel these dynamics at play. So we started looking for a way to make the audience members' interest, their questions, their focus a decisive part of a real asylum seeker's story.

Seeing the recent surge in mobile video, we also decided it should be targeted primarily at smartphones. But adding a layer of interaction on top of mobile video was a technical as well as a storytelling challenge. Smartphones detect the video on a website and, once it's full screen, rule out the option of an extra layer. We solved this by software-decoding (in JavaScript) the video stream to a canvas element, thereby bypassing the regular video player. So we basically make your device believe you're seeing a regular website—while you're de facto watching a video. It gave us the 50 opportunity to add interaction to the video on a smartphone. We solved our technical problem, but interaction is still needed to deliver in narrative as well as technological terms. The question was, how does it help the story? On a superficial level it might give users some sense of control of the story, or tickle their curiosity. On a deeper and more conceptual level though, we needed the interaction to be part of the storytelling itself.

Since we were targeting mobile phones, the design we aimed for had to be intuitive and minimal, too. For that reason we chose to make the subtitles an active part of the story, and by doing so, stressed the role and interests of the official in that conversation. Effectively, we made some words in the subtitles function as hotspots. If you click on them, they move upward. Every active word in the subtitles is an entrance to a short clip. These clips are edited to fit each other in a variety of ways. This enables the audience to process the story in an unique tempo, with a unique route too. If viewers do not click on any of the subtitles, they will still get the whole story but just a core version of it. If they click and watch more, the story leads them into side-stories, nuances or new perspectives. By doing so we were able to tell an time-elastic story that fitted the interest and arc of tension of the user. And it will make you understand that your role as the user (your interests, your decisions) is part of the story you'll hear and see. So, when you have to make a decision in the end whether to accept or reject the asylum seeker you are aware of this dynamic. The stories are based on transcripts of real interviews. So when you finally make the decision, you'll get to see how and what the Dutch government decided in each case.

11 DID EVIL WIN?

Klaas van Dijken, Adriane Ohanesian

Klaas van Dijken, Adriane Ohanesian Interactive Web Documentary, 2017

More than a decade ago, celebrities, policy makers and millions of citizens in the United States and Europe took to the streets to demand attention for Darfur, the war torn region in Sudan. They called it a genocide: in Darfur, hundreds of thousands of people were being killed and thousands of women and girls were raped. The International Criminal Court in The Hague issued a warrant for the arrest of president Omar al Bashir, for crimes against humanity and war crimes. But a mere decade later little has changed in Darfur, as journalists Klaas van Dijken and Adriane Ohanesian found out when they visited the region illegally in 2015. The Bashir government is still in charge and doesn't allow journalists to enter Darfur. Van Dijken and Ohanesian saw that many atrocities still continue there. In the meantime, any mention of Darfur has disappeared from the news coverage. The US and the EU are even collaborating with the criminal regime. How does this happen? How come the public and politicians have forgotten about the crisis that occupied their conscience a mere decade ago? The journalists created this project to follow-up with several key players involved in the global action to save Darfur. They spoke with victims, activists, politicians and one rebel leader and asked them: Where did things go wrong? What could they have done different? In the interactive documentary, viewers can assess all these answer for themselves and ultimately decide on the answer to the question: *Did Evil Win?*

DESIGN POSTRSCRIPT

Jana-Lina Berkenbusch

ICIDS Art Catalogues Covers from 2015 until 2017
ICIDS Art Catalogue 2018 published by Carnegie Mellon ETC Press

When Ido Iurgel, then member of the ICIDS Steering Committee and organizer of the 2015 edition of the conference, began to think about the design for an ICIDS Art Catalogue, he first approached his colleague at Rhine-Waal University of Applied Sciences, Jorg Petri. Around this same time, I had entered the university to study Information and Communication Design. Serendipitously, the design of this catalogue would become my first job there! I took the first draft of the catalogue, created by Jorg Petri, and expanded it, to develop the first catalogue for the ICIDS Art Exhibition, printed in 2015. I continued to design and develop the catalogues over the next years, through 2017, when the catalogue expanded in partnership with Carnegie Mellon ETC Press to become a publication.

The ICIDS Art Catalogue presents some interesting design challenges. Art catalogues thrive on large illustrations showing the artworks presented. This catalogue, however, was focused on digital art, with images that are typically small in resolution. This lack of resolution has to do with the fact that as a rule, screenshots are taken from the screen. In addition, these pictures are often very dark. So it is not possible to display screenshots in large format because they will eventually pixelate. To accommodate this, we adjusted the format — not too large of a book, but specialized for showing both landscape and portrait formats, due to its square dimensions. When choosing the fonts, we selected google fonts. The serif typeface I selected for the current print edition is intended for plain text, with an accompanying font that is somewhat fancier for titles and curatorial texts.

But how should the cover be designed? I am of the opinion that the cover must reflect the contents of a book, something with is unfortunately often not the case — I am often struck by this at bookstores. At first I thought an image of a single artwork might be striking for the cover, but the ICIDS Art Catalogue is always an anthology, and as previously discussed, the images available are often not a desirable resolution for larger scale printing. Then I came up with the idea of a typographic, two-color design. This works very well, allowing the ICIDS catalogue, even from a distance on a shelf, to be instantly recognizable as a series. In the cover design, the ICIDS acronym wraps around the fold of the spine, it is broken and straightened, and the letters lose their meaning and thus their cohesion, to become simple, abstract forms. At the same time, the superimposed text of the full conference name creates a strict horizontal and vertical orientation, which is then interrupted again by the small black text. The design is reminiscent of a labyrinth, or early computer games of the late 1970s, such as Snake. The bright, opposing colors chosen for the covers are meant to evoke the computer and digitally, as well as the bridging across the analogue and digital world, often seen in the projects included in the exhibitions. This creative-typographic design for the cover is meant as an elegant solution for the design constraints of the project, as well as a graphic nod to early interactive narrative contexts such as early video games, and multimedia work such as mixed reality.

CONTRIBUTORS

Shirin Anlen (1985) is an Interactive creator working in the field of documentary, video games and volumetric photography. Her work combines various participatory practices that explore how new technologies can enrich audio-visual narratives. Shirin's works have been exhibited internationally including IDFA DocLab, Next Festival de Cannes, HeK-House of Electronic Basel, Museum of Moscow and the Israeli Center of Digital Art. Shirin founded the first interactive and VR storytelling festival and lab in Israel and currently developing her second webVR feature.

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Elizabeth Goins is an Associate Professor of Performing Arts and Visual Culture at Rochester Institute of Technology and a game designer. Her research interests include: making games that experiment with narrative, heritage and humanities content; spatial and environmental storytelling; enacted narrative in games. Currently, she teaches classes in anime, the design of virtual worlds, and video game criticism.

Mez Breeze has developed award-winning digital writing and games have been influential over the past two decades in shaping interactive and Cross-Reality (AR/VR/MR) genres, electronic literature, and digital fiction. Having been awarded an Honorable Mention in the 2017 Microsoft MCV Pacific Women In Games List which profiles the "most influential women across all facets of the Australian and New Zealand Games Industries", and having attained an 2017 Honorable Nomination for her work in Virtual Reality, Mez is currently a Coproducer, Creative Director and Lead Interactive Writer of the Inanimate Alice: Perpetual Nomads Virtual Reality/Novel Series. She is also a proud bearer of a ridiculous number of laugh lines; co-creator of All the Delicate Duplicates; a Senior Research Affiliate with The Humanities and Critical Code Studies Lab; a bee devotee and permaculture practitioner; an Advisor to The Mixed Augmented Reality Art Research Organisation and (most importantly) a steward to two lovely rescue dogs. Mez's Mixed Reality projects, games, and code poetry (including her pioneering English-code hybrid language "mezangelle") reside in Collections as diverse as The World Bank, Cornell's Rose Goldsen Archive at Cornell University, and the PANDORA Electronic Collection at the National Library of Australia. Duke University have extended to Mez an invitation to develop a comprehensive career archive of her games, works, correspondence and papers to be held at the David M. Rubenstein Rare Book & Manuscript Library.

Sandra Camara is currently a research assistant at Madeira Interactive Technologies Institute. Having grown up around the world (Venezuela, United States, Canada, Madeira), she has developed a passion for discovering and understanding new cultures. She holds a BA and MA in Graphic Design from Universidade da Madeira and an MA in Entertainment Technology from Carnegie Mellon University and the University of Madeira. After working as an art teacher for several years, she channeled her experience in Art and Media to develop educational games for kindergarten students. Her current research addresses the use of cross-reality (AR/VR/MR) technology for children's education.

Andy Campbell is Director of Digital for One to One Development Trust, an award-winning UK charity that specialises in delivering innovative digital media, film and arts projects. Through One to One's studio Dreaming Methods, Andy has been creating leading-edge digital fiction for two decades, from experimental apps and browser-based stories to full-blown narrative games. He is a judge of the New Media Writing Prize, now in its 7th year, and the lead developer of Inanimate Alice, a pioneering online novel series.

Maria Engberg is an Associate Professor at Malmö University, Department of Computer Science and Media Technology, and an Affiliate Researcher at the Augmented Environments Lab (AEL) at the Georgia Institute of Technology (US). She is a digital media researcher and designer. She designs mobile media experiences for augmented and mixed reality for aesthetic, cultural heritage and informal learning experiences. In collaboration with researchers at the AEL she creates augmented reality mobile media experiences for cultural heritage, narrative and entertainment. With Jay David Bolter, under the name Far&Near, she creates AR/MR mobile media narratives: the latest of which, entitled Mosaic, was shown at the 2016 More Light art exhibition at Eyedrum, Atlanta (GA). Her research interests include digital aesthetics, locative media and media studies. She is the co-editor of Ubiquitous Computing, Complexity, and Culture (Edman, Bolter, Diaz, Søndergaard, and Engberg, Routledge, 2015) and is the author of several articles on digital aesthetics, literature, and locative media, including augmented and mixed reality. Her current book project (under contract with MIT Press) with Jay David Bolter and Blair MacIntyre is Reality Media: Augmented and Virtual Reality.

Patrik Erlandsson is a Lecturer in Media Arts, Aesthetics, and Narration at the University of Skövde in Sweden. He is a writer and media researcher and teaches primarily interactive storytelling within the computer games development programs. He helped lay the groundwork for the children's book-project KLUB — a project in which local cultural heritage is told and explored using both traditional print and new media technologies.

Bettina Fabos, Ph.D., Project Director. Dr. Fabos is Associate Professor of Visual Communication and Interactive Digital Studies at the University of Northern Iowa, where she is also engaged with the University's public history program. Both a scholar and award-winning producer of digital culture, her current work revolves around digital culture, digital visualization, digital photo archiving, and public memory. Her particular knowledge of media pedagogy and interactive digital studies is valuable to the *Proud & Torn* project insofar as communicating historical narrative and collective photographic identity. As a Presidential Scholar at the University of Iowa (where she received her Ph.D.), she won the University's top dissertation award; she was also a recipient of a Spencer Fellowship. In 2013, she conducted research as a Fulbright Research Fellow in Hungary for *Proud & Torn*. She is the co-author of three significant textbooks: Media and Culture (the leading textbook for mass communication survey classes across the U.S.), Media Essentials, and Media IN Society, all with Bedford/St. Martin's Press. She is also co-founder of FORTEPAN IOWA (fortepan.us), a digital archive of amateur photographs on 20th-century Iowa life based on the Hungarian FORTEPAN (fortepan.hu).

Ludo Hekman is a freelance journalist and creative producer, specialized in translating complex issues into thought provoking concepts and stories alike. He has worked for print, online and TV journalism outlets in countries including Iran, Iraq, and Afghanistan. He is one of the founders of Lighthouse Reports, a journalistic production company with a focus on stories about conflict and peace and an urge to tell compelling and constructive stories. As a creative producer he has started many innovative and meaningful collaborations and has a good sense for the opportunities of emerging technologies.

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Per Linde, PhD in Interaction design, is a designer, researcher and Associate Professor at Malmö University. His research addresses ubiquitous computing, mobile interaction, participatory design processes and Living Labs methodologies. He is a chair of the management board for the Internet of Things and People research platform at the university where he coordinates the project "Interaction in the Smart Home" and is the research area leader of the theme of Smart Cities. He is the author of several articles and book chapters on interaction design, co-creation and place-specific computing. Linde has a background as poet and performance artist.

Valentina Nisi is currently an Assistant Professor in Digital Interactive Media at the University of Madeira and Adjunct Faculty at the HCI Institute at Carnegie Mellon University. She is a Founding Member and Vice President of the Board at the Madeira Interactive Technologies Institute. Valentina is currently involved in the shaping of the M-ITI International partnerships, while teaching, researching and publishing on creative digital media. Her research spans from Creative Media Productions, Interactive Gaming, and Transmedia Storytelling. She holds a Ph.D. in Mobile Location-Aware Multimedia Stories and an MSc in Multimedia Systems from Trinity College Dublin and a Bachelor Degree in Fine arts from the Albertine Academy of Turin. Her background includes Interaction Design, Video Art, and Screenwriting. In 2006 she co-founded Fattoria Mediale, an Amsterdam based non-profit foundation, for the design and production of culturally rich media experiences. Before that, Valentina worked with Glorianna Davenport at Media Lab Europe MIT and research partner and Prof.Mads Haahr at the Computer Science Department of Trinity College Dublin.

Adriane Ohanesian, photojournalist, received her B.A. in Cultural Anthropology and conflict resolution from Colorado College in 2008 and graduated from the International Center of Photography's photojournalism and documentary photography program in 2010. Upon the completion of her degree, she moved to Sudan and has been photographing mainly in Africa ever since. Adriane has continued to document the civil war in South Sudan, fighting in Somalia, clashes in Burundi, and has been the only photographer in the past ten years to access the rebel-controlled areas of Dafur, Sudan. Adriane's ongoing focus has been on the impact that conflict has on isolated civilian populations. She strives to cover all aspects of conflict, often exploring the isolation and desperation of people who have no other choice but to endure the reality of life within a war zone. In 2015, Adriane was selected as one of Getty Images Emerging Photographers. In 2016, she won a World Press Photo award for her work in Dafur, and the Anja Niedringhaus Courage in Photojournalism Award. In 2017, Adriane was recognized as one of PDN's 30 New and Emerging photographers and completed the World Press Photo's Joop Swart Masterclass. Adriane's photographs have been published by: Al Jazeera, The Wall Street Journal, National Geographic, The New Yorker, the New York Times, and TIME. Adriane is currently based in Nairobi, Kenya,

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