

APPROVAL SHEET

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ABSTRACT

Title of Document: WANDER/WONDER
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Wander/Wonder explores the nature of speculation and our changing relationship with physicality through two separate but connected experiences: *Wander*, a walkable virtual street map of Baltimore City with all buildings removed except for psychic reader storefronts, and *Wonder*, a zero-gravity digital astral plane experienced as a virtual reality environment. While the interactor flies through the *Wonder* side via an Oculus Rift VR headset, the *Wander* side is projected on a screen for spectators to view. The interactor uses a custom crystal ball controller to navigate both environments simultaneously - one person guides the experiences of spectators in *Wander* while fully immersed in the VR environment of *Wonder*.

Interacting with the environments challenges participants to consider their relationship to the future in an increasingly speculative age. *Wander* presents a world where the physical aspects of the city have faded, leaving only the speculation offered by psychics.

Predictive algorithms use metadata such as browser activity, searches, and previous purchases to anticipate future actions by a user, much as psychics gather bits of data to divine the future through arcane or mysterious processes. *Wonder* offers the opportunity to surrender physical reality in exchange for an experience beyond reality, a sort of second Sight. This reimagining of the trope of the blind oracle represents a more hopeful interpretation of the transformative powers of technology.

WANDER/WONDER.

By

Mollye Catherine Bendell.

Thesis submitted to the Faculty of the Graduate School of the
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Dedication

Dedicated to August Odell Dicks, the future.

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Table of Contents

A Future Experience	1
Ephemeral Technologies	3
Practical Magic	7
Blind Oracles	9
The Psychic and the Search Engine	12
Nearness	20
In Context	25
“the language of the angels”	27
Conclusion	33
Bibliography	35

A Future Experience

In the physical space of the virtual reality work Wander/Wonder, the interactor enters a dark exhibition space, and stands at a plinth facing a projection screen. A crystal ball is inset in the pedestal top at waist height, and the interactor is encouraged to put on a virtual reality headset. Once immersed in the VR experience, the interactor uses the crystal ball controller to navigate through the Wonder environment. The interactor controls two separate applications with the crystal ball. The projection screen shows the Wander application, while the headset shows the Wonder application. In this way, the interactor only experiences a flight through Wonder and the onlookers only traverse Wander.

In Wonder, the interactor flies through a rendition of an astral plane. As the interactor puts on the headset, they surrender their awareness to their physical environment. In exchange, they are privileged with a *Second sight*, an opportunity to experience something beyond physical reality. Every form within the plane derives from my hand-drawn sketches. After digitization, these sketches are used as reference images to create 3D forms. The sketches are then mapped to those forms as textures.

Although somewhat analogous to a natural world, the environment attempts to create a sense of the ephemeral with floating forms and transparent textures.

Wander consists of a walkable street map of Baltimore City with all buildings removed except the psychic reader storefronts. Where viewers expect to see blocks and buildings, instead they see empty space, a digital abyss mapped with a skeletal street map. The map uses the correct elevations, and the hills and valleys of Baltimore will feel familiar to those who have spent time walking in this city. Attempting to enter a psychic by walking through a door teleports the user outside of a different psychic.

Ephemeral Technologies

The art of speculation has incited reverence and suspicion long before the predictive qualities of artificial intelligence became newsworthy. Historian Elizabeth Petroff observes “Mystics may be found in every religious tradition, sometimes as central participants but often on the periphery of accepted practice, for they map out new experiences of the divine.”¹ Before religion and technology became distinct from one another as problem solving methodologies, oracles filled the role of scientific advisor by practicing divination rituals to interpret Divine will. Ancient civilizations such as Greece, Rome, and Egypt established oracles as a governmental office where the individual acting in the position changed, but the role remained.² For example, the Pythia, a priestess also known as the Oracle of Delphi, acted as an advisor for ancient Greeks from the eighth century BCE to the fourth century CE. During this 1200 year span, the Delphic oracle became the authoritative advisory voice in ancient Greece and arguably one of the most powerful women in the Classical world.³

¹ Elizabeth Alvil Petroff, “The Mystics,” *Christian History* 10, no. 2 (May 1991): 31.

² These oracles were public servants, like librarians or judges. Like the Supreme Court, the oracle could choose which problems were important enough to hear. The process of travelling to Delphi to consult the oracle, as well as the elaborate rituals supplicants were required to undergo to prepare to receive the priestess, meant that the queries were of extreme importance.

³ William Anderson, ed., “The Delphic Oracle,” in *Man’s Quest for Political Knowledge*, NED-New edition, The Study and Teaching of Politics in Ancient Times (University of Minnesota Press, 1964), 109–18, <http://www.jstor.org.proxy-bc.researchport.umd.edu/stable/10.5749/j.ctttsz1z.9>. Between eight and ten Sibyls (oracles; priestesses chosen to commune with Apollo) have been documented throughout ancient Greece, Rome and Egypt.

Through the seventeenth century, European academics considered divinatory astrology a branch of mathematics.⁴ This allowed (male) psychics such as Nostradamus to publish yearly almanacs containing predictions so compelling that they have rarely been out of print since his death in 1566, even while authorities continued to aggressively execute witches. The Enlightenment era emphasis on scientific method and rational thought resulted in the expulsion of astrology from academies and universities as “...minds like those of Galileo, Descartes and Newton introduced clarity and precision in the domain of mathematics, physics and astronomy.”⁵

The academic dismissal of astrology reflected the rejection of psychic abilities in the Enlightenment era and beyond. However, several hundred years later the Modern Spiritualist movement renewed social interest in the paranormal as an object of study and curiosity.⁶

⁴ Lynn Thorndike, *History of Magic and Experimental Science*. (New York: Columbia University Press 1958), 8-17. By far the most comprehensive academic resource on mysticism I found in the course of my research, Lynn Thorndike delves into this era with an in-depth summary, culminating thus: “Like Moses we have brought the reader through the wilderness to within sight of the promised land of modern science. It remains to be seen whether we shall enter in or whether we shall content ourselves with viewing the prospect o’er from the other - magical - side of Jordan.”

⁵ Thorndike, *History of Magic and Experimental Science*, 14.

⁶ J. Gordon Melton. *Encyclopedia of Occultism And Parapsychology*. (Boston: Gale / Cengage 1996), 1247. “The introduction of modern Spiritualism in 1848 undoubtedly set the stage for psychical research. The movement was so widespread and the reports of its effects so numerous and impressive that it was inevitable that scientists (especially those facing the spiritual questions to which the movement spoke) would be attracted to the movement and then drawn into an examination of the alleged phenomena.”

In the late 19th century, between the wake of the Second Industrial Revolution⁷ and advent of psychoanalysis, the term “psychic”⁸ first appears in English.^{9 10} Historian Richard Noakes argues, in *Thoughts and Spirits by Wireless: Imagining Psychic Telegraphs*, that the new ubiquity of devices such as the electric telegraph contributed to the renewed interest in mediumship during this time period. The “invisible channel through which professed spirits of the dead interacted with the living was often thought to be a subtle fluid analogous or closely related to electricity and this helped justify claims that spiritualism involved the ‘celestial’ or ‘spiritual’ equivalent to the electric telegraph.”¹¹ Similarly, Dr. Todd Jay Leonard, a social scientist specializing in American religious history writes in *Talking to the Other Side* that the “acceptance of mechanical technology [...] help[ed] to lay the foundation for the possibility of technology being able to be used as a form of ‘science’ to prove the existence of life after death in the form of spirit communication.”¹²

The devastation of mechanized warfare increased the appeal of searching for life after death with the latest technology. The emergence of photographic technology in the aftermath of the Civil War produced the curious phenomenon of spirit photography,

⁷ The Second Industrial Revolution (generally dated 1870 - 1914, the beginning of WWI) yielded major advances or inventions in photography, telephone, phonograph, microscope, moving image, seismograph, and the discovery of the electromagnetic spectrum itself.

⁸ From the Greek psychikos (“of the mind”), rooted in the Greek psyche (“soul” “to breathe”).

⁹ Melton, 1247.

¹⁰ Psychology was considered a branch of philosophy until late 19th century.

¹¹ Richard Noakes, “Thoughts and Spirits by Wireless: Imagining and Building Psychic Telegraphs in America and Britain, circa 1900–1930,” *History & Technology* 32, no. 2 (June 2016): 137–58, <https://doi.org/10.1080/07341512.2016.1217598>.

¹² Todd Jay Leonard, Phd. *Talking to the Other Side: a History of Modern Spiritualism And Mediumship: A Study of the Religion, Science, Philosophy And Mediums That Encompass This American-made Religion*. (Indiana: iUniverse, Inc. 2005), 71.

in which mediums “capture[d] images of the dead returning from the other side to be photographed with their loved ones.”¹³ New technologies¹⁴ fueled popular perception that researchers could methodically evaluate psychic phenomenon. Noakes further asserts that by “the 1920s this interest was fuelled by the growth of radio broadcasting and by Spiritualism’s increased appeal to the bereaved masses seeking reconciliation with the personalities of loved ones killed in the First World War.”¹⁵

¹³ Martyn N. Jolly, “Faces of the Living Dead,” Martyn Jolly (blog), October 2, 2013, <https://martynjolly.com/2013/10/02/faces-of-the-living-dead/>.

¹⁴ New technology more creates an atmosphere of interest in mediums than defrauds them - exposing fake psychics remained more or less analog. Psychics were defrauded in this time by, more or less, people jumping out from behind curtains to pull off the mask of an accomplice.

¹⁵ Noakes, 138-139.

Practical Magic

A psychic reader provides a framework for working through “psychic” problems, meaning the very human impulse to attempt to look into the future. Does acknowledging the possibility that every reading may be a con undercut the appeal of a psychic reading? In his profile of psychic readers of New York City, Mark Jacobson offers an alternative take:

“On one hand, I justified giving money to these fakers as a form of grifter tax, a perverse appreciation of the long-running, ritualized con. But there was more to it than that. Hunted by the Nazis just like the Jews, the Rom might weight the wheel for the *gadjje*, but that didn’t mean they didn’t believe, totally, in the all-encompassing vagaries of chance and fate, or what they call *baxt*. [...] knowledge that the game is fixed doesn’t stop the urge to play anyway.”

Consider the relationship between risk-taking and predicting the future. Followers of astrology tend to “plan it by the planets,” that is, at the beginning of each month (or day) they check their horoscope to find which times will be most advantageous to schedule various things in their lives. After an assassination attempt on Ronald Reagan’s life in 1981, Nancy Reagan hired an astrologer, Joan Quigley and planned her husband’s schedule based around Quigley’s readings.¹⁶ There was no way that the First Lady was taking any risks that might be avoided through psychic powers.

¹⁶ Roberts, Steven V., “White House Confirms Reagans Follow Astrology, Up to a Point - The New York Times,” May 4, 1988, <https://www.nytimes.com/1988/05/04/us/white-house-confirms-reagans-follow-astrology-up-to-a-point.html>.

Further, the ability to predict the future often seems to create more anxiety about that future. For example, one of the most popular astrologers in the world, Susan Miller, has increased her writings to over 3,000 words for each horoscope, each month. She has grown so prolific that her followers periodically turn on her if she posts readings later than the first of the month.¹⁷ Again, we come to the vulnerability of the query. Does the presence of psychics indicate a constant and very real human need?

¹⁷ Jon Methven, “Dude, Where’s My Horoscope?,” *The Atlantic*, July 11, 2014, <https://www.theatlantic.com/business/archive/2014/07/dude-wheres-my-horoscope/374258/>.

Blind Oracles

In *Wonder*, the interactor is blinded to the realities of the outside world in exchange for a singular experience in a different reality. Through thousands of years of cultural tradition prophets have been symbolically or physically blinded. In Western tradition, this theme may have originated in ancient Greece, although versions of this archetype appear in many cultures and eras - consider for instance the importance of the “third eye” in dharmic spiritual tradition. In a defining Greek example, the myth of Tiresias, Hera blinds Tiresias for agreeing with her husband, Zeus, that women enjoy sex more than men. Unable to undo the work of another God, Zeus instead grants Tiresias the second Sight, the ability to predict the future. Tiresias goes on to appear in, among many others, *Oedipus Rex*, the *Metamorphoses*, and the *Odyssey*.¹⁸¹⁹ In a more recent example, Tiresias receives a couple of lines in T.S. Eliot’s *The Waste Land*. Further supporting the idea that the absence of sight grants insight, the blind seer trope often extends to poets or other kinds of storytellers. Homer is most often depicted as blind, and Larrissy lists numerous examples of blind Celtic bards.²⁰ Mary Ann Beavis

¹⁸ “Tiresias | Greek Mythology,” Encyclopedia Britannica, accessed April 14, 2018, <https://www.britannica.com/topic/Tiresias> In another version of this origin story, Tiresias saw Athena, the Goddess of Wisdom, bathing and she blinded him in anger. However, after Chariclo intervened on his behalf, Athena offset the punishment with the gift of foresight.

¹⁹ Tiresias is possibly most well known for his appearance in Sophocles’ *Oedipus Rex*, in which he provides an ironic foil to Oedipus. Although physically sighted, Oedipus is blinded by his own anger and pride, while Tiresias, physically blind, has intimate knowledge of Oedipus’ future. Only when Oedipus loses his sight can he “see” the error in his ways.

²⁰ Edward Larrissy, “Celtic Bard in Ireland and Britain: Blindness and Second Sight,” Edinburgh Scholarship Online, March 2012.

attributes this connection to social roles the blind often played in antiquity, such as poets reciting verses or as seers providing consultations to the public.²¹

Prophets in literature often acquire the second Sight to compensate for their physical blindness. There may be some historical foundation to this. Historian Mary Ann Beavis documents figures of antiquity such as Democritus and Phineus, who gave up their sight in exchange for heightened mental strength. She further cites Wolfgang Schrage's observation that rabbinical scholars euphemistically refer to a blind person as "one who sees clearly," indicating that their physical blindness has improved their spiritual powers.^{22 23} Regardless, the trope of blindness imparting a different form of sight persisted through popular culture from *Oedipus Rex* to *The Matrix* to *The Wire*.^{24 25}

The blind oracle takes on new meaning when considered through the lens of virtual reality. In *Wonder*, although the interactor faces and controls the *Wander* environment, they are blind to the experience they create for spectators. In exchange, they use the *Wonder* app to fly through a reality that is always unfolding. A VR

²¹ Mary Ann Beavis. *From the Margin to the Way*. 27.

²² Democritus willingly blinded himself to improve his powers of concentration, while Phineus traded his sight to become a seer.

²³ Accounts conflict as to whether the Pythia wore a veil. Phillip Vandenberg writes that the Delphic Oracle wore a purple veil while undergoing monthly purification rituals to prepare for communication with the gods, but Beavis claims there is a surprising absence of evidence for blind Greco Roman priestesses.

²⁴ In the film *The Matrix: Revolutions* Neo is only able to defeat Bane when the act of Bane blinding him allows him to tap into the Source.

²⁵ In the television series *The Wire*, Butchie, a blind bartender, "serves as Omar's banker and advisor — one of the few people the stick-up artist can trust. Quick to arrange for cash or muscle as the need arises, Butchie also stands as the lone point of contact for reaching out to Omar."

<https://www.hbo.com/the-wire/cast-and-crew/butchie>

headset physically blinds the user to their immediate surroundings as they explore a reality completely independent of their physical location. The user trades the ability to interact with their physical environment for an experience within a simulated world.

The Psychic and the Search Engine

An inauthentic psychic²⁶ often uses a form of mentalism called a cold read to evaluate their clients.²⁷ In a cold read, psychics “read our clothing, physical features, nonverbal gestures, and reaction to what they are saying.” writes Myers. For example, a client unconsciously fiddling with a wedding band may be worried about their marriage. A fresh tattoo may commemorate a recent life change. After evaluating this data, the psychic uses the power of suggestion to control the rest of the reading and produces specific details to convince the client of the authenticity of the reading. Myers quotes Ray Hyman, psychologist and former psychic:

Memorize some universally true statements from astrology and fortune telling manuals and use them liberally. Tell people it is their responsibility to cooperate by relating your message to their specific experiences. Later they will recall that you predicted the specifics. Phrase statements as questions, and when you detect a positive response, assert that statement strongly. Be a good listener and later, in different words, reveal to people what they earlier revealed to you. If you dupe them, they will come.

²⁶ Or perhaps, an authentic psychic dealing with a problematic client.

²⁷ In contrast, a “hot read” refers to a time when a psychic is given information to act on, such as when the police hire a psychic to find a missing person.

Like search engine algorithms, then, psychics use collected data to modify user experience. The key: both seek a void or vulnerability in the user based on data separate from the query itself.

The word algorithm has become a convenient substitute terminology for a variety of ominous artificial intelligence (AI) concepts, but an algorithm in its most basic form is “a series of instructions that explain how to perform a task.”²⁸ Dr. Parnos Parpas, lecturer at the Imperial College of London, clarifies that current discourse around algorithms is “not about algorithms per se, but about the way society is structured with regard to data use and data privacy. It's also about how models are being used to predict the future.”²⁹ Three interconnected concepts have helped to cultivate the current climate: 1. data sets have grown so large that they are impossible to analyze without automation, 2. that analysis has itself grown so complicated that often the automation is understood through its results rather than its construction 3. the instructions that comprise algorithms can only improve based on their own failures.

In comparison to the broad strokes of a cold read from a psychic that ultimately yield specifics, the algorithm of a predictive application such as a search engine uses specifics to build the broad strokes. To do this, it measures small pieces of specific user data against a much larger set. This metadata could include browser activity, searches, and previous purchases - things unrelated or incidental to the user query that

²⁸ Jacob Brogan, “What’s the Deal With Algorithms?,” *Slate*, February 2, 2016, http://www.slate.com/articles/technology/future_tense/2016/02/what_is_an_algorithm_an_explainer.html.

²⁹ Leo Hickman, “How Algorithms Rule the World,” *The Guardian*, July 1, 2013, <http://www.theguardian.com/science/2013/jul/01/how-algorithms-rule-world-nsa>.

could still be used to anticipate the future actions of the user.³⁰ These small bits of data are so small that it may not be obvious to look for a correlation between, say, curly fries and higher intelligence. Therefore, when companies such as Cambridge Analytica build personality profiles of millions of Facebook users through a voluntary online test, they can cross-reference these test answers with available metadata from the profiles of these users. Their ability to analyze large amounts of linked metadata allows them to reverse engineer their results to build personality profiles of users who did not take the test, but have allowed Facebook access to their metadata.³¹ As of April 2018, Cambridge Analytica stands accused of obtaining that data under false pretenses and using it to create micro-targeted political campaigns advertised to users as valid and objective news stories.³²

Note that the crime here is harvesting Facebook data and misusing it externally. If this information was being used within Facebook to improve its own microtargeting algorithms, which it almost certainly is, that would be legal. The reality check is not the legitimacy, but the clarification of methodologies which use metadata in aggregate to predict and influence user behavior. Users evaluate applications based on output – that is, the ability of digital media to amplify their physical lives. Companies such as Apple, Google, Facebook and Amazon evaluate their own applications’ utility

³⁰ For example, when a user “likes” something on Facebook, Facebook compares that information against a running count of their past “likes,” so it can bump posts by people “liked” most often to the top of the feed.

³¹ This is all Facebook users if one approaches Facebook in the role of an advertiser as opposed to a user.

³² “Did Cambridge Analytica Get Your Data? You’ll Know Soon,” AP News, April 6, 2018, <https://apnews.com/e53b1d2362504890b389c125c6a2f5e4>.

in terms of user input, not service output.³³ Metrics for success consist of levels of user interactivity: how many people use the product, how often they use it, how long they spend with it, and how these metrics yield advertising revenue.

There exists a misconception that as predictive algorithms grow more sophisticated, automation will eliminate human bias in their analysis. In reality, the increasing complexity of these algorithms makes them more vulnerable to human mishandling, because bias is more difficult and expensive to identify. In an interview with NPR, New York Times reporter Cade Metz explains that because humans can't process, for example, hundreds of millions of images at once "these systems operate in ways that even the people who build them do not completely understand. [...] You cannot identify the patterns that that system identified. You can't pinpoint the exact decisions it made over the course of that analysis because you cannot do it yourself."³⁴ Writer David Auerbach, a former software engineer at Google, elaborates that from the perspective of a corporate entity "the reason why any *particular* decision was made is less important than making sure the algorithm makes money overall. Who has the time to validate hundreds of millions of classifications?" Predicting user behavior with neither motivation nor obligation to adjust for error has obvious social

³³ Scott Galloway, *The Four: The Hidden DNA of Amazon, Apple, Facebook, and Google* (Penguin, 2017). "Are these entities the Four Horsemen of god, love, sex and consumption? Or are they the Four Horsemen of the apocalypse? The answer is yes to both questions."

³⁴ Terry Gross, "Robots Are Now 'Creating New Robots,' Tech Reporter Says," *NPR.org*, accessed April 15, 2018, <https://www.npr.org/2018/03/15/593863645/robots-are-now-creating-new-robots-tech-reporter-says>.

consequences. As Lisa Moren summarizes “the presumed objectivity inherent in the “unmanned” algorithm sanctifies the anticipated result as simply true.”³⁵

Because the increasing complexity of these programs creates what Frank Pasquale refers to as “black box algorithms,” said algorithms may only be evaluated by their effect, and as time goes on, even the failures can be difficult to identify “as machine learning and the “training” of data create classification algorithms that do not behave in wholly predictable manners.”³⁶ Further, algorithms now construct new versions of themselves to create more accurate predictions. In his essay on AI learning from aggregate data sets, artist Trevor Paglen writes that the “advent of machine-to-machine seeing has been barely noticed at large, and poorly understood by those of us who’ve begun to notice the tectonic shift invisibly taking place before our very eyes.”³⁷

Predictive algorithms join discrete pieces of information to tap an almost infinite number of niche markets without additional human oversight. Paglen continues to distinguish the “machine-machine landscape” from the “human visual landscape” by describing the paradoxical process inherent in the former:

³⁵ Lisa Moren, “Algorithmic Pollution: Artists Working with Dataveillance and Societies of Control,” *NMC Media-N*, August 20, 2017, <http://median.newmediacaucus.org/uncovering-news-reporting-and-forms-of-new-media-art/algorithmic-pollution-artists-working-with-dataveillance-and-societies-of-control/>.

³⁶ David Auerbach, “The Code We Can’t Control,” *Slate*, January 14, 2015, http://www.slate.com/articles/technology/bitwise/2015/01/black_box_society_by_frank_pasquale_a_c_hilling_vision_of_how_big_data_has.html.

³⁷ Trevor Paglen, “Invisible Images (Your Pictures Are Looking at You),” *The New Inquiry*, December 8, 2016, <https://thenewinquiry.com/invisible-images-your-pictures-are-looking-at-you/>.

The first move is the individualization and differentiation of the people, places, and everyday lives of the landscapes under its purview—it creates a specific metadata signature of every single person based on race, class, the places they live, the products they consume, their habits, interests, “likes,” friends, and so on. The second move is to reify those categories, removing any ambiguities in their interpretation so that individualized metadata profiles can be operationalized to collect municipal fees, adjust insurance rates, conduct targeted advertising, prioritize police surveillance, and so on. The overall effect is a society that amplifies diversity (or rather a diversity of metadata signatures) but does so precisely because the differentiations in metadata signatures create inroads for the capitalization and policing of everyday life.³⁸

In this way, infinite possibilities may exist in tandem with no extra human oversight or effort, tweaked and optimized every time the user interacts with their browser or mobile phone. The ability to predict the future is the precise mechanism that enables these entities to modify user behavior to shape that future. The psychological strategies that social media companies use to popularize their services benefit from more impulsive, emotion-driven users, with provoking interaction as a primary metric of success. In a 2017 interview with the *New York Times*, Jaron Lanier indirectly addresses issues of provocation by commenting on the capacity for social media to amplify specific personality traits: “...there’s a certain kind of personality quality that

³⁸ Paglen, “Invisible Images.”

overtakes you ... It's this kind of highly reactive, thin-skinned, outraged single-mindedness.”³⁹

Corporate and government digital surveillance collects data and uses that data in aggregate to tailor and shape experiences for individual users. The more worrying consequence of this type of AI is the capacity for these tailored environments to modify user behavior. In a successful psychic reading, the user experience shapes the actions of the user, encouraging repeat business by making the client feel in control, but also wanting more. In an interview with Shay Parker, founder of Best American Psychics on the differences between psychics and con artists, Parker states that “bogus psychics specialize in teasing information out of clients and then telling them what they want to hear, typically in the realms of love or money.”⁴⁰ The longer the psychic can prolong and amplify the client’s anxiety about the future, the more successful they will be.

Wander attempts to hold a mirror to oracles that predict user futures without ever facing scrutiny about the way they define those futures. In these situations the technologies that should be increasing accessibility are the exact thing keeping us out. In *Wander*, attempting to enter a psychic only leads you out the door of a different

³⁹ Maureen Dowd, “Soothsayer in the Hills Sees Silicon Valley’s Sinister Side,” *The New York Times*, November 8, 2017, sec. Style, <https://www.nytimes.com/2017/11/08/style/jaron-janier-new-memoir.html>.

⁴⁰ David Lazarus, “How to Tell If a Psychic Is More Interested in Cash than Clairvoyance,” *LA Times*, May 23, 2017, <http://www.latimes.com/business/lazarus/la-fi-lazarus-psychic-scams-20170523-story.html>.

psychic. There is no satisfaction from this minimal landscape. The (neon) signs are there, but not the future.

Nearness

By contrast, *Wonder* attempts to offer an aspirational version of reality, constructing an astral plane that gestures toward psychic vision. As many virtual reality experiences have done in the past, *Wonder* asks, what could be worth leaving your physical body for? The role of the interactor as the navigator of both *Wander* and *Wonder* creates the conceit for the spectator that the interactor receives a privileged perspective as a result of their willingness to leave their physical reality behind.

Virtual realities maintain an uneasy orbit around the subjective reality of an individual. The relationship is complicated and complemented by the interactor as the subject of the narrative. In an essay on the conceptual implications of virtual reality environments, Simon Penny writes that VR “perverts relationships of the dramatic tradition, one is simultaneously actor and director, one is both constructing a narrative, a protagonist of that narrative, and its audience.”⁴¹ Created by, for, and around the user, these spaces feel near real in almost every aspect except the tangible, although tangibility is unlikely to remain a barrier to truly immersive experiences much longer. Not only will haptic feedback mechanisms inevitably improve, but tangibility may not remain a metric for reality. The resurgence of speculation around virtual reality in the past five years, for example, highlights how digital environments

⁴¹ Simon Penny, “Virtual Reality as the End of the Enlightenment Project” (Simon Penny, 1994), <http://simonpenny.net/texts/enlightenment.html>.

have replaced physical environments as venues for communication as the hardware has improved. Penny continues,

The question becomes: what constitutes a continuous interactive representation? [...] The mind, it seems, is very willing to restructure itself to compensate for or adapt to, a changing ‘reality.’ There is a peculiar cognitive feedback loop here: VR, standing in for ‘reality’ begins to shape the way the mind describes its experience to itself.

Consider Lil Miquela, a musician and Instagram personality. Lil Miquela has released an album, pals around with celebrities in LA, and posts pictures with her boyfriend. She also may be an extremely realistic digital rendering. This has made her Instagram a topic of impassioned debate, with thousands of commenters demanding to know if she’s real. Viewers accept that this rendering is real enough that they demand the rendering answer questions about its own existence.



Fig. 1 Comments attempt to determine if Lil Miquela is a "real" person. (Screenshot by Mollye Bendell. *I'm the trick, he's the treat*. By Lil Miquela. San Francisco: Instagram, 2017.)



Fig. 2 Commenter stands up for Lil Miquela. (Screenshot by Mollye Bendell. *I'm that bitch*. By Lil Miquela. San Francisco: Instagram, 2017.)

Possibly the most interesting thing about the mystery of Lil Miquela is that her residence in the *uncanny valley*⁴² is almost certainly intentional on her part. While viewers consider Miquela nearly real, and respond in kind, well over a decade has passed since computer renderings entered photoreal territory. While it would be difficult to point to the watershed moment in which a computer simulation fooled most humans, an exemplary case might be Digital Emily, a 2008 research project led by Paul Debevec at the USC Institute of Creative Technologies.⁴³

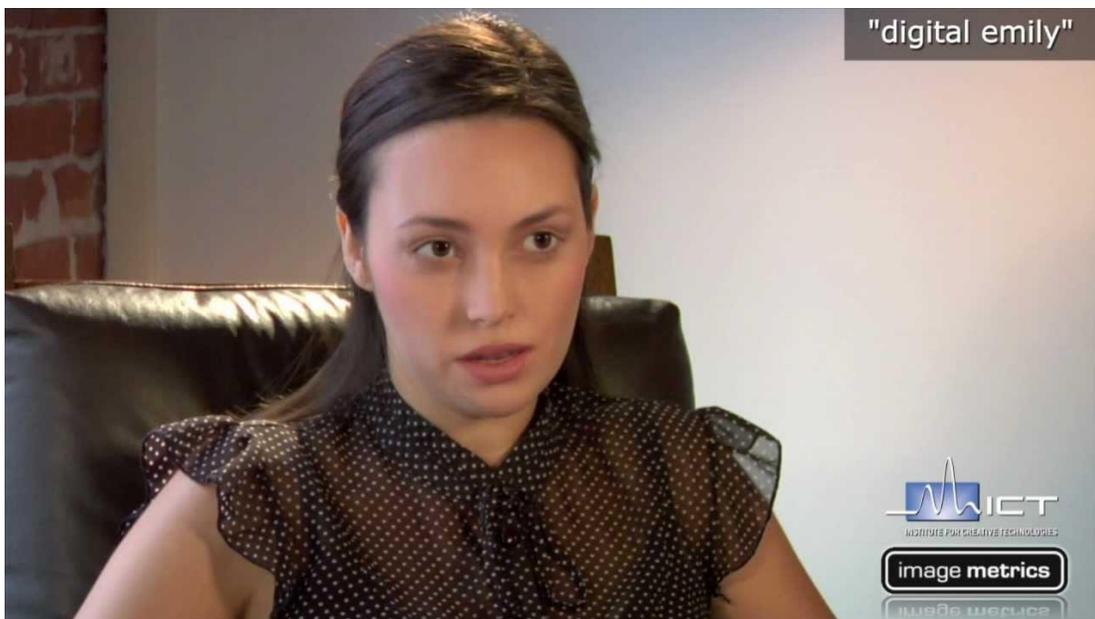


Fig. 3 Rendering of "digital Emily," a digitization of actress Emily O'Brien. (Screenshot by Mollye Bendell. *Digital Emily*. By USC Institute for Creative Technologies. Los Angeles: University of Southern California, 2008.)

⁴² Stephanie Lay, "Uncanny Valley: why we find human-like robots and dolls so creepy," *The Guardian*, 13 November, 2015. "...a characteristic dip in emotional response that happens when we encounter an entity that is almost, but not quite, human."

<https://www.theguardian.com/commentisfree/2015/nov/13/robots-human-uncanny-valley>

⁴³ "The Digital Emily Project: Achieving a Photoreal Digital Actor." USC Institute for Creative Technologies, accessed April 14, 2018, <http://gl.ict.usc.edu/Research/DigitalEmily/> Opening the documentation for the project, the creators lead with this reaction from VFXWorld journalist Peter Plantec: "I'm one of the toughest critics of face capture, and even I have to admit, these guys have nailed it. This is the first virtual human animated sequence that completely bypasses all my subconscious warnings. I get the feeling of Emily as a person. All the subtlety is there. This is no hype job, it's the real thing ... I officially pronounce that Image Metrics has finally built a bridge across the Uncanny Valley and brought us to the other side."

Examples such as Lil Miquela indicate not only that the boundaries of “real” reality grow blurrier, but that the digital expands into physical reality as quickly as humans become more internal. Facebook users who have been at the same party for instance, may find that Facebook suggests they become friends based on the proximity of their smartphones to one another. Joseph Clarke paraphrases Nigel Thrift’s assessment of this integration as follows “By anticipating and second-guessing our decisions about how we occupy our world, Thrift argues, networked computer technology conditions the phenomenal space of our everyday life to such a degree that it constitutes a ‘technological unconscious.’ ”⁴⁴ This anticipation is defined by its capacity to create *nearness*, to simulate not reality but the closest thing to reality. This nearness is fed by its own capacity to anticipate the future.

⁴⁴ Joseph Clarke, “Into a Forest Of Script,” *Log*, no. 12 (2008): 116–24.

In Context

The Oculus Rift used to control the *Wonder* application is a recent iteration of the combination of technological and philosophical speculations that constitute a virtual reality experience. In *Immersion vs Interactivity*, scholar Marie-Laure Ryan uses Pimentel and Texeria's definition of virtual reality as "an immersive, interactive experience generated by a computer."⁴⁵ Speculation on what constitutes immersion and interaction has defined and continues to define scholarship on any form of computer capable of producing an alternate reality. Even less helpful, the form of the computers used to generate these realities and the definition of an alternate reality remain a matter of subjective opinion. Surveying the landscape in 1994, Ryan writes:

"there is hardly anybody who does not have a passionate opinion about the technology: some day VR will replace reality; VR will never replace reality; VR challenges the concept of reality; VR will enable us to rediscover and explore reality; VR is a safe substitute to drugs and sex; VR is pleasure without risk and therefore immoral; VR will enhance the mind, leading mankind to new powers; VR is addictive and will enslave us; VR is a radically new experience; VR is as old as Paleolithic art."

The earliest stereoscopic images were produced by British scientist Charles Wheatstone in 1838.⁴⁶ That said, one could consider that artists and writers have always experimented with immersive media (perhaps, for instance, through the

⁴⁵ Marie-Laure Ryan, "Immersion vs. Interactivity: Virtual Reality and Literary Theory - Postmodern Culture 5:1," 1994, <http://faculty.humanities.uci.edu/poster/syllabi/readings/ryan.html>.

⁴⁶ Clive Thompson, "Stereographs Were the Original Virtual Reality," *Smithsonian*, October 2017, <https://www.smithsonianmag.com/innovation/sterographs-original-virtual-reality-180964771/>.

introduction of perspective into paintings), sometimes pushed by technological innovation but just as often rebelling against it. Charles Baudelaire sniffed at “a thousand hungry eyes, bending over the peep-holes of the stereoscope, as though they were the attic windows of the infinite.”⁴⁷

In the early 1990’s, virtual reality artists and researchers achieved an immersive and interactive experience within the settings of labs and galleries. This created an enormous amount of buzz around the prospect of a marketable VR headset, but the hardware couldn’t overcome the technical challenges presented by a consumer-grade product and public interest waned.⁴⁸ Virtual reality faded from mainstream consciousness until 2012, when the Kickstarter campaign for the Oculus Rift “sparked a renaissance in headmounted 3D.”⁴⁹ At this point, the technology that had choked the mass consumption of VR in the 90’s – LCD screens and tilt sensors – was made cheap and readily available as a side effect of the popularity of smartphones.⁵⁰

⁴⁷ Thompson, “Stereographs Were the Original Virtual Reality.”

⁴⁸ Ben J. Edwards, “A Look at VR from the ’80s, ’90s, and Through Today - IGN,” IGN, October 21, 2016, <http://www.ign.com/articles/2016/10/21/a-look-at-vr-from-the-80s-90s-and-through-today>.

⁴⁹ Thompson.

⁵⁰ Thompson.

“the language of the angels”

That initial boom of virtual reality, however, did generate interest in its potential for immersive and interactive art. Artists in these contexts have repeatedly referred to a psychic landscape or supernatural experience, possibly due to transformative capacity of the media, or the ease with which material can become immaterial, or the parallels between immersive media and out-of-body experiences. Ryan goes so far as to state that “In this mode of communication there will be no need for the user to translate her vision into sets of precise instructions. Purely visual thinking will be implemented by means of practical, non-symbolic gestures. [...] The mystics of ages past (such as Swedenborg, an esoteric philosopher of the XVIIIth century) had a term for this radically anti-semiotic mode of communication. They called it ‘the language of the angels.’”⁵¹

In Char Davies’ virtual reality work *Osmose*, the *immersant* explores a dozen surreal world spaces, navigating using their breath and balance. Davies writes that the aesthetic of *Osmose* “relies on transparency and ambiguity” and that the visual elements “work together to loosen the mind's rational hold, dissolving the subject/object dichotomy and, in a dreamlike way, shifting the immersant's mode of

⁵¹ Ryan, “Immersion vs. Interactivity.”

experience away from the everyday bias of eyesight to one that resonates deeper within the physical body.”

Researching Davies’ background as a painter directly inspired the aesthetic choice to use exclusively hand-drawn textures in the *Wonder* experience. Drawing has always been foundational to my practice. In a previous work, *Schematic*, every graphical mark I made in a sketchbook was scanned and compiled into a single scalable vector graphic.

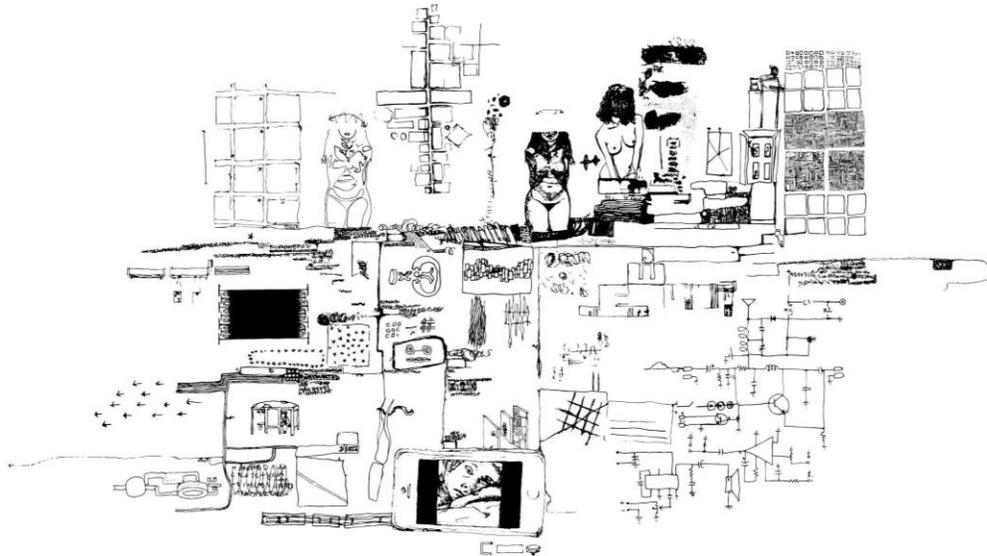


Fig. 4 Mollye Bendell, *Schematic*, 2016, Scalable Vector Graphic.

Wander/Wonder represents a direct progression of my artistic practice which, for the past several years, has focused on the material properties of an increasingly less physical world. My previous sculptural work has addressed questions of vulnerability, visibility and longing in a world that often feels isolating. *MollyeNet*, for example, consists of a WiFi network deployed as an artwork at an art museum. *MollyeNet* maintains a parasitic relationship with museum WiFi and thus cannot exist outside of

a museum. *MollyeNet* does not interfere with the operation of a museum in any way, except to occupy the designated space of approved art without approval.

My work *Recorder* gestures toward the ephemerality of information by recording audio into sand. Similar to a record player, the machine has a turntable and a needle. However, record players work by tracking the vibration of a needle in the fixed grooves of a record. *Recorder* inverts this functionality by linking the needle to a speaker resonator, driven by a microphone. A very fine layer of sand tops the turntable, and as an interactor speaks or makes noise the resonator wobbles the needle on the spinning platter, transcribing new grooves. *Recorder* constantly records and erases the interactor's actions, drawing and redrawing sonic information.

Wander/Wonder contains more visual information than some of my previous works but that information is essential to maintaining conceptual continuity in the larger context of my practice. As the *Wonder* experience developed, the aesthetic direction reached a turning point. I initially worked towards an environment of 3D models that represented specific memories to create the impression of a subconscious. However, these models felt flat and didn't provide the contrast I was looking for between physical and virtual reality. Redesigning the scene around pen and ink drawings created an environment that felt singular and ephemeral.

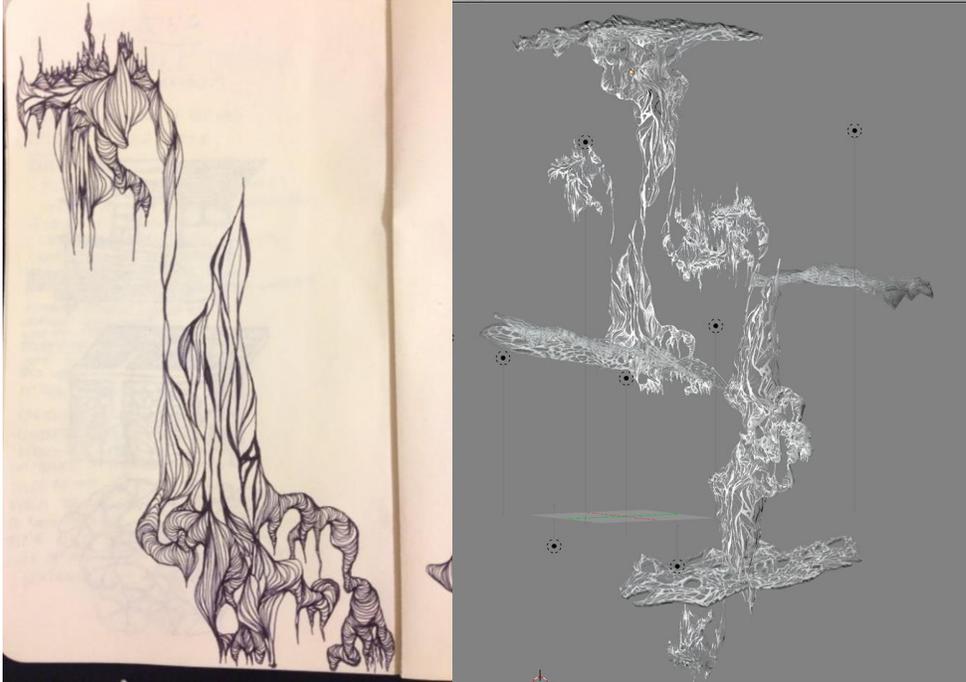


Fig. 5 Left, sketch for Wonder experience. Right, 3D model with sketch applied as texture.

In Zoe Beloff's 1995 work *Beyond*, the destination format was a CD-ROM, not a head mounted device, but the experience was still fully panoramic, like a 360 video. According to Beloff, *Beyond* "operates in a playful spirit of philosophical inquiry exploring the paradoxes of technology, desire and the paranormal posed since the birth of mechanical reproduction." *Beyond* was an interactive digital serial in which a psychic medium transmitted evidence of the dead as a new video each week. These videos "are represented by fragments of home movies from 1920's to 1940 found at the flea markets as well as early film footage from the Library of Congress Paper Print collection."⁵² Within *Beyond*, the artist acts as a medium to interface between old and new technologies, focusing on resurrecting photos and videos from a time

⁵² Zoe Beloff, "The Dream Life of Technology," January 1997, 7.

when many were attempting to use those technologies to prove the existence of life after death.



Fig. 6 Nina Canell, *Brief Syllables* (detail), 2014.

Wander uses the psychic as a vector for addressing the role of speculation in a digital age, and the sparse look of the map dotted with psychics draws from my research interest in sculptors intervening in the aura of the digital⁵³ through other kinds of minimal or ephemeral work. Swedish artist Nina Canell's practice, for instance, takes a poetic approach to examining the physicality of these signals. Her series *Brief Syllables* consists of cross-sections of high voltage subterranean

cables, while in her installation *Telepath* she drapes a high-voltage neon tube over an equal length of copper pipe. In *Every Distance Is Not Near*, Fionne Meade observes that Canell's work gestures against "the digital fatigue that increasingly conditions our time—constantly updated information, the flatness of visual compression and image production, ever widening abstractions of finance, the atomizing nature of networked communication [...] Lucidity glows in algorithms, desire is predictive, and connectivity replaces geography."⁵⁴

⁵³ Michael Betancourt, "The Aura of the Digital," *CTheory*, September 5, 2006. As Betancourt defined it, "the illusion of a self-productive domain, infinite, capable of creating value without expenditure, unlike the reality of limited resources, time, expense, etc. that otherwise govern all forms of value and production."

⁵⁴ Fionn Meade, "Nina Canell, *Every Distance Is Not Near*" *Solo*, September 2012, <https://cargocollective.com/fionnmeade/Nina-Canell-Every-Distance-Is-Not-Near>.

Trevor Paglen has built his practice around “gathering material evidence of the systems of advanced technology that we all use every day but that — obscured by euphemisms such as “internet” and “cyberspace”, or deliberately coded and concealed by the intelligence services — we rarely see or understand.”⁵⁵ Paglen’s photography of, for example, distant military facilities from public vantage points connects to the conceit of *Wander*; that this experience allows the user the opportunity to gaze back at unseen, all-seeing oracles.



Fig. 7 Trevor Paglen, "They Watch the Moon," 2010, a classified listening station within the forests of West Virginia, within the National Radio Quiet Zone.

⁵⁵ Liz Jobey, “Trevor Paglen: What Lies Beneath,” *Financial Times*, December 31, 2015, <https://www.ft.com/content/beaf9936-a8ff-11e5-9700-2b669a5aeb83>.

Conclusion

Wander/Wonder explores the tension between the singular, lush vision of the interactor immersed in VR and the sparse landscape accessible to the spectator. In construction and conception, these two experiences are intended to complement one another, each challenging the other's notion of reality. While the core motivation for the work remains the desire to playfully speculate on the act of speculation, *Wander/Wonder* has evolved over time into a critical examination of vision, vulnerability, and *nearness*.

In this work, the interactor must give up some of their physical senses for the ability to access a second Sight, the opportunity to see beyond reality, into the Beyond. The trope of the blind seer, and the idea that the absence of sight could grant insight, became critical as the work advanced and I started to consider the implications of a virtual reality experience. VR accommodates one viewer at a time – with what view is that viewer privileged? The isolation of the interactor from the spectator was the impetus behind the creation of the *Wonder* experience. As the interactor explores an environment intended to simulate wonder, spectators wonder what the interactor sees. The interactor navigates both environments with a crystal ball, conflating the act of gazing and the absence of that gaze as the interactor blindly navigates the *Wander* experience.

Wander/Wonder has intentions beyond the predictive powers it may embrace or critique: *Wander* invites the user to examine the feelings of uncertainty, isolation and loneliness that cause them to speculate about their futures, while *Wonder* offers an antidote through an escapist fantasy into, potentially, heightened consciousness. Of course, *Wonder* forces vulnerability in a different way: the work can only be viewed by surrendering the viewer's visual awareness of their surroundings.

Finally, *nearness*. How close are we to erasing the line between the present and the future through nearly autonomous AI and near-perfect digital renderings? *Wander* and *Wonder* orbit around "real" reality, asking the extent to which physicality indicates existence. The virtual psychic storefronts in the *Wander* app depict their brick and mortar counterparts to the best of my ability. Is the storefront the most real part of the psychic construct because it's the most tangible? Or is the psychic vision more proximate to reality because it embodies the spirit of the experience? My speculation has entered a playful recursive loop, turning in upon itself.

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