The background of the entire page is black. Overlaid on this are several thick, wavy, and looping lines that resemble tentacles. These lines are rendered with a vibrant, multi-colored gradient, transitioning from light blue and cyan at the top to pink, purple, and magenta at the bottom. The lines are scattered across the page, with some crossing each other, creating a sense of movement and depth.

# TENTACULAR

The Agency of Speculative Fiction  
in Experiential Reality

by

Kristjan Buckingham

A thesis exhibition presented to OCAD University in partial fulfillment  
of the requirements for the degree of Master of Design in Digital Futures

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## Abstract

The development and evolution of media technology has led to the expansion of human communicative possibilities. In facilitating the distribution of ideas, further technological innovations are made possible, resulting in a sort of symbiotic or even parasitic dynamic between communication media and those who create and depend upon it. Emerging media, such as Augmented Reality, are able to introduce virtual elements into physical environments, complicating the way in which reality may be perceived, understood, and experienced in relation to the world. Speculative Fiction is a useful way to consider the implications of such developments, and to bring these conversations outside of academic spaces through imaginative representations of existence and potential versions of reality. This project offers a “tentacular” approach to storytelling in the form of a nonlinear, atemporal, and multisensory Experiential Reality narrative, which animates an assemblage of ideas in a fictional context. This framework focuses on the potential of Speculative Fiction to effect change beyond the narrative space, reaching out into other parallel realities by provoking meaningful consideration of technological advancements and their influence on the world; how the world is understood; and by whom it is experienced.

## Keywords

*Augmented Reality, Speculative Fiction, Nonlinear Storytelling, Experiential, Media, Agency*

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Tentacular was developed and exhibited on Treaty 13 territory—the traditional land of the Huron-Wendat, the Seneca, Haudenosaunee, and the Mississaugas of the Credit River.

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## **Dedication**

*To you—for taking in these ideas and allowing them to live in the world.*

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## Chapter 1: Concept

### 1.1 Introduction

The construction of this thesis reflects the mosaic approach of assemblage which brings together fragments of ideas from various types of media—reaching out in different spatial and temporal directions, yet all coming together to form a single entity.<sup>1</sup> Rather than seeking to find specific answers, this iterative and explorative process makes connections and provokes existential consideration of seemingly unanswerable questions.

Through the development of this project, it became imperative to design beyond the affordances of Augmented Reality headset devices which are to become more ubiquitous in the near future. Therefore, this project looks toward the next iteration of such technology wherein the virtual becomes increasingly integrated into the user's perception of reality. Given the limitations of designing for a medium that is not yet available, the implementation of a fictional narrative is not only instrumental in expanding this theme, but it is proposed that through this type of speculative storytelling, eventual innovations in media technology are able to be realized.<sup>2</sup>

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<sup>1</sup> Abridged Thesis Overview Video: <https://youtu.be/LgD3U2H8xw8>.

Appendix A: Abridged Thesis Overview Video Transcript.

In addition to the extensive use of footnotes intended to emphasize this approach, this document has also been supplemented with audiovisual representations on YouTube where it may be more accessible to an audience outside of academia. Transcripts have been included in the appendices.

<sup>2</sup> T.E.N.T.A.C.U.L.A.R. Orientation Video: <https://youtu.be/-tFleF1xFSM>.

Appendix B: T.E.N.T.A.C.U.L.A.R. Orientation Video Transcript.

### 1.1.1 *Research Questions*

The primary considerations throughout the research-creation process of developing this thesis are as follows: How might a speculative approach to Augmented Reality inform the narrative possibilities and design affordances of a nonlinear storytelling experience? How is the concept of 'tentacular embodiment' useful as a narrative model or as a metaphor for emerging modes of perception alternative to the human perspective? What are the implications of 'Experiential Reality' on the dynamic between humans, the virtual, consciousness, and perception? Are works of Speculative Fiction effective in altering how reality is understood and experienced?

### 1.1.2 *Definitions*

**Tentacular embodiment** – In reference to evolutionarily advanced cephalopods, describes forms of perception alternative to the human experience. A representational other which comprehends the world by reaching out in various directions to simultaneously process that which it encounters.

**Experiential Reality** – Speculatively proposed term for the next iteration of media technology, advancing beyond the audiovisual elements of Virtual Reality (VR) and Augmented Reality (AR) to activate other sensory responses and minimize the dissonance between the virtual and the user's experience of reality.

**Assemblage** – Refers to the collage-like approach of piecing together various fragments to construct a broader image or representation. Typically applied to sculptural works, extrapolated to include transmedia elements such as written documents, videos, audio, and the virtual.

## 1.2 Literature Review

### 1.2.1 *Evolving Media*

Communication media facilitates the connection of information between human beings across space and time. The technological advancement of these communicative tools directly impacts the way in which individuals are able to engage with ideas and experience reality.

“After all, there is nothing real outside our perception of reality, is there?”<sup>3</sup>

In his collection of essays *Into the Universe of Technical Images*, Czech philosopher Vilém Flusser would describe this progression as the movement from “traditional images,” consisting of simple two-dimensional pictorial representations beginning with cave paintings; past “linear text,” or the written word; toward “technical images,” which include “photographs, films, videos, television screens, and computer terminals [which] take over ... the task of transmitting information crucial to society and to individuals.”<sup>4</sup> These complex technical images are compilations of existing information and resources put together in a way that may be

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<sup>3</sup> *Videodrome*, directed by David Cronenberg (1983; Canada: Universal Pictures), streaming. Asked by the villainous Professor Brian O’Blivion, who also asserts that “the television screen is the retina of the mind’s eye. Therefore, the television screen is part of the physical structure of the brain. Therefore, whatever appears on the television screen emerges as raw experience for those who watch it. Therefore, television is reality, and reality is less than television.”

<sup>4</sup> Vilém Flusser, *Into the Universe of Technical Images*, trans. Mark Poster and Nancy Ann Roth (Minneapolis: University of Minnesota Press, 2011), 5-7. Flusser offers a model of five “rungs” which humanity has climbed toward higher levels of abstraction, from the first primitive concrete experience rung through the fifth rung – the level of calculation and computation in which texts become inaccessible; the level of technical images.

ephemerally transcendent—that as novel or revelatory an innovation may be, it will immediately have always been possible, if not inevitable.

As Flusser states, technical images are “not surfaces but mosaics assembled from particles. They are therefore not prehistoric, two-dimensional structures but rather posthistorical, without dimension. We are not turning back to a two-dimensional prehistory but rather emerging into a posthistorical, dimensionless state.”<sup>5</sup> In the publication which Flusser describes as a fable, he suggests that the imminent age of technical images will reach a point where everyone is so removed from the physical and focused on pure information “like a consciously self-produced dream, ... [that] by comparison to it, all previous forms of life are merely prehuman approximations.”<sup>6</sup> Essentially, through the dynamic creation and consumption of technical images to the absolute degree, humans will be able to become fully realized beings.

Somewhat similar to Flusser’s concept of the technical image, is the “technical object” presented by Gilbert Simondon in his article *On the Mode of Existence of Technical Objects*. “The unity, individuality, and specificity of a technical object are those of its characteristics which are consistent and convergent with its genesis. The genesis of the technical object is part of its being. The technical object as such is not anterior to its own becoming but it is present at

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<sup>5</sup> Flusser, 6.

<sup>6</sup> Flusser, 172.

every stage of its becoming. The technical object is a unit of becoming.”<sup>7</sup> If the generation of complex virtual representations can be understood as manifesting the full potential of human experience, the tools necessary to achieve that level of creation are immensely valuable.

Recognizing media forms as the means of furthering the capabilities of human information processing, the affordances of a given medium are what dictate the limitations of what can be effectively communicated. The work of Canadian scholar and media theorist Marshall McLuhan has been particularly influential on the understanding of media as extensions of the human, and each medium as not only conduits for content but messages in their own right. "Our human senses, of which all media are extensions, are also fixed charges on our personal energies, and ... configure the awareness and experience of each one of us."<sup>8</sup> Through Benjamin Bratton’s model of “The Stack,” modern technology can be understood as interwoven layers of networks which humans are inextricably a part of. “After billions of years of evolution, complicated heaps of carbon-based molecules (that includes us) have figured out some ways to sub-contract intelligence to complicated heaps of silicon-based molecules (that

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<sup>7</sup> Gilbert Simondon, *On the Mode of Existence of Technical Objects*, trans. Ninian Mellamphy (Ontario: University of Western Ontario, 1980). In his rigorous consideration of technical objects as they exist in the world, Simondon concludes that while technical objects “tend towards concretization ... there should be no confusing of a tendency towards concretization with a status of absolutely concrete existence.”

<sup>8</sup> Marshall McLuhan, *Understanding Media: The Extensions of Man* (United Kingdom: Routledge, 1964), 23. McLuhan explores various forms of media and the meaning inherent to each respective format regardless of content, which audiences engage with distinctly and to unique effects.

includes our computers).”<sup>9</sup> In this context, Bratton takes this idea to McLuhan’s logical conclusion wherein media is no longer an extension of the human, but the way in which some form of human consciousness may live on. “Should ‘we’ survive the Anthropocene, it will not be as ‘humans.’”<sup>10</sup> Bratton implies that there will come a tipping point where human consciousness relies more on technological extensions than their organic biological counterparts to the point of obsolescence—that using technology will ultimately become an inherent part of being.

As crude communicative tools become more refined over time, their usability, accessibility, and legibility tend to increase, making it less difficult for users to utilize a given medium to express ideas coherently. In their book *Life After New Media*, Sarah Kember and Joanna Zylińska connect the idea of media and technology as tools, and therefore extensions of experiential being which become non-distinct from the user, back to Heidegger’s notion of “our originary technicity, our way of being-with and emerging-with technology. It is in seeing beyond

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<sup>9</sup> Benjamin Bratton, *The Stack: On Software and Sovereignty* (Cambridge: MIT Press, 2016), 50. Bratton outlines the various layers of The Stack, how these networks are connected, and how they communicate. These layers are referred to as platforms which are programmed, affecting both the tangible and intangible, linking “actors, information, and events across multiple spatial and temporal scales at once.” He proposes the current iteration of The Stack includes six layers: Earth, Cloud, City, Address, Interface, User.

<sup>10</sup> Benjamin Bratton, “Some Trace Effects of the Post-Anthropocene: On Accelerationist Geopolitical Aesthetics,” *e-flux Journal* 46 (2013). In this article, Bratton discusses geopolitical aesthetics, algorithmic capitalism, accelerationism, the collective death drive, planetary skin (epidermal biopolitics), and the blurring of the symbolic, the imaginary, and the real in machinic images as the Earth moves toward the post-Anthropocene.

the instrumental dimension of technology that the human can establish a better relationship to it or even to see himself as part of the technological set up for the world.”<sup>11</sup> Through the compilation of ideas presented by these various media scholars appears a connection between the technological advancement of the tools humans use to communicate, and the way humans process information and experience the world. As these communicative technologies continue to advance, so too do the potentialities of the human experience.

### 1.2.2 *Speculative Storytelling*

As technology continues to develop and blur the lines between the physical and the virtual, it is increasingly difficult to define what should be considered to be ‘real,’ and to whom this notion of ‘reality’ applies. Speculative Fiction / Science Fiction (SF) is a useful way to consider the implications of technological and scientific developments, and to bring these conversations outside of academic spaces.<sup>12</sup> Media such as books, film and television, radio and podcasting, video games, and VR / AR experiences have all been used to facilitate speculative representations of existence and potential realities.

In their book *Speculative Everything*, Anthony Dunne and Fiona Raby claim that “this is one of the strengths of design over art in relation to technology: it can pull new technological developments into imaginary but believable everyday situations so that we can explore possible

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<sup>11</sup> Sarah Kember and Joanna Zylińska, *Life After New Media: Mediation as a Vital Process* (Cambridge, MIT Press, 2012), 14. Kember and Zylińska explore the relationship between humans and technology through various philosophical and allegorical texts.

<sup>12</sup> Appendix C: Supplemental SF Contextual Review [Video Essay](#) broadly explores influential SF works.

consequences.”<sup>13</sup> The form in which these speculative works are realized and the level of their practicality can be extremely varied, but may act as a reference point for consideration of existential concerns. Speculation may be used as a tool to better understand and find truth in the unknowable through fictional imaginings represented through media, which are imbued with their own agential capacity to alter consciousness and one’s perception of reality. Kember and Zylinska describe this idea of vital materiality in relation to media as “the lifeness of media—that is, the possibility of the emergence of forms always new, or its potentiality to generate unprecedented connections and unexpected events.”<sup>14</sup>

Mary Shelley’s *Frankenstein; or, The Modern Prometheus*, recognized as the first SF novel, depicts a creature made up of an assemblage of disparate parts and brought to life through the then-emerging discovery of galvanism.<sup>15</sup> Karen Barad references Shelley’s creature in connection to the properties of electricity to discuss “the nature of matter and its agential

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<sup>13</sup> Anthony Dunne and Fiona Raby, *Speculative Everything: Design, Fiction, and Social Dreaming* (Cambridge, MIT Press, 2013), 57. Dunne and Raby propose an imaginative approach to design that challenges what is possible and suggests value in open speculation through creation. They offer that fictional scenarios which sit within a range of plausibility may offer a reference point of consideration that may optimize the probability of reaching a desirable future.

<sup>14</sup> Kember and Zylinska, xvii.

<sup>15</sup> Mary Shelley, *Frankenstein; or, The Modern Prometheus* (1818). The unique narrative structure of the section describing first-person narration from the creature is framed as a story within a story within a story—itself an assemblage of perception.

capacities for imaginative, desiring, and affectively charged forms of bodily engagements.”<sup>16</sup> Among their sprawling collection of ideas, Barad discusses the notion of the “fecund void,” or the potential fertility of nothingness. “The virtual is a superposition of im/possibilities, energetic throbs of the nothingness, material forces of creativity and generativity.”<sup>17</sup> The generation of ideas through speculative exploration allows potentialities to become realized.

Augmented Reality presents a rare opportunity to explore innovative forms of storytelling in a new medium. Applying McLuhan’s notion that the medium itself is more significant than any of its respective content, it is important to consider the way in which AR will become another extension of the human. With consideration for Bratton’s model of The Stack, AR has the potential to embody the inextricable integration of technology into human life and the world by manifesting the virtual in physical environments. Where previous iterations of communication technology have progressed from vessels that contain discreet pieces of information, to portals that allow access to vast amounts of content, AR offers a way to draw virtual content out into the physical world—less of a gateway to bring humans into the virtual world and more of a mechanism to bring the virtual into the human world.

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<sup>16</sup> Karen Barad, “Transmaterialities: Trans\*/Matter/Realities and Queer Political Imaginings,” *GLQ: A Journal of Lesbian and Gay Studies* 21, no. 2-3 (2015): 388. Barad employs several interesting literary techniques in their article, including the use of prefixes, homonyms, antonyms, and shared root words in a way that leverages language to impart dual meanings that may be interpreted in different ways. In this way, conflicting words like im/possibilities (possibilities and impossibilities) are able to simultaneously coexist in a sort of superposition like that in quantum physics.

<sup>17</sup> Barad, 410.

### 1.2.3 *Design for Experiential Reality*

As we descend into the darkness of the deep ocean, we also descend into an unknown region we know less about than our solar system. Stories abound of sea monsters lurking at the ends of the earth, on the blank spots on maps and 20,000 leagues beneath our breath. Taking different forms, one creature perennially appears in philosophers' thought as an Other: the cephalopod ... [whose] shapeshifting potential ... not only provides them with camouflage and sophisticated signalling in the wild, but also provides us with a malleable monster for our phobias and phantasies ... Poly-perverse cephalopods with their orgies, drag performances and psychedelic dreaming have fascinated philosophers in the past and will continue to tempt them as rising waters encroach our shores.<sup>18</sup>

This definition for “cephalopod” from “Sleep of Reason: An Atlas of the Philosophical Imaginary” encapsulates the mysterious and illusory nature of tentacular beings. This project applies such embodiment as an approach to storytelling based on the mechanism of tentacles, leading to a multi-temporal and multi-spatial experience. *Tentacular* is a nonlinear interactive exploration of the agential capacity of media and the potentialities of speculative works, conveyed through a fictional narrative in Augmented Reality, with each path not a branch of the story but a tentacle with the agency to reach out and take hold of the user.

In another of his self-described fables, *Vampyroteuthis Infernalis*, Flusser looks to the octopoda evolutionary counterpart to humans, the vampire squid, in order to better understand the human experience from the perspective of an other:

Its tentacles, analogous to our hands, are digestive organs. Whereas our method of comprehension is active—we perambulate a static and established world—its method is

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<sup>18</sup> Dehlia Hannah, Ala Roushan, Nadim Samman, and Charles Stankievec, “Sleep of Reason: An Atlas of the Philosophical Imaginary,” *Afterall: A Journal of Art, Context, and Enquiry*, 50 (2020): 163. One of the contributions from my Primary Advisor, Ala Roushan, for what the authors describe as “an atlas of the monstrous throughout philosophical history.”

passive and impassioned: it takes in a world that is rushing past it. We comprehend what we happen upon, and it comprehends what happens upon it. Whereas we have “problems,” things in our way, it has “impressions.” Its method of comprehension is impressionistic.<sup>19</sup>

Tentacular beings are a helpful analogue when trying to reconcile the subjectivity of an individual’s human experience of reality as presumably incomplete. If media are to be understood as extensions of the human, there is an implication that the currently limited capacity of human perception has not yet uncovered knowable aspects of reality. “How do you define real? If you’re talking about what you can feel, what you can smell, what you can taste and see, then real is simply electrical signals interpreted by your brain.”<sup>20</sup> Virtually synthesized or not, it is impossible to know if human modes of perception are capable of capturing the full realm of the perceptible, whether sensory inputs are interpreted accurately by an individual, and to what degree an individual’s experience correlates with objective reality. The subjectivity of an individual’s experience of reality renders the distinction between the real and the virtual inconsequential. For Jean Baudrillard, this level of indeterminacy between the real and the virtual becomes “simulacrum,” in which “illusion is no longer possible, because the real is no

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<sup>19</sup> Vilém Flusser and Louis Bec, *Vampyroteuthis Infernalis: A Treatise*, trans. Valentine A. Pakis (Minneapolis, University of Minnesota Press, 2012), 39.

<sup>20</sup> *The Matrix*, directed by The Wachowskis (1999; United States: Warner Bros. Pictures), streaming. Heavily inspired by the work of philosophers including Jean Baudrillard, the character Neo discovers that his entire perceived existence has been a simulation which his physical body was “jacked” into.

longer possible.”<sup>21</sup> As this distinction between reality and virtuality dissolves, the prospect of Experiential Reality as a new medium begins to corporealize.

There is a lot of loaded terminology used to describe emerging media devices which fit into the “virtuality continuum,”<sup>22</sup> including several terms which have been muddled by dominant corporate entities who use them differently. Virtual Reality is commonly understood as an enclosed immersive environment in which the user is able to interact with virtual elements. Augmented Reality allows interactive virtual elements to be overlaid on the physical environment where the user is located. The terms Mixed Reality (MR) and Extended Reality (XR) are arguably less clearly defined.<sup>23</sup> Perhaps rather than convoluting distinctions between devices which are only just beginning to break into the mainstream, additional terms such as XR ought to be reserved for a more profound leap toward Experiential Reality, where the difference between the physical and the virtual becomes a negligible part of the user’s

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<sup>21</sup> Jean Baudrillard, *Simulacra and Simulation*, trans. Sheila Faria Glaser (Ann Arbor, University of Michigan Press, 1994). Baudrillard explores what is perceived, what is real, and what is true, dealing with concepts of representation, simulation, symbolism, and interpretation. He argues that there are four possible phases of an image: a reflection of reality, a perversion of reality, a mask of the absence of reality, and no longer reality but a simulation – simulacrum.

<sup>22</sup> Paul Milgram and Fumio Kishino, “A Taxonomy of Mixed Reality Visual Displays,” *IEICE Transactions on Information Systems* E-77D, no. 12 (1994): 3. An early model for Virtual-Reality-related terminology which is commonly referred to when placing devices on the spectrum of virtuality.

<sup>23</sup> Steve Mann, John C. Havens, Jay Iorio, Yu Yuan, and Tom Furness, “All Reality,” *AWE 2018*. The authors analyze the overlapping continuum of terminology related to emerging media technology.

perception and the device used to interface with this environment becomes nearly imperceptible. As Flusser declares in *Vampyroteuthis Infernalis*:

We have begun... to overcome our dependence on material objects, to renounce artifacts for an immaterial and intersubjective art form. Having lost faith in material objects as artificial memories, we have begun to fashion new types of artificial memory that enable intersubjective and immaterial communication. These new communicative media may not be bioluminescent organs, but they are similarly electromagnetic. A vampyroteuthic [tentacular] revolution is underway.<sup>24</sup>

As VR and AR devices become more accessible, there is potential to utilize the storytelling affordances, which wouldn't otherwise be possible, in order to speculate on the potentialities of the journey into Experiential Reality. In such virtual environments, the assemblage of technical images may allow humans to “realize their creative potential only by processing new and immaterial information,” as described by Flusser<sup>25</sup>—immaterial creations in ethereal environments for disembodied observers, experienced as reality.

### 1.3 Contextual Review

#### 1.3.1 *Speculative Discourse in Virtual Reality*

Through his discursive transmedia work which includes Virtual Reality, Canadian digital artist Jon Rafman is among contemporaries pushing speculative rhetoric regarding emerging media technology. Rafman states in an interview: “In terms of cinema and fine art, I am convinced that artists will help to define what this new medium [VR] is and what its language will be. If the work succeeds you will start to understand the changes in human perception that

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<sup>24</sup> Flusser and Bec, 65.

<sup>25</sup> Flusser and Bec, 67.

the changes in the media reflect.”<sup>26</sup> This seems to imply that innovation in creative storytelling is only possible because of the continual development of perspectives among individuals—that the tools humans use to tell stories are only able to advance because there is a persistent need to keep sharing new ideas in ways that have not previously been possible. Impossible not only because of the limitations in technology, but because stories must build from a foundation in order to have meaningful progression—complex narratives depend on the context of previous storylines.

Although much of Rafman’s work utilizes VR, it often blends the experience together with physical spaces as well. Rafman explains that “we’ve been moving this way [toward Augmented Reality] for many years now, but what is new is that it is much more embodied now. You are actually able to incorporate more than simply just looking through a portal of the screen. Now we can actually incorporate our whole bodies into it.”<sup>27</sup> One of the biggest limitations of AR has been the detachment of peering through a handheld screen, as opposed to the embodied virtual interactions afforded by more immersive approaches which are beginning to become available.

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<sup>26</sup> Jon Rafman, interview by Timo Feldhaus, “Virtual Reality Sickness,” *SSENSE*, <https://www.ssense.com/en-us/editorial/culture/virtual-reality-sickness>. Rafman’s work plays on the tension of virtual and physical spaces, and the impact of technology on human consciousness.

<sup>27</sup> Rafman.

Rafman offers that “the change in our consciousness precedes the change in our technologies. The technologies that come out are a product of what we have become.”<sup>28</sup> For better or worse, it may not be only that media impacts the human mind, but rather that the collective state of human consciousness shapes each new form of media before it emerges. If each medium, as McLuhan suggests, is the extension of a human faculty, then each new media form must be preceded by a faculty from which to extend. While communication media allows humans to interpret and express new information, it does not unlock additional potential for human comprehension so much as it reflects its expansion as humans continue to evolve.

### 1.3.2 *Augmented Dystopia*

The video *Hyper-Reality*, a crowd-funded concept film created by Keiichi Matsuda, captures a dystopic take on a potential future wherein Augmented Reality has become unremovable and completely engrained into everyday societal interactions. The project’s website states, “Our physical and virtual realities are becoming increasingly intertwined. Technologies such as VR [and AR] ...will envelop every aspect of our lives. It will be the glue between every interaction and experience, offering amazing possibilities, while also controlling the way we understand the world.”<sup>29</sup> The bright colours and dazzling animations of virtual objects overlaid on familiar physical environments quickly become overwhelming as the world becomes saturated with advertisements and paywalls. Ending in tragedy, the short film takes a decidedly pessimistic approach to exploring the implications of AR ubiquity. The intensely

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<sup>28</sup> Rafman.

<sup>29</sup> Keiichi Matsuda, *Hyper-Reality*, 2016, <http://hyper-reality.co/>.

positive visual effects emphasize the dissonance between the way features are marketed to consumers and the user's actual experience of using that technology.

### 1.3.2 *The Stack, Visualized*

The extent to which technology has been integrated into human life and the world is complex, arguably even akin to the sublime in its inconceivability, so efforts to represent this dynamic are necessarily comprehensive. In an amalgamated series of infographics, academic and artist Vladan Joler aims to visualize the complexities of the stack with an emphasis on conceptual impact over literal depiction.<sup>30</sup> While there are several aspects of the work which could be said to be editorial or subjective, it is perhaps all the more successful in its provocative aims than a strictly factual representation would be. It is often through artistic liberty that speculative discourse may become impactful to those who engage with it.

“New Extractivism” leverages design conventions, subverting the expectation of infographics as visual representations of statistical data, to reveal a more impressionistic and subjective kind of truth about the effects of technology on human life. In much the same way, the aim of *Tentacular* is to utilize unexpected narrative interactions and the affordances of AR to suggest deeper implications about future technological advancements in communication media, without overtly depicting potential outcomes.

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<sup>30</sup> Vladan Joler, “New Extractivism,” *OpenSecretKW*, <https://opensecret.kw-berlin.de/artwork/new-extractivism/>. A model of the stack comprised of a “fractal allegorical structure—an allegory within an allegory within an allegory...” which artfully depicts the complex integration of technology into human life and the world.

## Chapter 2: Approach

### 2.1 Methods & Methodology

The methodology behind the development of this thesis is primarily framed by a research-creation perspective, utilizing various methods and approaches to engage with the tools and materials through an iterative process.

#### 2.1.1 *Research-Creation*

Research-creation has become a popular framework to engage with understanding through making where knowledge and creation inform one another in a cycle of reciprocity. “The event of research-creation activates a potentiality that is speculative and in the present simultaneously.”<sup>31</sup> By allowing findings from theoretical and technological research to effect the outcomes of the creation process, and by consistently reiterating upon both aspects, unexpected results tend to manifest.

#### 2.1.2 *Speculative Design*

Speculative design “thrives on imagination and aims to open up new perspectives on what are sometimes called *wicked problems*, to create spaces for discussion and debate about alternative ways of being, and to inspire and encourage people’s imaginations to flow freely. Design speculations can act as a catalyst for collectively redefining our relationship to reality.”<sup>32</sup> This approach allows for robust implementation of a design for a future context which may

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<sup>31</sup>Stephanie Springgay and Sarah E. Truman, “Counterfuturisms and Speculative Temporalities: Walking Research-Creation in School,” *International Journal of Qualitative Studies in Education* 21, no. 6, (2019): 550.

<sup>32</sup> Dunne and Raby, 2.

never come to be. While the predictive nature of this method is inevitably precarious, speculative design offers a way to think critically about present circumstances by creating solutions for their potential trajectories.

### 2.1.3 *Rapid Prototyping*

Throughout three weeks of remote rapid prototyping sessions in collaboration with the Canadian Film Centre Media Lab, came the first official prototype in Augmented Reality, capturing the framework, themes, and tone of the proposed experience using creative commons 3D objects with very basic interactions and animations. CFC mentor Arthur Yeung contributed digital audio distortions which serve as the score for the prototype and were a great starting point for continued audio experimentation. Joseph Ellsworth also provided many insights with input and feedback throughout the remote rapid prototyping process, as did all of the CFC Media Lab mentors. For the first iteration of *Tentacular*, each scene was developed separately and stitched together during editing with audio also added in post-production.<sup>33</sup>

### 2.1.4 *Iterative & Experimental Development*

The iterative approach to prototyping extends beyond the structured collaboration with the CFC Media Lab, continuing throughout the development process. Building from the first prototype, each scene is able to be refined and restructured in a recursive process. There are many possible ways to create 3D assets, so in exploring the affordances of the medium it is important to implement a variety of approaches to the creation and animation of objects and scenes, as well as audio assets. While there were several sub-versions of each prototype, the

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<sup>33</sup> Tentacular Prototype v1.0: <https://youtu.be/ilTGWwzZjKY>.

goal was to distinguish version 2 with completely original assets and functional scene navigation<sup>34</sup>, before building out more complexity in the exhibited version 3.

### 2.1.5 *Nonlinear Approaches to Narrative*

The structure of the fictional narrative presented an opportunity to move away from a linear storytelling approach toward a model that utilizes the affordances of immersive virtual interactions. While there are many existing nonlinear narrative models, the “tentacular embodiment” being explored throughout this thesis became an enticing model to frame the narrative itself.

### 2.1.6 *Audiovisual Assemblages*

The limitations in presenting this thesis entirely through text also became apparent early in the process, leading to the decision to incorporate audiovisual presentations which allow for more dynamic visual and auditory references, in addition to being made more accessible to a broader audience. While the videos provide supplementary context that extends beyond this document, they do not need to be accessed in conjunction with the text or in a particular order, complementing the tentacular embodiment of the thesis itself.

## **Chapter 3: Creation**

### 3.1 Crafting the Narrative

*Tentacular* is a nonlinear interactive exploration of the agential capacity of media and the potentialities of speculative works, conveyed through a fictional narrative using AR-

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<sup>34</sup> Tentacular Prototype v2.2: <https://youtu.be/2uHplH6gQkl>.

passthrough with a VR headset. Each pathway functions not as a branch of the story but as a tentacle with the agency to reach out and take hold of the user.

### 3.1.1 *Narrative Structure*

The structure of the narrative itself takes on a tentacular form, beginning with an instigation—an inciting incident which draws the user into the story, each appendage gaining agency as it is activated, until the user is entangled and devoured by the experience. Although this engagement ends with a departure of sorts when the user must take off the headset and end the interaction, that would not necessarily be the case if there was no headset to remove. An advanced form of AR such as Experiential Reality would not necessarily end with such a departure, as it may remain dormant with its host until the next instigation.

Apart from the numerous linear storytelling models, the tentacular storytelling model is distinct from other nonlinear narrative structures. In their proposition of a rhizomatic narrative structure, Gilles Deleuze and Felix Guattari situate their rhizome model in opposition to the branching tree structure.<sup>35</sup> While a branching narrative may be linear or nonlinear, there are typically branches that go unexplored as the user chooses which paths to pursue. Alternatively, a rhizomatic narrative structure offers many interconnected entry points and “dead-ends” that do not necessarily depend on one another. The tentacular model differs from both, in that the various paths extend outward in different directions and may be explored independently and nonlinearly but are all connected by a central core.

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<sup>35</sup> The Chicago School of Media Theory, “Rhizome,”

<https://lucian.uchicago.edu/blogs/mediatheory/keywords/rhizome/>.

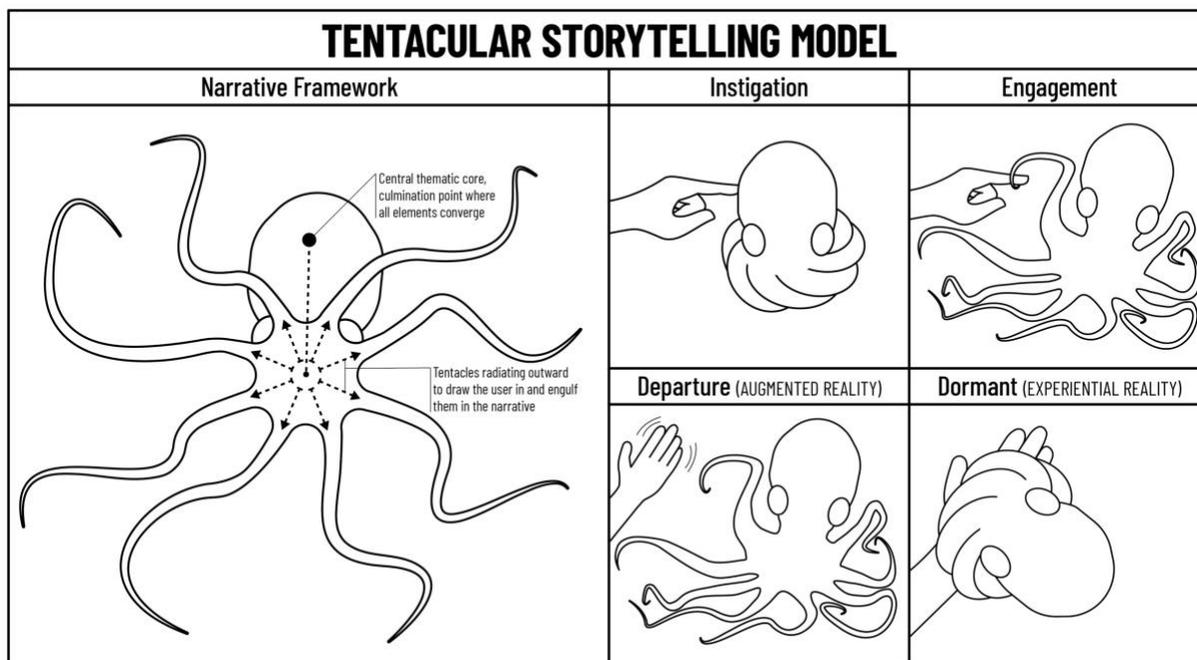


Figure 1: Tentacular storytelling model

When the user puts on the headset, a series of paths appear, each radiating from their perspective, surrounding them. At the end of each extremity is an object that triggers one part of the narrative in any order the user chooses. Each of these sections contains a unique exploration of the theoretical, philosophical, technological, and historical ideas behind the story. In this application, the model essentially functions as a menu so that the user can remain relatively stationary. It could also be applied as a map, leading the user down story paths that converge in a central core that accumulates artefacts as each direction is explored. More broadly, this model can be applied to any medium that affords some degree of nonlinearity, conceptually extending various modes of engagement that may be accessed distinctly yet which all lead back to a greater central theme that becomes increasingly activated as the user progresses through the narrative.

## 3.2 Building the Experience

Each component of the experience was necessarily worked on separately but simultaneously with decisions made in each aspect correlating to respective changes in the others. This iterative process culminates in an exhibit showcasing the speculative future of Experiential Reality.

### 3.2.1 The Device



Figure 2: Oculus Rift S, ZED Mini, and Leap Motion technology stack

The headset device was compiled, taking inspiration from the technology stack implemented in a previous OCAD Digital Futures thesis project, *Playtime for Punctum* by Nick Alexander, comprised of a VR headset, a specialized external camera, and hand-tracking technology.<sup>36</sup> The ZED Mini camera uses two lenses which are optimized for AR pass-through video, and the Leap Motion hand-tracking sensor allows for intuitive interaction without hand-held controllers. Each of these units are attached to an Oculus Rift S, rather than the HTC Vive utilized in the previous technology stack.

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<sup>36</sup> Nicholas Alexander, *Playtime for Punctum*, <https://playtime-for-punctum.format.com/>.



*Figure 3: Multiple cords required to enable controllerless AR passthrough*

The device is an assemblage, pieced together to create a single-unit wearable solution, which allows for an immersive and intuitive experience akin to what will likely be available in the near future. The cords of each device reach out from the computer and wrap around the user, taking on a tentacular embodiment of its own.

### *3.2.2 The Virtual Build*

Another benefit of this technology is that it is compatible with development in Unity, which supports extremely robust interactions and animations. The primary challenge was getting each respective Software Development Kit (SDK) to cooperate. While there is robust documentation available for Unity development with the ZED mini, Leap Motion, and general XR projects, there are some hurdles to overcome when trying to link them in a complex virtual environment. Several attempts were made to construct the various interactions through scenes and triggered animations before settling on a relatively stable method.

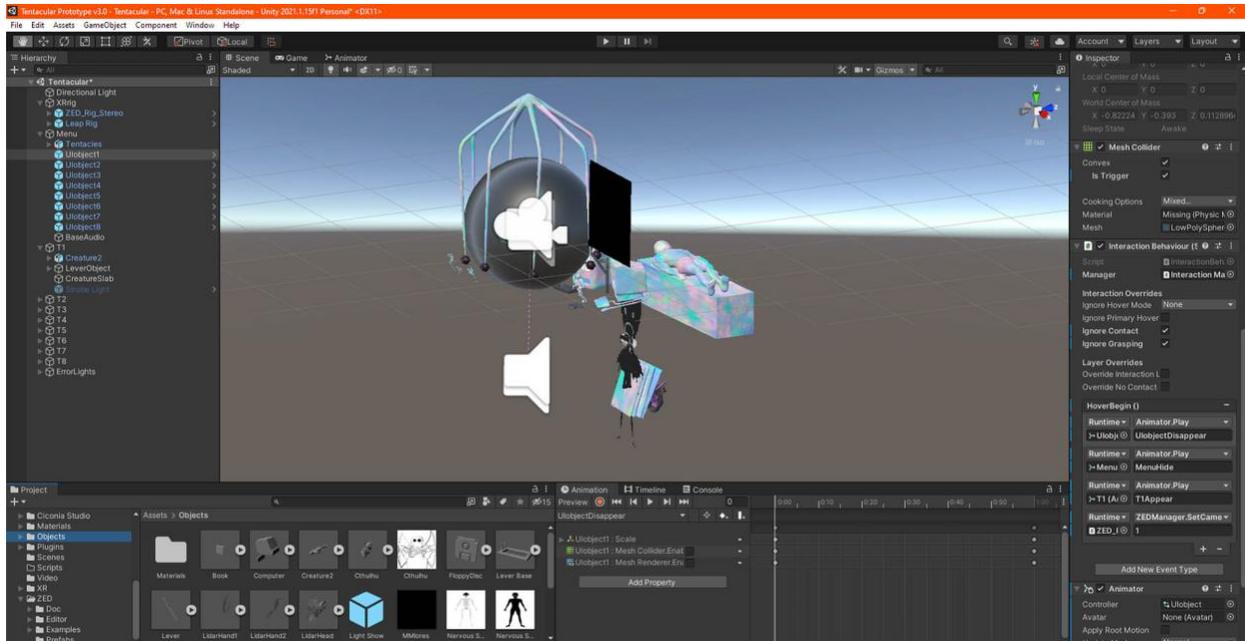


Figure 4: Unity development environment

Tools such as Masterpiece Studio allow for the modelling, rigging, and animation of 3D assets, all done in Virtual Reality. Volumetric captures provide detailed topological representations of physical objects and spaces which can be projected into virtual environments or overlaid in augmented space. These are just a couple examples of the explorative approaches employed in the virtual build.

The game jam research project, *Hand Made: VR Tools for Creation*, led by Dr. Emma Westecott in partnership with the developers at Masterpiece Studio, presented an opportunity to become familiar with VR software that became instrumental to the virtual build of this project.<sup>37</sup> While similar 3D modeling VR apps such as SculptVR and Tilt Brush are available, rigging and animation are less accessible and notoriously difficult to learn.

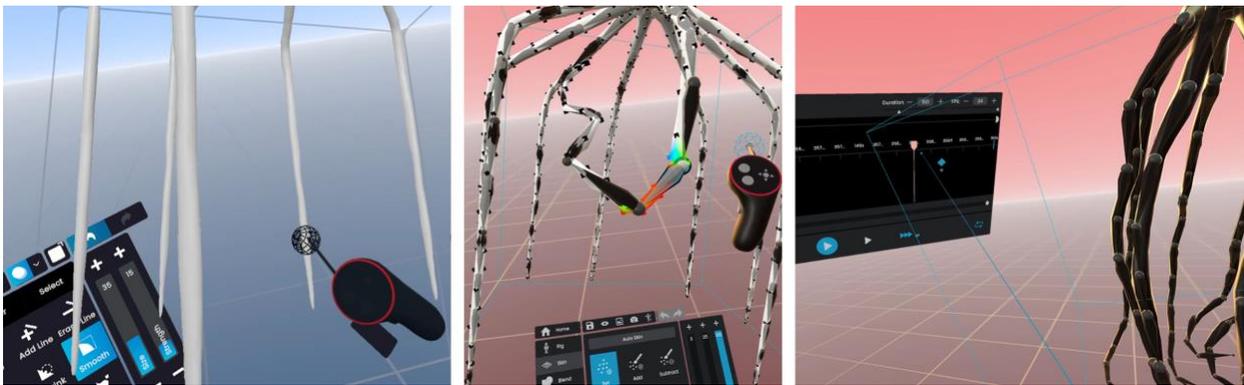
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<sup>37</sup> Emma Westecott, *Hand Made: VR Tools for Creation*, Game:Play Lab, Research Project Website, <http://www.gameplaylab.ca/hand-made-vr-tools-for-creation/>.



*Figure 5: 3D model creation and animation in VR with Masterpiece Studio*

Masterpiece Studio allows the user to construct and refine a 3D model, create a custom exportable skin for the object, rig a dynamic skeleton, select where the mesh binds to each bone, construct animations from a series of keyframes, and export all of those elements to be used in Unity.



*Figure 6: 3D model built in Masterpiece Creator, rigged and animated in Masterpiece Motion*

This approach allows the user to intuitively interact with the virtual environment using physical gestures, making the whole process very straightforward. There is also an interesting thematic connection with this project, in creating virtual objects by using physical gestures in VR space, to be used in the context of a physical environment with AR passthrough.

### 3.2.3 The Physical Environment

One of the interesting things about utilizing AR-passthrough is that the setting in which the user views the experience becomes a part of it. The installation space is situated within the context of the graduate exhibition, and most viewers will likely experience a walkthrough video of the project in a fixed location. By adding intentionality to the physical space it is meant to be exhibited in, deeper multisensory explorations may be made possible. On the other hand, bringing AR experiences into various physical environments may allow for unexpected interactions.



*Figure 7: Unexpected AR interaction from Prototype v1.0*

The context of how the user is presented with the device and how the interaction begins before the headset display illuminates are also important to consider. These aspects may help to situate the user within the fictional narrative and invite the participant to engage with the speculative story world while providing a reason to begin engaging with these exploratory interactions.

### 3.3 Outcomes

#### 3.3.1 *An Assembled Experience*

The following elements were iterated upon during conceptualization, implementation, troubleshooting, testing, and revising throughout the development process. Each piece functions independently as a fragment, compounding to construct an assemblage that extends beyond the virtual. While many of these ideas may not be obvious to all users, it is helpful to have larger conceptual motivations behind simple interactions, which are able to build upon the context of one another without being linearly dependent.

**Instigation** – The fictional premise sets up the context for why the user is putting on the headset and engaging with these interactions. The device itself is not meant to be capable of Experiential Reality, but rather is said to be a calibration process used to determine whether the user is a viable candidate for permanent implementation of Experiential Reality. This process—Technologically Enhanced Neurally Transmitted Approximation Calibrated Utilizing Latent Augmented Reality, or T.E.N.T.A.C.U.L.A.R.—is described as a technical analysis of the user’s responses to interactions with virtual objects grounded in a physical environment in order to establish compatibility for similar interactions without an external headset.<sup>38</sup>

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<sup>38</sup> T.E.N.T.A.C.U.L.A.R. Strawberry Video: <https://youtu.be/YRjF1fuXuSQ>.

T.E.N.T.A.C.U.L.A.R. Blueberry Video: <https://youtu.be/Wsw-NU-Jw88>.

Appendix D: T.E.N.T.A.C.U.L.A.R. Blueberry Video Transcript.

The choice of strawberry or blueberry does not determine the outcome in the exhibited experience but is intended to showcase the nonlinearity with two of the many possibilities.

To begin this engagement, the user must symbolically make a decision to instigate the experience. As an unsubtle nod to *The Matrix*, the user is given a choice of which “microchip” in the shape of a small brain to consume—strawberry or blueberry.<sup>39</sup> While it is presented jokingly, as stated in *The Matrix: Resurrections*, “The choice is an illusion,”<sup>40</sup> and not necessarily meant to be convincing, but to get the user to actively play along with the narrative. This is not so much a “beginning” to the interaction, but more of a prodding to awaken it.



Figure 8: Instigation prompting the user to engage with the interactions

**Tentacles** – The core of the experience is represented by a series of tentacles which become more active as the user engages with the various interactions. Aside from navigating the technical challenges such as the virtual objects drifting into the floor over time and debugging nested animations, it was also important to establish an aesthetic that continues throughout the other elements. Several variations on the shape and animation states of the tentacles were drafted before settling on their design.

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<sup>39</sup> Brain gummies sourced from Canadian candy manufacturer Squish Candies, <https://www.squishcandies.ca/>.

<sup>40</sup> *The Matrix: Resurrections*, directed by Lana Wachowski (2021; United States: Warner Bros. Pictures), streaming. The divisive sequel / reboot provides meta-commentary on the cultural impact and philosophical implications of the original film and trilogy to the point of deconstruction.

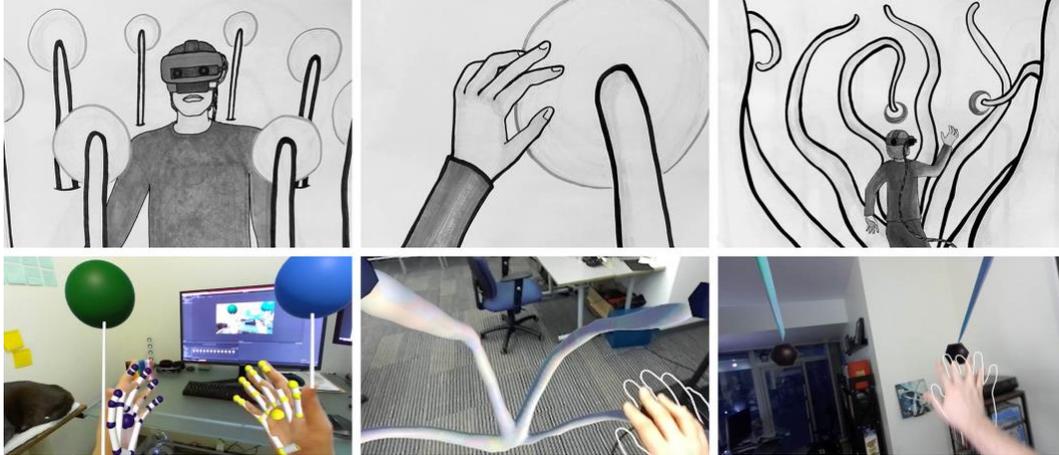


Figure 9: Tentacular core that triggers each scenario

**Creature** – This is a direct reference to Frankenstein’s monster, who has lived on in the public consciousness as an imaginative abomination—crudely pieced together from innumerable embodiments, brought to life by means of electricity. As one of the earliest SF conceptions, Shelley’s creature has manifested in the world as a brutish, misunderstood monstrosity in ways its creator never could have predicted, which is precisely what the novel describes. In this iteration, a lever appears which, when activated by the user, animates the creature in the physical world causing it to awaken and reach toward the one who brought it to life.

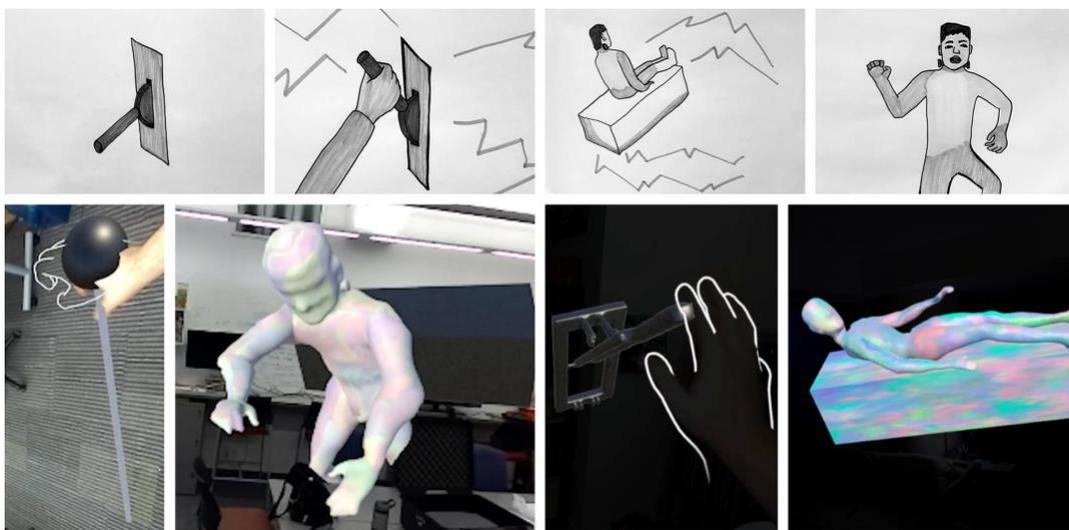
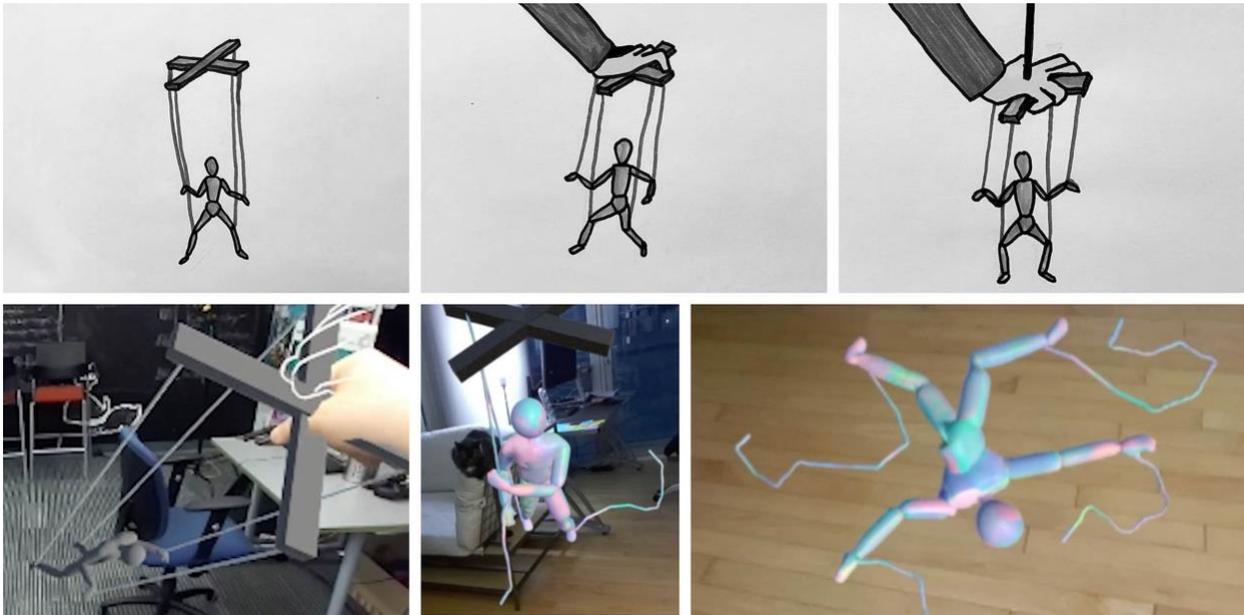


Figure 10: Creature brought to life when lever is activated

**Determinacy** – A marionette appears, but when the user tries to grasp the handle to control it, the puppet breaks free from its strings before crashing to the ground. Meanwhile, strings appear upwards from the user’s hands. This interaction is meant to prompt consideration of whether a puppet is commanded by the actions of the one pulling the strings, or if the actions of the puppet dictate the movements of the metaphorical puppeteer—and what might be the consequences of cutting the strings.



*Figure 11: Puppet breaking its strings and crashing to the ground*

**Manifesting Fiction** – A book rises from the ground and opens, revealing an illustration inspired by H.P. Lovecraft’s unfathomable cosmic entity known as Cthulhu. A 3D rendering of the image then emerges from the page as a literal depiction of fictional works manifesting in the real world from the perspective of those who engage with it—becoming activated when taken in by the reader, audience, or user.



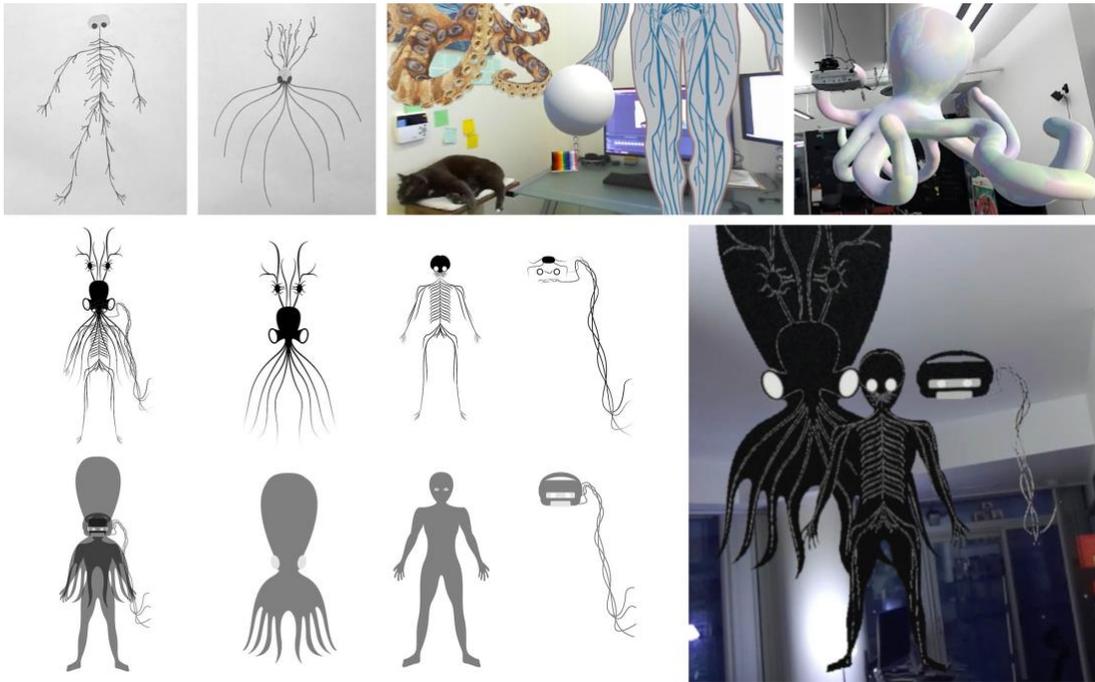
Figure 12: 3D character emerging from 2D book illustration

**Media Evolution** – When the user engages with the VHS tape and floppy disk, they play short clips of AR media explorations on the television and computer respectively. This brief interaction is meant to be reminiscent of the evolution of media and how information is accessed. As communication technology has advanced, the vessels used to contain, distribute, and access media have also changed. Formats such as VHS tapes and floppy disks keep discrete pieces of information separate from the device on which they are displayed, however such methods are becoming increasingly redundant with the rise of cloud storage.



Figure 13: TV/VCR with VHS tape and computer with floppy disk

**Nervous Systems** – Originally conceived as “cephalopod anatomy,” this section seemed to fit better thematically when juxtaposed against a human counterpart. More specifically, nervous systems, which perceive and process sensory inputs emerged as the most relevant comparison. This was then extended to the “nervous system” of the technology stack used to create the experience. These elements are overlaid then separated to contrast these alternative means of perception.



*Figure 14: Illustrations of human, octopod, and headset device nervous systems*

**Perception** – Whether or not there is an objective reality to observe, the way an individual processes and understands that which they perceive is a more subjective experience. By altering the lighting and colours of a familiar environment in real-time, this scene is meant to evoke the subjectivity of perception.

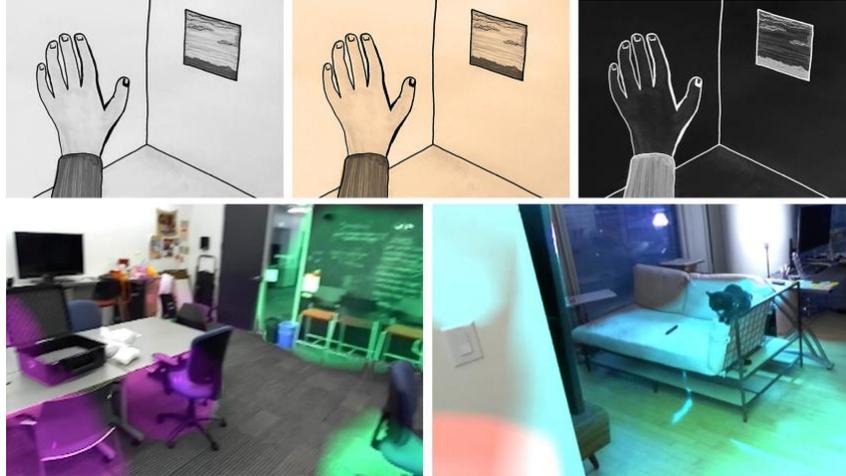


Figure 15: Lights and colours changing in real-time

**Reproduction** – This section went through the largest transformation in terms of content. The concept of reproduction is taken broadly—in terms of biological, mechanical, and virtual reproduction, as well as duplication, mimesis, and iteration. While thematically interesting, this concept is difficult to portray concisely in a short scene. In earlier prototypes, a single sphere splits into two and continues a mitosis-like animation until there are many copies. As a more dynamic alternative, a volumetric capture appears that is meant to represent the user. A lidar scan taken with an iPhone 12 Pro of a masked person wearing the headset and two hands appears. The animated scan emerges from the user as a virtual reflection.

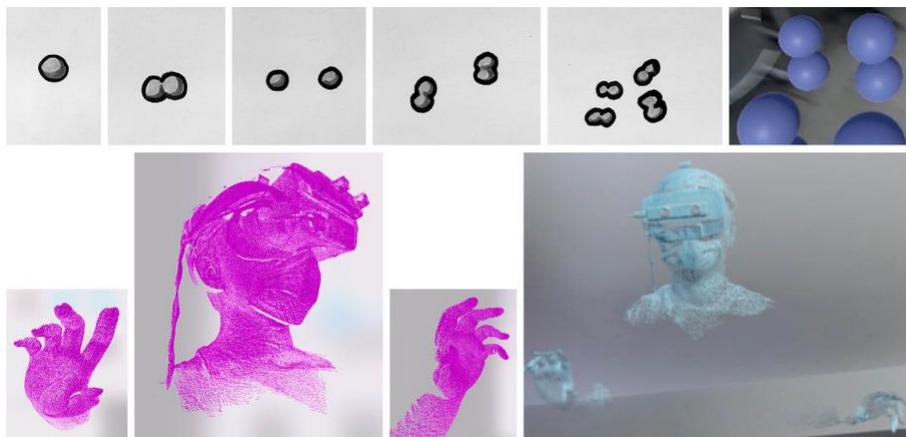
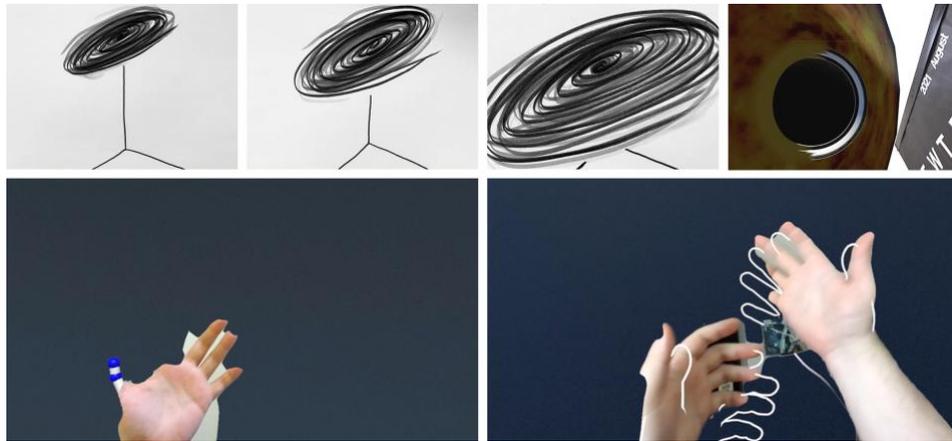


Figure 16: Lidar scan of headset and hands

**Virtual Space** – During the rapid prototyping phase, this simple interaction was used as a placeholder for the “perception” section. Simply a sphere with a plain black material applied, placed around the user’s head, creates an interesting effect—engulfing the user in virtual space that is difficult to determine the volume of. By allowing occlusion from the user’s hands, the physical environment is able to peek through, emphasizing the isolating effect. The section “quantum spacetime” has been repurposed to the thematically stronger concept of “virtual space.”



*Figure 17: Virtual space engulfing the user*

**Soundtrack** – The sounds used in early versions of the project were created from audio samples of process documentation voiceovers, and were great inspiration to consider how to best incorporate audio into the final version. Instead of learning new audio software, a generative approach was taken using the AI music generating service Boomy<sup>41</sup>. There are several parameters which can be adjusted as the user generates and accepts or rejects each song.

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<sup>41</sup> *Boomy*, <https://boomy.com/>. Approximately 100 songs were generated to select 12 that were deemed appropriate for the project. The album artwork is also generated based on keyword prompts.

Twelve generative compositions were selected and compiled as the original soundtrack, *Tentacular AI OST*, which is available to listen to on streaming services.<sup>42</sup>

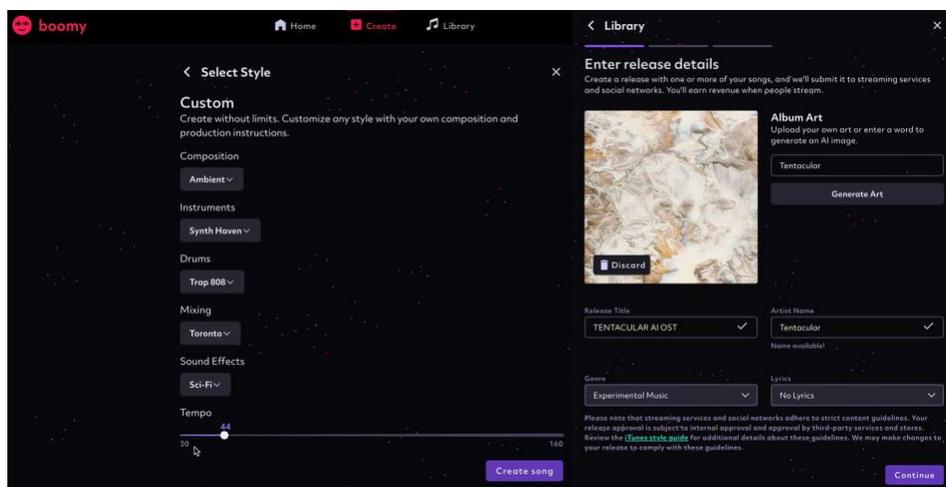


Figure 18: Boomy AI generative music and album art settings

**Departure** – By the time each of the tentacles has been activated, they have gone from the state of being still to undulating aggressively. With Experiential Reality, there would be no device to remove and possibly no way to depart from the experience except for it to become dormant. Within the fictional context of the T.E.N.T.A.C.U.L.A.R. calibration process, there is a device to remove, and the user is able to disengage with the experience. A determination is made whether the user is a viable candidate for future implementation of Experiential Reality.<sup>43</sup>

### 3.3.2 Experiential Reality Exhibit

This project is part of the 2022 Digital Futures Graduate Show, *Dual Exposure*, exhibited in the OCAD University Graduate Gallery on April 12-14 as an interactive installation, allowing

<sup>42</sup> *Tentacular AI OST*: <https://linktr.ee/Tentacular.AI.OST>.

<sup>43</sup> Appendix D: Document Detailing “Evil Plan” – “accidentally” displayed at the end of the interaction.

Appendix E: Blueberry Video Transcript alternatively plays to indicate viable compatibility.

an immersive way for participants to experience the narrative.<sup>44</sup> Two versions of walkthrough videos for Prototype Version 3.1 have been captured as the most recent iteration before the exhibited version.

### 3.3.3 Findings

The iterative research-creation process of this thesis has allowed the conceptual aspects, technical considerations, original art assets, fictional narrative, and contextualization to recursively build upon one another. The proposed research questions have been refined throughout, and were never intended to be directly answerable, but to serve as a reference point to bring together these thematic explorations. Rather than providing answers to these questions, this project serves to emphasize them.

**How might a speculative approach to Augmented Reality inform the narrative possibilities and design affordances of a nonlinear storytelling experience?** There are seemingly endless ways in which speculation can inform storytelling and interaction decisions in AR or any medium, making this a valuable question to continuously revisit.

**How is the concept of ‘tentacular embodiment’ useful as a narrative model or as a metaphor for emerging modes of perception alternative to the human perspective?** As an adaptive, shapeshifting form, the cephalopod structure managed to contort itself to fit more aspects of this project than could have been foreseen. What could have been a fleeting concept became a powerful metaphor that proves to be exceptionally useful.

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<sup>44</sup> 2022 Digital Futures Graduate Thesis Projects: [www.dfthesis.com/2022](http://www.dfthesis.com/2022).

**What are the implications of ‘Experiential Reality’ on the dynamic between humans, the virtual, consciousness, and perception?** With the impending potential of AR ubiquity, the virtual and physical are likely to become increasingly intertwined with users’ experience of reality. The unpredictability of how this will unfold makes this dynamic worth considering further.

**Are works of Speculative Fiction effective in altering how reality is understood and experienced?** Perhaps the most subjective of these questions, this seems to be a matter of how engaging a given work is to its audience. Efficacy aside, imaginative explorations of potential trajectories are useful ways to work through the implications of burgeoning technology and prompt discourse without necessarily offering conclusive resolutions.

## **Chapter 4: Culmination**

### 4.1 Reflection

The concept of “tentacular embodiment” is at the core of this thesis and has established itself in every aspect of the project. What began as a metaphorical other intended to embody the agential capacity of communication media and works of Speculative Fiction, morphed into a storytelling model which shaped the narrative structure of the experience. This malleable form also applies to the technology stack assembled on the headset device, with multiple cords reaching out from the computer and entangling the user. The structure of this document also seems to fit, with its interconnected network of ideas, reaching out beyond the confines of written text through footnotes and hyperlinks which extend to other media forms which may be experienced nonlinearly. Like the first creature born of SF, this speculative creation has been

stitched together and taken on a life of its own—a sprawling tentacular entity with the agency to reach out and manifest in the user’s experience of reality.

#### 4.2 Future Work

*Tentacular* builds upon my previous work and is representative of the fields of study I find most engaging and will continue to explore. To speculate on future directions this project may head, it is helpful to consider past influences which led to this trajectory.

*The Message in the Media*<sup>45</sup> is an AR experience I developed for my undergraduate capstone project at MacEwan University. A series of cards act as 2D image targets that anchor virtual elements to supplement and animate the printed content.

This work was recently continued in *Media Metamorphosis*<sup>46</sup>, for which a series of 3D-printed media objects act as 3D AR targets that play an assemblage of clips highlighting the book, the radio, the television, and the computer.

*Multisensory Moments: Los Carpinteros La Montaña Rusa*<sup>47</sup> is a collaborative multisensory interpretation of an artwork which includes an AR representation of the sculpture.

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<sup>45</sup> *The Message in the Media*, <https://youtu.be/ogg1j-X1Vq4>.

<sup>46</sup> *Media Metamorphosis*, <https://youtu.be/ReC7F3Eyptl>.

<sup>47</sup> *Multisensory Moments: Los Carpinteros La Montaña Rusa*, <https://ago.ca/events/multisensory-moments-los-carpinteros-la-montana-rusa>. Created for the Art Gallery of Ontario, in collaboration with OCAD University graduate students Mihyun Maria Kim in the Interdisciplinary Art Media and Design program, and Tamara Crasto in the Inclusive Design program. We worked with blind and low vision volunteers throughout our process to create this multisensory interpretation of *La Montaña Rusa* by Cuban artist collective Los Carpinteros. Video premieres April 25, 2022.

This video was created with the intention of making the work accessible to the widest possible audience, regardless of access or ability.

*Superluminal; or, A Tale of Longing Across Space and Time*<sup>48</sup> is a melodramatic transmedia narrative which tells the story of an unexpected connection formed between an alien and a robot who communicate across spacetime with radio waves and QR codes that reveal messages in AR.

Each of these projects incorporates Augmented Reality as an exploration of the storytelling affordances of AR as a medium, particularly as an experience designed to be connected with other transmedia elements and the user's environment. This project itself can be continually refined and made more complex, adapted for a future commercial AR headset device, or used as a model to create other explorative storytelling projects. It is this emergence of narrative possibility that I hope to pursue as AR devices become more ubiquitous and the next new form of communication media reveals potentialities that are currently just speculation.

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<sup>48</sup> *Superluminal; or, A Tale of Longing Across Space and Time*, <https://twitter.com/ZVN1618>.

### 4.3 Conclusion

Each component—the narrative, the virtual build, the device it is displayed on, the context of the physical environment it is experienced in—all of these elements are interconnected and depend on one another. These fragments come together as an assemblage, constructing a tentacular entity that is animated (in the Promethean sense) not entirely in the virtual or physical world, but through the user's unique experience of reality. This shapeshifting creature takes on a different form throughout each interaction based on the sensory engagement of the user, expanding to emerge as a distinct embodiment from the perspective of the subject. As virtual representations of fictional creations develop in complexity and become more integrated into physical environments, they may depend less on their audience to have an active presence in the world. Even as human consciousness progresses further into the virtual, constructed immaterial creatures may eventually manifest as fully realized others coinhabiting reality.

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## Appendices

### *Appendix A: Abridged Thesis Overview Video Transcript*

[Title card]: Tentacular: The Agency of Speculative Fiction in Experiential Reality

[00;00;11;24 - 00;04;48;14]: As technology continues to develop and blur the lines between the physical and the virtual, it is increasingly difficult to define what should be considered to be real and to whom this notion of reality applies. AR offers a way to draw virtual content out into the physical world, less as a gateway to bring humans into the virtual world and more of a mechanism to bring the virtual into the human world.

The headset device is compiled from a ZED Mini camera, which uses two lenses optimized for air pass through video with the Leap Motion hand-tracking sensor allowing for intuitive interaction without handheld controllers, attached to an Oculus Rift S VR headset. This device is an assemblage pieced together to create a single-unit wearable solution, which allows for an immersive and intuitive experience akin to what will likely be available in the near future.

Instigation. To begin this engagement, the user must symbolically make a decision to instigate the experience. This is not so much a beginning to the interaction but more of a prod to awaken it. Tentacles. The core of the experience is represented by a series of tentacles which become more active as the user engages with various interactions.

Creature. This is a direct reference to Frankenstein's monster, who has lived on in the public consciousness as an imaginative abomination.

Crudely pieced together from innumerable embodiments, brought to life by means of electricity. Determinacy. This interaction is meant to prompt consideration of whether a

puppet is commanded by the actions of the one pulling the strings, or if the actions of the puppet dictate the movements of the metaphorical puppeteer and what might be the consequences of cutting the strings.

Manifesting Fiction. A book rises from the ground, revealing an image of Cthulhu. A 3D rendering of the image emerges from the page, a literal depiction of fictional works manifesting in the real world from the perspective of those who engage with it. Media Evolution. This brief interaction is meant to be reminiscent of the evolution of media and how information is accessed. Formats such as VHS tapes and floppy disks keep discrete pieces of information separate from the device on which they are displayed. However, such methods are becoming increasingly redundant with the rise of cloud storage. Nervous Systems. Juxtaposing modes of perception and ways of processing sensory inputs, including the technology stack used to create this experience. These elements are overlaid and separated to contrast these alternative means of perception.

Perception. This scene is meant to evoke the subjectivity of perception. Reproduction. The Lidar scan of a masked person wearing the headset and two hands appear. The animated scan emerges from the user as a virtual reflection. Virtual Space. Simply a sphere with a plain black material sphere placed around the user's head, creating an interesting effect engulfing the user in virtual space.

By allowing occlusion from the user's hands. The physical environment is able to peek through, emphasizing the isolating effect. There are seemingly endless ways in which speculation can inform storytelling and interaction decisions in AR or any medium,

making this a valuable question to continuously revisit. As an adaptive shapeshifting form, the cephalopod structure managed to contort itself to fit more aspects of this project than could have been foreseen.

What could have been a fleeting concept became a powerful metaphor that proves to be exceptionally useful. With the impending potential of AR ubiquity, the virtual and physical are likely to become increasingly intertwined with the user's experience of reality. The unpredictability of how this will unfold makes this dynamic worth considering further. Imaginative explorations of potential trajectories are useful ways to work through the implications of burgeoning technology and prompt discourse without necessarily offering conclusive resolutions. Like the first creature born of Speculative Fiction, this speculative creation has been stitched together and taken on a life of its own. A sprawling tentacular entity with the agency to reach out and manifest in the user's experience of reality. As virtual representations of fictional creations develop in complexity and become more integrated into physical environments, they may depend less on their audience to have an active presence in the world. Even as human consciousness progresses further into the virtual, these constructed, immaterial creatures may eventually manifest as fully realized others who coinhabit it in reality.

*Appendix B: T.E.N.T.A.C.U.L.A.R. Orientation Video Transcript*

[Title card]: EXPERIENTIAL REALITY – *What is reality, if not experience?*

[00;00;26;21 - 00;02;33;05]: Oh, hi there. I'm just finishing up the calibration process to see if I'm a viable candidate for the exciting new technology known as Experiential Reality.

You might be thinking, "You want me to walk around with that monstrosity wrapped around my head?" Not at all. This device facilitates the process of Technologically Enhanced Neurally Transmitted Approximation Calibrated Utilizing Latent Augmented Reality, or Tentacular.

This technical analysis is conducted to determine the specimen—the user's compatibility for future permanent implementation of Experiential Reality.

So what exactly is Experiential Reality? This bleeding edge technology advances beyond the audiovisual elements of Virtual Reality and Augmented Reality to activate other sensory responses and minimize the dissonance between the virtual and the user's experience of reality, all without the need to peer through a screen or wear an external device.

Ready to find out if Experiential Reality is right for you? Let's get started with Tentacular.

A soluble temporary microchip which will initiate the calibration process must be consumed to instigate this engagement. The user must make a very important decision—strawberry or blueberry. Although there is a pleasant taste, it is imperative to resist consumption until the device has been activated. The subject—the participant will engage with a series of interactions by using hand gestures to select virtual objects indicated by their purple color. Please be aware that some participants may be sensitive to visual latency, distortion and rapid lighting changes. The calibration of hand gestures may also be unstable throughout this process to mitigate these effects. The user may lower their arms and slowly raise them back into vision until an outline appears. Please

refrain from rapid movements and remember that the effects of this process are irreversible and maybe forever ingrained at the user's mind.

The user may indicate that they are prepared to proceed by placing the microchip at the base of their brain. Let us begin. You may now chew and ingest the tiny brain.

*Appendix C: Supplemental SF Contextual Review Video Essay*

<https://youtu.be/oFDwTNZTT1g>

*Appendix D: T.E.N.T.A.C.U.L.A.R. Blueberry Video Transcript*

[00;02;34;06 - 00;02;50;14]: Congratulations! TENTACULAR has determined that you are a viable host—candidate for future permanent implementation of Experiential Reality. Experiential Reality is not yet approved for commercial use. The creators of this product are not responsible for any lingering side effects or dissociations with reality.

*Appendix E: Document Detailing “Evil Plan”*

EVIL PLAN

- CREATE LIFE
- Trick unwitting specimen to manifest creature
- Market it as an “experience” – PROFIT \$\$\$
- Global domination
- NFTs ?

*Appendix F: Early Thematic and Narrative Brainstorming*

- Evolution of Media: History of media / Experiential Reality
  - Media is only able to come to life while being experienced, otherwise exists in a dormant state

- Media works can only be truly experienced once – the second viewing is seen with a completely different context and a sort of inverted sense of anticipation, creating an entirely new experience for each subsequent or partial viewing
- Our unique experience and memory of the work is its true manifestation
- Technology has incrementally allowed media to remain in an almost perpetually active state thereby gaining agency
- Eventually there will be no headset to remove
- Frankenstein's Monster: *Frankenstein* / electricity
  - Assemblage of assemblages
  - Abomination of an abomination
  - Brought to life through electricity
  - First creature of Science Fiction
  - Meta-narrative – story within a story within a story
  - Manifested in public consciousness as a monstrous misunderstood creature pieced together from various incarnations and is able to live on through successive forms of emerging technology made possible by electricity
- Cephalopod Anatomy: Octopus Biology / tentacular embodiment
  - Tangential evolution apart from the human experience
  - Completely different form of intelligence and understanding of the world
  - Structure, Nervous system, Anatomy, Abilities
- Manifestation of Fiction: SF effect on reality

- Authors tapping into something they cannot fully comprehend
- Trying to create a representation of an emerging possibility as it is being realized
- Capturing a glimpse of what is becoming before it is known
- Symbiotic or even parasitic relationship with human beings wherein society would not have been able to advance without the development of media technology, which leveraged human progress to bring itself to life, continuing to develop and advance beyond human comprehension
- Perception: ways of understanding / information processing
  - Human sensory experience
  - Cephalopod sensory experience
  - Technological sensory experience / data processing
- Reproduction: Mechanical / biological
  - Idea is inseminated
  - Concept is conceived and developed
  - Gestates and grows until ready to enter the world
  - Birthed against its will by the will of its creator
  - Continues to live with gradually less oversight and control by the creator
  - Impossible to predict what it will turn into, how it will be received by others
  - May go on to spawn offspring of its own or may simply die
  - Connection, insertion, sensual
- Determinacy: Puppetry / control

- Being made to control a puppet
- Controlled sense of control
- Although the puppet responds to the movements of its master, the actions of the puppet dictate the way in which the master must move
- Illusion of control
- Quantum Spacetime: superpositions
  - Able to be simultaneously contradictory
  - Superpositions allow for more opportunities than their respective binary values combined
  - Not a literal multiverse of alternate dimensions but an ephemeral eternity of ever-emerging indeterminacies which hold infinite potential until they are realized, at which point they will have always been whatever they become
- Narrative Conclusion
  - After the user has reached out and explored each “tentacle,” the central core takes over to bring these thematic elements together — an assembled entity which has manifested in the physical world, gaining agency over its audience
  - Literally wrapped around their brain, distorting their view of the world
  - Thoughts have been completely entangled
  - Mind has been ensnared and devoured
  - Too late to do anything about it
  - Can take headset off but cannot be removed from memory

- The virtual becomes inextricable and indistinguishable from the physical world
- Not technically mandatory but impossible to participate in society without it