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Placemaking in Marginalia:
Orality-literacy Fluctuations as Praxis for Extended Reality Performances

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Abstract

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Placemaking in Marginalia is a theoretical-practical research on experimental Extended Reality technologies for live performances and non-linear narratives. Situated at the confluence of experimental applications of spatial computing, algorithmic theatre and Machine Learning (ML), it leverages a comparative study across oral culture structures, medieval approaches to textual technologies, media interfaces, orality-literacy metamorphoses, intertextuality and systems of extreme variability to elucidate creative parallels and set forth an interdisciplinary methodology for theorizing and developing virtualities and hyperrealities in the form of hybrid live performances for dancers, actors and algorithms. This encompassed the development of two instances of applied research and pedagogy: *All Coding is Always Transcoding*, a week-long dynamic research laboratory and *Enclavados Todos Juntos*, a live performance, both taking place at the Meany Center for the Performing Arts in Seattle, in April and May of 2024.

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Dedication

I want to dedicate this to my family for their unconditional love and support. To my husband Jonathan, who encourages me and inspires me everyday, to my mother, Alma Yolanda Castillo Rojas and my father, Javier Luna Reyes, who instilled in me an enormous curiosity setting me off in this creative journey and whose research and field work deeply inspired this thesis. To my sister and grandmother who are always my beacons of calmness and ease. In loving memory of my grandfather, whose perseverance and hard work inspired me deeply. In memory of Dani and Bruno, who made every place feel like home.

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Introduction

Placemaking in Marginalia is a theoretical-practical research situated at the confluence of experimental applications of spatial computing, algorithmic theatre and Machine Learning (ML), it leverages a comparative study of oral culture structures and textual technologies to set forth a series of interconnections which informed a methodology for theorizing and developing virtualities and hyperrealities in the form of hybrid live performances for dancers, actors and algorithms.

Concerned with elucidating ways in which performative spaces, incorporating Extended Reality, game engines and networked systems can be aroused and reclaimed as embodied interfaces of diverse narrative patterns and cosmologies, this methodology casts its foundations as an assemblage of seemingly disparate threads; encountered across medieval approaches to textual technologies, media interfaces, orality-literacy metamorphoses, intertextuality and systems of extreme variability, these threads are transposed and consolidated as unexpectedly *post-modern* entanglements. Resonating with the contemporary experience of technologically-driven paradigm shifts that, just as they did roughly a thousand years ago, restructure the human experience of reality, storytelling and signification, this assemblage endeavors to present conceptual parallels and pathways that allowed me to expand on the theorization and construction of divergent extended realities through reclaiming the margins and peripheries of the medium, whilst implicitly contesting the aesthetics and politics of hegemonic world-building practices.

Concurrently to the theoretical research and embracing an interdisciplinary framework, *Placemaking in Marginalia* encompassed the development of two central intersections of applied

research and pedagogy: *All coding is always transcoding* (fig.1), a week-long dynamic research laboratory at the Meany Studio Theater in April 2024, which resulted in an invaluable collaboration with performers, artists, professors and students in the exploration and theorization of performance and technology; and *Enclavados Todos Juntos* (fig.2), a live performance integrating Mixed Reality(MR) interfaces and expanded cinema, in collaboration with dancers Ashley Menestrina and Carolina Marin, presented at the Meany Center for the Performing Arts in Seattle, in May 2024.



Fig. 1 - Still from *All coding is always transcoding* - research lab (2024)



Fig. 2 - Still from live performance *Enclavados Todos Juntos* (2024)

Background

My artist practice has been concerned with exploring and unraveling the mediated rhetorics of *the home* as a politically-loaded place and how it is experienced through intensities of ambivalence, frustration, belonging and desire. Central to this exploration on the construction of the domestic, are the concepts of placemaking and forming place attachments, both inherently diverse concepts that develop across perspectives, memories, identities and temporalities, which are performed at both collective and personal scales within the everyday, in relation to “multiple, geographically scattered places simultaneously that together create a web of meaning”.¹ The home appears as an immersive place of memory and ritual, a complex assemblage and a performative stage² in a state of superposition, constant signification and negotiation. The multifaceted research and theorization on the ubiquitous ambivalence that permeates the domestic has continuously fascinated and inspired me to develop digital hyper-realities and virtualities, where algorithms aid in the in the exploration of spatiotemporal relationships through technologically augmented spaces.

Within these virtualities, objects, events and architectures are transformed and imbued with behaviors and qualities which exacerbate embodied and idealized dynamics, extracting them from the peripheries and centering them into narrative vignettes, installations and performances.

¹Lynne Manzo and Patrick Devine-Wright, *Place attachment: Advances in Theory, Methods and Applications*, 2020.

² In the chapter *Metatheoretical moments in place attachment research: Seeking clarity in diversity* (2020), by Williams, D. R., & Miller, B. A., part of the book *Place attachment: advances in theory, methods and applications* (Manzo & Devine-Wright, 2020, 23), it is noted that “Originating from the philosophy of Deleuze and Guattari (1987) and the “thrown-together-ness” of Massey’s (1994) relational sense of place, assemblage theory conceptualizes place as a complex, dynamic constellation of materiality, representations, and performative practices (Cresswell, 2015).

The Peripheral and the Residual

A prevalent thread throughout my work has its origins with the fascination of encountering, studying and collecting the peripheral and residual elements that make up the experience of place and the ordinary. As an artist and archivist of these objects, my practice lies in unraveling the role these elements fulfill—or hinder—in the production of place attachments and the construction of the *homely*. Increasingly being transformed and forced into an elusive ideal, the staging of *home* morphs into a homogeneous *non-place*, “a space which cannot be defined as relational, or historical or concerned with identity”³; exacerbating a bittersweet and performative relationship with the construction and signification of the familiar, the *non-place-like-home* is fabulated and performed as mediated fragments of attachments and *ordinary affects*, poetically defined by Kathleen Stewart, as “the varied, surging capacities to affect and to be affected that give everyday life the quality of a continual motion of relations, scenes, contingencies and emergences”⁴. The concept of *ordinary affects*, in conjunction with the construction of place attachments, has further guided an exploration of the accumulation of the residual “things” that, creeping in from the peripheries, imbue everyday life with fluctuating charges of fantasies and frustrations.

The Index of the Collapsing Memory (2020, fig. 3) is a net-art generative and interactive work which deliberately breaks and glitches a three-dimensional force graph, where nodes in a dataset are interconnected according to relationship weights and references to each other.

³ Auge, Marc. *Non-Places: An Introduction to Supermodernity*. Verso, 2008. 63

⁴ Stewart, Kathleen. *Ordinary affects*. Duke University Press, 2007.1

Through the use of a trackpad or a computer mouse, the graph, and each individual node, can be rotated, panned and zoomed in. The database feeding this force graph contained descriptions of objects and everyday detritus; things that were stored away and simply accumulated at the margins of the family home. Whilst some descriptions and connections were factual, others had to be fabricated; subsequently, these descriptions were transposed into a JSON text format file and given numeric values according to arbitrary intensities of mnemonic significance; these numbers fed the algorithm a speculative and subjectively noisy dataset which resulted in erratic behaviors; some objects would cluster into masses of immense virtual weight which would send every other node violently flying outwards and then springing back into either a concentrated pulp of debris or consolidated into an assemblage of unstable and quivering objects, haphazardly held together by a fleeting moment of balance. These impermanent still lifes, invited the audience to elucidate and signify connections, prompting for interaction; yet, any accidental contact with a *spiring-loaded* object, would send everything imploding back into a concentrated conglomerate. The only path to discerning this archive, momentarily landing onto another still life, is through consciously embracing outwardly chaos. *The Index of the Collapsing Memory*, like the memories it holds, behaves erratically, precariously re-configuring itself. Oscillating between entropy and control, new memories of the fictional home and the junk drawers that hold these material residues are created. The more we attempt to gain clarity, the deeper we delve into an overwhelming wreckage of the local and the particular where imploding and expanding memories, slowly construct a patchwork of identity that is being constantly re-imagined.

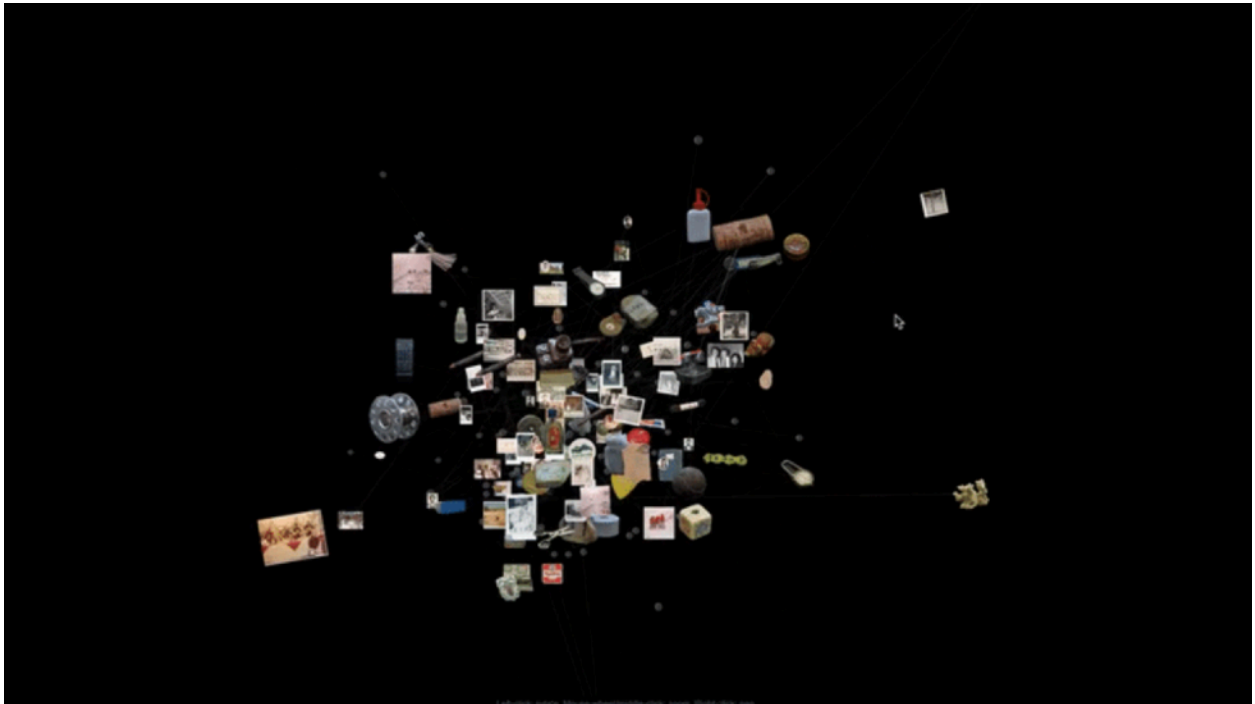


Fig. 3 - Screen capture of *The Index of the Collapsing Memory* (2020)

The implementation and interaction of ambivalent virtual objects and spaces that become activated through algorithmic behaviors, were consolidated in another iteration, a Virtual Reality (VR) work titled *Entropy Will Be Larger Tomorrow* (2020-2021, fig. 4), an immersive generative loop, which can be experienced with a VR headset or presented as a collective screening within a 360-degree planetarium. This work transposed the chaotic performance of residual objects from the two-dimensional webpage into an encompassing virtual construction of a home. Three-dimensional models of ordinary objects, such as groceries, cleaning supplies, furniture, magazines and home decor, sprout out of thin air within the walls of a standardized, *one-bedroom-one-bathroom* apartment, these objects are affected by varying gravity forces, they collide with one another, hurtling beyond the walls of the apartment and into a weightless void. Within this virtual space, a camera embodies the audience's gaze and presence, allowing for its

control through their head movements. The camera moves across the domestic space on a predetermined path, reminiscent of theme park rides, the camera incessantly follows the same loop, as the objects slowly appear within the apartment, each journey through it becomes exponentially cluttered. The space becomes a stage for a dynamic and chaotic choreography of objects competing for space with each other, colliding with the camera and eventually saturating the computer itself, the system becomes unstable and unable to render the large amount of collisions and triangles until it crashes and has to manually be re-booted.

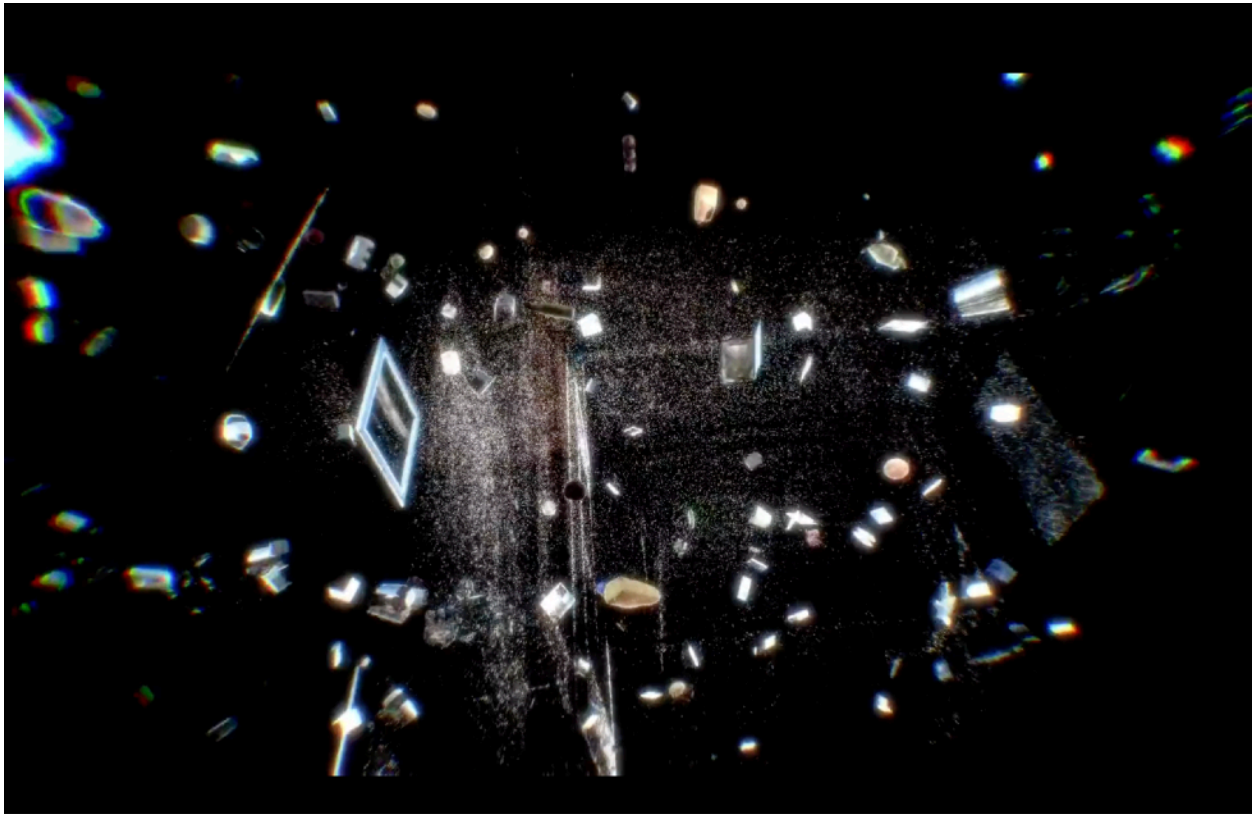


Fig. 4 - Still from *Entropy Will Be Larger Tomorrow* (2020-2021)

The algorithms staging this home confer a sense of confusing claustrophobia and instability whilst objects fluctuate between being comforting or becoming exhausting trash. Developed during the height of the COVID-19 pandemic, this generative home dilated and engulfed its inhabitants in a manifested paradox, simultaneously enacted as a space of safety and intimacy, whilst encroached with uncertainty, frustration and isolation.

The creation of databases and archives of virtual objects and their role in the construction of ambivalent spaces figure prominently as a primary resource which can be reconfigured and revitalized through a myriad of iterations. Furthermore, the consideration of algorithms which can infuse erratic and unsettling behaviors towards the familiar, and how they can mediate, augment and signify place attachments within disordered domestic environments, consolidate the approach of actuating *software performances*⁵ as catalysts to increase the expressive and performative capabilities of the virtual medium and its interfaces, re-purposing and claiming algorithms beyond their intended uses or industries (e.g. gaming industry, surveillance and robotics) to create mnemonic simulacra and ambivalent scenes of the ordinary.

⁵ Lev Manovich's concept of "software performances", where the archive is being performed in real-time by the software decoding it and expanding it. Lev Manovich, *Software Takes Command: Extending the Language of New Media* (New York, United States of America: Bloomsbury, 2013), <https://doi.org/10.5040/9781472544988>.



Fig. 5 - *Jon and Bruno* (2020)



Fig. 6 - *Jon and Bruno* (2020)

Erratic Software Performances

Consciously activating algorithmic behaviors as performative actors in software performances, a subsequent work titled *Jon and Bruno* (2020, figs. 5-6), was consolidated. Employing the Unity game engine software, it consists of a virtual camera which has been programmed to obsessively and erratically traverse a virtual space whilst constantly orbiting around and across a volumetric video recording made with a depth sensor. Created impromptu, this recording captured a small glimpse of the ordinary, which, inside the game engine, was displayed as an animated, three-dimensional point cloud; emerging from a peripheral digital residue, this virtual memory deceptively appears as an immersive capture of the past, inviting the virtual camera to traverse and inhabit it, yet, by assigning the same video as a texture for each individual point, the memory is constantly being granularly replicated and folded unto itself. The closer the camera gets to a cluster of points to discern more detail, the points expand back into a wide shot which increasingly loses resolution and becomes pixelated. My dysfunctional algorithms offer a stark contrast with the satisfying software performance enacted by the fictional *Esper Machine* (figs. 7-8) in Ridley Scott's film *Blade Runner* (1982), where the software virtually augments the space inside a photograph by magnifying details and peripheries and displaying them in super-resolution quality, thus producing more information from a single archive.

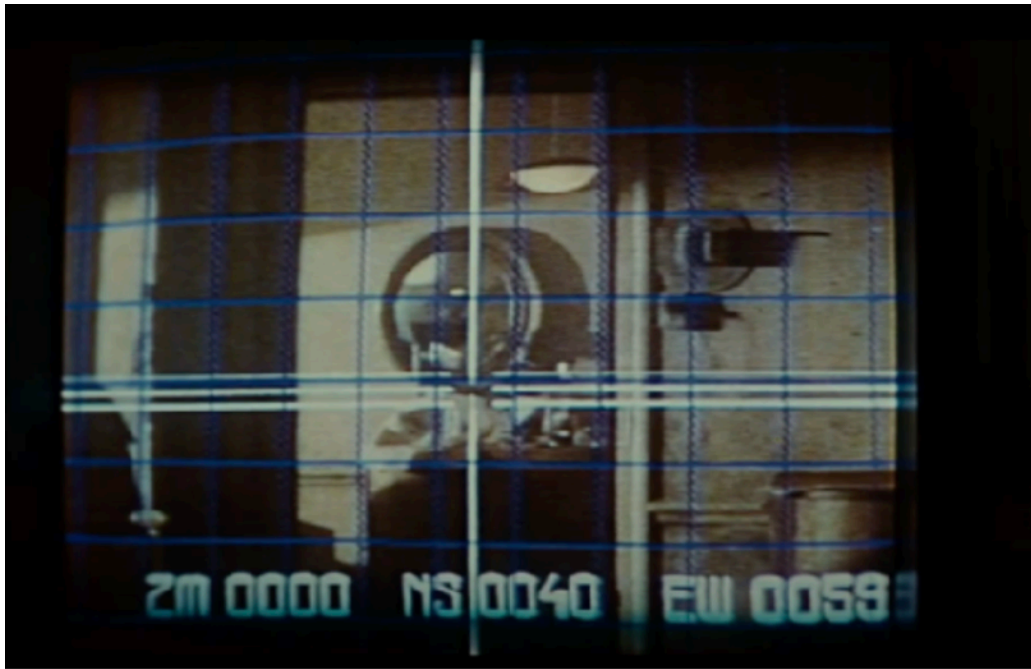


Fig. 7 - Detail, *Blade Runner*, by Ridley Scott (1982)



Fig. 8 - Detail, *Blade Runner*, by Ridley Scott (1982)

The virtual memory, through repetition and movement,⁶ becomes signified as an ambivalent attachment, as the dysfunctional algorithm explores the space that contains the mirage of *Jon and Bruno*, seeks to solidify its memory through frantic repetition, becomes a performative conduit to embody a relationship of unattainable tangibility with the familiar, now appearing more distant than ever.

The mnemonic and relational patterns of movement across virtual constructions of the ordinary, glimpsed through the conjunction of autonomous cameras tasked with observing and maintaining focus on specific scenes and objects around them, whilst concurrently executing their own distinct behaviors, stimulated the conceptualization and development of *The Kaleidoscope of the Eternal Now* (2020, fig. 9-10), a short film consisting of volumetric videos of various scenes from an ordinary day. Filmed just before the pandemic reached Mexico, it captured, amongst others, a family gathering together to enjoy what would be the one of the last moments of pre-Covid normality.

⁶ In the chapter *Metatheoretical moments in place attachment research: Seeking clarity in diversity* (2020), by Williams, D. R., & Miller, B. A., part of the book *Place attachment: advances in theory, methods and applications* (Manzo & Devine-Wright, 2020), it is noted that one of the ways in which place attachment has been theorized and constructed is through a *performative metatheory*, where the signification of place is enacted through habitual choreographies and “place becomes a scene or venue of embodied practice”. (p.21), furthermore, “Since place attachment is an embodied relationship to the world, places are constituted by people doing things in place and thus are constantly being performed and are never finished.” (p. 22)

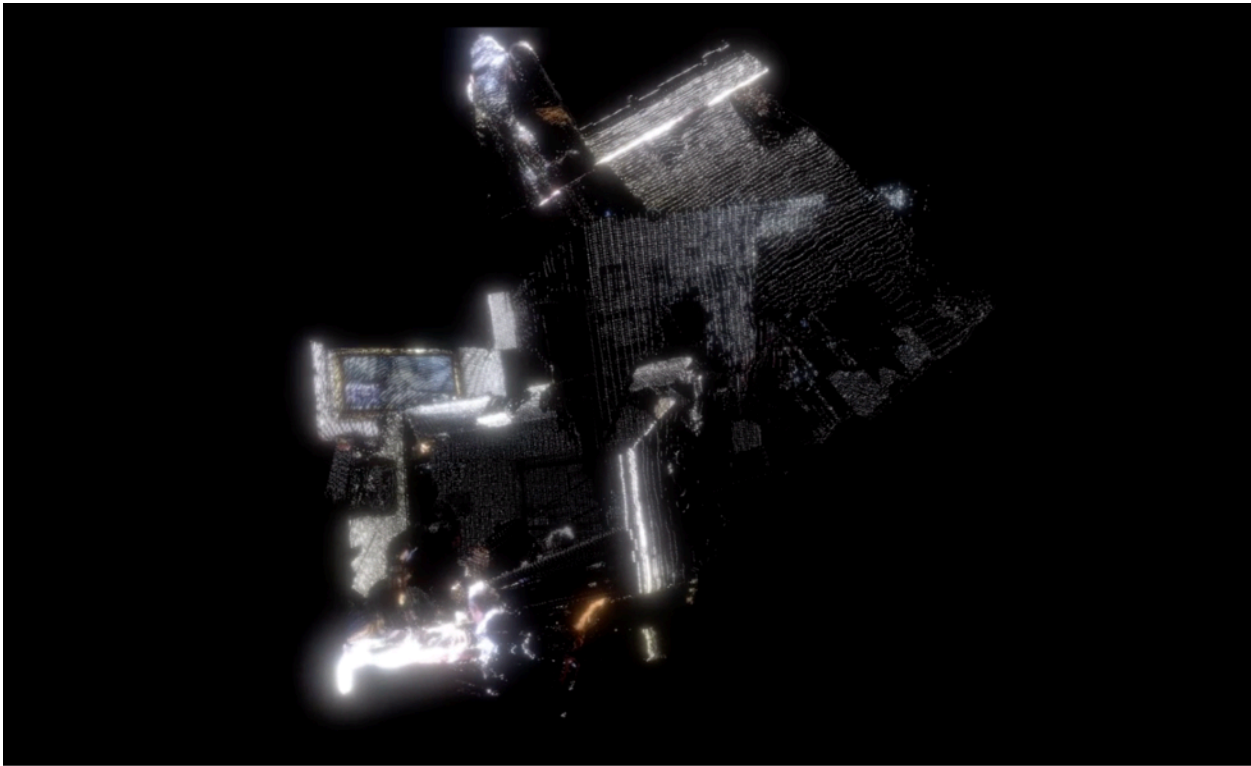


Fig. 9 - *The Kaleidoscope of the Eternal Now* (2020)

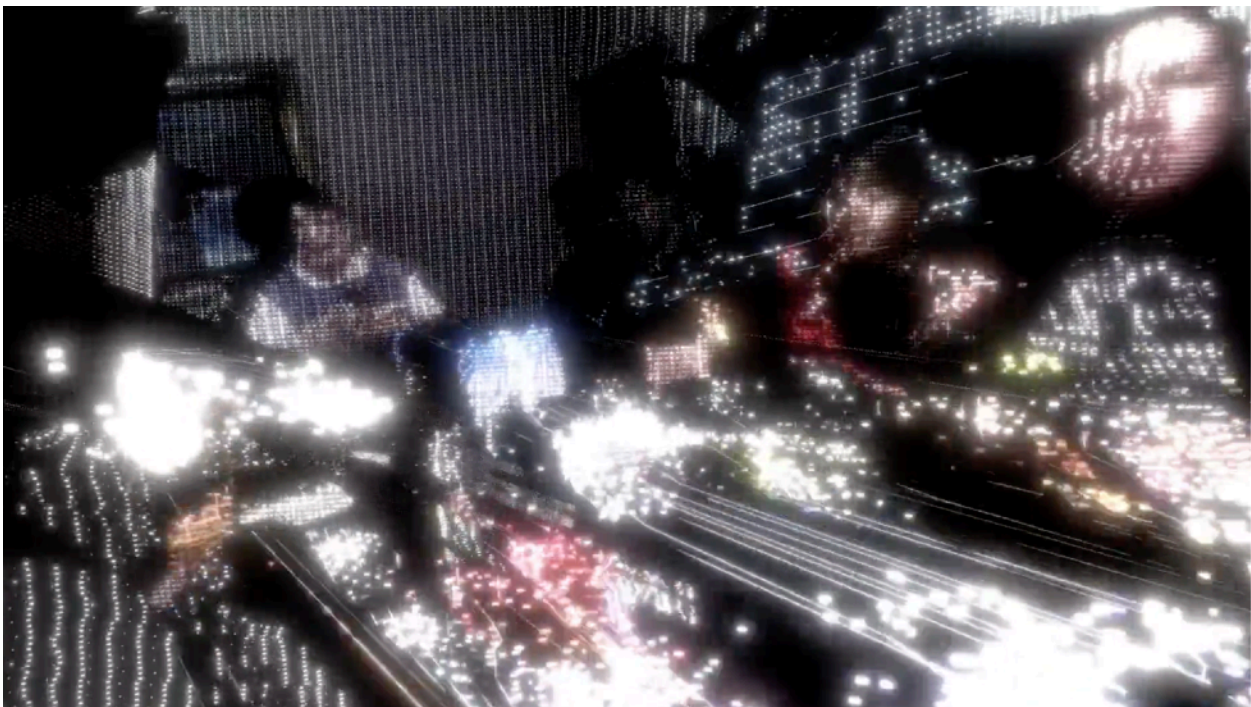


Fig. 10 - *The Kaleidoscope of the Eternal Now* (2020)

These volumetric snippets of time formed small clusters which constantly reconfigured themselves, they expanded and contracted, materializing various domestic fragments within a lived-in home in Mexico as the backdrop of a vibrant space of memory; a space filled with cluttered peripheries where everyday events were captured just as they began to fizzle out into endings, being explored as patterns of motion and stopping, “ordinary life, too, draws its charge from rhythms of flow and arrest. Still lifes punctuate its significance: the living room strewn with ribbons and wine glasses after a party, the kids or dogs asleep in the back seat of the car after a great (or not so great) day at the lake. [...] A still life is a static state filled with vibratory motion, or resonance. [...] It is the intensity born of a momentary suspension of narrative, or a glitch in the projects we call things like self, agency, home, a life”⁷.

Traversing this virtual space, the camera tracks and explores fragmented scenes and architectures, it follows a choreography informed by the ever-changing configurations that each cluster of memories is presenting outwardly to the camera. The present and the past collide with one another, forming impossible architectures and fragments of time, “*The kaleidoscope of the eternal now* is a dance of memories, where forgetfulness and the rhythm of the ordinary unravels and registers within intensities, regularities, intermittences, urgencies and small vibrations. The memory of the now is distorted into a bittersweet mix of noise, digital corruptions, samples and algorithms”⁸.

The explorations of algorithmic choreographies manifesting and augmenting the domestic as an amalgamation of fragments and presences deepened the theorization of mediated

⁷ Stewart, *Ordinary Affects*. 19

⁸ lauralunacastillo.net, “The Kaleidoscope of the Eternal Now,” Laura Luna Castillo, n.d., <https://www.lauralunacastillo.net/thekaleidoscopeoftheeternalnow>.

performances as interrogations on the ways domestic environments of ambivalence are idealized as hyper-realities, where fantasies and hegemonic desires are enacted through everyday performances of self and negotiations of belonging.

Mediated Placemaking

Contrasting against the cluttered margins of the lived-in space, domestic *non-places*, devoid of peripheral and residual objects unfold as places of virtual and desired attachments. Through implicit absences of any kind of *others*, and deliberately made *culturally odorless*⁹, these places exist as hyper-realities of a hegemonic mirage of the home. The extensive global reach of *IKEA-esque* home aesthetics, fast and “affordable” furniture, together with their dramatically staged showrooms and catalogues, depict functional and harmonious homes which have become central archetypes consolidating an unattainable idealization and construction of the home. Deni Ruggeri, notes that place attachments can also be the “byproduct of a deep awareness and identification with the places that makes us feel fulfilled”¹⁰, furthermore place attachments are not only individual constructions but are also formed as a result of “collective processes of meaning-creation [...] informed by and representative of socially produced values, norms, behaviors, and social identities.”¹¹

⁹ Koichi Iwabuchi introduced “culturally odorless” as a concept to put forth an argument for the perceived “invisibility” of Japan’s cultural presence in the global audio-visual market, “what may be called ‘culturally odourless’ products, that is, products which, in contrast to American export icons such as Coca Cola or McDonald’s, do not immediately conjure images of the country of origin in the minds of consumers”. Koichi Iwabuchi, “Marketing ‘Japan’: Japanese cultural presence under a global gaze,” *Japanese Studies* 18, no. 2 (September 1, 1998): 165–80, <https://doi.org/10.1080/10371399808727650>. 165

¹⁰ Deni Ruggeri, “The agency of place attachment in the contemporary co-production of community landscapes”, in *Place attachment: advances in theory, methods and applications*, Manzo & Devine-Wright (Routledge, 2020), 246.

¹¹Ibid. 246

As such, the domestic constructions staged across commercials, home decor showrooms, holiday homes and a myriad of other mediated encounters which proliferate across consumer culture, arouse desires to form place attachments towards domestic virtualities which depict functional and idyllic environments. The mise-en-scène of domestic *perfection*, gives rise to enquiries relating to the clashes of such virtualities with the real, lived environment and its inherent entropy. The aspirational relationship that is concocted through these images invites the viewer to virtually traverse these places, to imagine what it is to inhabit this physical space and to exist, unburdened, within a mental and emotional space that is inherently connected to orderly and uncomplicated living, whilst intrinsically connected with *purchasing* something in order to attain it. Lauren Berlant, in the book *Cruel Optimism*, powerfully epitomizes these aspirational relationships to virtual place attachments, as optimistic attachments which involve “a sustaining inclination to return to the scene of fantasy that enables you to expect that this time, nearness to this thing will help you or a world to become different in just the right way. But, again, optimism is cruel when the object/scene that ignites a sense of possibility actually makes it impossible to attain the expansive transformation for which a person or a people risks striving.”¹²

¹² Lauren Berlant, *Cruel optimism* (Duke University Press Books, 2011). 2



Fig. 11 - *Hooray to the wonderful everyday!* (2021)



Fig. 12 - *The Showrooms* (2021)

The *cruel optimism* and the *culturally odorless* qualities that conform these idealized virtual places inspired the work titled *Hooray to the wonderful everyday!* (2021, fig. 11), in which furniture and short-term rental television advertisements are appropriated and deconstructed to explore the ways in which identity, presence and absence are performed across a dysfunctional negotiation between belonging and realizing oneself as *not* being *culturally odorless*. The characters seen “inhabiting” the *promised* homes within these commercials, are algorithmically erased, leaving behind a void filled with latent pixels. Through the glitchy absence of these artificial inhabitants, the latency of this *non-place-like-home* develops twofold, both sensually inviting the viewer to imprint themselves and their desires within these showrooms and inadvertently, embracing an alienating everyday, imagining oneself fitting haphazardly and performatively within it.

The oscillating politics of identity and belonging are staged across these appropriated images of the *show-home*, through morphing clusters of pixels which shift in identity across these commercially-manicured scenes. In the article *Belonging and the politics of belonging* by Nira Yuval-Davis, it is mentioned that “identity narratives can shift and change, be contested and multiple. [...] They reflect emotional investments and desire for attachments: ‘individuals and groups are caught within wanting to belong, wanting to become, a process that is fueled by yearning rather than positing of identity as a stable state’”¹³; like the glitched presences across these speculative commercials, identity and belonging resonate as unstable and precarious everyday performances.

¹³ Nira Yuval-Davis, “Belonging and the Politics of Belonging,” *Patterns of Prejudice* 40, no. 3 (July 1, 2006): 197–214, <https://doi.org/10.1080/00313220600769331>.

The notion of unstable performances, where identity and reality clashes with the *pristine* and the *odorless* qualities of the domestic imaginary echoes with Erving Goffman's *The Presentation of Self in Everyday Life*, in which Goffman analyses the myriad of performative presentations we engage with throughout our social everyday — idealization, belonging to communities, reinforcing our own identities to ourselves— however, it is noted that these performances themselves are fragile and unstable:

... we must be prepared to see that the impression of reality fostered by a performance is a delicate, fragile thing that can be shattered by very minor mishaps. The expressive coherence that is required in performances points out a crucial discrepancy between our all-too-human selves and our socialized selves. As human beings we are presumably creatures of variable impulse with moods and energies that change from one moment to the next. As characters put on for an audience, however, we must not be subject to ups and downs.¹⁴

Through this technological embodiment of unstable presences trespassing the *show-home*, the dislocation of the *other*, its identity and the everyday performance, of fitting within these non-homes, is amplified, together with the struggle of presence and absence within the peripheries of the realities of home. Free of heavy clutter and the detritus of everyday conflicts, the *non-home* stimulates a dissonance of being slightly out of place, as the chaos and the uncertainty of reality and the lived-in, settles in.

Further exploring the fraying rhetorics of the home, the three short speculative ads titled *The Showrooms* (2021, fig. 12), use a series of IKEA catalogue images (fig. 13) to explore the paradoxical gestures of imagining being inside these domestic fantasies, and the impossibilities attached to these raggedy mirages. Through a deliberately glitched 3D Ken Burns algorithm,

¹⁴ Erving Goffman, *The Presentation of Self in Everyday Life* (Anchor, 1959). 56

which uses a depth estimation model to hallucinate three-dimensionality,¹⁵ an encoded gaze zooms into the pictures, presenting, for a moment, an illusion of inhabiting this domestic stage, however, as the algorithm is pushed to the brink and zooms beyond its depth estimation, the IKEA fantasy unravels into a grid of pixels. This algorithm performs a longing of immersing oneself within the non-home, impossible to ever be purchased, it seeks then to be simulated, creating a fleeting pseudo-virtual reality where intensities and intervals of *cruel attachments* are fragmented as digital scaffoldings. The algorithmic manipulation and unraveling of *The Showrooms*, aided by Machine Learning's (ML) biased graphic and linguistic hallucinations, augment the luring portrayal of a place that unfolds into charged voids, desires and personal baggage. The appropriation and augmentation of manicured showrooms and gigantic datasets behind Machine Learning algorithms, produced a latent, homogeneously sensual vision of a home, which allows to explore the absence of otherness as narratives on alienation and attachment.

Assemblages for Virtual Attachments

The examination of homogenized mirages of the home inevitably steers my focus towards constructions of places and manifestations of attachments that closely resonate with my own experience of alienation and placemaking, and, which appear at the other spectrum of absence; places where we encounter subconsciously exaggerated assemblages, which unfold along complex negotiations between *cruel optimistic* desires to belong, variegated cultural syncretisms and the construction of virtual place attachments which appear as transportable contestations to

¹⁵ Sniklaus, "GitHub - Sniklaus/3d-ken-burns: An Implementation of 3D Ken Burns Effect From a Single Image Using PyTorch," GitHub, n.d., <https://github.com/sniklaus/3d-ken-burns>.

displacement and migration. These cluttered environments, representing collections of clashing identities and heritages, reflect on a performativity of belonging at the thresholds, Diana Taylor, in *¡Presente! The politics of Presence*, through her own experience, condenses these fluctuating experiences as complexities of being *in-betweenness*, “the unsettled, constant back and forth code-switching, for example conjures a sense of proximity [...] becoming between languages, living between here and there has helped me to understand between-ness, beside-ness, entanglement, and negotiation as integral components of thought and presence itself, not simply instantiations of geographical or methodological located-ness”,¹⁶ additionally, Taylor reflects on the primal role that language *in-betweenness* holds across constructions and relationships to displacement, belonging, and embodiment, “points of proximity and rupture, the iterations and multilayeredness of language, form part of the dis- re- mis-placements and movement [...] Translation, in this sense, seems more like an evolving dialogic, citational and performative movement that builds on meanings and gestures, highlights the slippages and gaps, and exhausts the potentialities of silences and the unspoken to understand why some concepts, possibilities and realities come into or fall out of awareness”.¹⁷ Through this re-focused lens, at the conjunction of cultural syncretism, performance and the exploration of *in-betweenness* within place attachments, my work gravitates towards exploring the construction and signification of augmented realities as stages for human-machine interactions. Inhabiting technological errors and noisy algorithms as modes of code switching and transcoding oneself, facilitated in my work a methodological shift, initiated with the development of *La casa de la II* (2022), a work which

¹⁶ Diana Taylor, *¡Presente!: The Politics of Presence* (Duke University Press Books, 2020). 6

¹⁷ *Ibid.* 7

unlocked expansive layers of investigation on the conjunction of technologically extended realities formulated as live performances for both human and machine performers.

The House on 11th Street

This work consolidates (figs. 13-14) an expansive virtuality of a home through a multi-channel audiovisual installation-performance, which was developed with long-time collaborator and actor, Anaid Bohor. The title of this work refers to a home where I spent a fragment of my childhood and was also known to Anaid as a child. This house is now long gone, demolished and practically erased from any formal archives, existing only as a blurred amalgamation of apocryphal anecdotes through the mnemonic lenses of our six-year-old selves. The house, when drawn from memory, unfolded as an impossible space, where staircases changed places, the color of the carpet varied according to whoever was conjuring it and the floor plans were highly speculative in scale and form. The act of actively and iteratively summoning this house through periodic sessions of telling each other stories and remembrances, took us from drawing dubiously-factual floor plans into an increasingly detailed inventory of objects, materials, sensations and events. Increasingly obfuscated by layers of speculation and fantasy, the house felt simultaneously vivid and authentic whilst unfolding across unreal spatial and anachronistic configurations. This confabulated house, with its shapeshifting and elusive qualities, led us to borrow it as a vessel in which to enact the exploration of identities dislocated by migration, longings and life between the thresholds of territories, fictions and realities.



Fig. 13 - *La casa de la 11* (2022)



Fig. 14- *La casa de la 11* (2022)

The narrative that consolidated the house was augmented and additionally remixed through a Natural Language Processing (NLP) algorithm which was trained in Spanish with a large corpus of the stories we had speculated about the house; this model became the voice of a third collaborator and performer. The installation-performance made use of asynchronous and synchronous three-dimensional scanning and motion capture techniques to create a virtual double based off Anaid's image and gestures, this virtual entity mirrored the corporality of the performer through the use of a Microsoft Kinect V2 depth sensor, which enabled real-time gesture recognition and body skeletal identification. This sensor, constantly scanning the exhibition space, encouraged a choreographic exploration of the physical space in order to trigger and discover previously untapped narrations and behaviors from the virtual double. Both human and algorithmic performers narrated the house simultaneously; acting as dislocated hosts and fragmented storytellers, their narration would develop into looping structures, reacting, discussing, repeating and building on top of each other, until either the algorithm or the performer would exit the loop and move on to recite other fragments. These oral storytelling patterns began elucidating a chimeric re-construction of *The House on 11th Street*, by feeding information into an additional algorithm which controlled a virtual camera, it guided it through a three-dimensional architectural patchwork of photogrammetry models of lived-in spaces. The organic storytelling structures and symbiotic choreographic improvisation, which shifted with each iteration, allowed the mythology of the house to unfold and retract throughout moments of clarity and chaos, at the intersections of site-specific installation, unstable Extended Realities (XR) and live performance.

The confluence of technologies, which augmented the gallery space as a multimodal performative stage, and the oral storytelling patterns, slowly emerging as embodied trajectories, constructing a cartography of signification across the gallery, called for a deeper conceptual investigation into the fractal structures and world-building patterns intrinsically performed through oral traditions.

Enchantments and Apparitions: Encounter with Oral Culture

The interest to pursue a deeper investigation on the structures and patterns of oral storytelling was certainly solidified and deeply inspired by becoming immersed in the field research archive and semiotic analysis on oral culture conducted and published by my mother, Alma Yolanda Castillo Rojas, in 1994, in our home towns in Puebla and Tecali, México, this research is contained in the book titled *Enchantments and Apparitions: Semiotic analysis of oral stories collected in Tecali de Herrera* (1994).

As a child, I had watched my mother laboriously transcribe countless hours of sonic recordings, which would give form to a textual corpus of local oral stories across Tecali; three decades later, I recovered these recordings and sat to listen to them once again. On each recording, I heard re-tellings of stories and anecdotes that shifted and morphed in place and time, merging reality and fiction in varying patterns of rhythms and intonation. Tucked away and slightly muffled within the margins of these recordings — *rancheras* playing on the radio, clinking dishes, drinks being offered, interjecting voices, dogs barking, roosters, chickens, street sellers — were the sonic *ordinary affects* that crystallized the contextual *present* in which these stories were signified, among the ebb and flow of the everyday, the storyteller usually gathered an impromptu audience of family and neighbors (fig.15). These everyday details materialized multiple narratives and constructions of place converging asynchronously (figs.16-17). Teetering at the edge of magic realism and passing through multiple perspectives and degrees of modernity, these narratives speculated a place existing in-between generations, languages, technologies and cultures. The field work conducted in Tecali, exists not only as an indexical transcription of orality, which with great attention, respect and effort, strives to transpose the

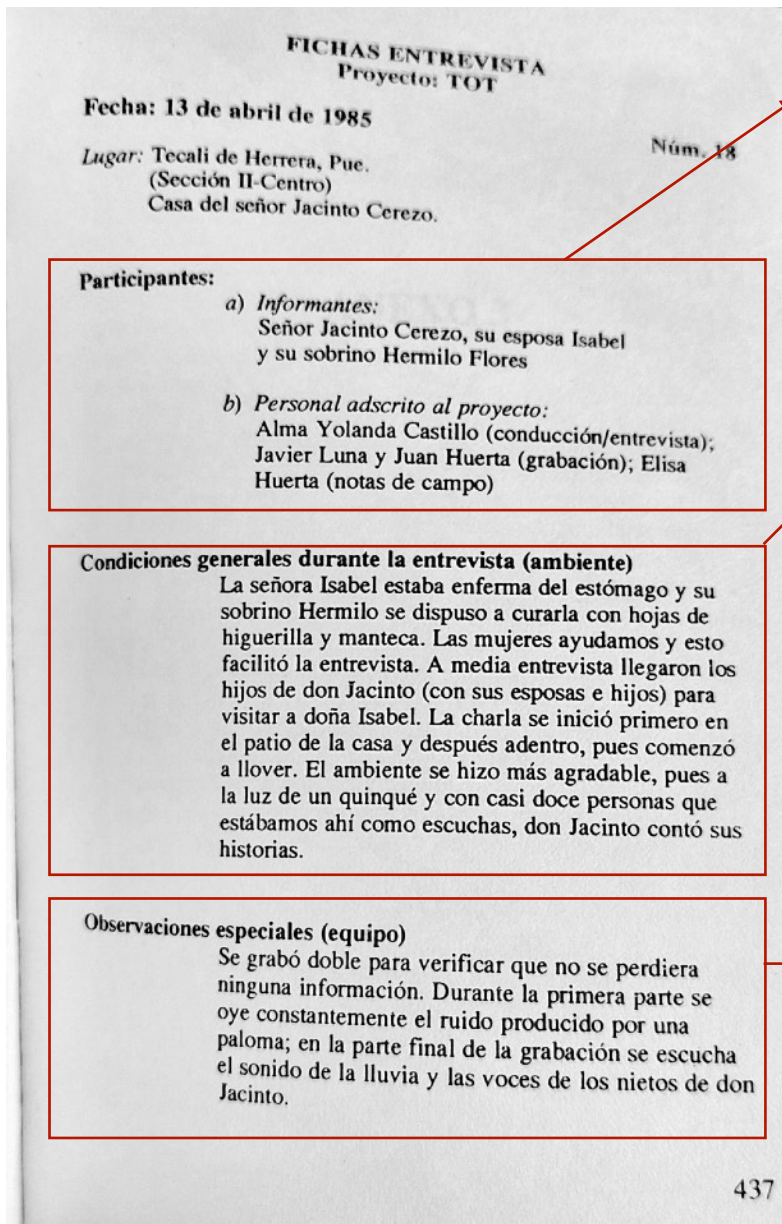
multidimensionality of oral communication into a textual format (through the meticulous inclusion of patterns of intonation and pronunciation, figs. 18-19), but it also unfolds as an incredible vivid capture of a sonic virtuality of place.

The analysis of oral narratives and their structures establishes and applies a methodology rooted in a legacy of semiotic theories, drawing from the works of Propp, Dumezil, Levi-Strauss and culminating in the structural analysis of Greimas.¹⁸ These structural theories conform a visual and textual meta-language, starting from Greimas' semiotic square¹⁹ (fig.20), with which to represent and interpret complex relationships forming across place, storyteller and content, as noted in the introduction of the book, "the reader who undertakes studying this work will know from the very beginning that she is summoned here as a reader of a discipline, semiotics, which, like all disciplines, requires the acceptance of certain rules of the game. Therefore, developing the simulacra in which Tecali's stories are to be seen requires a double adaptation: with the stories themselves and with the theoretical tools provided for the manufacture of such a mirror".²⁰ These structural vocabularies and patterns of interpretation are additionally represented across an array of visualizations, diagrams and cartographies (figs. 21-22), which narrate and construct Tecali through perspectives and abstractions of space, time and presence. These tools aid in the process of transposing the complex phenomenological experience of oral culture into a textual (and sonic) simulacra.

¹⁸ Alma Yolanda Castillo Rojas, *Encantamientos Y Apariciones: análisis semiótico de relatos orales recogidos en Tecali de Herrera, Puebla* (Instituto Nacional de Antropología E Historia, 1994). 39

¹⁹ Also known as Greimas Square, it is a tool to analyze the semiotic structures of relationships of signification, formulated across differences and oppositions, as noted by Castillo Rojas, "For Greimas there is significance because it is possible to perceive discontinuities, perceive differences. Significance, therefore, can only be based on differences; meaning can only be perceived if it is articulated. It is for this reason that discourses are presented as games of differences. At the deep level of the semi-narrative structures is the elemental structure that allows recognizing and indicating values of a differential and operational type, therefore it involves or is "armed" with, at least, two terms simultaneously present and for one relationship between those terms". 64-65

²⁰ *Ibid.* 19



Participants:

- a) *Informants:*
Mr. Jacinto Cerezo, his wife Isabel and his nephew Hermilo Flores
- b) *Personnel assigned to the project:*
Alma Yolanda Castillo (host/interview);
Javier Luna and Juan Huerta (recording); Elisa Huerta (field notes)

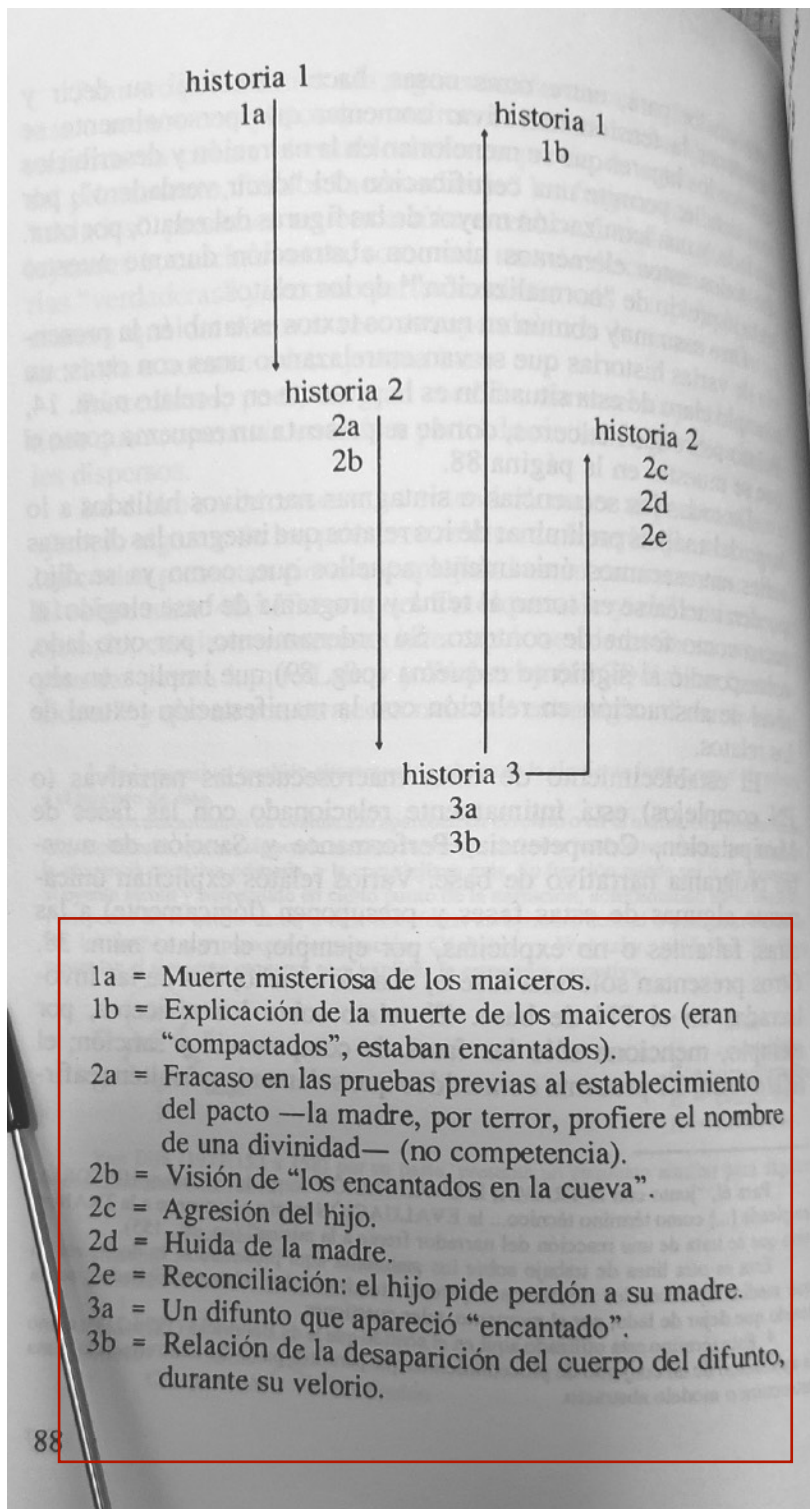
General conditions during the interview (environment)

Mrs. Isabel was sick with a stomach ache and her nephew Hermilo set out to cure her with *higuerilla* leaves and butter. We women helped and this made the interview easier. Halfway through the interview, Don Jacinto's children (with their wives and children) arrived to visit Doña Isabel. The talk began first in the patio of the house and then inside, as it began to rain. The atmosphere became more pleasant, by the light of a lamp and with almost twelve people who were there as listeners, Don Jacinto began telling his stories.

Special remarks (by team)

[the interview] was recorded twice to verify that no information was lost. During the first part, the noise made by a dove is constantly heard; In the final part of the recording you can hear the sound of the rain and the voices of Don Jacinto's grandchildren.

Fig. 15 - Addendum contextualizing one of the recordings of Tecali's oral stories. Unfolding within the everyday of familiar gatherings. These notes expand and generate more threads to this archive. - Rojas, *Encantamientos Y Apariciones: Análisis Semiótico de Relatos Orales Recogidos En Tecali de Herrera, Puebla*.



1a = Mysterious death of the corn farmers.

1b = Explanation of the death of the corn farmers (they were "Compactados"[meaning made a pact with a supernatural entity], they were enchanted).

2a = Failing the tests established before the pact was realized — the mother, out of terror, utters the name of a divinity - (non-competition).

2b = Vision of "the enchanted in the cave".

2c = Aggression of the son.

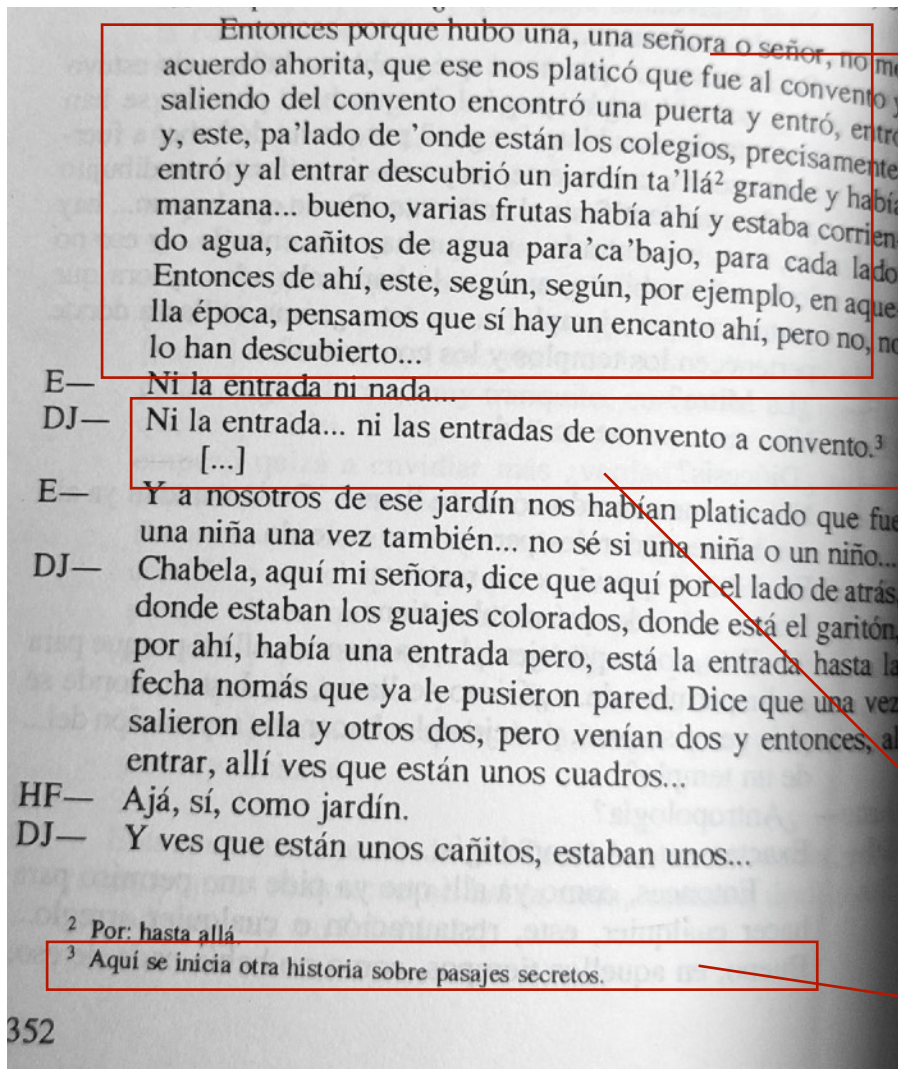
2d = Flight from mother.

2e = Reconciliation: the son asks his mother for forgiveness.

3a = A deceased who appeared "enchanted"

3b = Report of the disappearance of the body of the deceased, during his wake.

Fig. 16 - A schematic visualizing the ways in which stories iterate into each other, bifurcate and get entangled again, through multiple storytellers who each contribute new fragments, anecdotes or perspectives - Rojas, *Encantamientos Y Apariciones: Análisis Semiótico de Relatos Orales Recogidos En Tecali de Herrera, Puebla*.



DJ—...So because there was one, a lady or gentleman, I don't remember right now, that she told us that she went to the convent and leaving the convent she found a door and entered... next to where the schools are, precisely, He entered and upon entering he discovered a big garden and there was an apple... well, there were several fruits there and water was running, little water pipes to the bottom, to each side.

So since then, this, according to, according to, for example, at that time, we think that there is an enchantment there, but no, they have not discovered it...

E—Neither the entrance nor anything...

DJ—Neither the entrance... nor the entrances from convent to convent [footnote]

Footnote: Here begins another story about secret passages.

Fig. 17 - An excerpt from a transcription of a story relating to a magic garden said to be inside the now dilapidated Tecali Ex-convent (one of the oldest Franciscan convents in Mexico, built around 1554) in which the storytellers nest another story about secret passages that lead inside the convent. This bifurcating story is barely signaled in a footnote, however this is enough to incite the imagination - Rojas, *Encantamientos Y Apariciones: Análisis Semiótico de Relatos Orales Recogidos En Tecali de Herrera, Puebla*.

| Simbolo | Equivalencia | |
|----------|--|--|
| | Pausa larga. | Long pause. |
| , | Pausa breve. | , Brief pause. |
| () | Datos proporcionados por el informante, de tipo explicativo o personal, no pertinentes directamente para la historia que se está contando. | () Data provided by the informant, of an explanatory or personal nature, not directly relevant to the story being told. |
| [...] | Supresión, por parte del transcriptor de información no relevante. | [...] Deletion, by the transcriber, of non-relevant information. |
| [] | Datos puestos allí por el transcriptor para explicar elementos que se dieron en el contexto comunicativo o gracias a la contextualización que permite el tener una visión global de la colección de relatos y el estudio etnográfico de la zona. | [] Data placed there by the transcriber to explain elements that occurred in the communicative context or aids in the contextualization of a global vision of the collection of stories and the ethnographic study of the area. |
| letra' | apóstrofe, indica supresión de algún sonido convencional dentro del español normativo. | letter' apostrophe; indicates suppression of some conventional sound within normative Spanish. |
| letra — | letra. Ejemplo: sí-i indica saltito. No se usó el apóstrofe usual por servir este signo a otra clave. | letter— Example: si-i indicates suppression of the letters "s". The usual apostrophe was not used because this sign serves another key. |
| margen — | Diálogo entre personajes referidos por el informante. | Margin— Dialogue between characters referred to by the informant. |
| — | Turnos durante los diálogos de la entrevista. | — Take turns during the interview dialogues. |
| " " | Estilo directo: hablar de un personaje. | " " Direct style: talk about a character. |
| [] | Comunicación simultánea (enlace entre la línea superior e inferior del texto). | [] Simultaneous communication (link between the top and bottom line of the text). |

Fig. 18- An excerpt from the book, showing the “symbols for the transcription”, which help denote prosody, rhythms and confluent storytellers - Rojas, *Encantamientos Y Apariciones: Análisis Semiótico de Relatos Orales Recogidos En Tecali de Herrera, Puebla*.

Las ofrendas y los pactos en el Tentzo

OT 28A, 610

RELATO NÚM. 54
 INF. NÚM. 17: Primitivo Vélez
 INF. NÚM. 18: Edmundo Vélez
 INF. NÚM. 19: Don Chalito
 ENTREVISTA: Alma Y. Castillo

H— Sí, ese lugar es medio malo. En Todos Santos van a dejar los huilotitos... [¡esto indica traslape. Los informantes hablaron casi al mismo tiempo].
 Ah, los huilotos!

V— ...ofrendas ¡Y no!,[§] llegan a hacer una fiesta muy grande allá...

CH— Van a dejar ofrendas.
 ¡Cómo adoran ese cerro!

CH— Es un pueblo muy grande. Un tezcal feo.

PV— ¡No, llevan la banda y ahí van!...

E— A lo mejor gente a la que le ha dado dinero ¿no?

CH— Sí, y dejan, este, cazuelones de mole, cera, pan, todo, todo, cosas de bebida.
 Y gente de Atoyatempan o de acá también.

CH— No.

PV— No, pos el cerro es de ellos.

CH— ...Es de ellos. Allá ni quien va de otra parte, nomás ellos. Pero los que ya saben que hay algo van.

EV— Porque de ese cerro es... dueños hasta aquí, colindando con San Antonio Juárez.

E— Si pues es lo que dicen, que van a hacer muchos tratos ahí. Gente que necesita dinero, que ahí va.

PV— Sí.

CH— Y ganado, ganado pos ahí sale malo.

EV— Por Molcaxac tiene... se le nota bien su cara.

E— Es lo que dicen, que se le ve bien.

[§] Exclamación de asombro afirmativa, a pesar de la presencia de una negación.

STORY NO. 54
 INF. NO. 17: Primitivo Vélez
 OT 28A, 610
 INF. NO. 18: Edmundo Vélez
 INF. NO. 19: Don Chalito
 INTERVIEWER: Alma Y. Castillo

Yeah, that place is kind of bad. In *Todos Santos* they go to leave the *mourning doves*... [this indicates overlap. The informants spoke almost at the same time].
 Ah, the mourning doves!

...Offerings. And no! [footnote] they get to have a very big party there...

Affirmative exclamation of astonishment, despite the presence of a negation

Fig. 19 - An excerpt from a transcription of stories relating to offerings taken to the enchanted hill called *El Tentzo*, three storytellers were interviewed at the same time and they would often reaffirm each other, discuss details and interject objections throughout the story, in this example the simultaneity and energy captured in the transcription depicts a vibrantly performed narrative - Rojas, *Encantamientos Y Apariciones: Análisis Semiótico de Relatos Orales Recogidos En Tecali de Herrera, Puebla*.

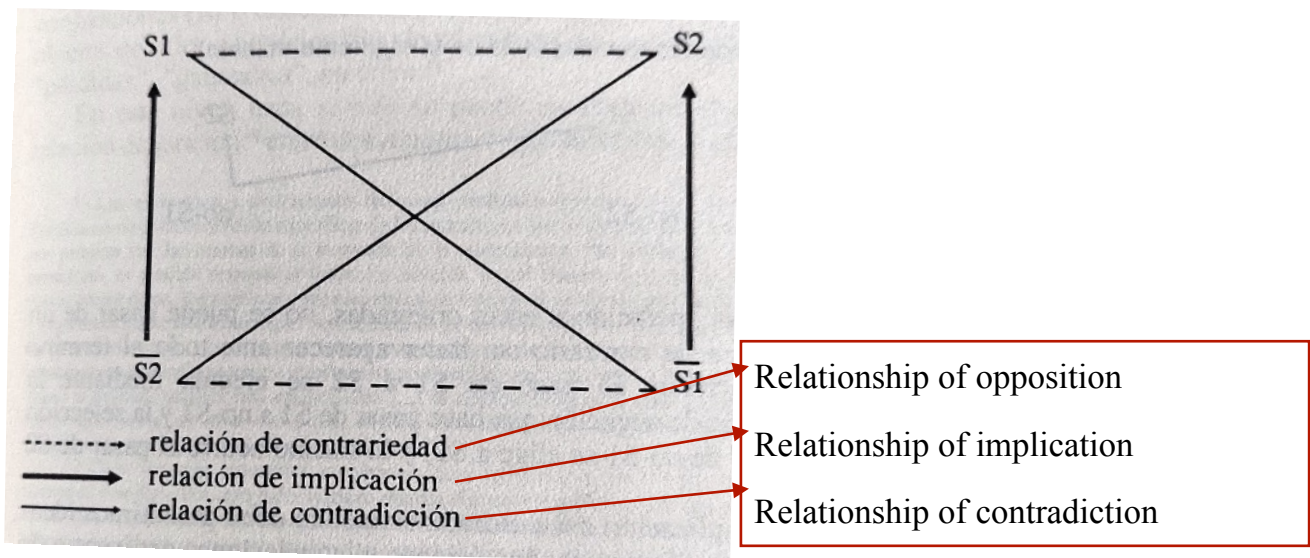


Fig. 20 - Greimas's Square, a visualization from the book - Rojas, *Encantamientos Y Apariciones: Análisis Semiótico de Relatos Orales Recogidos En Tecali de Herrera, Puebla.*

Topology

TOPOLOGIA

ET = Topical spaces (places of performances)

ET₁ = Caves in hills (Habitat of The Bad One [El Malo] and prison of the enchanted), strangers from the land. Underworld.

ET₂ = The hill, the boundary between heaven and earth.

ET₃ = The earth (plain), habitat of the human

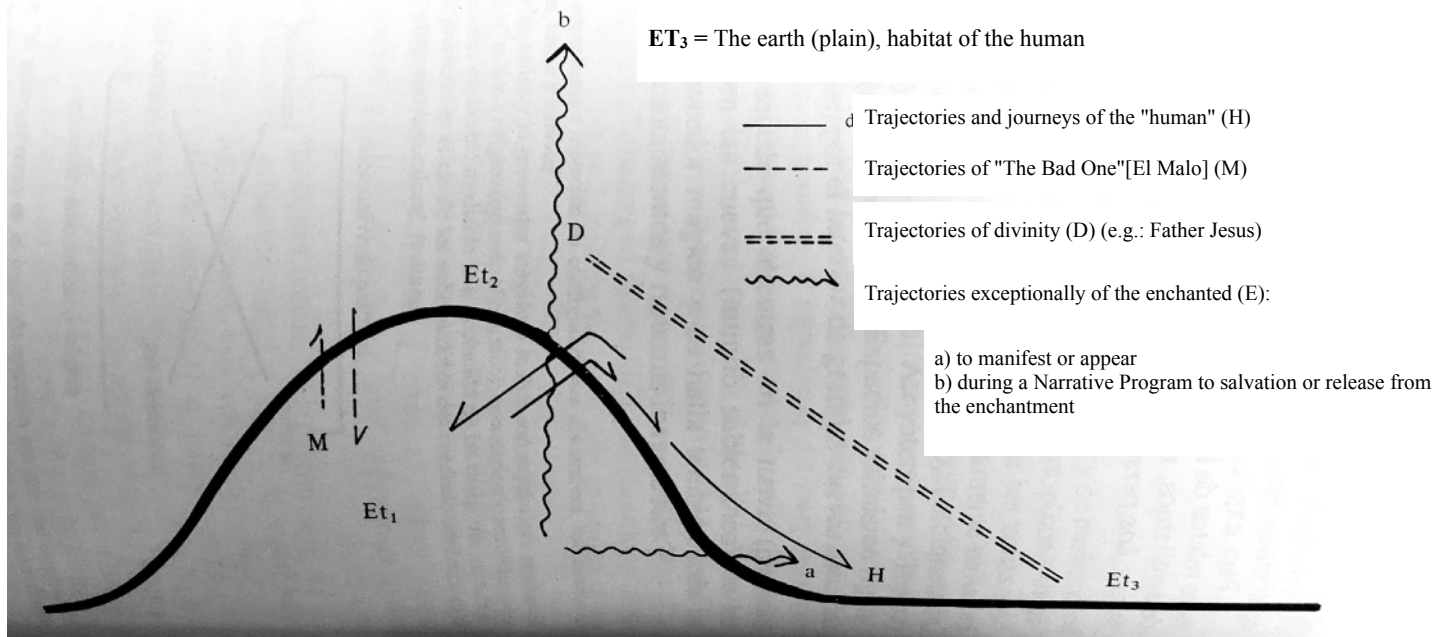


Fig. 21 - Visualization of Tecali's narrative topology, through the oral stories narrated and signified across its landscape - Rojas, *Encantamientos Y Apariciones: Análisis Semiótico de Relatos Orales Recogidos En Tecali de Herrera, Puebla.*

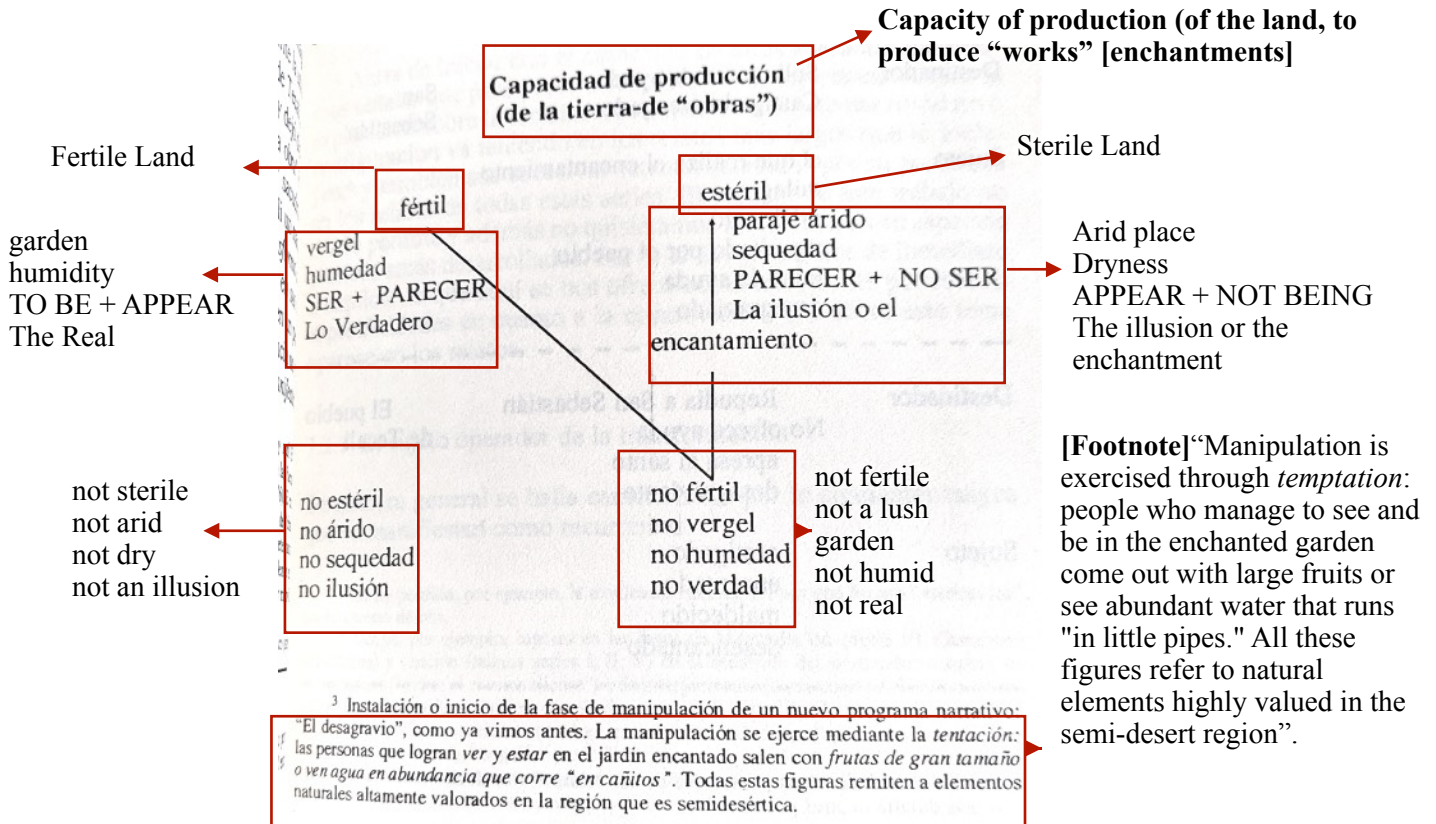


Fig. 22 - A schematic showing the relationships of signification across an arid landscape, the footnote further explains the relationship the landscape holds to the narrative that permeates placemaking in Tecali. Traversing an environment that is inherently experienced through harshness breeds desires for enchantments which produce lushness and richness. At the same time, the stories emerging from these desolate places resonate with Juan Rulfo's *The Burning Plain and Other Stories* (1953), a magic-realism anthology of short stories which unfold in the harsh arid scrublands of Jalisco, Mexico; *Don Quixote's* (1605 and 1615) La Mancha where the arid landscape emerges a place of hallucinations, and Jan Potoki's *The Manuscript Found in Saragossa* (1805), a novel constructed as a *mise en abyme*, unfolding across Spain's Sierra Morena, where enchantments and apparitions become abundant throughout the stories within stories. - Rojas, *Encantamientos Y Apariciones: Análisis Semiótico de Relatos Orales Recogidos En Tecali de Herrera, Puebla*.

Creatively agitated from the processes dislodged with the development of *The House on 11th Street*, the encounter with this anthology of semiotic theory and diagrams, which not only pictorially document voices dislocated by time, but also carry and enact the performativity of orality and peripheries of place, promptly stirred up a series of rhizomatic connections within the enquires I had been conducting on virtual constructions of place, attachment and performatively

inhabiting these virtualities. Technologically augmented, and unfolding across media translations, oral stories and the visualization of their scaffoldings, emerge as interfaces from which the virtual construction and signification of place is projected within and across time.

This exploration into a meta-language that elucidates the structures of signification of a place, its narratives and oral stories as performances, inspires another layer of translation. By considering them as algorithms and performative scores which would reconstitute them back into multidimensional experiences, technologically re-interpreting them as interconnected networks for storytelling, software performances and improvisation scores. The processes of orality-textuality mediation and the conceptual vocabularies which have been developed across textual and oral studies resonate and re-invigorate my artist practice into an anthological framework which is presented in the following sections as an assemblage of relationships and convergences.

From Threads to Knots

Oral culture, emerges, first and foremost, as a primal evolutionary gravitation towards narrating ourselves as beings and communities, historian Yuval N. Harari puts forward a speculative theory on why the Homo Sapiens outlived and transcended other human species, "...a random mutation changed the language abilities in the sapiens brain, causing a cognitive revolution", such revolution, represented the leap for Homo Sapiens communities to thrive as increasingly large populations and across vast territories, Harari continues, "the secret was probably the appearance of fiction... any large-scale human cooperation... is rooted in common myths that exist only in peoples' collective imagination... yet none of these things (religious beliefs, nations, laws) exists outside the stories that people invent and tell one another".²¹

Through storytelling we construct our experience of reality and through orality, voice and language are interfaced, and carried through to signify the world; however until recently, oral culture had remained marginalized, often being perceived as a lesser construction of expression and studied through a textual bias. As argued by Paul Zumthor, a literary historian and medievalist, in *Oral Poetry*, "thanks to a long-standing aesthetic prejudice, all artistic language production is identified with writing: whence the difficulty we have in recognizing the validity of that which is not written".²²

This textual bias is also compounded with the impossibility to imagine the signification of reality without literacy, as the technology of writing fundamentally restructured human consciousness through encoding the oral into visual structures; Walter J. Ong, a media studies

²¹ Yuval Noah Harari, *Sapiens: A Brief History of Humankind* (Harper, 2015).

²² Paul Zumthor, *Oral Poetry: An Introduction*, trans. Kathryn Annette Murphy-Judy (Minnesota, United States of America: University of Minnesota Press, 1990). 4

scholar who converged with Zumthor on oral tradition studies, further formulated, in his landmark publication, titled *Orality and Literacy: The Technologizing of the Word*, that “fully literate persons can only with great difficulty imagine what a primary oral culture is like, that is, a culture with no knowledge whatsoever of writing or even of the possibility of writing. Try to imagine a culture where no one has ever 'looked up something'. In a primary oral culture, the expression 'to look up something' is an empty phrase: it would have no conceivable meaning. Without writing, words as such have no visual presence, even when the objects they represent are visual. They are sounds. You might 'call' them back — 'recall' them. But there is nowhere to 'look' for them”.²³ The restructuring of human consciousness through literacy, fundamentally and permanently influenced the understanding and interpretation of the complexities of orality and the signification of the world through these complexities; however without writing, the production and sharing of knowledge, be it collective or personal, can only be preserved and communicated as long as it is being *continuously* narrated and performed. Literacy introduced mnemonic interfaces that altered the limitations and mechanisms of human memory by allowing the consolidation of sprawling and highly specific structures and references which would be impossible for the human mind to retain and memorize. The fundamental synergy between orality-literacy transposition, memory and preservation of knowledge, introduces a never-ending process of negotiation; Ong predicated on these fluctuating relationships in the following passage:

Oral cultures indeed produce powerful and beautiful verbal performances of high artistic and human worth, which are no longer even possible once writing has taken possession of the psyche. Nevertheless, without writing, human consciousness cannot achieve its

²³ Walter J. Ong and John Hartley, *Orality and literacy: The Technologizing of the Word*, 2012. 33

fuller potentials, cannot produce other beautiful and powerful creations. In this sense, orality needs to produce and is destined to produce writing. [...] Fortunately, literacy, though it consumes its own oral antecedents and, unless it is carefully monitored, even destroys their memory, is also infinitely adaptable. It can restore their memory, too. Literacy can be used to reconstruct for ourselves the pristine human consciousness which was not literate at all—at least to reconstruct this consciousness pretty well, though not perfectly (we can never forget enough of our familiar present to reconstitute in our minds any past in its full integrity).²⁴

The persistent conundrum of interpretation, translation and mediation becomes abundantly poignant when Zumthor elicits the substantial environmental and physical entanglements present in oral narrations, occurring as simultaneous linkages of embodied signification, defined across relationships, separations or articulations between subject and object²⁵. The games that can be played across language and orality, as Zumthor continues, are released from the rules of linearity, “...where slipping between registers, jumping between discourse (from assertion to prayer, from story to interrogation), lends a certain flexibility to the utterance. [...] There are lateral movements of language, ambiguities that participate in the progressive construction of discourse”.²⁶ Ong further ties these ideas in the foreword to Zumthor’s work, eliciting the inherent immediacy of orality, as an immersive web of simultaneities, “...gesture re-creates sacred space-time. [...] Everything is in action at once in this oral hermeneutic song, a hermeneutic that consists of the interplay of interpreter (the singer) and audience. To understand anything of what is going on here, you have to understand and be engaged by everything — which is the way hermeneutics should be and can never be if we restrict its target to the text”.²⁷

²⁴ Ong and Hartley, *Orality and Literacy: The Technologizing of the Word*. 14

²⁵ Zumthor, *Oral Poetry: An Introduction*. 9

²⁶ *Ibid.* 21

²⁷ *Ibid.* xi

Orally performed narratives are further consolidated across complex structures, patterns and rhythms, which allow them to be endlessly re-configured according to the situation in which they are performed. Milman Parry, in *The Making of Homeric Verse*, demonstrated the Homeric poems as oral creations, converging across improvisation and musicality, they made use of hexameterized phrases or formulas, which allowed the poet(s), to "...fit his verse and tell what he has to tell. In composing he will do no more than put together for his needs phrases which he has often heard or used himself, and which, grouping themselves in accordance with a fixed pattern of thought, come naturally to make the sentence and the verse".²⁸ Additionally, Parry mentions that these formulas allowed the poets to arrange phrases in an endless number of compositions, yet the formulas also set "...bounds and forbid him the search of a style which would be altogether his own. For the style which he uses is not his at all: it is the creation of a long line of poets or even of an entire people".²⁹

Parry's studies on the Homeric poems, ties incredibly intricate knots across patterns for improvisation, musical structures and notions of cultural lineage which are carried across time by various storytellers and further consolidated through concurrent structures for repetition and variability. This performative multimodality presents complexities of understanding, transposing and morphing the immersive nature of oral culture. Folding the simultaneity of orality and unfolding it into textuality, from within our textual consciousness (from which there is no "escaping") occurs as a process of intermediality, involving a series of fluctuating slippages, losses and transfigurations of representation and signification.

²⁸ Milman Parry and Adam Parry, *The Making of Homeric Verse: The Collected Papers of Milman Parry* (Oxford : Clarendon Press, 1971). 270

²⁹ Ibid.

The representation of the world through storytelling frameworks of simultaneity occur across the concept of the *everywhen*, which represents a cosmology of signification of *time* without the notion of *time* or *history* as being linear and successive. First introduced in *White Man Got no Dreaming* by W.E.H. Stanner, the *everywhen* was used to encompass an understanding of *time* in the Arunta or Aranda tribe in Australia, as a signification of temporality in the concept of *The Dreaming*, which “conjures up the notion of a sacred, heroic time of the indefinitely remote past, such a time is also, in a sense, still part of the present. One cannot ‘fix’ The Dreaming in time: it was, and is, everywhen”.³⁰ The perception of everywhen is encountered across many indigenous communities which are also primarily oral cultures (or cultures that have retained a higher influence of their oral past, a high level of “residual orality”), it reverberates in the understanding of the immersive levels in which orality unfolds and it exemplifies a fundamental translation and transposition conundrum. Oral culture is intrinsically immersive and multimodal, it demands embodiment, space and simultaneity; textual technologies afford us with an incredible set of complexities which in turn augment the human capabilities to record and preserve ideas, yet they demand the transfiguration of orality, from its multidimensional expression into a single dimension. The workaround relied in finding ways to creatively “accept” the price, through innovative adaptability.

Concurrently with my research on oral traditions and before diving into medieval entanglements, I had become interested in twentieth century literary authors who made use of margins and footnotes as mechanisms to blur the thresholds of fact and fiction, augmenting and introducing concurrent narratives and temporalities. The short stories by Jorge Luis Borges, such

³⁰ W. E. H. Stanner, *White Man Got No Dreaming: Essays, 1938-1973* (Australian National University, Research School of Social Sciences, 1979). 24

as *The Library of Babel*, *The Garden of Forking Paths*³¹ (1941) and *The Aleph and Other Stories*(1949),³² use footnotes to introduce commentaries and facts (and pseudo-facts) which imbue the narratives with a sense of legitimacy, inviting the readers to suspend belief and immerse themselves within the imaginary worlds therefore created. Another example studied was *Pale Fire* by Vladimir Nabokov,³³ in which he introduced himself as both editor and commentator of a seemingly posthumously publication of a poem by John Shade (a fictional author which is nevertheless presented as real), through the extensive commentary occupying the second half of the book, it becomes apparent that there are several nested narratives occurring across the book, traveling across various temporalities, concocted anecdotes and histories are intertwined, demanding of the reader an unusual and unexpected interaction with both the text and the materiality of the book. Whilst these encounters with twentieth century authors resonated with the concurrent narratives of oral culture, they were not particularly elucidating orality-literacy transpositions. My research on Extended Realities and oral culture entanglements had to jump the twentieth century and land roughly a thousand years into the past.

Exploring orality across a technological continuum, guided this research towards manuscript studies and early print technologies. Identifying the manifestations of this period's orality-literacy transmediations as highly experimental and innovative approaches to the textual interface, these disciplines introduce a material and conceptual approach to emerging and shifting technologies and its interfaces. The next section attempts to draw more threads into this tapestry, by presenting a collection (by no means exhaustive) of textual examples and

³¹ Jorge Luis Borges, *The Garden of Forking Paths* (Penguin Classics, 2018).

³² Jorge Luis Borges, *The Aleph and Other Stories* (Penguin Classics, 2000).

³³ Vladimir Nabokov, *Pale Fire* (Vintage, 1962).

vocabularies used across medieval studies which resonate and deepened the horizons on how I could approach the development of performative structures for emerging spatial computing technologies, such as VR and XR.

To construct knots from these threads, this investigation is inspired by Ong’s framework for an ever-present linkage across orality-literacy shifts and contemporary digital culture, Ong studied the structures of oral cultures of the past “to cast unexpected light on the long present, 'ebullently and tellingly' using textual studies to link power and knowledge, across 'historical continuities (which are also psychological continuities)’³⁴. Additionally, Zumthor’s framework to weave a study of oral poetry, understanding it as inherently vast in scope, as a language that is “less an instrument of analysis than of translation”,³⁵ resonates with the present endeavor to further transpose a variety of orality-literacy approaches across the technological/historical continuum.

³⁴ Ong and Hartley, *Orality and Literacy: The Technologizing of the Word*, 2012. XI

³⁵ Zumthor, *Oral Poetry: An Introduction*. 31

The Hyperaware interface: Medieval Entanglements

The middle ages, have been widely misrepresented as a period of time where humanity is presented as *lost* in the darkness of cultural, scientific and societal decline. Yet, the studies on textual technologies, medieval intertextuality, trails and stemmatics, which traces the variations of a work to its earlier texts and manuscripts, reveal a highly experimental and innovative approach to transferences and negotiations from the oral signification across the textual and into modern interfaces.

These innovative and arguably *post-modern* approaches and entanglements with textual technologies refer to a hyperawareness of the medium, its materiality and plasticity; in other words, a hyperawareness of the interface which carries the content, in this case, the ideas and concepts woven within written language. This interface awareness enables creation and creativity to unfold within, across and beyond their contents, the interface is not *just* a carrier for content or a simple point of interaction, instead it performs, augments, transgresses and links ideas and significations throughout form, formats and elicits simultaneous paths for signification. This medieval approach to textual plasticity, emerges from a high synergy between a strong prevalence of oral traditions and an increasingly textual paradigm-shift, where, in conjunction to the lack of monolithic homogeneity and textual stability, the construction of the textual interface is developed across high degrees of improvisation and structural variability.

Intertextuality, hypertextuality and interconnectedness resonate as modern notions in the experience of rapidly-shifting digital media, yet, within manuscripts and early printed texts, complex examples of these concepts (conglomerated under the concept of *Marginalia*, although they are anything but *marginal*) are not only developed across the whole textual interface, they

are also propelled beyond format and conventional delimitations. Many of the elements and relationships we take for granted when we engage with contemporary texts, such as titles and authors, footnotes, references, delimited margins, among many more, are either missing altogether, stretched to its limits or presented in ways which would result absolutely alien to our modern literate sensibilities. Instead we encounter a variegated *mise-en-page*, which makes use of the physical space of the page (and in some cases extends beyond it, i.e., manuscripts being used as bindings for other manuscripts; texts fragmented and assembled as new anthologies, amongst many more) to fold and unfold aspects of orality, its simultaneities and traces of collective performativity. Jeffrey F. Hamburger, in the essay *Medieval Hypertext: the Illuminated Manuscript in an Age of Virtual Reproduction* (2011), not only identifies glossed bibles (which utilize the spaces at the margins and between lines to offer and interject commentaries and explanations) as examples of hypertexts and hyperlinks, but also makes allusion to the way these hypertexts would be performed collectively:

Measured by the standard of a glossed bible, the High Middle Ages offer spectacular examples of hypertext. [...] Often baffling in their complexity, for example, in the multitude of cues packed together in highly abbreviated form, liturgical manuscripts required of their users a form of performative hypertext in that the celebration of the Mass or the Office, not to mention a myriad of other ceremonies, involved multiple celebrants each equipped with a book [...] that contained the texts proper to their part in the performance.³⁶

Additionally, in an extensive study of the *Glossa Ordinaria* (1480/1), one of the most popular biblical commentaries of the middle ages, David A. Salomon, in *An Introduction to the 'Glossa*

³⁶ Hamburger, Jeffrey. et al., “Medieval Hypertext: The Illuminated Manuscript in an Age of Virtual Reproduction”, Harvard, 2011, 365-66.

Ordinaria' as Medieval Hypertext (2012), describes the encounter with the medieval staging of hyperlinking and hypertextuality:

After several centuries of manuscripts, the entire glossed Bible was printed in 1480/1 and circulated throughout Europe. [...] The very layout of the text on the page encourages discussion and debate, and one can almost envisage the reader entering a debate already ongoing when he comes to the page. The cacophony of voices, coming at the text from the margins and between the lines, gives one the impression of coming into a discussion already in progress. One also realizes, quickly, that the discussion will not cease once the reader closes the book. One reason for this debate and discussion is the method of schooling used in the universities of the Middle Ages when most of the *Glossa Ordinaria* was constructed. *Disputatio, quaestio* and other forms of debate so popular in the medieval university find their way into this elaborate exegetical discussion.³⁷

Within this description of an initial encounter with the *mise-en-page* of the *Glossa Ordinaria* (figs. 23-24), it is possible to catch a glimpse on the complex orality-literacy negotiations and transmutations which permeated medieval textuality and intertextuality. The interface of the page is elicited as a space of amalgamated discussions spanning centuries, performing and expanding an archive of voices interjecting each other, offering commentary, sometimes in stern disagreement; such conversations unfolded asynchronously and often anonymously, dislocated and yet embodied through their singularity. The glossed bibles, journeying through manuscripts of unstable marginalia structures, to movable print editions of the fifteenth century, become assemblages where the “main” body of text is engulfed by a periphery of simultaneously occurring events. The medieval *mise-en-page*, resonating with the dramaturgical concept of *mise-en-scene*, develops the page as a stage for elements to signify a space of interaction, dialogue and performance.

³⁷ David A. Salomon, *An Introduction to the Glossa Ordinaria as Medieval Hypertext* (Religion and Culture in the Middle Ages, 2012). 1-2

This medieval intertextuality, staging intricate confluences of text, images and music, unfolded throughout systems of uncertainty and noise. Manuscripts and early print texts which have survived entropy and managed to reach us here in the present, journeyed through time as shapeshifting collections of fragments, translations, interpretations and textual-archaeological imaginations, many of them frequently edited, amended, erased and re-configured in processes spanning several decades and centuries (fig. 25). The concept of *mouvance*, which refers to this extreme variability, was first introduced by Zumthor in *Essai de poétique médiévale* (1972), quoted here as found in Albrecht Classen's Handbook of medieval studies (2010) as "the character of a work which, [...] before the age of printing, is a relative abstraction, given that the concrete texts which actualize it will present, through the interplay of variant readings and reworkings, [...] a ceaseless vibration and a fundamental instability".³⁸ Medieval *mouvance* is entangled with the conundrums of translation and transposition, generating some of the most fascinating *mise-en-page* assemblages, in which the textual interface performs and embodies in a similar, yet dysfunctional, role as the software performance of the *Esper Machine* in *Blade Runner*, although this hardware-performance takes centuries, the archive is also decoded and performed; unfolded from *a single* work into an ever-expanding corpus of translations, commentaries, iterations, transcriptions and interpretations.

Through some of the concepts introduced above, the medieval approach to producing texts and *reading* emerges as a process which is far removed from the current way in which we experience texts. As our societies have moved farther away from our oral pasts, we read texts in

³⁸ Noted by Cassen, this definition is found "in the glossary of the French original, not included in the published English translation". Thus the need to cite Zumthor from a secondary source as access to the French original was not achieved as of the writing of this dissertation. In Albrecht Classen, *Handbook of Medieval Studies: Terms, Methods, Trends*, 2010. 1539

silence and engage in textual compositions which are mostly meant to be read linearly. In contrast, non-linear formats and experiences with the textual interface permeate virtually every manuscript of the middle ages, where every available space in the page had the potential to be used to introduce another text, image or allusion to sound and music. One example of both non-linearity of the textual interface and performative aspects seeping in through scribing gestures, can be found in the *Libro del Conorte* (1481-1534, fig.26), a manuscript which collected the sermons of the Abbess Juana de la Cruz. Speculated to have been authored by several fellow nuns (*scrittura comunitaria*), through “highly complex processes involving the memorizing, drafting, editing, copying, ordering and codification of oral performances”³⁹, it amalgamates transcriptions of sermons as they had been performed (often publicly), in the form of lengthy stigmata by Juana de la Cruz. The sermons contained within the *Conorte* have been edited, fragmented, re-arranged and censored, where the concept of an “original” version is an illusion: “The final products of these performative metamorphoses conceal multi-layered, multi-authored re-creations that tend to be perceived by later users as a single unit”.⁴⁰ Glosses or commentaries, concordances, mnemonic works, censorship and scribal emendations to errors, are some of the most common inhabitants of marginalia and develop concurrently as texts within texts, in often complex compositions and references.

³⁹ Pablo Acosta-García, “Towards a Critical Edition of the Libro Del Conorte of the Abbess Juana De La Cruz (1481-1534),” in Radboud University Press eBooks, 2023, https://doi.org/10.54195/xfrb6134_ch09. 201

⁴⁰ Ibid. 203

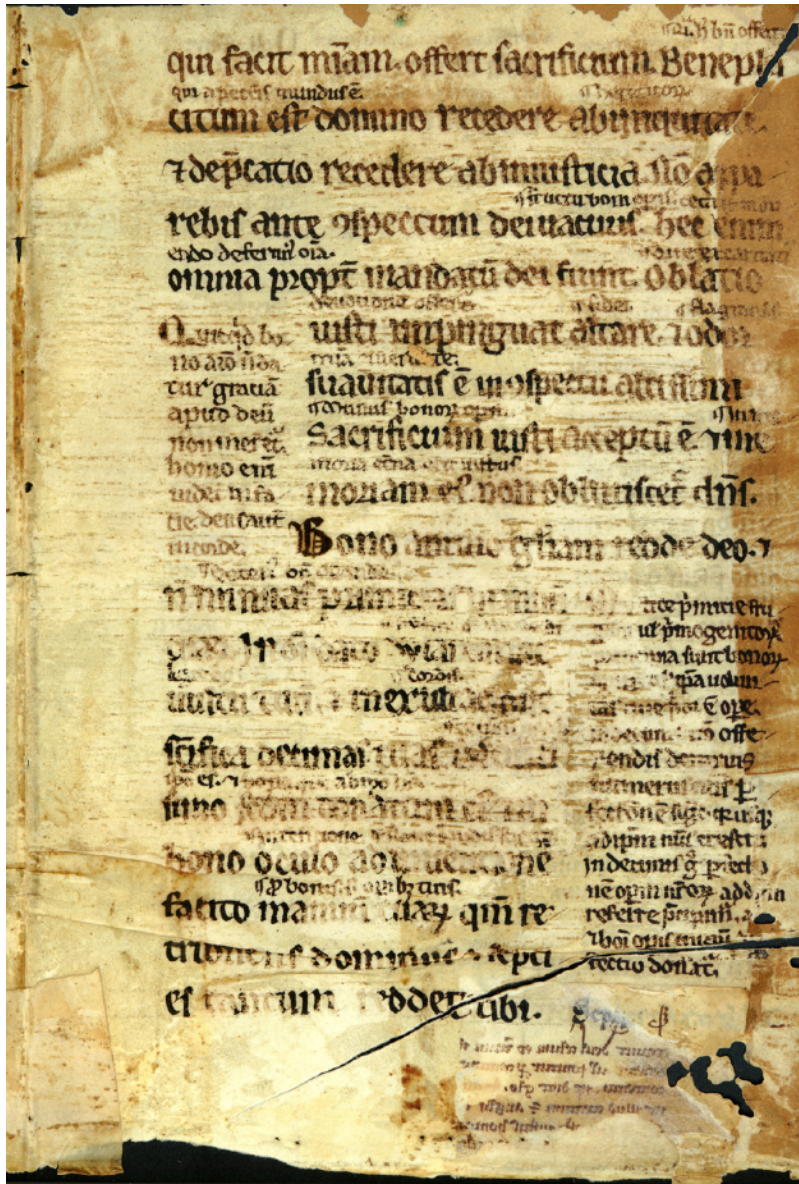
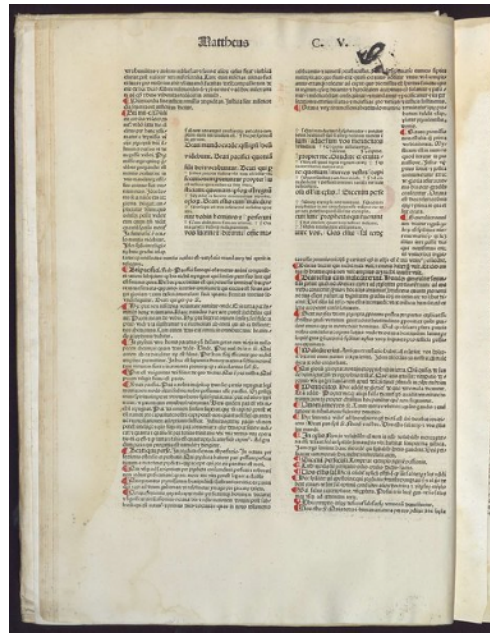


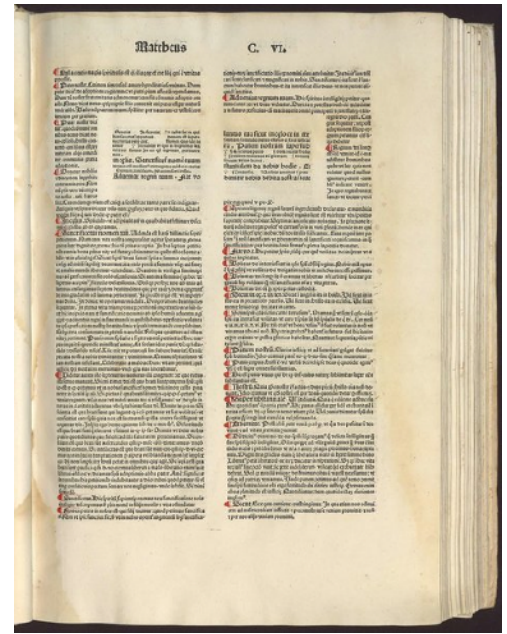
Fig. 23 - A manuscript example of a bifolium (Folio 1 recto) from a Glossa ordinaria bible (between 1200 and 1299), displaying interlinear and marginal commentaries through inconsistent placement, typography, and size. Curiously, it is noted in the *Item Description*, that it was “probably used as a binding. Glue residue is visible, as are the strokes from the brush used to apply the glue”. The gesture of reusing a manuscript for another manuscript’s binding further resonates with the early textual interfaces existing within systems of instability, accidentally creating assemblages of simultaneous narratives. - *Bible bifolium with gloss, 13th century: Ecclesiasticus 35:4-13. (Beals 16, Folio 1, recto):* University of Washington Libraries, Special Collections, Medieval and Historical Manuscripts, Beals 16-1r n.d. <https://digitalcollections.lib.washington.edu/digital/collection/mhm/id/295/>.



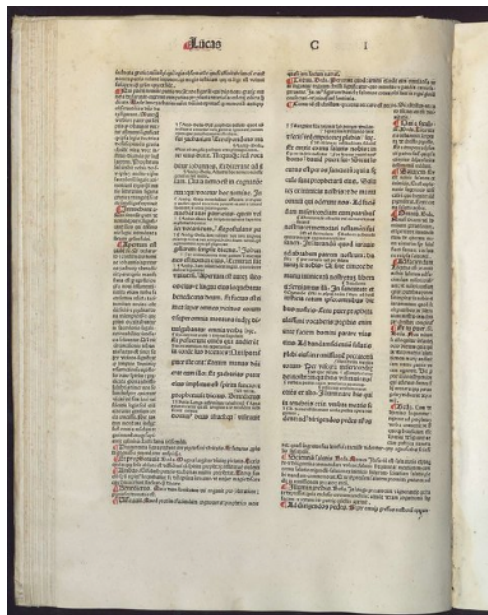
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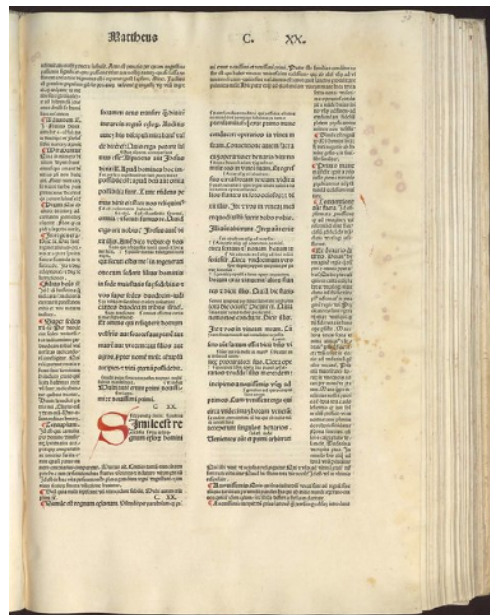
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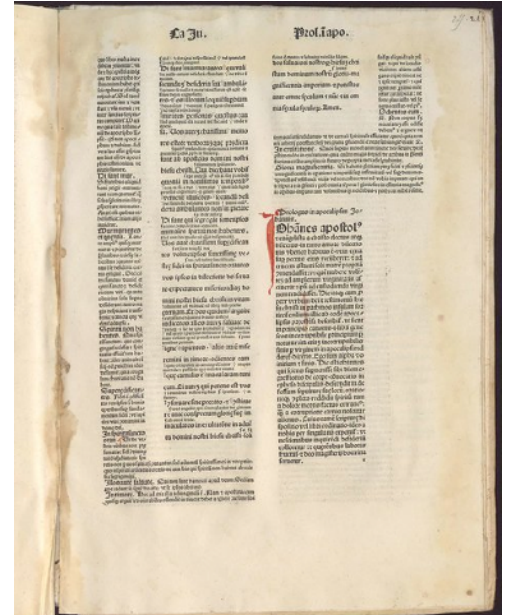
3



4



5



6

Fig. 24 - Six folios from the fourth volume of the Glossa Ordinaria (1480 or 1481), with interlinear and marginal commentaries around the “main” body of text (p.1). In some pages (2 and 3) the commentary far exceeds the Scripture. There could be up to four texts (p.6) running concurrently in these glossed bibles, often “spilling” beyond the page, requiring the addition of symbols to indicate that the commentary continued in the next folio (4-5). - *Latin Bible with ordinary gloss Walafriidis Strabonis aliorumque and interlinear Anselmi Laudunensis*, Biblioteca statale del monumento di Santa Scolastica, “Libri Antichi - Biblioteca Nazionale Centrale Di Roma,” n.d. <http://digitale.bnc.roma.sbn.it/tecadigitale/libroantico/RMLE067536/RMLE067536/1>.

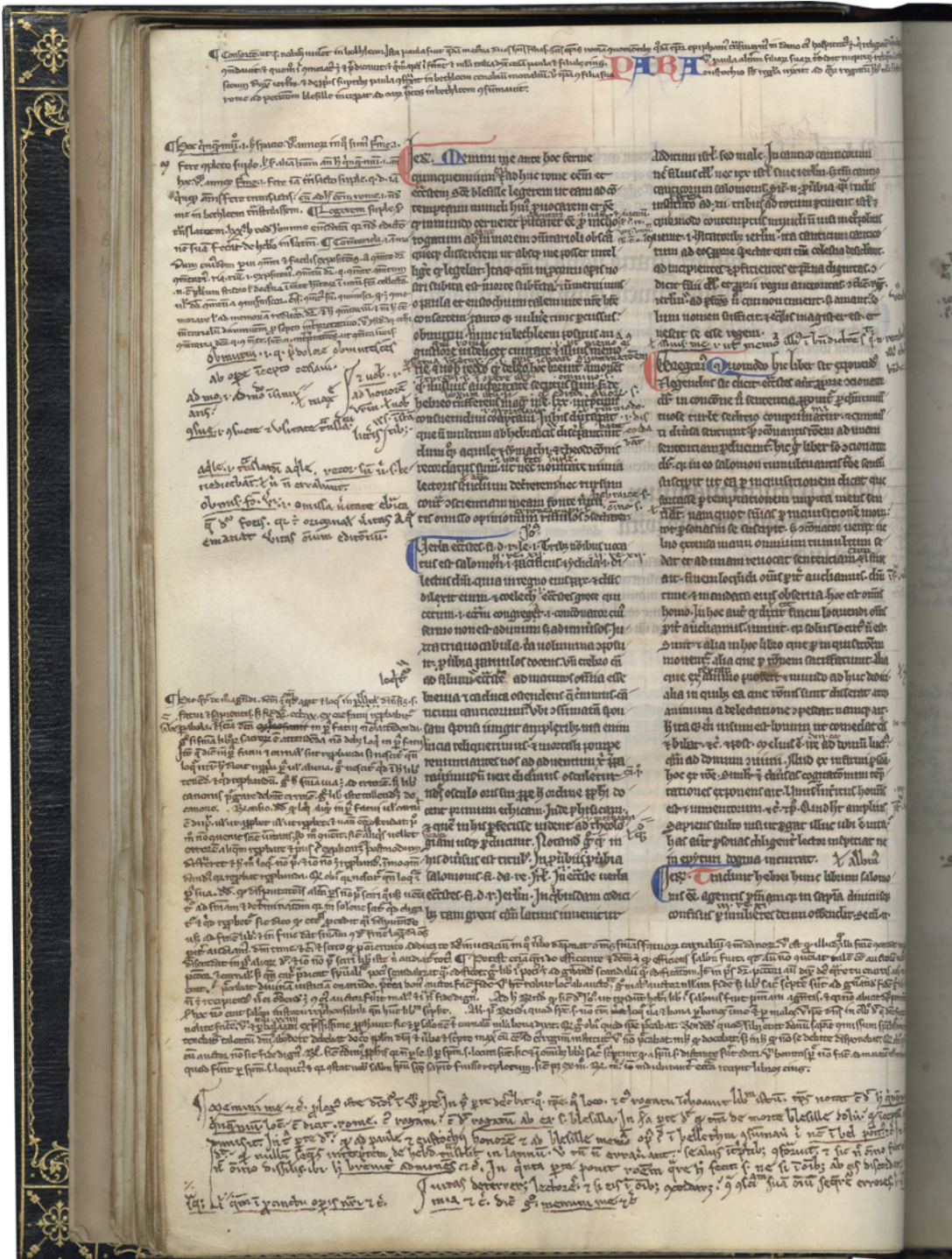
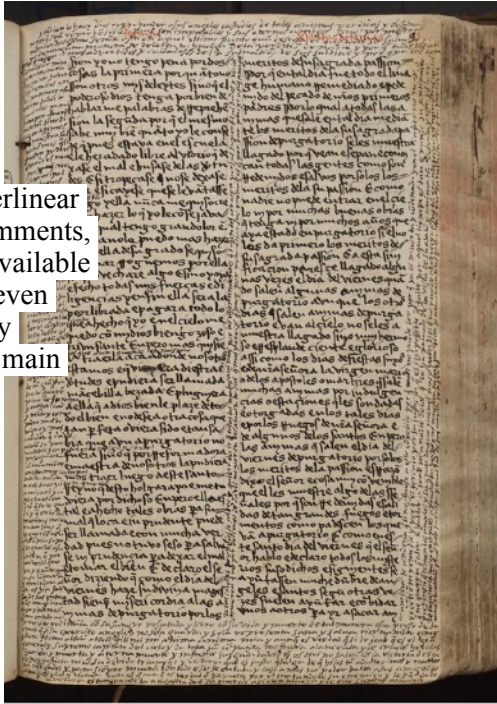
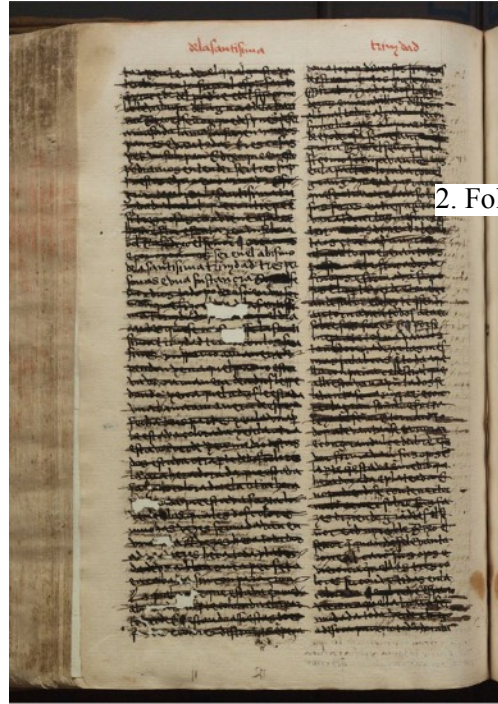


Fig. 25 - A folio from a Vulgate Bible containing Proverbs, Ecclesiastes, Wisdom, Ecclesiasticus, Song of Songs and Glossa ordinaria. In Latin, decorated manuscript on parchment Northern France (Paris?), c. 1240-1260. This manuscript shows “extensive marginal additions to the manuscript in several hands (two main glossing hands using ink, and additional notes in plummet)” - “Vulgate Bible: Sapiential Books (Proverbs, Ecclesiastes, Wisdom, Ecclesiasticus, Song of Songs) With the Glossa Ordinaria,” n.d. <https://www.textmanuscripts.com/medieval/vulgate-bible-sapiential-books-141642>.

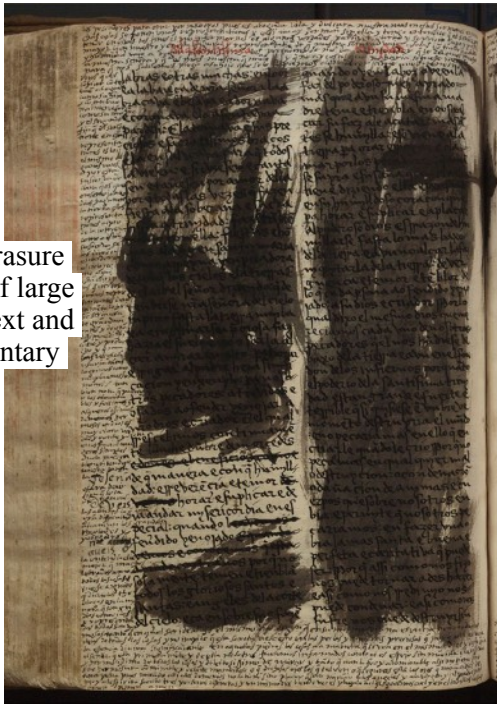
1. Folio one: interlinear and marginal comments, covering every available space, with text even running vertically between the two main columns



2. Folio two: Erasure and censorship of large portions of the text.



3. Folio three: Erasure and censorship of large portions of the text and marginal commentary across the page.



4. Folio four: Erasure and censorship of the whole text

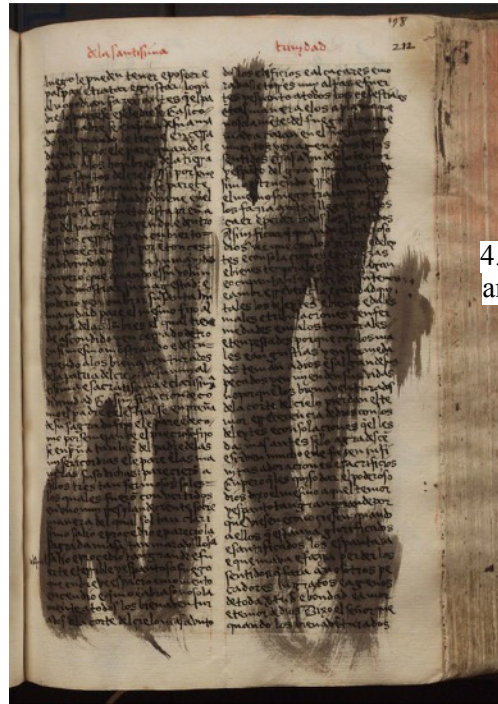
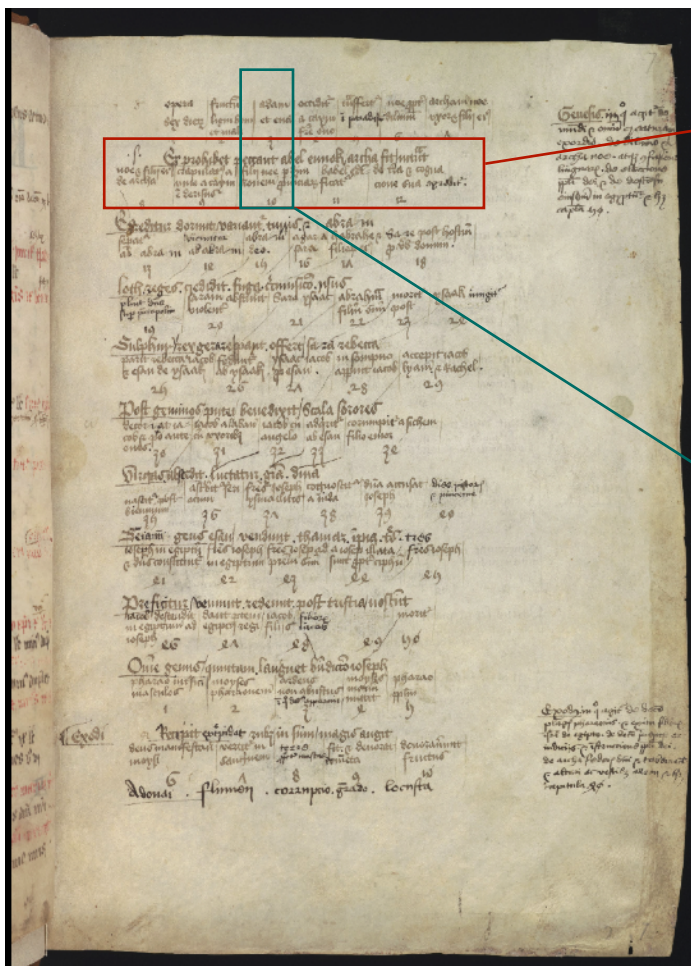


Fig. 26 - Four folios from the *Libro del Conorte* of the Abbess Juana de la Cruz (1481-1534), Monasterio del Escorial “edition” — “Comiença El Libro Que Es Llamado Conorte”. - Real Biblioteca Del Monasterio De San Lorenzo De El Escorial · Real Biblioteca Digital,” n.d., <https://rbme.patrimonionacional.es/s/rbme/item/13759>.

The paper titled *Old Light on New Media: Medieval Practices in the Digital Age*, Kiss et al.

introduce the *Summarium biblicum* (14th century, fig.27) as an extreme example of non-linearity:

...a biblical mnemonic tool which summarizes the contents of the Bible, in which every biblical chapter is represented by a single word (Doležalová, “Biblia Quasi in Saculo”; “Mémoriser la Bible”; Obscurity and Memory). The chain of words is organized into hexameters and thus the whole Bible is condensed into some 200 nonsensical verses. [...] *The Summarium* does not make any sense if read as a poem; it can be approached in a meaningful way only when divided into segments, each of them interpreted as a biblical reference. Even then it is used rather than read.⁴¹



Sex. prohibet. peccant. Abel. Ennok. archa fit. intrant'
 ['Six. prohibits. [they] sin. Abel. Enoch. arc is built. [they] enter.']

Representing the first seven chapters of Genesis

Above the word *peccant* [they sin], is written 'adam et eva' as a mnemonic aid

Fig. 27- *Summarium Biblicum*. Cambridge University Library MS Gg.iv.10, fo. 7r.

⁴¹ Farkas Gábor Kiss et al., “Old Light on New Media: Medieval practices in the Digital Age,” *Digital Philology* 2, no. 1 (January 1, 2013): 16–34, <https://doi.org/10.1353/dph.2013.0003>. 23

Non-linearity and oral culture are closely entwined in the medieval textual tradition, contrasting to our modern experiences of reading inwardly and silently, many of the medieval texts were meant to be read out-loud and performed within communal experiences, in the *The Medieval Craft of Memory* (2002) by Mary Carruthers & Jan M. Ziolkowski, some of the contexts in which these texts would be orally presented are mentioned as follows: "...sermons and prayers, school lectures and homilies. All of it was written down in the twelfth century or later, a time of spreading literacy in western Europe".⁴² Orally performed narratives and poems, as exemplified in Parry's studies on the Homeric Poems, required specific mnemonic and rhythmic tools in order to sustain a structure from which improvisation could emerge in-situ. In this sense, medieval mnemonic tools, inherited and adapted from Antiquity, stand out as particularly intriguing entanglements, where the high residual orality of the middle ages elicited considerable demand for cultivating and augmenting these memory mechanisms. Thus *ars memoriae* or the art of memory, as further elicited by Carruthers & Ziolkowski, emerged as an incredibly important discipline across orality-literacy composition practices:

Thus, as an art, memory was most importantly associated in the Middle Ages with composition, not simply with retention. Medieval memoria took the inventive function of human memory for granted, and emphasized it. Indeed, those who practiced the crafts of memory used them—as all crafts are used—to make new things: prayers, meditations, sermons, pictures, hymns, stories, and poems. Students of art and literature have long remarked on the intensely pictorial and affective qualities of these arts in the Middle Ages.⁴³

⁴² Mary Carruthers and Jan M. Ziolkowski, *The medieval craft of memory: An Anthology of Texts and Pictures* (University of Pennsylvania Press, 2002). 7

⁴³ Carruthers and Ziolkowski, *The Medieval Craft of Memory: An Anthology of Texts and Pictures*. 8

Through the conjunction of the mise-en-page as a stage and the continuous prevalence of mnemonic tools, oral culture reverberates strongly across the medieval orality-literacy continuum, appearing as live performances of the everyday, not ordinary or unimportant, but situated and enacted throughout highly familiar events and environments as ritual habits of signification. From another example in Carruthers & Ziolkowski's research, it is possible to imagine how ebulliently familiar orality might have still been back then:

On one famous occasion, a Dominican friar, William Jordan (d. after 1366), kept all London enthralled for a week with his preaching; another friar, Giordano of Pisa (d. 1310), preached for successive Lenten seasons, five times a day for forty days each time, to large crowds in the piazza before Santa Maria Novella in Florence. In addition, lay people as well as clerics were enjoined to frequent personal devotions, including prayers, meditations, and examinations of conscience, all to be performed thoughtfully and mindfully. Composing such personal meditations became another major task of *memoria* [...] These two tasks—composing sermons and meditations to be delivered to particular audiences and composing frequent personal devotions—govern much of the medieval craft of memory.⁴⁴

The *ars memoriae* combined complex diagrams and schematics with abbreviations and instructions, they were used to augment, aid and propel memory to perform a myriad of activities. Two manifestations of these mnemonics strongly captivate and propel this research. The first example refers to the mnemonic mechanisms which were enacted across the hands. Kensy Cooperrider, in the article *Handy Mnemonics: The Five-Fingered Memory Machine*, weaves a fascinating journey across this embodied mnemonic mechanism:

Beginning roughly twelve hundred years ago, we started using the hand itself as a portable repository of knowledge, a place to store whatever tended to slip our mental grasp. The topography of the palm and fingers became invisibly inscribed with information of all kinds — tenets and dates, names and sounds. The hand proved versatile

⁴⁴ Carruthers and Ziolkowski, *The Medieval Craft of Memory: An Anthology of Texts and Pictures*.9

in a new way, as an all-purpose memory machine.[...]hand mnemonics exist half in the mind and half in the flesh.⁴⁵

Often drawn in first person perspective, the hands emerge, through the page, as a ready-made interface, technologically augmented through diagrams, schematics, scores and instructions. Encompassing a myriad of disciplines, hands become embodied repositories and decoders to access a trove of encoded knowledge: musical scores and sound maps for performances (figs. 28-29), *computations* to determine events in time through seasonal and planetary rhythms (fig. 30), containers of liturgical narratives (fig. 31), dictionaries and calendars, among many others. The use of these visually-embodied mechanisms of memory integrate highly complex theorization and systems of knowledge for vernacular accessibility across the everyday, in the form of public recitation and performances, thus creating bridges across cloistered cultures and imaginaries and a broader medieval audience, as Cooperrider notes, “They bridged the voice and the pen, offering, to the trained imagination, a kind of living inscription”.⁴⁶

⁴⁵ Kensity Cooperrider, “Handy Mnemonics: The Five-Fingered Memory Machine,” *The Public Domain Review*, April 2022, <https://publicdomainreview.org/essay/handy-mnemonics/#fn1>.

⁴⁶ Cooperrider, “Handy Mnemonics: The Five-Fingered Memory Machine.”



Fig. 28 - 16th-century diagram from the manuscript of an unknown author depicting musical notes scored across a hand in the method attributed to Guido d'Arezzo, File:UCB Music Library MS 1087.jpg - Wikimedia Commons, n.d., n.d., https://commons.wikimedia.org/wiki/File:UCB_Music_Library_MS_1087.jpg.



Fig. 29 - Manuscript illustration of a "Guidonian hand", ca. 1274. "Note how the solmization sequence ut-re-mi-fa-sol-la appears both on the enclosing circle and on the hand itself", File:the Hand of Guido.jpg - Wikimedia Commons, June 8, 2011, June 8, 2011, https://commons.wikimedia.org/wiki/File:The_Hand_of_Guido.jpg.

Fig. 30 - Woodcut illustrations from Anianus' *Compotus cum commento* (ca. 1492), an adaptation of Bede's *computus* system, "Digital Collections - National Library of Medicine," n.d., <https://collections.nlm.nih.gov/bookviewer?PID.nlm.nlmuid-9410697-bk>.

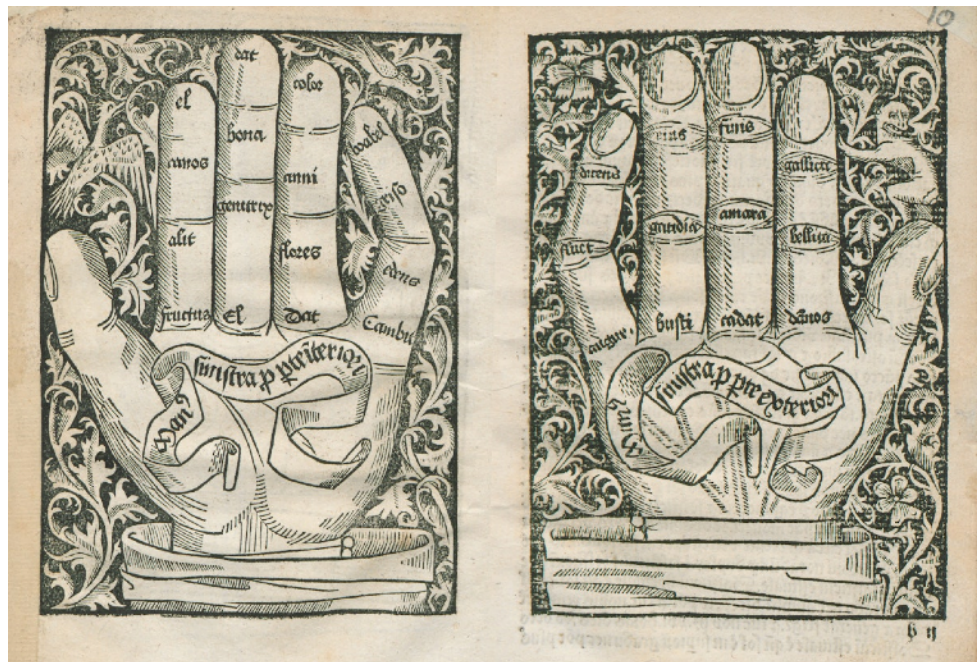


Fig. 31 - Ink and paint image from Stephan Fridolin's *Schatzbehälter der wahren Reichtümer des Heils* (*Treasury of the true riches of salvation*), published in Nuremberg by Anton Koberger in 1491. Here the hands contain numbers that correspond to meditations in the book, creating a table of contents, "Schatzbehälter Der Wahren Reichtümer Des Heils," Online Collection of the Walters Art Museum, August 1, 2022, <https://art.thewalters.org/detail/13698/schatzbehalter-der-wahren-reichtumer-des-heils/>.

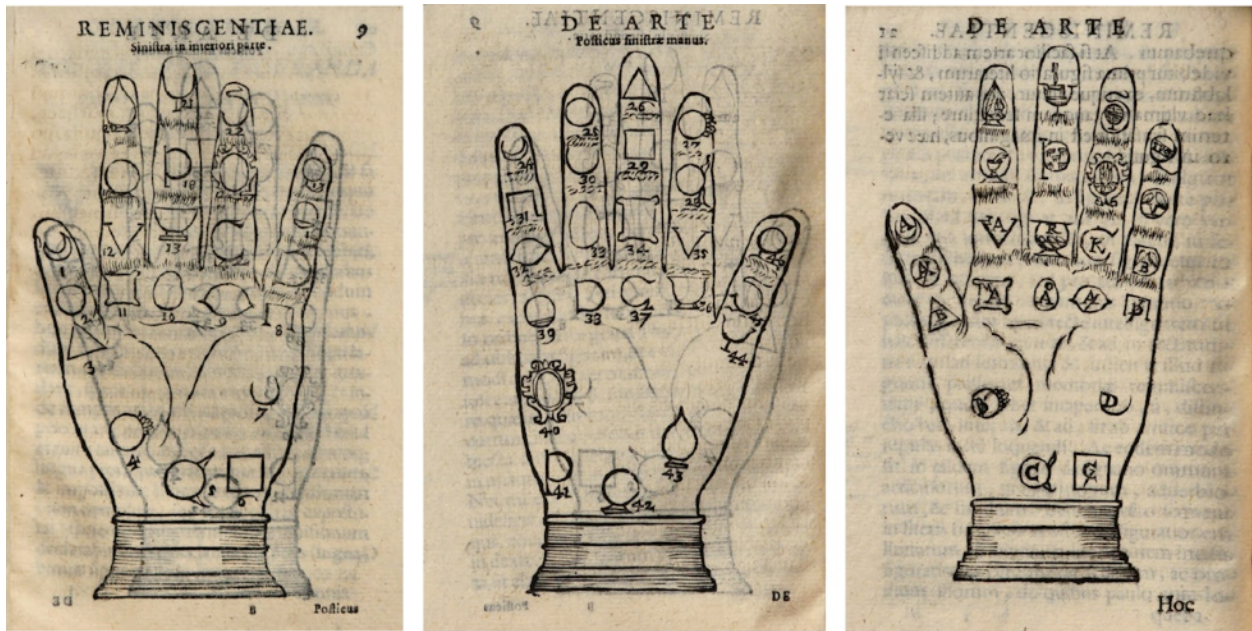


Fig. 32 -Hands from Girolamo Marafioti's 17th-century treatise on the art of memory, *De Arte Reminiscentiae*, demonstrating the use of loci, "Marafioti, Girolamo: De Arte Reminiscentiae per Loca, Imagines, Ac per Notas Et Figuras in Manibus Positas', Image 1 of 92 | MDZ," n.d., <https://www.digitale-sammlungen.de/en/view/bsb11291278?page=,1>.

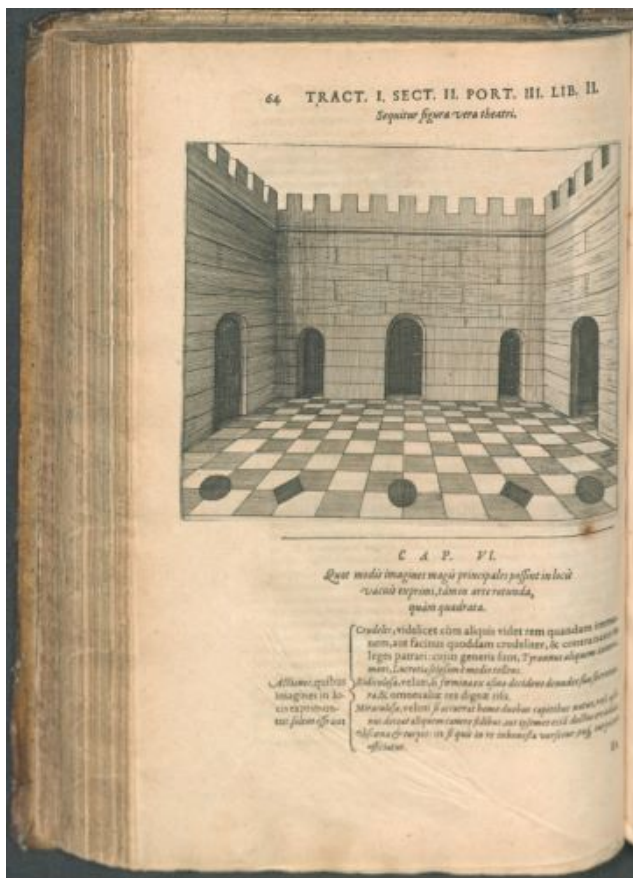


Fig. 33 -Tomus secundus ... de supernaturali, naturali, praeternaturali et contranaturali microcosmi historia, in tractatus tres distributa, Robert Fludd. Source: Early European Books project. / courtesy ProQuest, LLC, Public Domain

The second kind of mnemonic mechanisms which appear most intriguing, are the ones which conjure convoluted spatial representations. Emerging as both *manual loci* where the topology of the hand appears a stage in which to place specific memories (fig. 32-33), or as *memory palaces* or *method of loci*, mentally constructed, intricate architectures of fictitious places, where memories are placed in imaginary rooms or gardens and a spatial trajectory to retrieve them is traced in the mind's eye. These spatial mnemonics encountered in medieval manuscripts, would not only provide detailed instructions to build these speculative places, they would also construct a map of interconnected signification and interpretation; one example is Hugh of St. Victor's *De arca Noe mystica*, or *Noah's Mystical Ark/On the Mystic Interpretation of the Ark of Noah* (circa 1125–30) treatise, which vividly guides the reader through the construction of an impossible architecture, creating an allegorical Noah's Ark, sprawling across an assemblage of spaces, symbols and moral teachings. The text begins with the expectation that the reader, will perform and stage the construction of this place, and as they do so, will become immersed within it, begin inhabiting and embodying it. The following are some fragments of these instructions:

1. Now I will offer an exemplar for our own ark, as I have promised. I depict it as an object, so that you learn outwardly what you ought to do inwardly, and so that, once you imprint the form of this example in your heart, you will be glad that the house of God has been built inside of you
2. First, in order to show in a figure the religious significances of the Ark of Noah, I find the center of the plane on which I want to draw the Ark, and there, I fix a point. Around this point I make a small square, which is like the cubit from which the Ark was constructed. And around this square also I make another, a little bit bigger than the first[...]

14. ...Next I turn my hand to the width of the Ark, and, beginning from the right side, I extend two timbers upward to the line of generation, and from there, that is, from the line of generation to the left edge, I draw two timbers, the same ones, but transposed[...]
- 15....The first room is for the married, the second for the continent, the third for the virgins. Or thus: the first room is for those who use the world; the second, for those who flee the world; the third, for those who have forgotten the world. Or thus: the first room is for the crawling; the second, for the walking; the third, for the flying[...]
20. ...From the warmth of the east, which is the last corner for those returning and the first for those leaving, is written in one unbroken line: “Here ascend those who have not yet gone over from bad to good, but have progressed from good into better—those whom the Tree of Life feeds and carries forward”[...]
22. ...Fear ascends first from the cold of the east opposite the Book, naked, since it has thrown down the clothes of pride, because of the fire and worms that are drawn under the foot of the ladder. On the second ladder, Grief is depicted [...].⁴⁷

The construction of this speculative place begins in a two-dimensional realm, drawing a point of intense density from which an all-encompassing multi-dimensional world gushes outwardly. It challenges the reader to imagine incredibly contrasting and often contradicting realities, unfolding all simultaneously across different temporalities and scales, fluctuating rapidly from allegorical and mythical concepts into the mathematical and analytical realm of cubits and widths. The familiarly comforting (“From the warmth”), and that which appears tangible, (“I draw two timbers”), are pulled within a vortex of the transcendental (“those whom the Tree of Life feeds and carries forward”) and the mystical (“Fear ascends first from the cold...”). The Ark transforms into an immersive virtual reality, which constantly shape-shifts around the reader as it is staged and performed both across the page and beyond it. Carruthers and Ziolkowski further consolidate these interlinkages within the medieval context:

⁴⁷ Carruthers and Ziolkowski, “Hugh of St. Victor, A Little Book About Constructing Noah’s Ark,” trans. Jessica Weiss, in *The Medieval Craft of Memory: An Anthology of Texts and Pictures*. 44-58

These figures were to be manipulated mentally in order to make new connections among subject matters; such diagrams in some late manuscripts and early printed books included movable dials and pointers. Though the instructions for using them are often difficult, and are written in a Latin style that makes our computer manuals seem models of comprehensiveness and graceful lucidity, they clearly were intended to provide a kind of machine for invention, both an architecture and an engineering of memory that required some knowledge of basic geometry to comprehend them.⁴⁸

The processes that medieval readers and scribes produced through inventive and serendipitous approaches, demanded complicated and simultaneous negotiations happening across texts, images, sound and space. Embodied memory performances traced and staged spatial and temporal trajectories throughout variegated assemblages and associations, mirroring the identities and psychologies of scribes and readers alike. Iteratively signifying and constructing unstable realities, identities, simulacra and virtualities, these performances permeated an orally narrated mystical everyday.

⁴⁸ Carruthers and Ziolkowski, *The Medieval Craft of Memory: An Anthology of Texts and Pictures*. 18

The Simulacra Continuum

The semiotics of oral stories and the structures of uncertainty within the textual interface, with its *mise-en-page*, *mise-en-abyme*, and ultimately, its *mise-en-scene*, can be further constructed and interpreted as diagrams where all kinds of simulacra emerge across sediments and accumulations of interpretation, casting another line across the continuum of consolidating virtualities from these significations.

The examples of *ars memoriae*, the *mise-en-page*, Hugh of St. Victor's *De arca Noe mystica* and the semiotic visualizations of Tecali, all create, in one way or another, geometries—representations of spatial relationships, which sustain the construction and signification of place and identity, anchoring memory and imagination to *symbols* that can be encoded, measured, translated and decoded. Gabriel Lolli, in *The Meaning of Proofs*, sets forth an anthology of entanglements encompassing oral culture, rhetorics, recurrent tales across ancient civilizations and mathematical proofs as storytelling; echoing Italo Calvino's thoughts,⁴⁹ Lolli draws these threads together:

...“narrative structures” within which they unfold “exist on their own like geometric figures or Platonic ideas or abstract archetypes and impose themselves on each single person's individual imagination” (Calvino 1995, 1964), not unlike the recurring modules in which proofs are articulated. Reversing Calvino's analogy, the geometric figures and patterns within which the proofs perform their function exist like the narrative structures of fairy tales.[...] Doing math means moving on different languages, using both fictions and calculations, being both poets and laborers.⁵⁰

⁴⁹ Italo Calvino, *Italo Calvino: Letters, 1941-1985 - Updated Edition* (Princeton University Press, 2014).

⁵⁰ Gabriele Lolli, *The Meaning of Proofs: Mathematics as Storytelling* (MIT Press, 2022). 61-63

Furthermore, these geometric figures, emerging across orality-textuality structures, are carried and transposed as meta-languages, inviting their readers to inhabit them as spatial topologies. Semiotic diagrams construct mirages of place through relationships of affinity or contrariety. The schematics found within the book *Enchantment and Apparitions*, elicit the construction of a place of mysticism, where memory is anchored through myth, placemaking is enacted through accumulations of anecdotes, and oral performances are scored across symbolic transcriptions. These kinds of virtualities exist as latent environments, which until performed across and within, remain un-signified and unconsolidated. Kester Rattenbury in the book *This is Not Architecture*, compiled an anthology on several ways in which spatial relationships elicited across diagrams are elucidated as systems of superposition and variability, interlinking Gilles Deleuze's concept of the abstract machine⁵¹, diagrams remain in a state of a latent unfolding:

...the diagram is interesting not as a paradigmatic example of a disciplinary technology, but as an abstract machine that '[makes no] distinction within itself between a plane of expression and a plane of content'. Diagrams are distinguished from indexes, icons and symbols. Their meanings are not fixed. 'The diagrammatic or abstract machine does not function to represent even something real, but rather constructs a real that is yet to come.'⁵²

Diagrams can certainly elicit immersive virtual spaces, which extend beyond the flatness of the page but they have to be interpreted and approached beyond being perceived as *simple* textual works. Through performing them as a series of instructions, gestures and repetitions, they emerge as complex multimodal scores, Pauline Oliveros' *Sonic Meditations*, are *text scores* (figs. 34-36) or *recipes* for listening and aural improvisations, which are "transmitted orally without

⁵¹ Gilles Deleuze, *A Thousand Plateaus: Capitalism and Schizophrenia* (U of Minnesota Press, 1987).

⁵² Rattenbury, *This Is Not Architecture: Media Constructions*. 104

conventional musical notation”.⁵³ These scores, stage significations across space through presence and sonic embodiment; often conjuring sonic assemblages, sounds slowly conform an aural architecture, or a memory palace, of abstract rooms in which to hold on to the sounds Oliveros is unearthing from within the audience’s sonic pasts. These *ear* mnemonics, collectively construct immersive sonic virtualities, and the text which elicits them, is a work which is not only intended to be read but *heard*, and which fluctuates to adapt to specific performative contexts, as Oliveros’ notes:

Even though Sonic Meditations are in print, I often vary or revise the wording I use to transmit the instructions in new situations. Such instructions are intended to set an attentional process in motion within a participant and among the group that can deepen gradually with repeated experience. A definitive performance is not expected as each performance can vary considerably even though integrity of the guidelines will not be disturbed and the piece will be recognizable each time.⁵⁴

These textual scores elicit an environment where the fleeting physicality of sound, and the spatial information encoded within it, emerges only through focusing on the encounter of frequencies, resonances and vibrations, ricocheting across space and bouncing back into our bodies:

Space is an integral part of sound. One cannot exist without the other. We explore natural, constructed, imaginary, and virtual spaces to savor and enjoy their salient acoustical characteristics. This work is done with ears, voices, instruments, technology, shared experiences, and perceptions. [...] Listening to space changes space and changing space changes listening.⁵⁵

Oliveros’ scores, not only construct virtualities but they also augment the body as an oral-aural interface, in which sonic repositories are encoded and decoded. Resonating with medieval hand

⁵³ Pauline Oliveros, *Sounding the Margins: Collected Writings 1992-2009* (Lulu.com, 2010). 29

⁵⁴ Oliveros, *Sounding the Margins: Collected Writings 1992-2009*. 120

⁵⁵ *Ibid.* 165

mnemonics, systems of signification remain latent, only emerging from the peripheries as the system is being scored, performed, iterated and consciously embodied.

IMAGINARY MEDITATIONS

I.

Can you imagine your own resonance?

II.

Can you imagine listening beyond the edge of your own imagination?

III.

Can you imagine that every cell in your entire body is vibrating all the time?

IV.

Can you imagine the tuning of the universe?

V.

Can you imagine the echoes of all the footsteps you have ever taken?

Fig. 34 - *Imaginary Meditations*, text score by Pauline Oliveros (1979) - Oliveros, Pauline. *Anthology of Text Scores*. Lulu.com, 2013.

OLD SOUND NEW SOUND BORROWED SOUND BLUE

for Voices



Old Sound – A sound that you remember from a long time ago.

New Sound – A sound that you have never made before.

Borrowed Sound – A sound that you borrow from someone else.

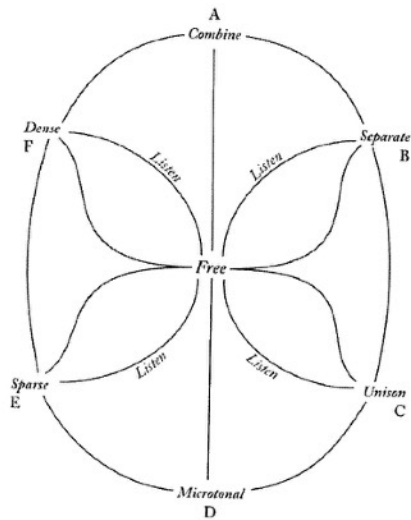
Blue Sound – A sound that is blue for you.

First listen inwardly to find your sound to be expressed vocally. Voice each kind of sound—old, new, borrowed, blue—from one to three times within a time frame of about five minutes. Pace yourself by listening to everyone and everything. Find a time for each of your sounds. Voice your sound just before, just after, or together with someone else's sound. The piece is finished when everyone has used all of their sounds not more than three times each.

Fig. 35 - *Old Sound New Sound Borrowed Sound Blue*, text score by Pauline Oliveros (1994) - Oliveros, Pauline. *Anthology of Text Scores*. Lulu.com, 2013.

MAGNETIC TRAILS

for Violin and Piano



Legend

Free – Improvise with no restriction.

Listen – Do not play (always an option).

A – *Combine* – Anything may be played with anything.

B – *Separate* – Each sound is separate from any other sound.

C – *Unison* – Sound together the same sound.

D – *Microtonal* – Slight differences or deviations in pitch from a reference tone. The reference tone can be selected from the other player's instrument or from the player's own instrument.

E – *Sparse* – Play very little.

F – *Dense* – Texture of many sounds simultaneously.

The Four Movements

Each movement is named after one of the four directions—East, South, West and North. Use the qualities of the directions to determine atmospheres and moods. For example: East – sunrise, new beginnings, birth, etc., South – warmth of sun, ease of life, West – sunset, time of dreams and visions, North – navigation, movement towards goals or truth.

Fig. 36 - *Magnetic Trails*, text score by Pauline Oliveros (2008) - Oliveros, Pauline. *Anthology of Text Scores*. Lulu.com, 2013.

Interpretations and translations across orality, textuality and performativity, reverberate with the frameworks and liquid approximations to a definition of dramaturgy presented in the *Routledge Companion to Dramaturgy*, as a process of making sense of relationships and associations and translating them into performative trajectories across time and space, inherently intertwined within the everyday:

The vernacular understanding of the concept of dramaturgy as a purposeful arrangement of events evolved simultaneously from the fields of both theater and sociology. In 1959, the term was used for the first time as a sociological category by Erving Goffman, in his book *The Presentation of Self in Everyday Life*. Goffman's dramaturgical theory of human behavior viewed everyday life as a series of theatrical events, performed along the lines of pre-established social scripts. (It is this sociological notion of the dramaturgy of everyday life that gave rise to performance studies, which defines performance as existing between "theater and anthropology") With everyone performing a "character," Goffman argued, human identity is not stable, but constantly reframed and redefined by the dramaturgy of one's role performed in response to external interactions. We become who we are and develop our own self-image based on dramaturgical analysis of our

social relations and the roles we are constantly asked to perform. In other words, we are the dramaturgs of our lives and of ourselves because we create meaning out of the lived events.⁵⁶

Dramaturgy, as the synergy of theater, anthropology and semiotics, encapsulates the approaches to meaning-making enacted through lineages of performativity. In the following passage from *Theater as a sign-system*, the threads elicited so far within this research, are further consolidated:

Where semiotics has provided a way of seeing the dramatic text which furthers our understanding of how the text is made, it has also provided the key to unlocking theatre from literature; the 'way to avoid imprisoning the theater in the text' (Kaisergruber 1977: 169). However, once the dramatic text is freed from the constraints of the traditional tools of literary criticism and from its consequent confinement to literature, and is considered in its theatrical context, the difficulties of 'reading' increase. The difficulties are created by what Barthes identified as the polysemic nature of theatre, i.e. its ability to draw on a number of sign-systems which do not operate in a linear mode but in a complex and simultaneously operating network unfolding in time and space.⁵⁷

Encoding of narrative across diagrams, and interpreting them as non-linear structures that delineate trajectories, events and spaces, resonate with the way scripts for theater are generally *not* approached as one-dimensional literary objects, and are instead approached as a “work which exists not only to be read but also to be *seen*”⁵⁸. The script is approached by a director/dramaturg as a meta-text, which has to be translated back into a spatiotemporal performance, “a theatrical event which is to be realized into planes (time and space), not one”⁵⁹. Within the theatrical paradigm of interpretation, translation and contextualization, the text goes from being solitarily signified and authored, to a collective construction, “once the ‘doing’ of theater is reinstated, then

⁵⁶ Magda Romanska, *The Routledge Companion to Dramaturgy* (Routledge Companions, 2015). 4

⁵⁷ Elaine Aston and George Savona, *Theatre as Sign System: A Semiotics of Text and Performance* (Psychology Press, 1991). 99

⁵⁸ Aston and Savona, *Theatre as Sign System: A Semiotics of Text and Performance*. 2

⁵⁹ *Ibid.*

the notion of individual authorship is also challenged, given that the “doing” also requires the collaboration of the performers, director(s), technical staff, and so on, all of whom contribute to the making of the theatrical event”⁶⁰. Theater blocking schematics (fig. 37) and theater textual ephemera, reflect on the meta-textuality of scripts, which become ever-expanding archives of collaborative and cumulative signification.

Shakespeare’s promptbooks, for example, (figs. 38-39) are scripts (or fragments) glossed, with commentaries by stage managers, directors and actors, which “include cast lists, stage directions, blocking diagrams, and cues for effects like lighting and music...often indicate cuts or alterations to the text made during rehearsals”⁶¹. These texts are continuously annotated throughout the margins, thus becoming complex diagrams themselves, which, in the case of Shakespeare’s plays, having been adapted, re-contextualized and re-imagined over the span of four-hundred years, consolidate a multiverse of morphing interpretations of space, movements, materiality and events. In an systemic approach, theater and dramaturgy, have actively preserved and encouraged a high oral residuality, carrying the medieval tradition of perceiving texts as latent multidimensional universes.

⁶⁰ Ibid.

⁶¹ “Harvard Library - Shakespeare Promptbooks,” Harvard Library, n.d., <https://library.harvard.edu/collections/shakespeare-promptbooks>.

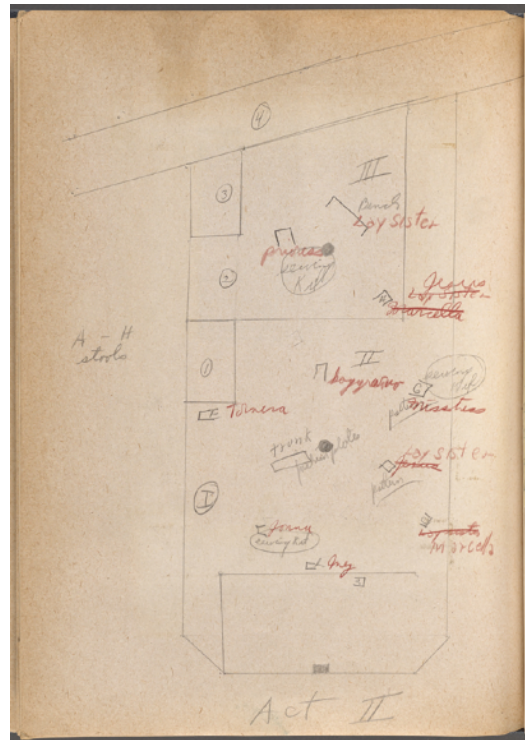
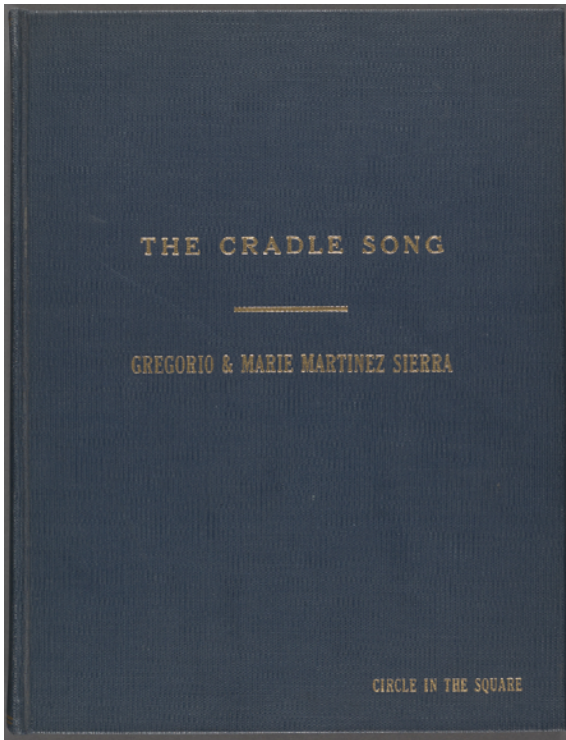
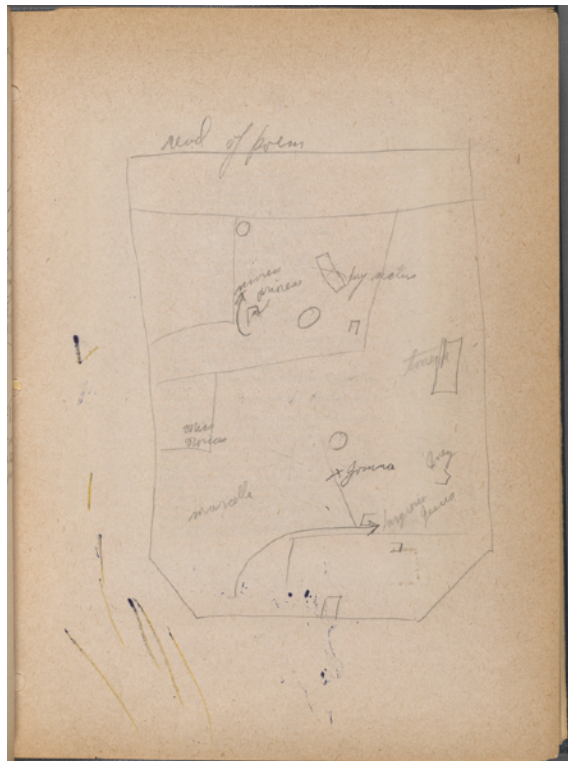



Fig. 37 - Promptbook pages containing blocking diagrams, from the *Cradle Song* by Gregorio and Marie Martinez Sierra - Billy Rose Theatre Division, The New York Public Library. "Script" New York Public Library Digital Collections. Accessed July 18, 2024. <https://digitalcollections.nypl.org/items/a5b0bf00-a530-0130-ecd6-58d385a7bbd0>

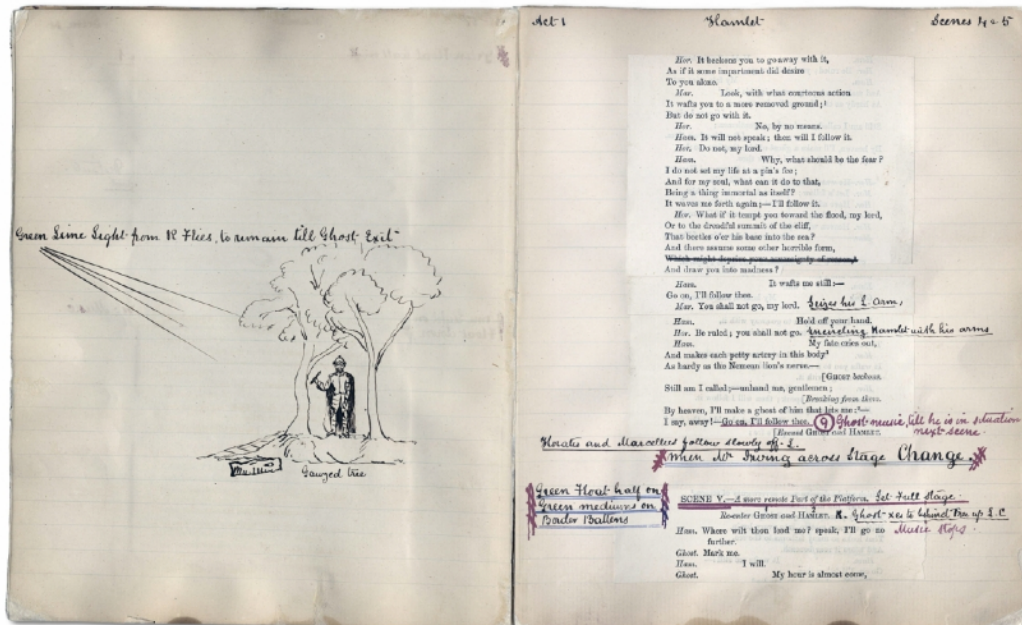


Fig. 38 - Lighting instructions for the ghost scene from a promptbook for Henry Irving's "Hamlet", 1874 - Harvard Theatre Collection, Houghton Library, Shakespeare, William, John Hunter, and Shakespeare Promptbook Collection. 1865. *Shakspeare's Tragedy of Hamlet : with Notes, Extracts from the Old 'Historie of Hamlet', Selected Criticisms on the Play, Etc., Etc. Adapted for Use in Schools and for Private Study*. London: Longman, Green, Longman, Roberts, & Gree

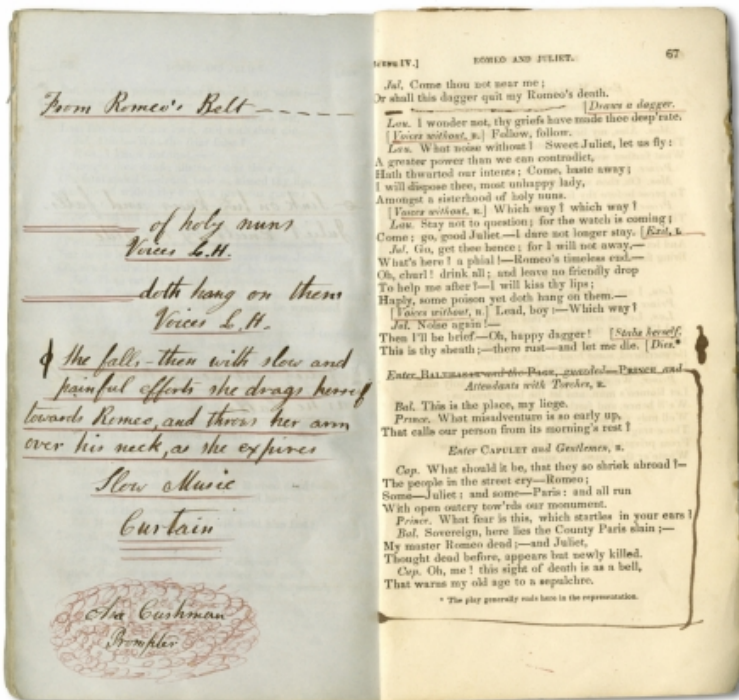


Fig. 39 - Promptbook for "Romeo and Juliet" Starring Charlotte Cushman, circa 1852 - Harvard Theatre Collection, Houghton Library, Shakespeare, William, Epes Sargent, Shakespeare Promptbook Collection, Theatre Royal, Drury Lane, and Park Theatre. 1853. *Romeo and Juliet : a Tragedy, in Five Acts*. New York : Baltimore, Md.: Wm. Taylor & Co., 18 Ann-Street ; Wm & Henry Taylor, Sun Iron Buildings.

The simulacra continuum emerges as an incessant construction of virtualities entangled across hyper-aware textual interfaces, geometric structures and theatrical signification. This continuum, leads to a primal conceptualization of *Virtual Reality*, encountered unsurprisingly, in the writings by French playwright and drama theorist, Antonin Artaud. In his essay, *The Alchemical Theater* (1938), Artaud intertwines alchemy and theater as *virtual arts*⁶², in which both are concerned with the signification of simulacra and both are enacted through a theatrical vocabulary; in alchemy, the series of symbols which direct the pursuit of material transfigurations are interpreted and performed as spiritual *doubles* of matter, whilst one frustratingly (and endlessly) awaits for these transfigurations to be “realized actually and materially”⁶³. Concurrently, theater, as Artaud argues, is the spiritually enacted *double* of reality, perpetually existing as an illusion:

All true alchemists know that the alchemical symbol is a mirage as the theater is a mirage. And this perpetual allusion to the materials and the principle of the theater found in almost all alchemical books should be understood as the expression of an identity (of which alchemists are extremely aware) existing between the world in which the characters, objects, images, and in a general way all that constitutes the *virtual reality* of the theater develops, and the purely fictitious and illusory world in which the symbols of alchemy are evolved.⁶⁴

The conjunction of the words “virtual” and “reality”, have been consciously curated throughout the previous sections, in order to introduce an analog conceptualization of virtual reality from the prism of its theatrical genealogy. Artaud’s *alchemic theater* is consolidated as a mirage of a reality which is forever unattainable; the virtual reality in which this mirage unfolds, stages a

⁶² Antonin Artaud, *The Theater and Its Double*, 1958. 48-49

⁶³ Ibid.

⁶⁴ Ibid.

materially paradoxical space, in which reality is embodied, made *tangible* (it is a world of "characters, objects, images..."), yet intrinsically remains as an imperfect double. Liminal, and invariably superimposed in an endless conflict, this virtual reality, like the alchemic process, demands the embrace of deconstruction and transformation of form and matter, "through a state of corruption"⁶⁵. The endless pursuit of resolution, leads to the re-contextualization of theater, not as stable and reliable system, but as a flawed virtuality, "that does violence to itself: installed on the stage, it is both here and now and yet also there and then. By being both, it is also neither. Its purity is thus inseparable from the miasma, the plague, the impure: its life inseparable from its death"⁶⁶.

Artaud's conceptualization of an analog virtual reality, interfaced across imagination and storytelling and entangled as an immersive system of contradictions and negotiations, resonate with the concepts which have consistently preoccupied my artist practice, especially in relationship to the signification of space as a virtual reality that is inherently unstable. Furthermore, and resonating with Artaud's concepts, Bertolt Brecht's Epic theater intertwines the semiotics of spatiotemporal signification with relationships of conflict that extend beyond a monolithic and stable representation of reality:

...epic theater holds up semiosis for analysis: the elements of dialogue, scene design, lighting, music, costume, sound, and actors' movement are separated and set into conflict. As always in theater, spatio-temporality is the means through which ideology is codified, but epic theater relentlessly exposes the volatility of these codes: one space-time construct may encode ideological systems that are antithetical to each other. Epic theater

⁶⁵ Ann Demaitre, "The Theater of Cruelty and Alchemy: Artaud and Le Grand Oeuvre," *Journal of the History of Ideas* 33, no. 2 (April 1, 1972): 237, <https://doi.org/10.2307/2708871>. 244

⁶⁶ Samuel Weber, "11. "The Virtual Reality Of Theater": Antonin Artaud," in Fordham University Press eBooks, 2020, 277–94, <https://doi.org/10.1515/9780823238675-014>. 292

thus draws our attention to the contradictions within and among these ideologies rather than trying to reconcile them by submerging them under one seamless aesthetic effect.⁶⁷

Alchemic virtualities, where “purity is thus inseparable from the miasma”, distilled, in incredibly poetic language, the mise-en-scene which unfolds incessantly throughout my work. Pursuing these systems of contradiction permeate the way I approach and artistically engage with spatial technologies as performative interfaces.

⁶⁷ Sarah Bryant-Bertail, *Space and Time in Epic Theater: The Brechtian Legacy* (Boydell & Brewer, 2000). 7

Praxis and Performance: Applied Research

The virtual reality which inhabits the alchemic theatre, expands beyond it and spills into the construction and signification of Virtual, Extended and Augmented Realities, this applied research has been directly inspired by artworks and performances, which have undertaken stimulating explorations where these two virtualities merge, are staged and performed. Virtual Reality (VR) head interfaces present a myriad of possibilities in which they can elicit exciting ways to explore divergent storytelling frameworks and present alternative and speculative worlds,⁶⁸ the work titled *Osmose* (figs.40-41), by Char Davies, is among one of the first artworks to explore the use of VR devices for immersive and interactive performances, creatively subverting set conventions on the usage of these technologies. It intersected the use of 3D computer graphics, immersive 3D sound, a VR headset (or head-mounted-device) and real-time motion tracking which used breathing and balance data as locomotion input to traverse a multi-dimensional virtual space. The performative aspect of this work permeates the experience of the visitor from start to finish; from carefully donning them with the VR headset and their motion-tracking vest, to the staging and light design of the space around them, creating a mise-en-scene for an intimate and encompassing experience which enacted a simulacra of floating throughout deep water-worlds. The immersive nature of this work and the use of breath as the control input to move through the various virtual spaces, transformed the way the audience perceived and performed their own bodies, further inspiring ways in which alternative ways of interaction completely alter the embodiment and signification of place:

⁶⁸ Janet Horowitz Murray, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (National Geographic Books, 1998). 13-93

...traditional interface boundaries between machine and human can be transcended even while re-affirming our corporeality, and that Cartesian notions of space as well as illustrative realism can effectively be replaced by more evocative alternatives. Immersive virtual space, when stripped of its conventions, can provide an intriguing spatio-temporal context in which to explore the self's subjective experience of "being-in-the-world"—as embodied consciousness in an enveloping space where boundaries between inner/outer, and mind/body dissolve.⁶⁹

Osmose demands total immersion in order to alter the audience's perception of space, time and self, creating a highly personal, yet isolating, experience. However, severing the user's visual and auditory senses from reality, consequently limits movement and engagement with the present reality unfolding around them. Through this obfuscation, some of these VR experiences become physically and socially alienating, where virtuality replaces reality altogether. Whilst isolation and alienation are concepts that I explore throughout my works developed for VR headsets, the idea of an alienation that is nested in a mirage of collectivity and communion, like a cruel optimist jolt, intrigued me and motivated a focal point to seek interfaces which can position performers and audiences within this liminal space.

The negotiation between complete immersion and sacrificing collective and spatial interactions has been occurring ever since VR head-mounted-displays emerged. When the interface is demoted to a secondary plane, we encounter scenes, occurring across VR film festivals, (figs. 42-43) where audience members are all sitting in small chairs, and whilst they are sharing the same physical space, they are all experiencing wildly different virtual realities which are not interconnected through content or networked digitally. In these virtual reality

⁶⁹ "Immersence," n.d., <https://www.immersence.com/>.

showcases the VR headsets are merely used to display content, and not as an element of signification itself.



Fig. 40 - “*Osmose Immersant*, image from the video installation of *Osmose*” (1995) - “Immersence,” n.d., <https://www.immersence.com/>.

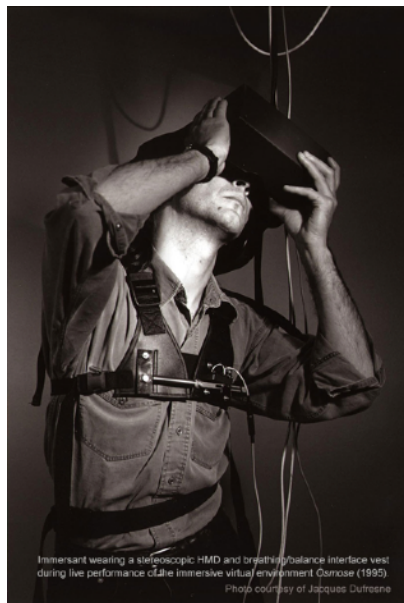


Fig. 41 - “Immersant wearing a stereoscopic HMD and breathing/balance interface vest during live performance of the immersive virtual environment” (1995) - “Immersence,” n.d., <https://www.immersence.com/>.



Fig. 42 - Attendees at the *Venice VR Expanded 2017* festival, each immersed in a different VR film. - “The Films of Venice Virtual Reality Section,” La Biennale Di Venezia, September 1, 2017, <https://www.labiennale.org/en/news/films-venice-virtual-reality-section>.



Fig. 43 - Virtual reality presentations at the 2019 Denver Film Festival can accommodate groups of as many as 15 people. - Ed Sealoover, “Arts and Culture: Denver Film Festival Offers More Entry Points Than Ever to Attract a Wider Audience,” *Denver Business Journal*, October 18, 2019, <https://www.bizjournals.com/denver/news/2019/10/18/denver-film-festival-2019.html>.

However, artists, theater and dance practitioners have explored and expanded on the performative aspects first elicited by Davies, in which the interface becomes hyper-aware; resonating with the textual interface, these headsets are then appropriated, transformed and stretched beyond simple carriers of content. Treated as an element of dramaturgy, the moment these interfaces enter a public stage, they are signified and connected to space through theatrical gestures, which are most intriguing when they are being performed at multiple points of view and experiences. The VR film/installation/performance titled *The DogHouse* (2014, figs. 44-46), by Joan Knattrup and Mads Damsbo, is staged with a dining table in a darkened room, the table is set for five people and on each plate they can find an Oculus Rift VR headset, five participants are invited to sit at this table during eighteen minutes and immerse themselves inside a first-person perspective. Each participant embodies a particular character, and gets to experience the story only from that point of view; as such, when the short film is over and the VR headsets are removed, participants are thrown back into their own corporality, as noted by Damsbo:

...when they come out they suddenly feel connected in a very weird semi-fictional, semi-real way, as they have experienced 18 minutes together... The participants discuss their own storylines and what happened when they were not present in the room - what the other characters did while they went to bathroom, for example. They want to know the whole truth and reconstruct the story.⁷⁰

Opening up another layer of analog-digital virtuality, whilst these participants are immersed in this virtual dinner, people outside of this experience get to observe five people wearing headsets, sitting together in this *real* table, yet silently embodying their virtual characters. As participants emerge from the virtual diner, and remove their headsets, they remain seated and begin

⁷⁰ Mads Damsbo in an Interview in Youtube - Trailerpark Festival, "The DogHouse Mixing Virtual Reality and Film," September 17, 2015, <https://www.youtube.com/watch?v=ChVbEgwRowM>.

discussing the story they just embodied, thus another virtuality unfolds right there, as this staged dining table once again hosts a lively discussion. These multiple narratives and performances, which transfigure and constantly cross the fourth walls of both cinema and theater, emerge as both isolating yet vibrantly communal experiences.



Fig. 44 - *The DogHouse* (2014). View of the dining table, with 5 participants immersed and embodying another character. - JOHAN KNATTRUP JENSEN, "Skammekrogen // the Doghouse - JOHAN KNATTRUP JENSEN," JOHAN KNATTRUP JENSEN - Writer, Film Director & Artist, May 10, 2023, <https://johanknattrupjensen.com/installations/the-doghouse/>.



Fig. 45 - *The DogHouse* (2014). Screenshot from video trailer. This is the point of view of one of the characters, which a participant will embody throughout the duration of the film. - Makropol, "Skammekrogen Trailer," July 17, 2024, <https://vimeo.com/86497104>.



Fig. 46 - *The DogHouse* (2014). Screenshot from video trailer. This is the point of view of one of the characters, which a participant will embody throughout the duration of the film. - Makropol, "Skammekrogen Trailer," July 17, 2024, <https://vimeo.com/86497104>.

Immersive theater and immersive cinema emerge as performative platforms in which these hyper-aware VR interfaces are being used to envelop the audience inside concurrent storytelling elements. The alchemic theater exists along analog and digital virtualities developing around the audience, centering the ability to create intimacy “...by eliminating the distance between audience members and actors, and placing them in the same physical space together, the existence of the fourth wall is effectively broken down, creating a unique vulnerability and opportunity for connection”.⁷¹

An incredibly powerful iteration on the use of these hyper-aware interfaces to nest multiple points of view and experiences as interconnected virtualities, is the signification which occurs when these interfaces are worn and embodied by professional performers. Both dancers and actors have access to another reality and bridge it to an audience and other performers around them, through storytelling gestures and trajectories. In this sense, the role of the oral storyteller, shifts into a multimodal one, which performs at multiple levels of signification.

Occurring simultaneously to these negotiations with VR interfaces, which oscillate between immersion and isolation, is the technological development of Mixed Reality(MR) devices. Ivan Sutherland’s *Sword of Damocles* (1968) was one of the first devices to incorporate see-through displays, yet the weight of the device required it to be attached to the ceiling and held above the head. Rapid technological development of smaller and more capable Graphics Processing Units (GPU) and Near-eye Displays (NED), have propelled the development of more accessible and wearable interfaces, such as the Microsoft Holo Lens. These devices merge and

⁷¹ Amelia Stevens, “How VR and AR Are Changing the World of Immersive Theater — AMT Lab @ CMU,” AMT Lab @ CMU, August 16, 2022, <https://amt-lab.org/blog/2021/8/how-vr-and-ar-are-changing-the-world-of-immersive-theater>.

transpose the virtual and the real space by projecting three-dimensional holograms across see-through lenses, permitting the user to retain awareness of their surroundings, thus enabling them to inhabit and physically traverse a place of *in-betweenness*.

Although fascinating, these MR devices had always been out of my reach due to their prohibitive cost (upwards to three-thousand dollars), it wasn't until the beginning of 2023 that, when perusing through some *old* equipment in storage at the University, I stumbled across an eight-year old Holo Lens device. I was ecstatic by this discovery and set out to develop *Assemblage Against Entropy* (2023, figs. 47-48), an Extended Reality live performance, in collaboration with dancer Emily Schoen Branch, it was presented at the DXARTS Fall Concert in October 2023, at the Meany Hall—Katharyn Alvord Gerlich Theater. Inspired by the theatrical staging of the film *Dogville* (2003, fig. 49) by Lars Von Trier, where architecture is entirely signified through a two-dimensional drawing on the floor, and resonating with latent diagrams as significations of space; *Assemblage Against Entropy* made use of the Holo Lens to transpose a virtual construction of a variegated private space, unfolding across the empty theater stage.

This world, only visible to the dancer, was divided into a series of cluttered rooms, each inhabited by a multitude of fictitious ordinary objects—a room for photographs of imaginary family members, trips and pets; a room containing window frames, another room containing imaginary trinkets and souvenirs. These spaces were all created with a text-to-image Artificial Intelligence (AI) model and then converted into three-dimensional objects, they were imbued with various degrees of metallic or magnetic properties, behaving differently according to the rooms in which they were encountered.

The presence of the dancer, would agitate and attract these objects, generating dynamic clusters of sounds and volatile clutter. In this performance, paradoxical realities unraveled simultaneously accessible to the dancer, however, the audience could only observe an empty stage and glimpse the cluttered virtual world through the dancer's gaze, being projected in a large screen across the stage. This environment of porous thresholds, where the private and the public collided in claustrophobic and chaotic ways, permeated a virtual and sonic embodiment of trajectories traced and choreographed across both the virtual and the real.

Throughout the rehearsals leading up to the public presentation, various algorithms, virtual physics simulations and mechanisms of interaction were actively developed, and continuously being embodied and activated by Emily Schoen Branch across a multitude of intensities and iterations of meaning-making. With each rehearsal, something new and unexpected emerged, about how this virtual world could behave, become stretched, enmeshed within the real, repeated and glitched; the virtual rooms were arranged, scaled and mapped in different imaginary configurations, each of them conjuring different experiences for both the performer and potential audiences.

This active collaboration generated valuable divergent and contrasting pathways of translation and interpretation which could only have happen in a space of active rehearsals, collective and creative synergies, and continuous interactions with these virtual-real spaces of signification. The XR networked system, deploying real-time sonic compositions, experimental C# coding and Python algorithms, become a second performer, responding and evolving around the dancer, profoundly affecting the way space, time and sound behaved across and around the dancer's movements.



Fig. 47 - *Assemblage Against Entropy* (2023)

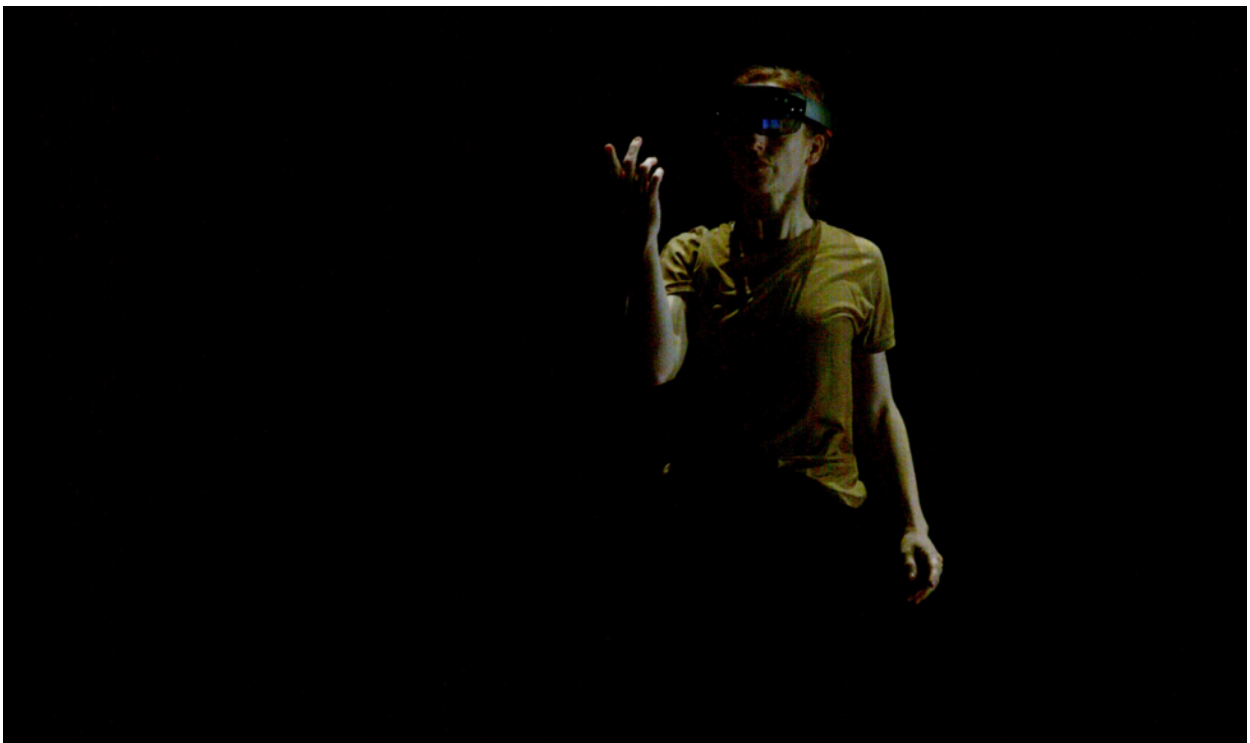


Fig. 48 - *Assemblage Against Entropy* (2023)



Fig. 49 -Stills from Lars Von Trier's film Dogville (2003) - Daniel Portilla, "Films & Architecture: 'Dogville,'" ArchDaily, August 24, 2022, <https://www.archdaily.com/375095/films-and-architecture-dogville>.

The emergence of these devices, in combination with other technologies which permit the augmentation and enmeshing of the real and the virtual, have set forth the term Extended Reality (XR), which encapsulates Augmented Reality (AR), Virtual Reality (VR) and Mixed Reality (MR) technologies. Existing as interconnectedness between media, algorithms, sensors, human-computer interactions, physical space and embodied intelligence, XR, unfolds across multiple dimensions, systems and events happening all at once, resonating as an intrinsically hyper-aware interface, which can be explored through creative-subversive frameworks, further intertwining theatrical signification and performances. Furthermore, the term itself is being constantly reinterpreted, to encompass all kinds of virtual and real entanglements happening both at the analog and digital levels.

This contemporary technological eco-system, resonates across the medieval synergy between oral traditions and the textual interface which produced immense narrative shifts, in which storytelling structures had to be creatively re-encoded, transposed and subverted. Through Extended Reality, encompassing technologies which increasingly merge the real with the virtual in ways akin to theater's *more-real* illusions, we encounter an unpredictable and burgeoning system of confluences between cinematographic and theatrical languages, where multimedia narrative structures and desires to re-encode established languages is explored through wearable interfaces, which augment the body as a digital media transcoder.

Therefore, my artist practice in its desire to move forward into exploring real-time performative systems, identifies the term of XR as a liberating conglomerate from which I can explore unstable alchemic virtualities, where patterns and rhythms can be endlessly reconfigured,

and where ephemeral iterations can enact fluctuating slippages, losses and transfigurations of representation and signification.

This applied research endeavored to generate opportunities to explore the use of spatial computing technologies as ways in which to create and signify virtual spaces. In collaboration with performers, patterns and scores of improvisation were both discovered and transposed from the structures and geometric figures which are compiled across this theoretical research. Furthermore, I continue exploring ways in which virtual, sonic and textual archives of peripheral and residual *things* could be folded back into these performances, expanding them through choreographies and trajectories of repetition.

Enclavados Todos Juntos: XR Live Performance

I have been continuously building a virtual home throughout my artist practice, that emerges as a dense focal point; this home seems to be the same one, yet endlessly expands and coils in and around itself. Like a dysfunctional memory palace, this place is further dilated by the notion of the alchemic theater and the virtualities full of contradictions which are staged within and beyond it. Gaston Bachelard's ontology of inhabiting and signifying place, in *The Poetics of Space*, resonates as another node in this continuum of virtualities negotiating geometries, semiotics and fluctuating spatial constructions which both anchor and destabilize a mirage of self and reality:

...In the theater of the past that is constituted by memory, the stage setting maintains the characters in their dominant roles. At times we think we know ourselves in time, when all we know is a sequence of fixations in the spaces of the being's stability—a being who does not want to melt away, and who, even in the past, when he sets out in search of things past, wants time to “suspend” its flight. In its countless alveoli space contains compressed time. That is what space is for.⁷²

Inspired by the research and the threads that consolidate the chapter Simulacra Continuum, I set out to narrate this house as an construction of spatial relationships and significations, where traversing it becomes a performative score for improvising slippages in translation and transmutations of the outside and the inside (figs. 50-51). Identifying emerging hyperreality platforms as means to enact a dilated and complex explorations of *in-betweenness*, this project, at the intersection of live performance, expanded cinema and algorithmic theater, embody an ever-changing narrative that unfolds real-time through interfaces which augment, an otherwise barren, performative space (figs.50-53).

⁷² Gaston Bachelard, *The Poetics of Space* (Penguin, 2014). 30

This performance was developed in collaboration with dancers Ashley Menestrina and Carolina Marin, it was presented on May 2024 at Meany Hall—Katharyn Alvord Gerlich Theater, as part of the DXARTS Spring Concert. In this collaboration both performers wore a Meta Quest 3, a Mixed Reality headset which encloses completely half of the face. Contrasting with the transparent lenses and opened-half of the Holo Lens, this headset utilizes an array of cameras and two Head-mounted Displays (HMD) to “live-stream” reality back to the user. This mechanism to augment reality, produces a sensation of derealization, as the eyes and the brain are receiving a mediated reality, filtered through tiny screens that produce chroma and lens aberrations at the peripheries of sight. These screens additionally change the focal length with which we are used to perceiving reality, positioned in such a way that the brain gets tricked, reality seems slightly farther away, generating a permeating sense of uncanniness. The experience of reality being reproduced back as an immersive virtuality, prompted an imagination into the micro delays that occur in the technological process to capture and stream back a simulacra, or a hyper-reality — capture multiple streams of both depth and color images, encode them into zeroes and ones, unpack them into a matrix of pixels, relay depth information to the GPU, generate a three-dimensional point cloud, triangulate the position of the user in this reality and then show it back to them as a double of reality— this speculation of micro delays in the construction of a hyper-reality, swayed the decision to utilize this device in order to imagine a virtuality which doesn’t look *modern*, and which exists just slightly *behind* the present.

Together with this quality of existing *out-of-present*, these devices allow an additional level of “live-streaming” through a fast speed wifi network, enacting another set of delays and

translations whilst allowing the audience to embody the performer's point of view, albeit additionally delayed, into this reality simulacra.

In this work, hands figure as primordial mediators, which encode and decode systems of knowledge, emerging as an inflection point between realities, virtualities and corporealities. Descending from a lineage of significations, from hand mnemonics as analog interfaces, to modern iterations of *data gloves*,⁷³ which digitally interface and augment hand gestures through wearable interfaces; hands have always been portals and topologies to access and perform virtualities. The GPUs in the devices worn by the performers permit the integration of cutting edge machine learning and computer vision algorithms which track hands, recognizing and learning new gestures without any additional hardware to be worn by the performer, this allows for the exploration of interactions with virtual objects through increasingly organic gestures, where objects, and their virtual qualities — weight, friction, magnetism, volatility — incite the brain to hallucinate their presences as quasi-real simulacra. These objects require the actuation of real muscles and hand postures in order to be manipulated, increasing a dramaturgy that unfolds across uncanny layers of reality and virtuality. .

As incredible as all of these technologies sound, when transposed into a performative stage and approached as hyper-aware interfaces, they emerge as a system of *mouvance*; of noise, frustration and extreme instability, which can turn into latent moments of chaos: the cameras stop tracking hands and they become disembodied, the machine learning algorithm classifies the performer's bare feet as hands and pulls objects towards them. The depth sensors can lose their

⁷³ A data glove or “Wired glove”, is “A graphical input device consisting of a glove with sensors that detect hand and finger movements. The hand position is usually determined by a sensor on the back of the glove. The finger positioning is determined by fiber optics”. - John Daintith and Edmund Wright, *A Dictionary of Computing* (OUP Oxford, 2008).

virtual anchors and shift the whole world in unexpected configurations. A remnant safety warning from older devices still pops-up when the user leaves the “safe area”.

These fluctuations between chaos and functionality, resonate with embracing glitches in these systems as a methodology of re-appropriation and signification of ambivalence which in turn stimulate a performative space inspired by Brecht’s gestures of defamiliarization, estrangement and alienation, in his essay *Short Description of a New Technique of Acting* (1933-1947), Brecht points to a state in which “...the actor does not allow himself to become completely transformed on the stage into the character he is portraying... he never tries to persuade himself (and thereby others) that this amounts to a complete transformation”,⁷⁴ in consequence, in navigating this eco-system of uncertainty, performers navigate and improvise in this world in a state of superposition, both as an incomplete or fragmented characters and as themselves, as an endless abstraction machine, signifying place and attachment within this system of extreme variability. Performers enter a liminal world which has to be *played* in order to (or attempted to) be understood and discovered. The space is always transforming itself between the imagined and the real, where the characters that performers play also emerge as assemblages of virtualities and realities. Never getting consolidated, because the world itself constantly fails and refuses to be spatiotemporally defined.

Stretching this interface, and becoming hyper aware of its materiality and plasticity, became a central point to develop a latent place of memory, of the frustrating *homely*, which could be discovered and signified through iterative explorations and collective significations of this virtual space. In this place the performers become non-verbal storytellers, where gestures,

⁷⁴ Bertolt Brecht, *Brecht on Theatre: The Development of an Aesthetic* (Macmillan, 1964). 137-138

sounds and rhythms produced by their interactions with this unstable familiarity construct a storyteller that is as much discovering a territory of contradictions for themselves as it is narrating it for others.



Fig. 50 - Still from live performance *Enclavados Todos Juntos* (2024)



Fig. 51 - Still from live performance *Enclavados Todos Juntos* (2024)

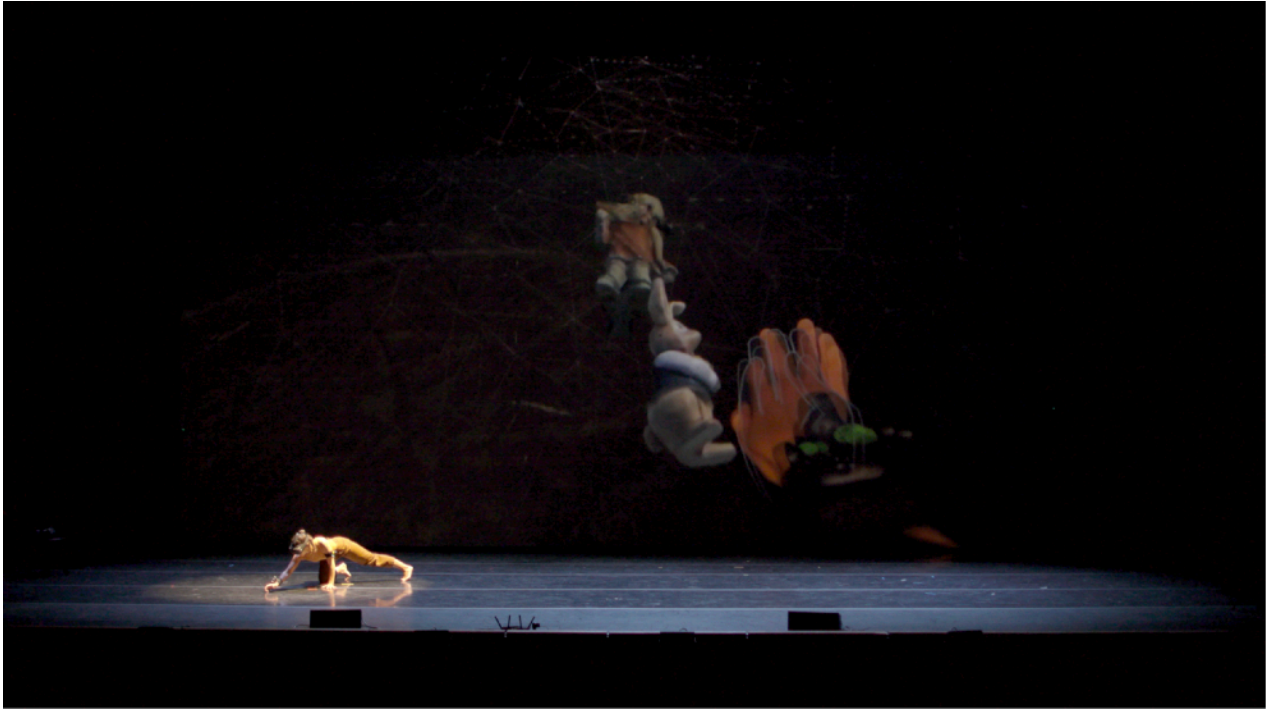


Fig. 52 - Still from live performance *Enclavados Todos Juntos* (2024)

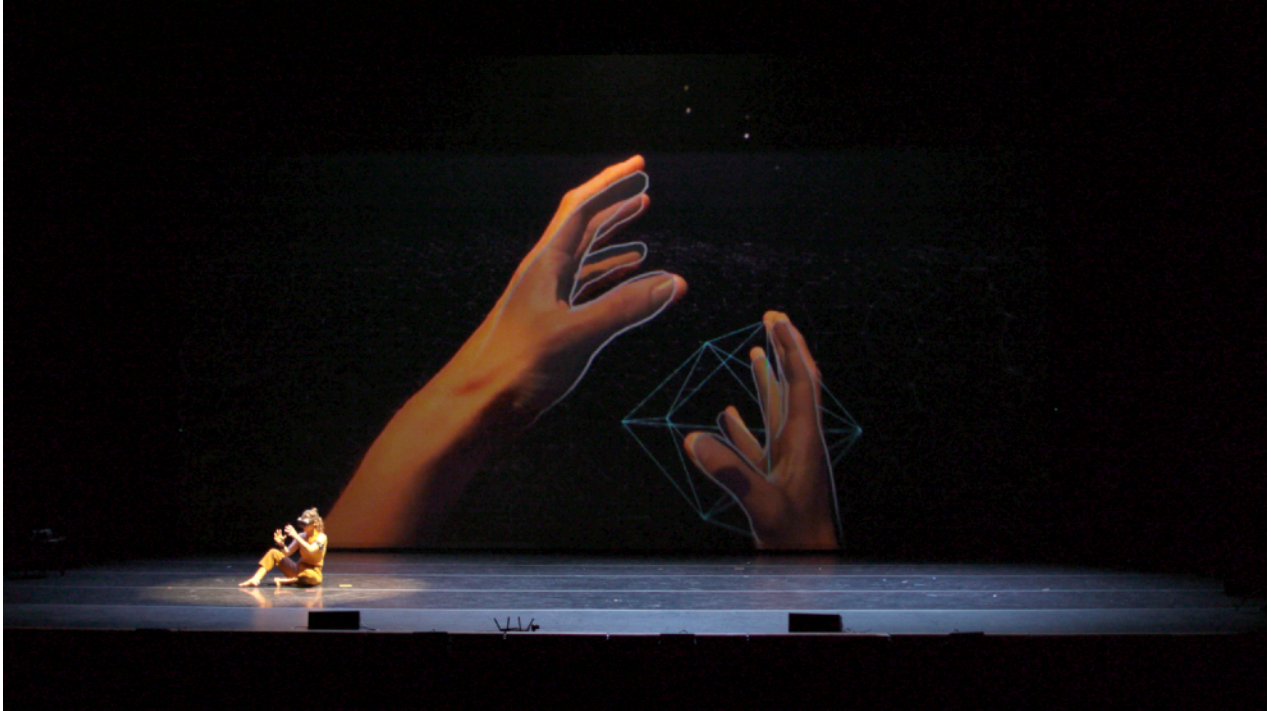


Fig. 53- Still from live performance *Enclavados Todos Juntos* (2024)

This project was further inspired by the photographs by Dana Salvo (figs. 54-56), which depict ordinary, yet highly baroque, assemblages of cultural syncretism and variegated hyper-realities, together with the conceptualization of inhabiting a (*new*) baroque, as a place *in-betweenness* modernity, as captured by Gregg Lambert in *On The (New) Baroque*:

Earlier on I defined the Baroque as occupying the exact middle of modernity, in the sense that it can be understood to recur historically precisely in the moment when one tradition of modernity exhausts its own possibilities and transitions into another, and even as the symptomatic principle of this exhaustion. It is important to note, however, that the signs of exhaustion and decay — which have been ascribed to the term “Baroque” from the very beginning — are not marked by attrition and lethargy, but rather by the sudden burst of frenetic and frenzied creativity”.⁷⁵

The virtuality which would be transposed into the stage, was developed inspired on the material qualities of the objects which make up the baroque assemblages on Salvo’s images; I collected some objects which look familiar yet quite culturally odorless: a porcelain figurine of a rabbit, an amorphous clay figurine that a child must have made and given to their parents, simple geometric objects, a wooden figure model, among others (figs. 0-3). These objects instead of being light and easy to grab, were made into heavy objects, which in turn would be highly sensible to any swift movement, hurling beyond the stage and into oblivion. The relationships and significations occurring between the performers, and their exploration of this place of memory, unfolds at the thresholds of something very intimate, yet happening within the public space of a performative event. Echoing Lambert’s thoughts:

...the staging of the world as a place capable of holding internal replications within opened up a rich cultural epistemology founded on the recursive play of insides and outsides [...] On the whole, then, a concern with illusionism, wonderment, and the

⁷⁵ Lambert, Gregg. *On The (New) Baroque*. Davies Group Publishers, 2008. 170

recursive and unstable relations between the real and the unreal in a now-theatricalized lifeworld characterized the Baroque.”⁷⁶

Consolidating an bittersweet attachment to this place existing in-between, through repetition and inhabitation, further inspired the encoding of both frustration and wonderment into a choreography of exploration and questions instead of delineated trajectories. This approach resulted in fascinating discoveries conveying across intensities of playfulness transforming into frenzied frustration attempting to hold things, to make them remain and stay close.



Fig. 54 - *Wall with Dolls, Mexico, C-Type Color Photograph, 16 x 20; 30 x 40*, Gallery, Clark. “Dana Salvo — Clark Gallery.” Clark Gallery, March 11, 2021. <https://www.clarkgallery.com/artists/dana-salvo>.

⁷⁶Lambert, Gregg. *On The (New) Baroque*. Davies Group Publishers, 2008. 8



Fig. 55- *Home altar with fan and thermos*, C-Type Color Photograph, 16 x 20; 30 x 40, Gallery, Clark. "Dana Salvo — Clark Gallery." Clark Gallery, March 11, 2021. <https://www.clarkgallery.com/artists/dana-salvo>.



Fig. 56- *Home altar with Ritual Soups, Mexico, C-Type Color Photograph, 16 x 20; 30 x 40*, Gallery, Clark. “Dana Salvo — Clark Gallery.” Clark Gallery, March 11, 2021. <https://www.clarkgallery.com/artists/dana-salvo>.

All Coding is Always Transcoding: A Research Laboratory

Concurrently to researching oral culture and textual studies, I endeavored to immerse myself, as much as it was possible, in performance studies and practice. Actively seeking collaborations with both actors and dancers, I could begin exploring some of the fascinating entanglements across orality-textuality structures and the transpositions to stage them and unfold them across time and space. This convergence on rehearsing and embodying virtualities, together with the concurrent research on medieval textual technologies and participating in Drama classes, especially Elementary Directing, introduced me to spaces of active collaboration with both dancers and actors, where I was able to engage in an entangled process of textual analysis. On the one hand, I was analyzing manuscripts, encountering systems of extreme textual variability and discovering fascinating parallels in which virtualities have been performed across centuries; on the other hand, I was studying and dissecting play scripts, such as *The Glass Menagerie* (1944) by Tennessee Williams and *Waiting for Godot* (1949) by Samuel Beckett, where virtual realities are constructed as fluctuating assemblages of the absurd everyday and magic-realism. Both textual analyses involved spatial thinking, speculating and imagining narratives unfolding throughout visual representations of space, drawing and inferring patterns of movement, and discovering, together with performers, ways to translate and re-interpret text from its stable printed form back into the uncertain and highly variable multidimensional qualities of oral and embodied performances. These processes of dramaturgy, embodiment and textual to performative transpositions, inspired the development of *All Coding is Always Transcoding*, a week-long dynamic research Laboratory (figs. 57-58), which took place at the Meany Studio Theater throughout April 15th to 19th, 2024.



Fig. 57 - Ewa Trębacz (left) and Ashley Menestrina (right) during the research Laboratory.



Fig. 58 - Carolina Marin (left) and Maria Thrän (right) during the research laboratory.

This research laboratory was conceived as a place in which to explore the collaborative creation of performative scores, test and experiment with Virtual and Extended Reality technologies as performative interfaces which could be stretched within and beyond their limits, to augment and intertwine the real and the virtual space.

It involved the participation of colleagues, students, professors, researchers, actors and dancers who approached this space with an incredible motivation and interdisciplinary curiosity which created a fantastic space to test, create and, of course, fail and test again. A main concern to sustain as a permeating dynamic within this laboratory was to focus on collectively and freely experimenting and discovering the expressive capabilities of these technologies when migrated into a space of performative enquires, for this reason, the priority was not on a particular set of concepts, but to embrace experiential learning and playfulness to discover ways in which to signify synergies between these systems of extreme variability, simultaneous virtual realities and sedimentary embodiment.

Throughout the conversations that developed during this lab, the word *production* emerged as a beacon, in the sense that, to create these Experimental Media works, we should ideally see them as collaborative productions, of translations and interpretations across disciplines, in a similar way that films, theater plays and manuscripts are, and have been constructed, involving and growing from the knowledge of artists in their own distinct fields of expertise, who bring in a set of skills, modes of signification, distinct aesthetics and conceptual vocabularies to augment the scope of expression and meaning-making of a long-form project. This section provides an overview of the technical set-up and some of the technologies used

throughout the research lab, before discussing some of the expressive parallels discovered throughout this process.

This research laboratory invited participants from Drama, Dance, Music and DXARTS departments, to test and explore Extended Reality systems for the formulation and implementation of performative scores and interactions for human-machine improvisations. Four main axis of research permeated this laboratory as outlined below:

1. The creation and organization of this laboratory as a blueprint to formulate future activations for interdisciplinary research. Identifying the inherent need for this research to be continuously built upon across a variety of approaches, staging and performative temporalities, in order to further cultivate a culture of hyper-aware interfaces where embracing systems of extreme variability incentivize a creative subversion in a technological and simulacra continuum. Within this rubric, it became important to understand how a research lab could be accessible to a wider range of participants, across a wide spectrum of coding, performative and storytelling skills.
2. The exploration of performative scores as questions and prompts to ask of the virtual environments and of the various performative styles which were enacted throughout this research. The laboratory's main objectives focused on discovering unique performative prototypes, languages and interactions that expand the performative possibilities of technologically mediated virtualities-realities.
3. Approaching interfaces through the technological continuum which has been woven throughout this research, activating commercially-available devices and open source code, expanding the research scope to algorithms, sensors and human-computer interaction devices

which are not necessarily the newest, in order to explore them as elements of dramaturgy and signification, augmenting their interdisciplinary and narrative reach through their materiality.

4. Documentation of rehearsals, encounters and exploration as a central node to an archive of possible applications and further conceptual enquiries which can subsequently materialize as interdisciplinary and collaborative research initiatives.

Overview of the laboratory

Software:

- **Unity Game Engine:** Handling spatial computation and real-time motion capture.
- **TouchDesigner:** Python-based visual programming interface for multimedia and Computer Vision.
- **Supercollider:** Audio synthesis and algorithmic composition.
- **MaxMSP:** Visual programming language for music and multimedia.

Virtual-reality interactions:

- Mapping the performative space with VR sensors.
- Position and motion tracking sensors.
- Manipulation of virtual elements such as sound, objects and physical simulations.
- Real-time interactions with sound and visuals.
- Immersive sound spatialization.

Participants:

- Sound and Tech: Daniel Peterson & Laura Luna Castillo
- Documentation & Tech: Maria Thrän

- **Performers:**

- Carolina Marin
- Derek Crescenti
- Emily Schoen Branch
- Ashley Menestrina
- Ewa Trębacz
- Students from DANCE 217 (30 students) with Derek Crescenti
- Students from DX482 (7 students) - with Professor Tivon Rice, Cristina Brambila & Eunsun Choi
- Students from DX490 (5 students) - with Professor Richard Karpen and Wei Yang
- Grad students from DRAMA (13 students) - with Professor Adrienne Mackie

Technical set-up

The week-long laboratory, first and foremost consisted on preparing the performative space for a variety of explorations. As this research is concerned in exploring ways in which the virtual and the real can be interfaced, a spatial computing system was established around the perimeter of the stage in order to be able to track and triangulate the position of the performers wearing the trackers (figs.59-62). This system utilizes four beacons or *lighthouses*, which relay Cartesian coordinates (x, y, z) to the Unity game engine via Wi-Fi network, they are installed diagonally facing each other, in the outer corners of the stage, leaving a space for performance of roughly ten meters in diameter. The lighthouses constantly shoot beams of infrared light which gets bounced back when they hit one of the sensors in the wearable trackers. By having four sensors,

the position of the trackers remained mostly quite precise, as at any time, three sensors would be able to “see” the tracker, accounting for possible occlusions. This resulted in highly precise spatial tracking which enabled performers to engage with a wide range of movements and punctual gestures. The coordinates received from the sensors could then be used to drive any kinds of behaviors inside the game engine.

One of the most interesting applications for this system, is exploring the creation of a spatial virtual double, which, in a similar concept as in *Assemblage Against Entropy*, can unfold and superimpose a simulacra of the performative space in a 1:1 scale. This enables performers to embody a virtual object, and both, simultaneously inhabit and traverse space existing within the same coordinates. Through this spatial set-up, virtual sound objects could be distributed across the virtual space, become activated, controlled and spatialized by the performers; with this goal in mind, a six-speaker array, arranged in a hexagonal formation along the perimeter of the stage, was created for spatializing a sonic archive of 4-channel (first order) ambisonic sounds. Additionally, a three-dimensional virtual sound map (fig.63-64) was created from the archives of 4-channel sonic samples provided by Ewa Trębacz. Using *Librosa*⁷⁷, a Python algorithm to perform sonic feature extraction, the sounds were analyzed and organized into clusters of similar spectral features.

The sonic spectral data was then fed into an algorithm in Unity which transposes the sonic spectral features into Cartesian coordinates, generating and placing a virtual object for each

⁷⁷ McFee, Brian, Colin Raffel, Dawen Liang, Daniel PW Ellis, Matt McVicar, Eric Battenberg, and Oriol Nieto. “librosa: Audio and music signal analysis in python.” In Proceedings of the 14th python in science conference, pp. 18-25. 2015.

sonic sample. The resulting sound map could be resized to the scale of the performance area, thus transposing a sonic virtual reality across real space.

This set-up and the staging of virtual spaces within it, was then activated and explored by participating actors, dancers, musicians and students, who would come into the performative stage and engage with this spatial interface as solo performers, duos, trios and as whole ensembles, leaving traces of their discovered trajectories, resulting in highly diverse and contrasting iterations and interpretations, around and beyond these confluent virtualities. This technologically-augmented stage, together with speakers and sensors, remained the same throughout the research lab; there were only two three-dimensional sound-maps, which we would then choose to distribute across the space. These sonic virtual objects were only glimpsed by the performers through small representations, projected on screens at the peripheries. However most performers decided to rely on the sounds themselves to explore the space.

The virtual stage within this arrangement awaited in a latent state, until a performer would enter the space. Each performer immediately began traversing and constructing a personal dramaturgy, encountering different sonic localities, highly specific to their movement and performative style. One performer would approach the space through smaller and punctual gestures, embodying a percussive character; another would traverse it with big, encompassing movements, covering the whole diameter in a few moments, creating a cacophonous assemblage. Patterns of signification began emerging across the sonic virtuality spreading around them. In this sense, the more the space was discovered and rehearsed through specific trajectories, the more it consolidated into a tangible virtual architecture. Very soon portions of these three-dimensional sonic clusters, were being signified as specific rooms and thresholds of varying

heights and widths. The construction of distinct spaces prompted each performer to generate markings on the floor, delimiting sonic events and gestures which could be repeated and iterated to create meaning and tension—or a release—through spaces of silence and boundaries between sonic timbres.

Throughout the duration of this research lab, it was rare that all the performers would be able to attend at the same days and times; when the first markings appear on the floor, and a day later, were encountered by a different performer, the markings became a diagram to make sense of, inviting to be deciphered and appropriated in an attempt to conjure and embody the virtuality which had been summoned by the previous performer. The space was marked with neon-colored tape, corresponding to different diagrams done by each performer, trajectories and sonic choreographies built up across the stage, each representing very specific forms of embodiment and inhabiting space. Richard Schechner's concept of *restoration of behavior*, additionally resonates with approximating a methodology of collective authorship and interpretation through improvisation and iterations, which further obfuscates the boundaries (if they were ever there) between the real and the virtual, the imagined and the mythological:

Restored behavior is living behavior treated as a film director treats a strip of film. These strips of behavior[...] can be rearranged or reconstructed; they are independent of the causal systems (social, psychological, technological) that brought them into existence. They have a life of their own. The original "truth" or "source" of the behavior may be lost, ignored, or contradicted—even while this truth or source is apparently being honored and observed. How the strip of behavior was made, found, or developed may be unknown or concealed; elaborated; distorted by myth and tradition. Originating as a process, used in the process of rehearsal to make a new process, a performance, the strips of behavior are not themselves process but things, items, "material." Restored behavior

can be of long duration as in some dramas and rituals or of short duration as in some gestures, dances, and mantras.⁷⁸

Restoring behaviors through rehearsing them, inhabiting them and generating personal and collective rituals, generated a set of diverse performances and spatial narratives, reiterating orality and textuality as ways in which we create memories, personas, improvisations and systems of extreme, yet concurrent variability,

Restored behavior can be put on the way a mask or costume is. Its shape can't be seen from the outside, and changed. That's what theater directors, councils of bishops, master performers, and great shamans do: change performance scores. A score can change because it is not a "natural event" but a model of individual and collective human choice. A score exists, as Turner says (1982a, 82—84), in the subjunctive mood, in what Stanislavski called the "as if." Existing as "second nature," restored behavior is always subject to revision. This "secondness" combines negativity and subjunctivity.⁷⁹

The performative explorations which happened throughout this laboratory, building up and weave in the continuum of crafting virtualities, both analogue and digital, and the reverberations of oral culture across these interfaces.

The next chapter closes this tapestry across the *mise-en-scene* of the virtual; embracing this methodology, I set out to imagine what different kinds of performative virtualities might look like, how they might be rehearsed, discovered and performed. Folding and unfolding performances and significations into assemblages of *cruel optimism* and ambivalent place attachments.

⁷⁸ Richard Schechner, *Between Theater & Anthropology* (University of Pennsylvania Press, 1985). 36

⁷⁹ *Ibid.* 37



Fig. 59 - Derek Crescenti wearing a motion capture tracker sensor on the right wrist, interacting with virtual sonic objects in virtual space.



Fig. 60 - Ashley Menestrina (left) and Ewa Trębacz (right) wearing motion tracker sensors on their wrists. These sensors allow for very precise tracking, enabling Trębacz' gestures, happening at very minimal scales, to actuate and interact with sonic objects clustered virtually around the wrist. Menestrina, on the other hand explored wider gestures in space, creating rhythms of macro and micro scales.



Fig. 61 -Emily Schoen Branch wearing five motion tracker sensors, tracking wrist, hand, torso and ankles.



Fig. 62 - Derek Crescenti and Carolina Marin embodying a virtual object with spin and coil mechanisms (left). Ashley Menestrina and Carolina Marin embodying a virtual armature.

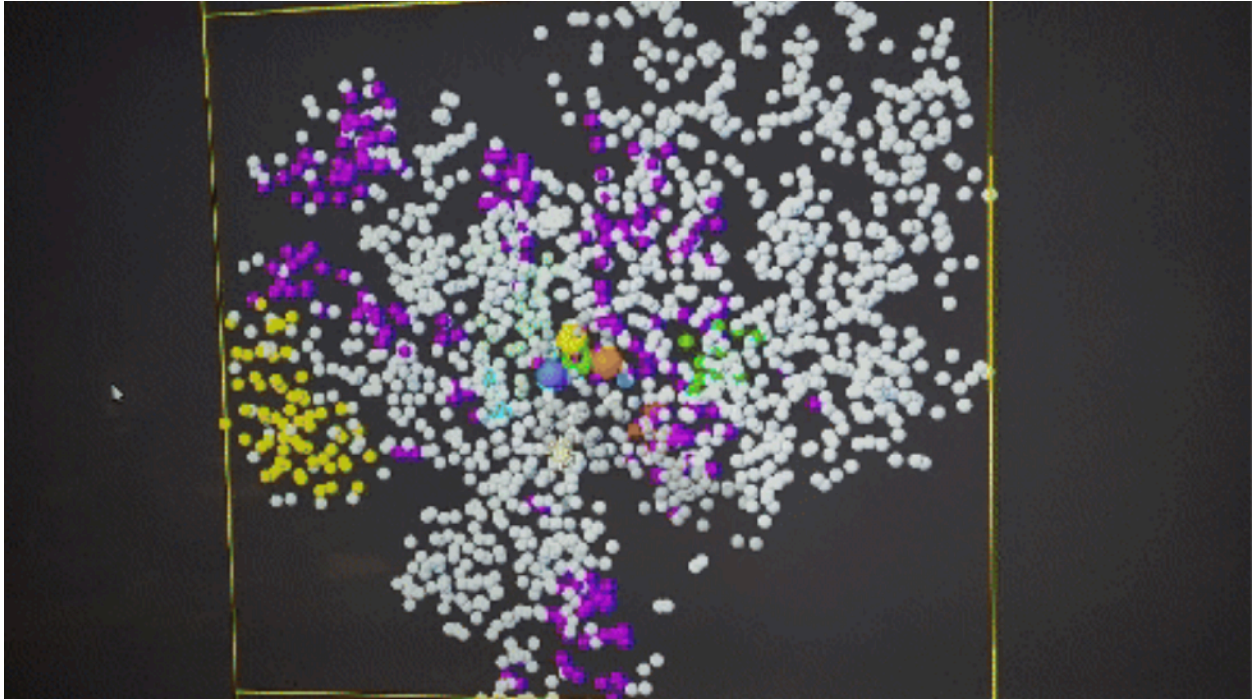


Fig. 63 - Top-view of the virtual, three-dimensional sound map, occupying the performative stage on a 1:1 scale.

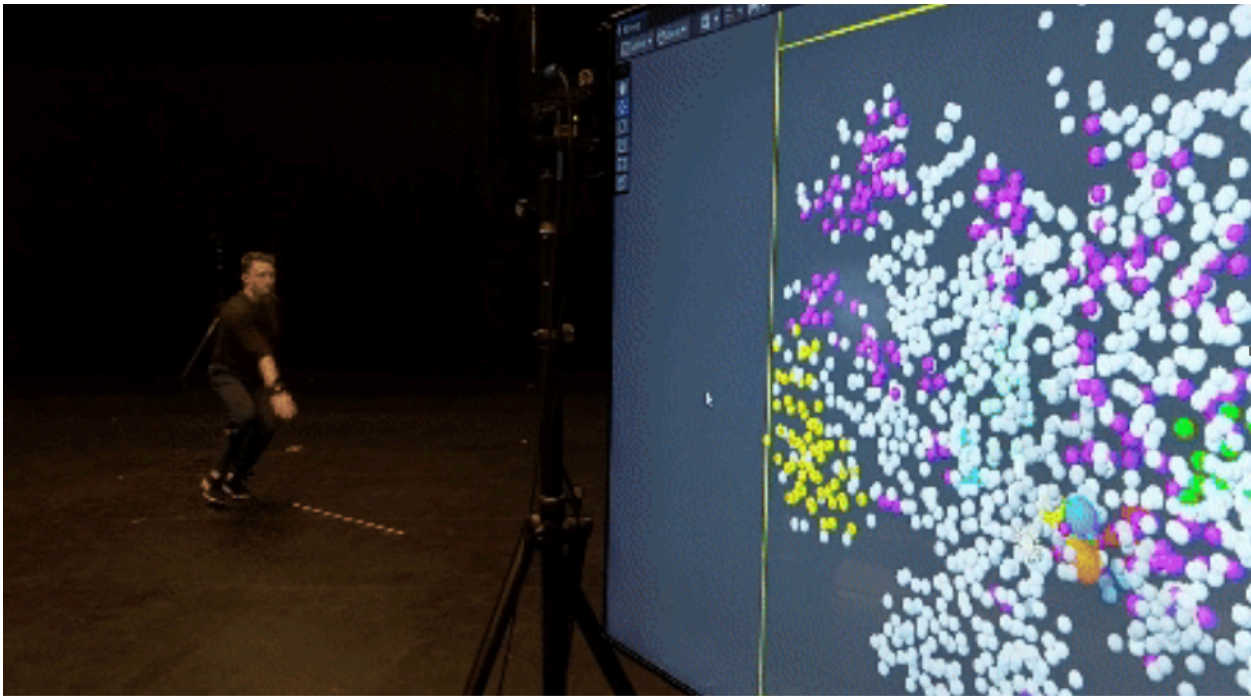


Fig. 64 - Derek Crescenti activating certain sonic clusters according to the trajectory scored on the floor of the stage.

Systems of Extreme Variability

These iterations of applied research illuminated several aspects which could only become truly apparent once things were being staged, rehearsed, performed, and finally presented in front of a live audience. The concepts and theorizations elucidated, throughout this dissertation, all interact at different intervals and rhythms within systems of extreme variability, which are enacted through the confluence of spatial technologies and live performance environments. Across *Assemblage Against Entropy*, *Enclavados Todos Juntos* and the research laboratory, *All Coding is Always Transcoding*, boundaries are demanded and created by these spatial technologies. In the use of MR headsets, vestigial boundaries were created as a safeguard for the user when immersed in obfuscating Virtual Realities, and by using motion capture systems, boundaries are created for infrared beacons to optimally read and convey the position of sensors. A pivotal quality emerges within these systems and their boundaries when they are transposed into a performative stage. Thresholds become transgressed when interfaces are approached as hyper-aware interfaces, explored and pushed by the performers towards divergent and peripheral areas in which the algorithms, sustaining these systems, lose their own sense of familiarity with their programmed concept of usage and reality.

Therefore, the stage in which these systems of extreme variability exist is in a permanent state of negotiation and translation, where analog and digital virtualities constantly fluctuate within relationships of an inside and an outside that is arbitrary, unexpected and is always moving in space. Performers, algorithms and virtual objects resonate with the images conjured by Bachelard in *The Dialectic of Outside and Inside*, where "...one no longer knows right away whether one is running toward the center or escaping... Thus, the spiraled being who, from

outside, appears to be a well-invested center, will never reach his center. The being of man is an unsettled being which all expression unsettles. In the reign of the imagination, an expression is hardly proposed, before being needs another expression, before it must be the being of another expression”.⁸⁰

This quality creates an incredibly complex dynamic of theatrical and semiotic signification within a performative space that is hostile, resonating with Artaud’s theater which enacts violence onto itself, both technologies and performers enter a symbiotic choreography of negotiation and slippages between failure, frustration, storytelling and spatiotemporal imagination. Navigating these hostile and glitching boundaries makes the stage seem uncertain, the outside creeps in and the inside is never truly materialized. Performers can be propelled out of the boundaries of the virtual world, (which contains sound, characters, objects) into an empty void, (the stage, a second boundary), which contains silence and perhaps another performer, still inside, in their own Mixed Reality.

How do we approach an embodiment to traverse this space? How to embrace the fear of encountering these failing systems and incorporate it into the signification of space, imagining what happens when this happens? How do you approach a space that is paradoxically playful, volatile, violent? What happens when you fall off the edges of the world, do you keep falling and exploring the void or frantically seek a way back inside?

This stage of extreme variability demands improvisation, stimulating a complex confluence of meaning-making, where virtualities are being created at the scaffoldings; reverberating through a simulacra continuum, the stage and these virtual realities don’t exist as a

⁸⁰ Bachelard, *The Poetics of Space*. 230

series of focal points, but instead become an expansive fractal territory of haphazardly stacked boundaries between latent realities, margins and peripheries. This is the stage of the alienating familiar, the virtual reality which decays at the same time as it inspires

Conclusions

From these explorations into structures and patterns of signification to construct virtualities and hyper-realities, I can discern a few specific ideas that I am keen to pursue. I am interested in further exploring the tensions between virtualities that malfunction, where virtuality is not utilized to produce futuristic-hegemonic archetypes, and instead it creates things that are still imperfect. If it is chaotic then it is not worthy. If it's not cutting edge then it is not real virtuality... How do we subvert some of these notions, just as the digital and textual studies are doing for the middle ages? When these technologies emerge as interfaces of latent hyper-awareness, it is a continuous attempt of this investigation to discover paths towards such freeing hyper-awareness and further explore these interfaces as things that can be auto-constructed without predetermined structures and aesthetics.

Emerging from both instances of the applied research, Textual Interfaces and Extended Reality technologies are enmeshed through theater and dramaturgy as connective tissues that create an unstable and delicious virtuality. Therefore becoming nodes in an expansive and iterative system of extreme variability, and deepening the possibilities these disciplines have to collectively broaden vocabularies and shared methodologies towards divergent and multidimensional narrative structures.

I am interested to continue this investigation as an increasingly collaborative endeavor into the marginal and the peripheral as interfaces for performances, which emerge from the weeds of noise, instability and uncertainty. Advocating for the investigation of these liminal environments of desire and frustration as valuable fabulations of virtualities beyond hegemonic mirages of home, being and belonging.

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Vita

Laura Luna Castillo is a Mexican multimedia and new technologies artist and composer.

Through convergences of time-based media, music, sculpture and generative storytelling Luna Castillo explores personal and collective identities shaped by political and intimate spaces. Her work is heavily influenced by research through a diverse array of topics, at the intersections of cultural poetics, sociology, geography, ethnography, philosophy and speculative fabulations. The creative use of new technologies such as volumetric filmmaking, VR/XR, open source programming and machine learning collide within immersive and hybrid experiences where narratives converge between the real, the imagined and the desired. Luna Castillo has developed audiovisual performances, installations and hybrid works for festivals and venues such as MUTEK Montréal, CYNETART Festival, EMPAC (Experimental Media and Performing Arts Center) in New York and at Meany Center for the Performing Arts in Seattle.