

This copy of the thesis has been supplied on condition that anyone who consults it is understood to recognize that its copyright rests with its author and that no quotation from the thesis and no information derived from it may be published without the author's prior consent.



**UNIVERSITY OF  
PLYMOUTH**

**AOPHENOESIS & THE ORIGINS OF CREATIVITY:  
VIRTUAL PATTERN RECOGNITION, ERROR, PATHS TO CONSCIOUSNESS  
& AUGMENTING THE EVOLUTION OF SELF**

by

**MAX KAZEMZADEH**

A thesis submitted to the University of Plymouth  
in partial fulfillment for the degree of

**DOCTOR OF PHILOSOPHY**

School of Art, Design and Architecture

August 2020

## ACKNOWLEDGMENTS

I would like to formally thank my Professor and Director of Studies, Roy Ascott, who is a model of creativity and innovation. Thank you for your patience, guidance, and encouragement through the years.

I would like to thank my advisor, Mike Phillips, for helping me address challenges and add find clarity when needed.

I also thank my advisor Dr. Jane Grant, who has been guiding light, leading by creative example and for providing helpful guidance and feedback.

I would also like to sincerely thank my wife and my family who were more than helpful, patient, encouraging and supportive during this process.

## **AUTHOR'S DECLARATION**

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Doctoral College Quality Sub-Committee.

Work submitted for this research degree at the University of Plymouth has not formed part of any other degree either at University of Plymouth or at another establishment.

This study was financed with the aid of a studentship from the Gallaudet University and carried out in collaboration with Gallaudet University.

A programme of advanced study was undertaken, which included the format and requirements of the Planetary Collegium.

Relevant scientific seminars and conferences were regularly attended at which work was often presented; external institutions were visited for consultation purposes and several papers prepared for publication.

The study and research on which the works were based took place in many different parts of the world and in collaboration with many different institutions, universities, residencies, and art centers. The period of time that contributed to the candidate's research in connection with this dissertation spanned from October 2009 to August 2020.

### **Publications:**

Kazemzadeh, Max B. "Postnational Technollaboration within the Postbiotanical Village" *Technoetic Arts Journal*, Volume 11, Issue 3, Intellect Publishers, December 2013. DOI: [https://doi.org/10.1386/tear.11.3.253\\_1](https://doi.org/10.1386/tear.11.3.253_1)

Kazemzadeh, Max B. "Art, Skill & Thought: The Moist Machine" *Skilled Art: Engenho & Arte*, Artshare Publishers, May 2012.

Kazemzadeh, Max B. "Apophenoetics: Virtual Pattern Recognition, the Origins of Creativity & Augmenting the Evolution of Self." *Technoetic Arts Journal*, Volume 10, Number 1, Intellect Publishers, May 2012. pp. 115- 118. ISSN: 1477965X, Online ISSN: 17589533 DOI: [https://doi.org/10.1386/tear.10.1.115\\_1](https://doi.org/10.1386/tear.10.1.115_1)

Kazemzadeh, Max B. "From Walls to Walkways, from Facts to Fields: Apophenia, DIWOD, Open Src Everything, the Post Nomadic Community & Syncretic Methods for Exploring Consciousness" *CR12 Presence in the Mindfield: Art Identity and the Technology of the Transformation*: editors: Roy Ascott and Luis Miguel Girao. Universidad de Aveiro, November 2011. ISBN: 978-972-789-356-0

Kazemzadeh, Max B. "Visibly Invisible: Spukhafte Fernwirkung, *Mechano-Moist & (the) Enlightenment*." *Making Reality Really Real*. editors: Roy Ascott, Gangvik, Jahrmann, TEKS Publishing, Trondheim, Norway, November, 2010 ISBN: 978-82-998211-2-4

Kazemzadeh, Max B. "Psychic Systems and Metaphysical Machines: Experiencing



Behavioral Prediction with Neural Networks” Technoetic Arts Journal, Volume 8, Number 2, Intellect Publishers, pp. 189-198(10), November 2010 , ISSN 1477-965X  
DOI: [https://doi.org/10.1386/tear.8.2.189\\_1](https://doi.org/10.1386/tear.8.2.189_1)

Kazemzadeh, Max B., Parberry, I., Roden, T., Nunn, J. R., Scheinberg, J., Carson, E., Cole, J., Challenges and Opportunities in the Design of Game Programming Classes for a Traditional Computer Science Curriculum” Publisher: larc.unt.edu, Publication Date: Jan 1, 2010

**Select Exhibitions:**

Ionian Center for Arts & Culture. SEA(S) Arts International Art Exhibition (SEA(S) ASYNOROS ΑΣΥΝΟΡΟΣ), Kefalonia, Greece. 08/06/18-09/03/18

Harvestworks Gallery, New York Electronic Arts Festival (NYEAF), Governors Island, NY. 07/1/17-07/23/17

ISEA: 2017: International Symposium of Electronic Art – 2017, Manizales, Colombia. 06/10-06/17/2017

Governors Island, NY. New York Electronic Art Festival (NYEAF). New York NY, 07/1/16 – 11/15/16

Medialab-Prado, “Madritmos (2016),” Madrid, Spain. 07/15/16-11/15/16

Harvestworks SOHO Gallery, New York Electronic Art Festival (NYEAF), Birdsong Mimic: East to West Event, New York NY, 07/19/16

CAFA Digital Media Gallery, “Beirithms (2016),” Beijing, China. 06/15/16-7/15/16

Governors Island, New York Electronic Art Festival (NYEAF), New York NY, 06/14/15-8/15/15

Times Square, New York Electronic Art Festival (NYEAF), “Birdsong Diamond Project”, New York, NY, 07/15/2015

American University Dubai, ISEA2014: 20<sup>th</sup> International Symposium for Electronic Art, Dubai, EAU. 10/30/14-11/08/14

Ionian Center for Art & Culture, “Poseidon’s Pull” Project, Kefalonia, Greece. 08/28/13-09/18/13

Washington State University (Pullman) Museum of Art, Group Exhibition, Pullman, Washington. 08/19/13-09/19/13

Gezera Art Center, Ministry of Culture of Cairo, Di-Egy Festival Exhibition, Cairo, Egypt. 03/13-04/13

MCentral Festival, “Americana X Trains” Exhibition. Washington, DC. 01/18-01/21/12

Submerge Art Fair DC, “Everybody’s Gotta Eat...Everybody Can” Exhibition. Washington, DC. 11/10/12-11/18/12

Corporation for National & Community Service, “Diversity”. Washington, DC.  
10/01/12-11/01/12

Ionian Center for Art & Culture (inside the Melissani Cave), “Lake Melissani & the Sensory Syrnix: Re-living the Myth of Melissani”. Kefalonia, Greece, 08/12

The Science Gallery at Trinity College, Interactivos? ’12 Exhibition, Dublin, Ireland,  
07/12-08/12

Songzhuan Art Museum, “New Age: New Media” Beijing New Media Arts Exhibition  
2011. 06/18/11-08/30/11

**Paper Presentations:**

Di-Egy Festival Consciousness Reframed Conference Series, International Research  
Conference on Art, Technology, and Consciousness, Cairo, Egypt. 03/31/13-04/02/13

CAA College Art Association Conference, presenting the paper “Postnational Technol-  
aboration within the Postbiotanical Village,” New York City, NY. 02/13/13

International Research Conference on Art, Technology, and Consciousness, “Techno-  
etic Teleos: Art, Myth and Media in Consciousness Reframed Series,” Ionian Center for  
the Arts & Culture, Kefalonia, Greece, 04/18/11 – 04/20/11

The 11<sup>th</sup> Annual International Research Conference: Consciousness Reframed: Art &  
Consciousness in the Post-Biological Era, “CR12: Presence in the Mindfield,” Macro-  
media University of Applied Sciences (MHMK), Lisbon, Portugal, 11/30/11 – 12/02/11

International Research Conference on Art, Technology, and Consciousness “Transcul-  
tural Tendencies, Transmedial Transactions,” Shanghai Institute of Visual Art, Fudan  
University, Shanghai, China, 08/26/11-08/27/11

International Exhibition on Art, Technology, and Consciousness, Ionian Center for the  
Arts & Culture, Kefalonia, Greece, 04/15/11 – 05/15/11

The 11<sup>th</sup> Annual International Research Conference: Consciousness Reframed: Art &  
Consciousness in the Post-Biological Era, “Making Reality Really Real,” convened by  
TEKS-Trondheim Electronic Arts Center, Trondheim, Norway, 11/19/09 – 11/22/09

International Research Conference on Art, Technology, and Consciousness “Skilled  
Art: Engenho & Arte,” Guimaraes, Portugal, 04/23/10 – 4/24/10

The Planetary Collegium’s Xth International Research Conference, Consciousness Re-  
framed: Art & Consciousness in the Post-Biological Era, “Experiencing Design, Behav-  
ing Media,” Macromedia University of Applied Sciences (MHMK), Munich, Germany,  
11/19/09 – 11/22/09

Word count of main body of thesis: 57,299 words



August 1, 2020

---

Max B. Kazemzadeh

---

Date

**Max Kazemzadeh**

**Apophenoesis & the Origins of Creativity:  
Virtual Pattern Recognition, Error, Paths to Consciousness &  
Augmenting the Evolution of Self**

**ABSTRACT**

This research defines apophenoesis as a convergent practical tool that can enhance one's creative process by introducing deviations from the familiar in such a way to allow new creative pathways to form and result in new innovations. With foundations in Roy Ascott's *technoetics*, which is defined as a "convergent field of practice that seeks to explore consciousness and connectivity through digital, telematic, chemical or spiritual means, embracing both interactive and psychoactive technologies, and the creative use of *moistmedia*" (Ascott, 2008, p. 1), apophenoesis more specifically provides a framework to demonstrate the value of disruption within technoetic art while demonstrating the relationships between creativity and perception. I have conducted an auto-ethnomethodological approach to analyze my own creative practice, which culminated in the following apophenoetic artworks: *Gesture's of Change* (2013), *Dabarithms* (2014) and *Poseidon's Pull: Revisited* (2018). Each artwork represents the wide range of impact apophenoesis has had once integrated into the formation of artistic intent, establishment of the creative process, as well as the content experienced within the work of art by participants and observers. Since apophenoesis has a direct relationship to perception, it can be used both as a tool within the creative process as well as a mechanism within the content of the experience, thereby generating experiences of apophenoesis for participants within each technoetic artwork.

In addition to Henri Bergson, who thoroughly models the relationship of perception to one's reality, and Leonardo DaVinci, who used apophenoesis within his creative practice, a pivotal contributor to this research is the German psychiatrist, Karl

Conrad, who discovered the phenomenon and called it *apophanie* during his clinical analysis of injured soldiers returning from war that exhibited what he then believed to be pre-schizophrenic characteristics. Conrad describes *apophanie* as phenomenon where one over-attributes significance in reference to patternless stimuli. This research highlights how Conrad's discovery evolved into the establishment of the *apophenoetic model* and its relationship to interactive media art practice, culminating in the discovery that these characteristics can be used to define a new category of innovative practice entitled *apophenoetic art*. Rooted in technoetic arts, this practice-based research will reveal that the disruption introduced in applying apophenosis to one's creative practice is a fundamental tool to producing exponential boosts in creative productivity.

Since Conrad's clinical research found detailed evidence of how the mind mistakenly attributes significance via the senses through the perception of actual stimuli, his research regarding apophanie as being characteristic of an illness has been challenged. This introduces the consideration that the phenomenon may actually be a common, naturally occurring experience within the mind of healthy individuals, and often occurs subconsciously as a disruption in perception. How Conrad chose to define apophanie reveal his interest in fostering cross-disciplinary research.

When apophenie is used in creative practice, it can be transformed into apophenosis, or a method for accessing creativity and extending creative practice. Further analysis of apophenosis reveals essential contributions to understanding the roots of creativity, inspiration, innovative thought, learning and how one's mind and body work to access creativity.

## TABLE OF CONTENTS

List of Illustrations	12
1. INTRODUCTION	19
1.1 Introduction to Apophanie, Apophenoesis and Origins of Creativity	19
1.2 Key Terms	24
1.3 Methodology for Discovery through Apophenoetic Practice	29
1.3.1 Project Summary	30
1.3.2 Formation of the Artist's Intent	31
1.3.3 Apophenoetic Transformation	32
1.3.4 Auto-ethnomethodology: Evaluation of Practice	44
1.3.5 Identifying the Contribution to New Knowledge	46
1.4 Research Questions	47
2. Defining Apophenoetic Practice	49
2.1 Interactive and Technoetic Art	49
2.2 Intention and Gesture	53
2.3 Consciousness as Apophenoetic Apparatus	72
2.4 Apophenoetic Artworks	91
2.4.1 <i>Gestures of Change</i> (2013) aka. <i>GoC13</i>	92
2.4.1.1 Project Summary	94
2.4.1.2 Formation of the Artist's Intent	99
2.4.1.3 Apophenoetic Transformation	101
2.4.1.4 Auto-ethnomethodology: Evaluation of Practice	104
2.4.1.5 Identifying the Contribution to New Knowledge	129
2.4.2 <i>Dabarithms</i> (2014)	131

2.4.2.1	Project Summary	143
2.4.2.2	Formation of the Artist's Intent	146
2.4.2.3	Apophenoetic Transformation	147
2.4.2.4	Auto-ethnomethodology: Evaluation of Practice	148
2.4.2.5	Identifying the Contribution to New Knowledge	153
2.4.3	<i>Poseidon's Pull</i> (2012) and <i>Poseidon's Pull: Revisited</i> (2018)	155
2.4.3.1	Project Summary for <i>Poseidon's Pull</i> (2012)	155
2.4.3.2	Project Summary for <i>Poseidon's Pull: Revisited</i> (2018)	158
2.4.3.3	Formation of the Artist's Intent	164
2.4.3.4	Apophenoetic Transformation	165
2.4.3.5	Auto-ethnomethodology: Evaluation of Practice	167
2.4.3.6	Identifying the Contribution to New Knowledge	173
2.5	Conrad's <i>Apophanie</i>	174
2.5.1	Disruption	181
2.5.2	Doubting the Senses	183
3.	Apophenoesis in Context	186
3.1	Apophenoesis in Static Arts	187
3.2	Apophenoesis in Interactive, Technoetic and Telematic Art	192
3.3	Best Praxis in Apophenoetic Art	199
3.4	Apophany External to Art	207
4.	The Apophenoetic Discourse	208
4.1	Conrad's Apophenoesis	208
4.2	Art is Apophenoetic	209
4.3	Inescapable Senses	210
4.4	Sensorial Extensions	214

4.5 Bio-Apophenoesis	216
4.6 Attention and Engagement	218
4.7 Gaining from Obsolescence	219
4.8 Ethics and Apophenoesis	221
4.9 Apophenoetic Communities	224
5. CONCLUSION	228
5.1 Contribution of new knowledge proposing apophenoesis as a technique to help introduce deviations from familiar content or processes in such a way that new creative pathways can form	231
5.2 Contribution of new knowledge employing apophenoesis to enhance the level of immersion participants experience within interactive artworks	237
5.3 Contribution of new knowledge proposing <i>apophenoetic art</i> as a term to define interactive artworks concerned with cognitive disruption and consciousness	241
5.4 Concluding Statements: Apophenoesis and the Anthropocene	244
Bibliography	247
Publications	264
Paper Presentations	266
Exhibitions	268
Invited Presentations, Curatorships & Residencies	273
Appendix 01: Reference Materials	280
Appendix 02: Categorization of Apophenoesis in Practice	282

**List of Illustrations** (All diagrams are depicted above figure titles on respective pages)

Figure 1: <i>Apophenoetic Toggle Model for Perceiving Significance from Stimuli</i> (by Max Kazemzadeh in 2018)	34
Figure 2: <i>Apophenoetic Black Box Chart</i> (by Max Kazemzadeh in 2013)	37
Figure 3: <i>Apophenoesis as Disruption within a Cybernetic System for Creative Development and the Interactive Experience</i> (by Max Kazemzadeh in 2018)	38
Figure 4: <i>Apophenoetic Toggle Model for Accessing Creativity (with references to Cybernetics)</i> ( by Max Kazemzadeh in 2018)	40
Figure 5: <i>Empirical vs. Apophenoetic Toggle Model Comparison</i> (by Max Kazemzadeh in 2018)	42
Figure 6 & 7: <i>Feud (2004)</i> (by Max Kazemzadeh)	57
Figure 8: <i>L/R I/O (2005)</i> (by Max Kazemzadeh)	57
Figure 9 & 10: <i>L/R I/O (2005) – Interactive Details</i> (by Max Kazemzadeh)	58
Figure 11: <i>IS.US (2006)</i> (by Max Kazemzadeh)	58
Figure 12: <i>Processing Gesture (2006) - Diagram</i> (by Max Kazemzadeh)	59
Figure 13: <i>Processing Gesture (2006) - Installation</i> (by Max Kazemzadeh) - see Appendix 02	60
Figure 14: <i>Processing Gesture (2006) – Interactive Installation with Drawn Byproducts</i> (by Max Kazemzadeh)	60
Figure 15: <i>Spin.Flick (2006) - Diagram</i> (by Max Kazemzadeh)	61
Figure 16: <i>Spin.Flick (2006) Installation and Coin Shadow Detection Console</i> (by Max Kazemzadeh)	61
Figure 17: <i>Max is a Pushover (2009) - Installation View</i> (by Max Kazemzadeh)	62
Figure 18 & 19: <i>Max is a Pushover (2009) - Interactive Detail</i> (by Max Kazemzadeh)	63
Figure 20: Image of <i>i.m.pshovr (2012) - Installation View with Green Screen Recording</i>	



Space (by Max Kazemzadeh)	63
Figure 21: Image of <i>Thank You for Recycling (2012)</i> (by Martina Kalogjera and collaborators) (photo by Reza Safavi)	64
Figure 22: <i>The Wishing Well (2013)</i> – Website (by Max Kazemzadeh and Joe Scheinberg)	67
Figure 23: <i>The Wishing Well (2013)</i> – Functional Diagram (by Max Kazemzadeh and Joe Scheinberg)	68
Figure 24: <i>The Wishing Well (2013)</i> – Opening with Representatives from the Jackie Chan Foundation (by Max Kazemzadeh and Joe Scheinberg)	69
Figure 25: <i>indexchange (2010)</i> (by Max Kazemzadeh)	76
Figure 26: ThinkThanks (2010) (by Max Kazemzadeh)	77
Figure 27: ThinkThanks: Chakras (2010) – Applied to Person’s Skin (by Max Kazemzadeh)	77
Figure 28: <i>Plantenkere (2011)</i> – Diagram (Plant + Norwegian for <i>Thinkers</i> - by Max Kazemzadeh)	80
Figure 29: <i>Plantenkere (2011)</i> – One of the Two Sets of Three House Plants with Coded Arduino Bases (Plant + Norwegian for <i>Thinkers</i> - by Max Kazemzadeh)	80
Figure 30: <i>Plantenkere (2011)</i> – Evidence of Effects on Plants (Plant + Norwegian for <i>Thinkers</i> - by Max Kazemzadeh)	81
Figure 31: <i>Plantenkere (2011)</i> - Data Collection (Plant + Norwegian for <i>Thinkers</i> - by Max Kazemzadeh)	82
Figure 32: <i>Plantenkere (2011)</i> Plants, Code, Evidence of Erosion, Data Collection (Plant + Norwegian for <i>Thinkers</i> - by Max Kazemzadeh)	83
Figure 33: <i>Plantenkere II (2011)</i> – Variation Study Diagram (Plant + Norwegian for <i>Thinkers II</i> - by Max Kazemzadeh)	84
Figure 34: <i>Volvofyta stochastis (2011)</i> ( <i>Plant Bulb Thinker</i> - by Max Kazemzadeh)	85

Figure 35: <i>Myrmoskepsis (2011)</i> (Norw. for “Ant Thoughts”) aka. <i>Antenkere (2011)</i> (Ant + Norw. for “Thinkers”) by Max Kazemzadeh	86
Figure 36: Fourier Transform Emission/Absorption Spectroscopy (Nuclear Magnetic Resonance) - by Max Kazemzadeh in 2012	87
Figure 37: Nuclear Magnetic Resonance [NMR] (by Max Kazemzadeh in 2012)	88
Figure 38: <i>Gestures of Change (2013)</i> – Four Participants (by Max Kazemzadeh in 2017)	92
Figure 39: <i>Gestures of Change (2013)</i> - Installation Space at the Gezirah Art Center in Cairo 1 (by Max Kazemzadeh in 2013)	93
Figure 40: @GesturesOChange Twitter Page: Full View	95
Figure 41: @GesturesOChange Twitter Page: Scrolled Down View	96
Figure 42: @GesturesOChange Twitter Pages: Scrolled Down Detail 1	97
Figure 43: @GesturesOChange Twitter Pages: Scrolled Down Detail 2	98
Figure 44: <i>GoC13</i> Development Process (by Max Kazemzadeh in 2018)	106
Figure 45: <i>Gestures of Change (2013)</i> - Installation and Functional Diagram: Face Recognition (by Max Kazemzadeh in 2017)	111
Figure 46: <i>Gestures of Change (2013)</i> - Apophenia and the Mirror Effect (by Max Kazemzadeh in 2017)	113
Figure 47: <i>Gestures of Change (2013)</i> - Apophenia and the Mirror Effect with Target (by Max Kazemzadeh in 2017)	114
Figure 48: <i>Gestures of Change (2013)</i> - Installation and Functional Diagram (by Max Kazemzadeh in 2017)	115
Figure 49: <i>Gestures of Change (2013)</i> - Installation ReTweet Transmission to @GesturesOChange Twitter Account Diagram	119
Figure 50: <i>Gestures of Change (2013)</i> - Screenshot with One Participant (by Max Kazemzadeh in 2013)	120

Figure 51: <i>Gestures of Change (2013)</i> - Screenshot with Two Participants (by Max Kazemzadeh in 2013)	121
Figure 52: <i>Gestures of Change (2013)</i> - Installation Space with Two Participants at the Gezirah Art Center in Cairo (by Max Kazemzadeh in 2013)	122
Figure 53: <i>Gestures of Change (2013)</i> - Original Code Extract (by Max Kazemzadeh in 2013)	124
Figure 54: <i>Beirithms (2016)</i> – Navigating Phone App (by Max Kazemzadeh with Reza Safavi) Beijing, China at the Central Academy of Fine Arts Gallery.	132
Figure 55: <i>Beirithms (2016)</i> – App Directs Rice Bag Drop Location (by Max Kazemzadeh with Reza Safavi) Beijing, China at the Central Academy of Fine Arts Gallery.	132
Figure 56: <i>Beirithms (2016)</i> – Testing Ceiling Mounted XY Mapped Rice Dropping Mechanism in Development (by Max Kazemzadeh with Reza Safavi)	133
Figure 57: <i>Beirithms (2016)</i> – Installation View (by Max Kazemzadeh with Reza Safavi) Beijing, China at the Central Academy of Fine Arts Gallery.	133
Figure 58: <i>Madritmos (2016)</i> - Tracking App (by Max Kazemzadeh with Reza Safavi)	134
Figure 59: <i>Madritmos (2016)</i> – Navigating App Takes a Working Siesta. Participant Must Complete App Task (ie. Dormir, Amor, <u>Bailar</u> , Cantar, or Jugar). Until Complete, the Curtains will animate accordingly in the Exhibition (by Max Kazemzadeh with Reza Safavi)	134
Figure 60: <i>Madritmos (2016)</i> – Responsive Curtain Installation that either Tracks or Does Task (ie. Dormir, Amor, Bailar, Cantar, or Jugar) (by Max Kazemzadeh with Reza Safavi)	135
Figure 61: <i>Colombiritmos (2017)</i> – Installation View – Offer 1 of 5 Coffee Bean in Gondola (by Max Kazemzadeh with Reza Safavi)	135

Figure 62: <i>Colombiritmos (2017)</i> – Installation View – Select 3 <sup>rd</sup> Coffee Bean, in Gondola (by Max Kazemzadeh with Reza Safavi)	136
Figure 63: <i>Colombiritmos (2017)</i> – 3 <sup>rd</sup> Coffee Container Drips on 3 <sup>rd</sup> Sugar Cube Detail (by Max Kazemzadeh with Reza Safavi)	136
Figure 64: <i>Paggank Daywaygun (2017)</i> – Installation View (by Max Kazemzadeh with Reza Safavi)	137
Figure 65: <i>Dabarithms (2014)</i> – Navigating Phone App (by Max Kazemzadeh with Reza Safavi)	138
Figure 66: <i>Dabarithms (2014)</i> – Collected Wish (by Max Kazemzadeh with Reza Safavi)	139
Figure 67: <i>Dabarithms (2014)</i> – Wish-specific Sand Sample (by Max Kazemzadeh with Reza Safavi)	139
Figure 68: <i>Dabarithms (2014)</i> – Each Wish Placed in Wish-specific Sand Sample (by Max Kazemzadeh with Reza Safavi)	140
Figure 69: <i>Dabarithms (2014)</i> – GPS Tracks with Collected Wish Locations on Palm Jumeirah (by Max Kazemzadeh with Reza Safavi)	140
Figure 70: <i>Dabarithms (2014)</i> – 9 Fairies on Trees Mapped to Each Wish (by Max Kazemzadeh with Reza Safavi)	141
Figure 71: <i>Dabarithms (2014)</i> – GPS Playback Uses Wishes to Trigger Fairy to Launch (by Max Kazemzadeh with Reza Safavi)	142
Figure 72: <i>Dabarithms Development Process</i> (by Max Kazemzadeh in 2018)	148
Figure 73: <i>Poseidon's Pull (2012)</i> – Installation View (by Max Kazemzadeh with collaborators)	155
Figure 74: <i>Poseidon's Pull (2012)</i> – Constellation and Drifting Star Points (by Max Kazemzadeh with collaborators)	156
Figure 75: <i>Poseidon's Pull (2012)</i> – Message from Poseidon, Poseidon's GPS Tracking	

Water Vessel, and Hardware Interface for Selecting Drifting Star Narratives (by Max Kazemzadeh with collaborators)	157
Figure 76: <i>Poseidon's Pull: Revisited</i> (2018) – Raspberry Pi, GPS Tracker and Receipt Printer (by Max Kazemzadeh and Reza Safavi)	158
Figure 77: <i>Poseidon's Pull: Revisited</i> (2018) – Computer (by Max Kazemzadeh and Reza Safavi)	158
Figure 78: <i>Poseidon's Pull: Revisited</i> (2018) – EEG (by Max Kazemzadeh and Reza Safavi)	159
Figure 79: <i>Poseidon's Pull: Revisited</i> (2018) – Drifting Collecting GPS Messages (by Max Kazemzadeh and Reza Safavi)	159
Figure 80: <i>Poseidon's Pull: Revisited</i> (2018) – Printed EEG Framed GPS Messages (by Max Kazemzadeh and Reza Safavi)	160
Figure 81: <i>Poseidon's Pull: Revisited</i> (2018) – Studying GPS Tracks for Significance (by Max Kazemzadeh and Reza Safavi)	160
Figure 82: <i>Poseidon's Pull: Revisited</i> (2018) – Installation (by Max Kazemzadeh and Reza Safavi)	161
Figure 83: <i>Poseidon's Pull: Revisited</i> (2018) Development Process (by Max Kazemzadeh in 2018)	167
Figure 84: <i>Poseidon's Pull: Mortal Emulation of Drift Control (thinking like a god)</i> (2018) – In Field (by Max Kazemzadeh and Reza Safavi)	169
Figure 85: <i>Poseidon's Pull: Mortal Emulation of Drift Control (thinking like a god)</i> (2018) – Installation View (by Max Kazemzadeh and Reza Safavi)	170
Figure 86: <i>The Waiter</i> (1574) by Giuseppe Arcimboldo - Creative Commons image	189
Figure 87: <i>Waterworks (LiliPod)</i> (2010) (by Max Kazemzadeh in collaboration with Kelly Andres) - <i>Lilipod</i> collecting data from the simulation of a nearby pond and sending it to the application.	226

References to Software and Documentation (Also See Appendix 01):

*Please refer to the following link for executable file for “Gestures of Change (2013),” or “GoC13,” as well as links to all referenced documentation of works in the format of video and imagery. While the video and image formats are universal, the GoC13 executable must be downloaded for either Mac or PC computers and experienced locally. Please note that the GoC13 software is merely a recreation of a time-specific and location-specific installation in an exhibition at the Gezira Gallery in Cairo, Egypt, at the Di-Egy Festival in 2013. The software along with the video documentation and description of the experience, artist's intention, creative process leading up to this installation, and the technical process all contribute to a complete understanding of the experience of the event at the time of installation. This exhibition was never intended to be exhibited ever again at a different location or time in its original form and functioned more like a live performance with live time-specific feeds from Twitter around the time of and relating to the civil unrest in Cairo.*

*Link to Content and Downloads in Support of this Document:*  
**[www.maxkazemzadeh.com/apopenia](http://www.maxkazemzadeh.com/apopenia)**

*Also please refer to the Twitter account for reTweets from Gestures of Change (2013) installation. The Twitter account name is @GesturesOChange. See the link below. Note: This account was recreated and updated recently for the purposes of the demo.*  
**<https://twitter.com/gesturesochange>**

*See also Appendix 01 for all reference materials.*

*This documentation is published alongside this document as an essential reference to, and leading to a more complete understanding of, the intentions of this text.*

## 1. INTRODUCTION

### 1.1 Introduction to Apophanie, Apophenosis and Origins of Creativity

“I shall not refrain from including among these precepts a new aid to contemplation, which, although seemingly trivial and almost ridiculous, is none the less of great utility in arousing the mind to various inventions. And this is, if you look at any walls soiled with a variety of stains, or stones with variegated patterns, when you have to invent some location, you will therein be able to see a resemblance to various landscapes graced with mountains, rivers, rocks, trees, plains, great valleys and hills in many combinations. Or again you will be able to see various battles and figures darting about, strange-looking faces and costumes, and an endless number of things which you can distill into finely-rendered forms. And what happens with regard to such walls and variegated stones is just as with the sound of bells, in whose peal you will find any name or word you care to imagine.” (DaVinci, 1989, p. 222)

These popular samples taken from the *Notebooks* of Leonardo DaVinci (1989) represent DaVinci’s description of the experience of *apophanie*, a term coined by German psychiatrist, Dr. Karl Conrad, during his research, where he regarded the experience of attributing significance to actual random stimuli as the first phase of the pre-schizophrenic condition. Since Conrad, further research has challenged the notion that the experience of *apophanie* may not be reflective of an illness, but rather may be something that is more common, in that the normal brain has a tendency to create patterns where patterns don’t exist.<sup>1</sup> (Hambrecht, 1993, p. 418–423) DaVinci is known to be the synthesis of a practicing artist, engineer and inventor who, one could argue, mastered the use of the experience of *apophanie* for creative thinking and discovery. In the description from his notebook above, DaVinci used an actual stone wall with stains to stimulate his imagination in order to visualize an invented landscape, battle, and

---

<sup>1</sup> While honoring Conrad’s research in the field of beginning schizophrenia, Hambrecht engaged in a study that challenges the empirical outcome of the research by stating “In this operationalization "trema" was confirmed as the frequent first stage of the disease process, whereas Conrad's hypothesized order of the two following phases (first "apophany", then "apocalypse") could not be validated. Therefore, Conrad's model cannot completely be generalized.” (Hambrecht 1993, p. 418–423)

moment in time. The type of stone that stimulated DaVinci's experience of *apophenie* was a kind of stone called the *mischio*. The stone is known to have "twisted veins of coloured minerals running through it." Leonardo attempted to recreate the natural patterns formed in the *mischio* in works he called *mistioni*. (DaVinci, 1989, p. 290) In this instance, DaVinci used the actual stimuli witnessed using his visual cortex as a foundation for the imagination of a virtual scene with a narrative, characters and more. In this process DaVinci pulled from previously witnessed, stored imagery from memory, while possessing a keen ability to integrate those memories into the characteristics of the stimuli he witnessed at that moment with the stains on the wall.

DaVinci's creative process intentionally evokes the imagination in search for significance which establishes a context that discards the possibility for stimuli and perceptions to be considered as errors. Instead, all of the elements within the perceived stimuli are weighted for their ability to contribute to an inspired imaginative image. In this instance, its significance or value is based on its contribution. Similarly, in attempts to elevate the mundane and discover significance through a creative process, artists often use a range of visual and associative strategies to transform content that may not normally be significant into something that generates interest in a viewer.

During Conrad's research as he began learning more about the phenomenon of *apophanie*, he found that the field of psychiatry wasn't equipped with terminology to completely describe this phenomenon. For this reason, Conrad went outside the psychiatric glossary and adopted terms from other disciplines, such as *gestalt* from psychology, to further elaborate on his term. When Conrad chose to use non-psychiatric terms to describe experiences of *apophanie* instead of coining new psychiatric terms to do so, he arguably took an interdisciplinary step toward collaborative conceptual development, introducing the possibility to share his discoveries with other disciplines. While Conrad describes *apophanie* as an error in perception that leads one to attribute



significance where it doesn't necessarily exist, in a different context the error in perception opens new cognitive pathways to ideas, images and visions that can inspire an individual, and could be reconsidered as an intentional effort to access creativity and innovative ideas.

In a paper I wrote in 2012, I referred to apophanie-in-practice, or apophanie implemented as a method within one's creative practice, as *apophenoesis*. (Kazemzadeh, 2012a, p. 117) Webster's Dictionary spells Conrad's apophanie as *apophenia* which is defined as the seeing of patterns in stimuli where patterns don't exist (Apophenia, n. d.), and *noesis* is of or pertaining to the mind, intellect, or intelligence (Noesis, n. d.). Blending these two terms transforms apophanie or apophenia from a term representing the diagnosis of someone's cognitive malfunction into a contemplative and reflective experience that can be used as a tool to consider the distortions one experiences as valuable contributions to creativity. This research asserts that apophenoesis can function as a model and tool to activate creativity and innovative thought, and I have used this process in the creation of a number of immersive interactive works of art.

Using an auto-ethnomethodological approach, I will share personal accounts collected during the development of three separate interactive artworks to help reveal relevant details that will more thoroughly describe apophenoesis as a tool within the creative processes for each project. These artworks include *Gestures of Change* (2013), or *GoC13*, which exhibited in Cairo, Egypt, *Dabarithms* (2013) from *The ...rithms Series* which exhibited in Dubai, and *Poseidon's Pull: Revisited* (2018), which exhibited in Greece. These works represent how apophenoesis, or apophany-in-practice, was used to extend the creative interactive experiences well beyond the framework of each project's initial intent. These projects also introduce the framework for what could be defined *apophenoetic art* and how this new discipline impacts the overarching art

critical discourse. (Kazemzadeh, 2012a, p. 120) Expanded questions about interactive experiences, immersive and connected spaces, identity, notions of self and other, and definitions of consciousness emerged during the development of these projects through the application of apophenosis.

For the ten years prior to initiating this research, my work investigated the influence constructed, semi-conscious interfaces had on human perception and interaction. (Kazemzadeh, 2009, p. 1) This research and practice led me to reconsider the relationship between human and machine perception<sup>2</sup>, how significance is recognized with respect to the gestalt of objects visually, and how meaning forms semiotically in the present age of complex and layered interactive, data-collection systems and social networks.

This research argues and demonstrates the case that apophenosis can function as an incremental tool within the creative process for the development of new imaginative experiences in art, design, architecture, product design, interactive experiences, literature, social network design, and gaming, while possibly providing a foundation for a more efficient, rapid development of innovations in the fields of science and engineering. *Apophenosis* arguably can provide new insight toward iterative development, while establishing a foundation for expediting new intricate collaborative networks that lead to resolving environmental, cross-cultural socio-political struggles, as well as developing new designs for our quickly evolving and growing cities and living spaces.

Csikszentmihalyi describes “creativity” as a process “by which a symbolic domain in the culture is changed.” (Csikszentmihalyi, 2013, p. 8) He states that *memes* to culture are like genes to the human body, “as units of information that we must learn if culture is to continue”, and a grouping of *memes* make up a cultural domain.

---

<sup>2</sup> machine perception: an artificial vision or tracking system that captures and processes visual information.

(Csikszentmihalyi, 2013, p. 7) With Csikszentmihalyi's definition of creativity, a paradigm shift, change or disruption in the symbolic domain is necessary.

Analysis of how humans recognize significance and the errors that occur in perception reveals essential contributions to better understanding the roots of creativity, inspiration, innovative thought, and learning.

## 1.2 Key Terms

The following are a list of key terms used that either contributes to better understanding the research questions or help answer them.

### **Apophanie:**

As Conrad's book is in German, and is still yet to be translated to English, in one significant paper written by Aaron L. Mishara in 2010 entitled “Klaus Conrad (1905–1961): Delusional Mood, Psychosis, and Beginning Schizophrenia”, he quotes Conrad describing his term *apophanie* stating “Borrowing from ancient Greek, the artificial term 'apophany' describes this process of repetitively and monotonously experiencing abnormal meanings in the entire surrounding experiential field, eg, being observed, spoken about, the object of eavesdropping, followed by strangers.” While apophanie might be paired with experiences such as paranoia, Conrad refers to paranoia differently, which seems more focused on the details regarding how patterns of significance are recognized cognitively. He continues stating, “At the aha-moment, the patient is unable to shift 'frame of reference' to consider the experience from any other perspective than the current one.” (Mishara, 2010, p. 9-13)

When discussing the term, Conrad's spelling of *apophanie* will refer to the pre-schizophrenic syndrome.

### **Apophany:**

Mishara uses the term *apophany* as the English spelling of Conrad's *apophanie* (Mishara, 2010, p. 2). This spelling is shared by Frank Fish in his 1960 paper published in the Journal for Mental Science entitled *Die Beginnende Schizophrenie*, written by K. Conrad Georg Thieme in 1958. (Fish, 1960, p. 1595). While apophany serves only as an English equivalent to Conrad's term, and doesn't offer different meaning, other

psychiatric papers that refer to Mishara's paper and use Mishara's spelling of the term reflect that Conrad's trouble finding psychiatric terminology to describe this phenomenon makes it unreliable as an illness, and might just be something that everyone naturally experiences. (Hambrecht, 1993, p. 418–423)

When discussing the term, Mishara's translation of Conrad's *apophany* will be used to describe the broader cognitive and creative processing of patterns.

### **Apophenia:**

The Merriam Webster's Collegiate Dictionary, however, uses the spelling *apophenia*, as does neuroscientist Dr. Peter Brugger, who defines it as “The tendency to perceive a connection or meaningful pattern between unrelated or random things (such as objects or ideas).” (*Apophenia*, n.d.)

*Apophenia* from the Merriam Webster's Collegiate Dictionary served as the basis for the original formation of the term *apophenoetics*, which was coined in a paper I wrote in 2012 (Kazemzadeh, p.115-118) referring to the use of *apophany*-in-practice, or the intentional integration and application of *apophany* into one's creative practice, and can also be used interchangeably with *apophanoetics* to maintain consistency with Mishara's translation of the term.

### **Apophenoesis:**

In the paper entitled “Apopenoetics: Virtual Pattern Recognition, the Origins of Creativity & Augmenting the Evolution of Self”, *Apophenoetics* is described as both the process and the study of the way that patterns form, are witnessed, and decoded in one's consciousness from the sea of random stimuli collected from the senses. It is the deconstruction and reconstruction of the range of diversely formatted content and imagery out

of context that can be processed and reprocessed, forming new patterns of significance. (Kazemzadeh, 2012a, p.117-118) *Apophenoesis* is when *apophany* is placed into practice, where recognized patterns of significance are further analyzed for relevance, and meaning is considered and attached to these patterns.

### **Disruption:**

According to the Merriam Webster's Collegiate Dictionary, *disruption* is "a break or interruption in the normal course or continuation of some activity, process" (Disruption, n.d.). Disruption in the context of *apophany* or *apophenoesis* is when one recognizes a pattern where a pattern doesn't exist or attributes significance to randomness. This disruption serves as both a heightened alert to the viewer due to the error in perception while also introducing new content to the viewer's mind that results from processing actual stimuli. This new content can lead to creative alternatives and discoveries from the norm.

### **Apophenoetic Toggle:**

The *Apophenoetic Toggle Model for Perceiving Significance from Stimuli* uses the metaphor of a viewer circling an abstract sculpture to describe the process of one's repeated attempt to find significance through the constant movement and repositioning which provides many different views of the asymmetrical and shapely form. At each moment along the circular path the viewer is provided a completely different scene, image, or experience which will naturally incite experiences of apophany.

### **Apophenoetic Intervention:**

Within the *apophenoetic model* exists the *apophenoetic intervention* step, which is the intrusion of an intentional disruption in order to expand the creative outcome until

the desired goal or resources are depleted. The *apophenoetic intervention* is used with the understanding that further instances of the *apophenoetic* loop will only continue to diversify the possible outcome and provide more opportunities for creativity and innovation. The loop is common within meditation techniques and are often paired with sound, motivating transcendence, growth, cognitive self-alignment, comprehension, and problem-solving. This practice is not too dissimilar from how Csikszentmihalyi describes the designer achieving perfection in their work through flow states (Csikszentmihalyi, 2008, p. 6). One could argue that this occurrence may in fact be the representation of what Bergson describes as metaphysical in the physical world.

### **Apophenoetic Art:**

*Apophenoetic Art* is a practice that is dedicated to exploring the facets of the cognitive and creative process through experiences of apophany. Interactive Art that employs a range of new Brain Computer Interfaces (BCI)<sup>3</sup> and sensors at this point could be considered to be at the forefront of apophenoetic art, however, there are a number of cognitive interfaces that explore experiences of apophany through modeling within an interactive interface.

### **Immersion:**

Immersion is a term to describe a participant's full cognitive engagement, or a sense of being drawn into a technoetic work of art. Immersion is only possible with the subconscious suppression of the ego. Immersion in the description of a participant's experience of a technoetic artwork does not refer to its literal use with immersive reality apparatuses such as virtual reality or augmented reality systems.

---

<sup>3</sup> Brain Computer Interface (BCI): Technologies created to track different brainwaves. Some common examples are Electro-encephalogram (EEG) headsets that have become more accessible to consumers in product form. In recent years open source software and libraries have become available which has allowed for a number of artists to experiment with the technology.

These key terms should aid in the understanding of the methodology and project descriptions as they echo relevant definitions for each term that emerged during this research. Most of these terms will consistently be used within the qualitative analysis of these works of art, and a clear understanding of these terms will aid in better understanding of the intricacies discussed within these projects. Next, the methodology will aid in completing a more holistic definition as it relates to many of the key terms above.



### **1.3 Methodology for Discovery through Apophenoetic Practice**

This section will describe in detail the methodology used in the conception, implementation, and analysis of my creative practice while providing the framework for how each artwork provides new knowledge. Practice and analysis play necessary roles within the methodology and due to the ubiquitously applicable nature of apophenoesis are often done simultaneously. In all instances, the methodology reflects the elements and stages that contribute to both the practice, analysis, and assessment and highlights how disruption plays a necessary role in creative development.

### **1.3.1 Project Summary**

For each artwork a brief summary description of the project will be outlined prior to further in-depth discussions regarding ways in which apophenoetics was applied to the creative process. Having a more holistic view of the work of art in its final exhibited form prior to discussing each individual element will be helpful for understanding the purpose and implications of each project more fully. The project summary will also serve to establish a context for the work of art as well as quickly connect the myriad elements that come together to create the technoetic and apophenoetic experiences.

### **1.3.2 Formation of the Artist's Intent**

Aristotle addressed the convergent element within creative practice that brings together intent with action in Nichomachean Ethics saying "For the things we have to learn before we can do them, we learn by doing them" (McCullough, 1998, p. 269).

In site-specific, technoetic artworks, the intent can evolve as one gains more knowledge about the site where the exhibition will take place, or in most instances in response to the physical space that the artwork will inhabit. In the case of the core practice, each project is integrated into the location and culture in many different ways. With each new artwork, the site and culture are exposed through the nature of the technoetic and apophenoetic systems that make up these projects. With each project, an analysis will be conducted regarding the formation of one's artistic intent, tracking its evolution through the apophenoetic transformation of the project to reveal its impact.

Once the artistic intent forms, the artist establishes a creative process which is also organic and evolving over the course of the project's development. This will also be addressed in this segment of the methodology.

### 1.3.3 Apophenoetic Transformation

Disruption is a primary element that must be considered within the apophenoetic transformation. Refer to the *Apophenoesis as disruption within a Cybernetic System of Creative Development & the Interactive Experience*. This diagram represents the processes how *Apophenoesis in a System of Creative Development* and *Apophenoesis within an Interactive Installation* compare to *Norbert Weiner's Simple Feedback Cybernetic Model*. One will notice that apophenoetic disruption intervenes within the project's inception, development and testing phases to ensure that exponential creative output is realized. Also reflected in these models is the looping system. As opposed to empirical models that tend to take a reductionist approach to analysis, within the apophenoetic model the loop encourages the repetition of certain sections of the process in order to improve and expand creative outcomes.

Within this phase of the methodology, artworks are analyzed for the applied methods with which apophenoesis was integrated into the formation of the artist's intent, creative process, design, development, and exhibition of the artwork. This analysis will seek to reveal the level of impact on the artwork affected by the apophenoetic transformation, or disruption, and whether this influence achieved an exponential boost that improved the creative process and how this impacted the artwork's outcome. Often with creative processes the goal is to move beyond one's own cognitive limitations which often results in a more universally accessible outcome. Arguably apophenoetic transformation allows for that necessary disruption where one's creative process moves beyond the limitations of self whereby attributes significance. In linear thinking one selectively omits certain stimuli that may not be relevant in order to stay on-track or on-task. However, with respect to creative processes, apophenoesis encourages the artist to further consider stimuli one naturally tends to omit due to irrelevance. When one is too quick to omit significant stimuli, one misses out on the associative relevance and references that

the stimuli provides. This associative stimuli has the potential to lead to conceptual and creative tangents that result in discovery.

In a paper I wrote in 2012 entitled “Apophenoetics: Virtual Pattern Recognition, the Origins of Creativity & Augmenting the Evolution of Self”, I describe apophenoetics as a practice rather than a diagnosis, describing it as “the study of the way that patterns form, are witnessed, and decoded in one's consciousness from the sea of random stimuli collected from the senses.” (Kazemzadeh, 2012a, p.117-118) It is within this study that apophenosis serves as a dual natured technique that can be infused into the creative process influencing how artworks come into being while at the same time used as a method to evaluate works of art.

Henri Bergson discusses the relationship of vantage point to the perception of the world by stating,

“Here is a system of images which I term my perception of the universe, and which may be entirely altered by a very slight change in a certain privileged image—my body. This image occupies the center: by it all the others are conditioned; at each of its movements everything changes, as though by a turn of a kaleidoscope.” (Bergson, 2014, p. 12)

It is in these movements and changes in vantage point that apophenoetic disruption occurs. In certain instances, movements from one's current vantage-point, changes in perspective, or the transformation of one's role or identity can create an apophenoetic disruption. While movement isn't necessarily a requirement for apophenosis, Bergson's quote is relevant to apophenoetic transformation and the *apophenoetic toggle model*, as movement through space results in significant shifts in perspective and vantage point, becoming the basis by which new images are witnessed, as well as their misperceived image counterparts, and new ideas form.

There is an process of interpretation that must be considered as a potential contribution to apophenosis. Apophany requires the exposure to information which is then

followed by an exchange or transfer of that information from one sensory apparatus to the processing apparatus of one's conscious mind. During the stimuli-processing phase, one's consciousness functions as multiple apparatuses, comparing gestalt associations in memory, evaluating, exchanging, reforming, and establishing meaning with respect to the ideas formed during this process. It is the deconstruction and reconstruction of the diversely formatted content and imagery, that can be processed and reprocessed, thereby forming new patterns of significance. (Kazemzadeh, 2012a, p.117-118) Apophenoesis is when apophany is placed into practice, and where recognized patterns of significance are further analyzed for relevance.

Infusing apophenoesis also means that the apophenoetic toggle would be applied to generate potential iterations with incrementally more diverse relevant results.

Apophenoetic Toggle Model for Perceiving Significance from Stimuli (Kazemzadeh 2018)

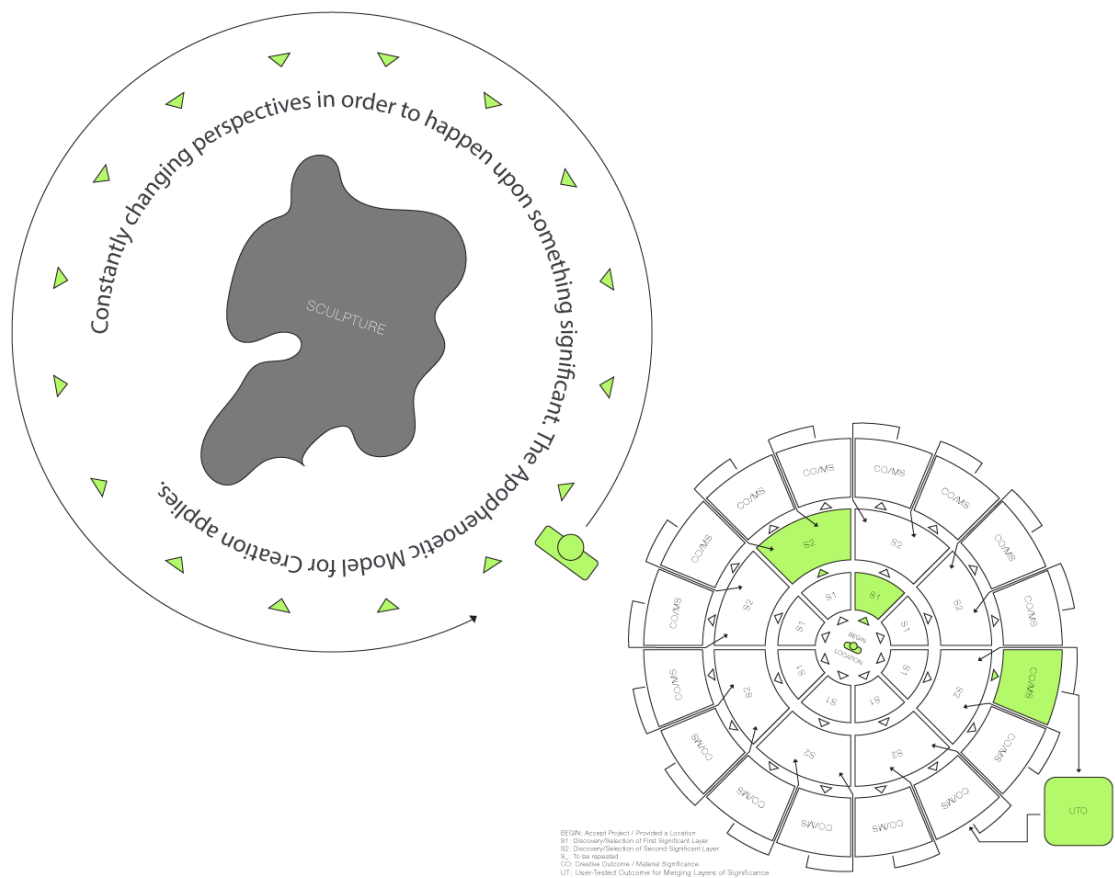


Figure 1: *Apophenoetic Toggle Model for Perceiving Significance from Stimuli* (by Max Kazemzadeh in 2018) - seen above

In the *Apophenoetic Toggle Model for Perceiving Significance from Stimuli* figure 1 above, the *sculpture metaphor* is used to describe what Henri Bergson refers to as one's experience from the *absolute* perspective, as opposed to the *relative* one. Bergson's absolute perspective relates the perception of an object or image from one's own experience, while the relative perspective is accessed via the description of another person's perspective. Bergson states that there are "two profoundly different ways of knowing a thing. The first implies that we move round the object; the second that we enter into it." (Bergson, 1918, p. 1) Bergson's comment is also important to consider with respect to practice-based research.

In the instance seen in figure 1, one's absolute experience perceiving an abstract sculpture is where the experience of apophany exists. However, using this as a tool and method with the intention of infusing it into one's creative practice is *apophenoesis*. *Apophenoesis* can be described as *apophany-in-practice*, or *apophany* embedded into one's creative practice. *Apophenoesis* is seeking experiences of *apophany* with the intention to create and innovate. *Apophenoesis* is the merging of the terms *apophany*, (or *apophenia* which is the Webster Dictionary spelling) or the attribution of significance where significance doesn't necessarily exist, with *noesis*, which is cognition, understanding, and to Plato, "the highest kind of knowledge." (Noesis, n.d.)

In the *Apophenoetic Toggle Model* the viewer circumambulates the sculpture to witness potentially infinite views of the asymmetrical and shapely form from an absolute perspective. At each moment along the circular path the viewer is provided a completely different scene, image, or content experience. This actual physical act or process can be used to describe how the Apophenoetic Toggle, or the repositioning of one's perspective or vantage-point can provide opportunities for new ideas, and thereby access creativity in research, creative practice, learning, and the discovery of new knowledge. In meditation as well as digital and analog systems, the concept of *the loop*, (with variation or disruption) not to be confused with repetition, enables processes in

living systems for learning, confirmation, incremental growth, change, and the establishment of foundations from which to develop bursts of exponential growth. Application of the Apophenoetic Toggle has rhythmic similarities to how Dr. Gimzewski's describes what he discovered as occurring within a cocoon during metamorphosis. (Pelling, 2008, p. 29-37)

Within the Apophenoetic Model, the apophenoetic intervention serves to expand the outcome and continue improvements until desired goal or resources are depleted, with the understanding that further instances of *the loop* will only continue to improve the outcome and provide more opportunities for disruption. *The loop* is common within meditation techniques pair with sound motivating transcendence, growth, cognitive self-alignment, comprehension, and problem-solving. This practice is not too dissimilar from how Csikszentmihalyi's describes the designer achieving perfection in their work through *flow* states (Csikszentmihalyi, 2008, p. 6). One could argue that this occurrence may in fact be the representation of what Bergson describes as *metaphysical* in the physical world and can also be viewed as a byproduct of this intensive focus that occurs within the apophenoetic loop.

Bergson's description of the absolute connects to the personal and intimate nature that characterizes an artist's contemplative creative practice. The application of apophenoesis within one's creative practice is equally as personal but is often represented with relative reflections of one's absolute experience. For this reason, apophenoesis is defined as a tool for immersion into one's absolute reality in order to realize significance in stimuli. Within these artworks Bergson's application of the absolute and relative perspectives comes into play with respect to evaluating the apophenoetic influence on immersion. (Bergson, 1918, p. 3)



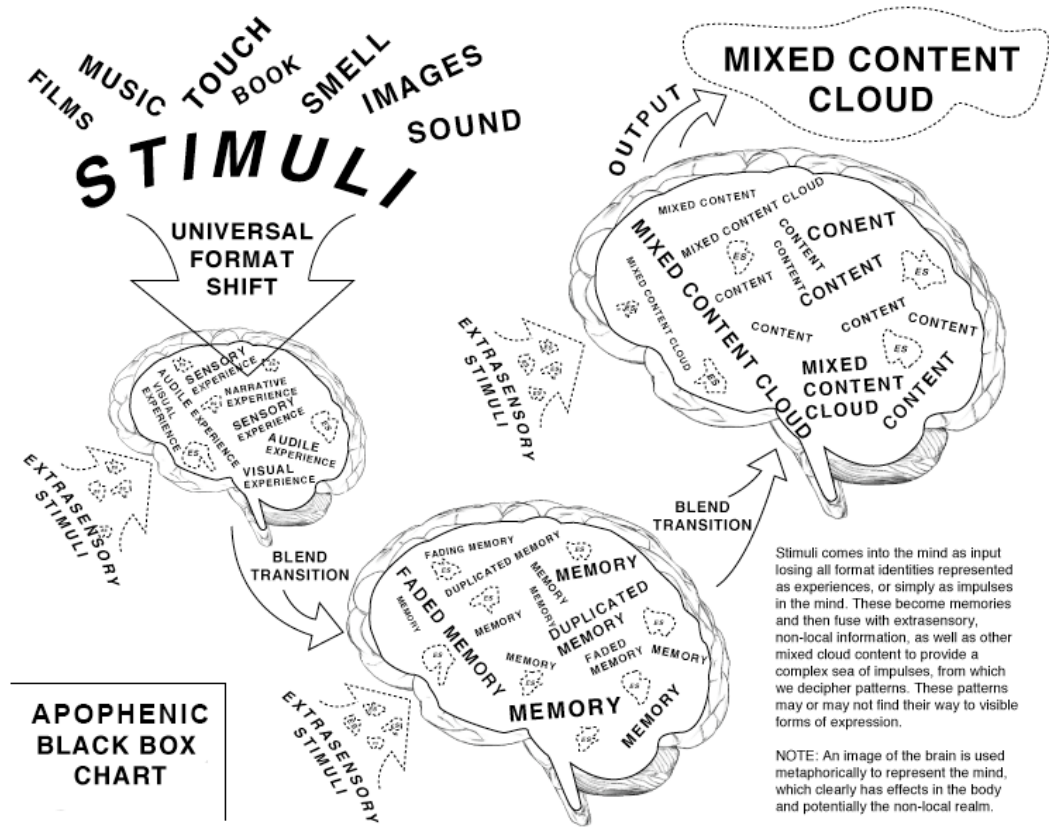


Figure 2: Apophenoetic Black Box Chart (by Max Kazemzadeh in 2013) - seen above

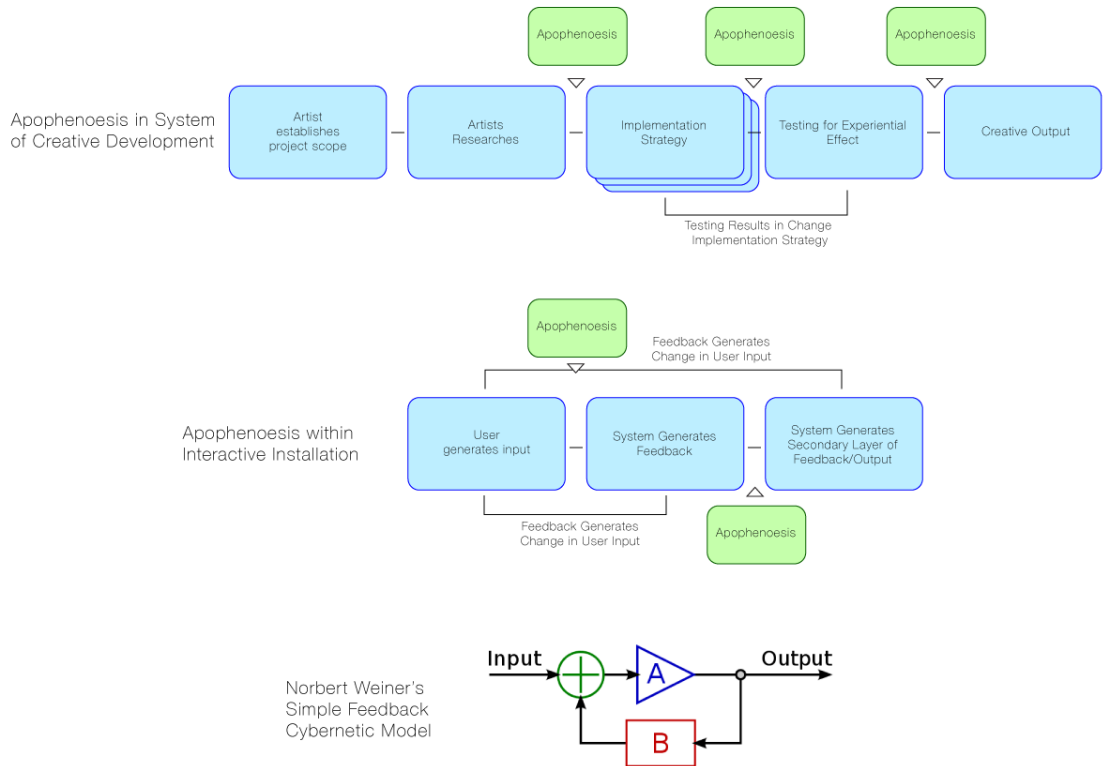


Figure 3: *Apophenoesis as Disruption within a Cybernetic System for Creative Development and the Interactive Experience* (by Max Kazemzadeh in 2018) - above

Consider for a moment that engagement in the perception of a sculpture in the round, or the *Apophenoetic Toggle Model for Perceiving Significance from Stimuli*, requires one to be in motion to discover stimuli that is significant. This significance could also be realized after circling the sculpture multiple times, as a sum of multiple scenes, images, or content experiences witnessed. While the motion seems to be the disruptive element, it is actually the constant shift in perception paired with the willingness to experience content in many forms that actually creates the disruption. Consider the cybernetic disruption caused when apophenoetics is integrated into Norbert Weiner's Simple Feedback Cybernetic Model. (Weiner, 1948, p. 112)

In Figure 3 above, a standard model for the development of a creative artifact is listed in blue. First, the artist establishes a project-scope. Next, the artist conducts

research based on the goal and scope. Then the artist develops an implementation strategy, tests the strategy through experiencing it or letting others experience it, then returns to the implementation phase to make changes and improvements. When the disruptive *apophenoesis* step is inserted between research and implementation, considering the *Apophenoetic Toggle Model*, the artist gains exposure to stimuli outside the context of the linear framework of the project goal, possibly drastically changing research formats of the artist's content experience, prior to implementation. While one might consider this to be a break from the practice, it is rather a more strategic disruption and must be understood as part of the process of perception and creation.

When *apophenoesis* is then inserted between the implementation and testing steps, it functions as a secondary disruptive toggle with respect to material selection and layering content into the experience, with a range of possible alternate formats of content that are separate from the project's implementation step. This *apophenoetic disruption* is implemented again after testing in response to what has been implemented prior and promotes creative disruptions to the larger final representation of the project.

One very real example of *apophenoesis* appeared in the implementation of the final stages of *i.m.pshovr (2006)*. The final apophenoetic disruption was developed with the purpose of drawing full attention of the participants in the room to the event when the participant collided with the virtual object on screen and pushed them over. To achieve this, a last-minute addition of a vibration motor was added, or attached, to the mirror that reflected the digital projection to the wall across the room, so that when the participant *pushed over* the virtual character, it triggered the entire data projection to vibrate. This heightened the participants immersion into the system and created even more desire to interact within the system.

When *apophenoesis* is implemented within a technoetic interactive installation, it can also be discussed within the context of Weiner's Simple Feedback model. In this model, there is a disruption or toggle in the logical data transfer of user input into the system, which thereby affects the feedback that the system generates for the user.

(Weiner, 1948, p. 112) This naturally causes the user to change their method and mode of input into the system. This input can be layered based on the different data points that function as input, which is also then disrupted or toggled in similar ways.

Apophenoetic Toggle Model for Accessing Creativity  
(with references to Cybernetics)

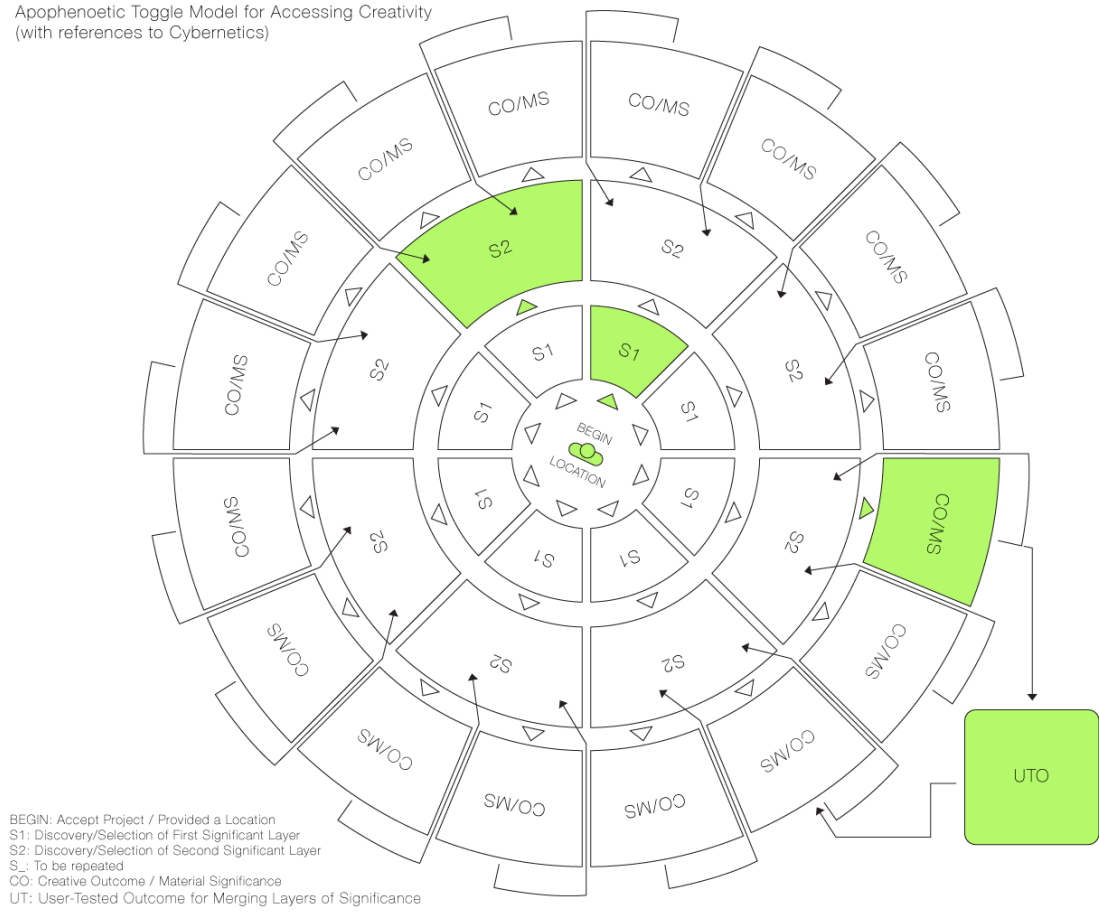


Figure 4: *Apophenoetic Toggle Model for Accessing Creativity* (with references to Cybernetics) ( by Max Kazemzadeh in 2018) - seen above

While the *Apophenoetic Toggle Model for Accessing Creativity* (with references to Cybernetics) uses the act of circling a sculpture as an example, within the diagram or model, the artist actually begins this process in the center, facing outward to infinite possible solutions to a task or problem. When the artist begins this process, he does so by Accepting the Project (see Figure 44: *GoC13* Development Process) and in the case of *Gestures of Change* (2013) aka. *GOC13*, I was provided a location in a country different from my home, which one could identify as imposing certain limitations as

well as context. Note, while this model functions without the imposition or influence of history or research priority on the project, similar to the blank canvas for an artist, it should be noted that in many instances these elements can provide certain impositions and directives that would naturally impact the outcome of this model. In the first phase of this process, the artist investigates outwardly, without limitation, all of the material available to them, toggling between formats and experiences in search of significance and relevance. This step can be repeated infinitely as there is more than one possible outcome. Within this toggling for significance phase, the discovery of one significant element may be connected or influence the understanding of a previously discovered significant element. After the discovery and selection of significance phase the artist must move into toggling for material significance or relevance, which also doubles as the *Creative Outcomes*. This step is also repeatable depending on how the layers of significance are addressed. Note that in the *Apophenoetic Toggle Model for Accessing Creativity* there are potentially multiple solutions, outcomes, available to any pursuit. Once a relevant material outcome appropriate to the layers of discovered significance is identified, a *User-Test(able) Outcome is Generated* merging the layers of significant discoveries with the material significance.

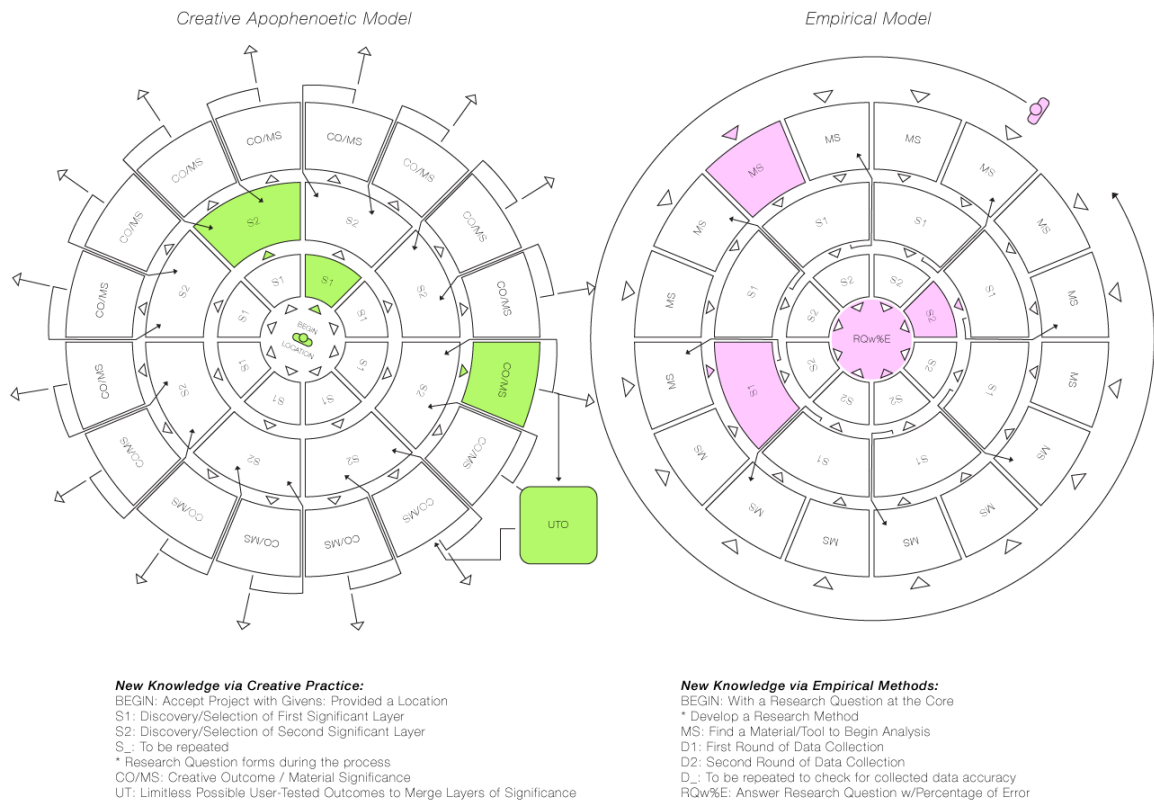


Figure 5: *Empirical vs. Apophenoetic Toggle Model Comparison* (by Max Kazemzadeh in 2018) - seen above

Compare the difference between the *Apophenoetic Toggle Model for Accessing Creativity* and the *Empirical Model* and consider the impact of each on the discovery of new knowledge. The researcher begins with a research question and develops a research method, searches for *Material* or *Tool* to begin analysis. They begin the first round of data-collection and if this is accurate, may continue on to a second round of data-collection. At any point if the hypothesis is refuted or a pursuit results in nothing valuable, the research process ends. The result of a successful *Empirical* process is a singular answer, narrow in scope, and often must account for percentage of error, or inaccuracy. The *Empirical Process* forfeits what Bergson refers to as the *absolute* perception for that of the *relative* in every instance, while the *Apophenoetic Toggle Model for Accessing Creativity* the research question emerges after the creative process

has already begun, and certain significant discoveries have been made from an absolute immersive engagement in the practice. (Bergson, 1918, p. 1-5) Again, as opposed to the *Empirical Model*, which attempts to search for the singular absolute outcomes, the *Apophenoetic Toggle Model for Accessing Creativity* results in infinite outcomes and establishes a format for continual growth with a foundation of knowledge.

The apophenoetic transformation can be best witnessed through the documented steps that were taken within the in-process development of each artwork. This documentation was collected via an auto-ethnomethodological approach and is described in the next section.

### 1.3.4 Auto-ethnomethodology: Evaluation of Practice

With this research, I used an auto-ethnomethodological approach, through which I analyzed each artwork's inception to exhibition in detail, compiling the creative processes, the disruptions, challenges, and apophenoetic steps that led to innovations and creative implementations to be realized. Each artwork reviewed maintained an individualized intent, creative process, and implementation in a different venue, country, and context. From the content and analysis collected from each artwork, I will seek to display how the application of *apophenoesis* served as a model and tool for the conception and implementation of complex, creative experiences that consistently break from familiar formats to gain exposure to innovation within the context of art practice. For each project, this section will represent in-process diagrams describing the method and strategies through which each project was created, and where apophenoesis was used as a tool to disrupt, expand and innovate.

Because apophenoesis deals with disruption and perception, I also use it as a functional tool for creatively identifying patterns of significance within the research process. There are moments when the auto-ethnomethodological steps blend with their apophenoetic counterparts, and this often results in more thorough analyses.

Auto-ethnomethodology is a term coined by Lyle Skains to describe "One's analysis of one's own practice while in the process of conducting that practice. This results in serving as an analysis of a process that provides a broad range of information about the practice." (Skains, 2016, p. 1) It serves as a semiotic approach to activities: treating the actual appearance of an activity (arguably the signifier) as evidence documenting that activity's underlying pattern (that which is signified). (Littlered, 2007, p. 1) The term, auto-ethnomethodology is based in Garfinkel's term ethnomethodology to which he describes "Make everyday activities (e.g. creative practice) visible by applying a special motive to make them of theoretic interest." (Garfinkel, 1967, p. 37)

In history studies, the term self-ethnomethodology and self-reflexive-ethnomethodology and radical reflexivity is used to describe recording and analyzing



one's own practice for the sake of discovering new knowledge. (Pollner, 1991, p. 56) I have chosen the term auto-ethnomethodology because it was used specifically to discuss art and creative practice.

Lastly, as influenced by artist Rafael Lozano-Hemmer's inclusion of a separate digital screen in the exhibition space for participants to see how his computer vision system would function in real-time, early within my interactive installations I would often pair my work with a secondary tracking systems in order to collect information with which to further analyze the ways users behaved while engaged in the experience. I initially considered this data collection as a mechanism for studying the influence of the designed technoetic interface on the behavior of participants within the system. In an early technoetic artwork, *A Seesaw & A Scoreboard* (2000) for instance, I set up a video camera to document how users interacted with the system and then studied user video responses for further assessments. In other instances, collections of feedback via interviews with participants would help identify what was successful within the system's design, which also helped to understand how architectural elements in the space might affect behavior. This tracking and data-collection ran parallel to the analysis of my own creative process.

Compiling the evolving artist's intent, paired with the analysis of the intensity and characteristics of the apophenoetic transformation through the auto-ethnomethodological practice of documenting the development and implementation of each of the works of art, one can identify the transformations that each artwork underwent through the application of apophenoesis, and how these discoveries can relate to the contribution of new knowledge regarding accessing creativity.

### **1.3.5 Identifying the Contribution to New Knowledge**

Within this section, the content collected from the *Evaluation of Practice* will be identified for the level of innovation within the context of existing contemporary, and interactive art practices. Contributions to the creative process, relevance to how disruption may contribute to the enhancement of the innovative characteristics of works of art, how these contributions relate their effectiveness as a tool for immersion, as well as how these practices may serve as new relevant forms of self-expression, will be considered within the context of a contribution to new knowledge.

Because many of these elements can be subjective, it will be necessary to refer to the collected and compiled auto-ethnomethodological documentation in order to identify the internal processes with which I engaged as an artist to implement and complete the works, as well as any feedback from participants and onlookers regarding their experiences with these works of art.

## **1.4 Research Questions**

Within the auto-ethnomethodological approach of conceiving and implementing the relevant site and culture specific technoetic projects: *Gesture's of Change* (2013), *Dabarithms* (2014) and *Poseidon's Pull: Revisited* (2018), the following questions emerged:

1. Does the application of *apophenoesis* as a tool within one's creative process help to introduce deviations from familiar content or processes in such a way that new creative pathways can form and lead to new knowledge and innovation?
2. Can employing *apophenoesis* to the implementation phase of an interactive artwork serve to enhance the level of immersion participants experience?
3. Would apophenoetic art be a more accurate term to define interactive artworks concerned with cognitive disruption and consciousness, especially in artworks that use Brain Computer Interfaces (BCI) such as Open-Source Electroencephalograms (EEG)?

This research addresses the above questions as informed via a creative practice, to further reveal how Conrad's *apophanie* is a naturally occurring process within the human experience and is fundamental to the process of creativity, innovation, learning and the development of new ideas in any field of research, whether artistic or empirical. When merged with my years of practice as an artist investigating gesture, human interaction, the interface, intentionality, human behavior tracking, perception and thought within interactive environments, the development of the project entitled *Gestures of Change* (2013) served as a jumping off point to identify sources of creativity and innovation. Within this project and the others mentioned, *apophenoesis* served as a necessary model to further define Conrad's term and understand the naturally occurring connections between disruption and creativity. This paper also discusses how *apophany* is perceived and applied within a range of creative disciplines, and how successful leaders in many disciplines not only validate but rely on the phenomenon in their daily practice and work. This new knowledge will not only impact creative processes that intend to develop new innovative experiences in the realm of

interactive art but has the potential to provide a foundation for more efficient technical and scientific research and discovery. *Apophany* can also serve as a basis for speeding the development of new intricate collaborative networks that can lead to resolving other challenges through interdisciplinary collaboration, cross-cultural socio-political struggles, as well as new solution-based designs for our evolving cities and living spaces.

## 2. DEFINING APOPHENOETIC PRACTICE

### 2.1 Interactive and Technoetic Art

In this section, it is important to consider the notion of Interactive and Technoetic Artworks, and the value of the understanding of interface in relation to perception, disruption and apophenoesis.

“In the degree that my horizon widens, the images which surround me seem to be painted upon a more uniform background and become to me more indifferent. The more I narrow this horizon, the more the objects which it circumscribes space themselves out distinctly according to the greater or less ease with which my body can touch and move them. They send back, then, to my body, as would a mirror, its eventual influence; they take rank in an order corresponding to the growing or decreasing powers of my body. The objects which surround my body reflect its possible action upon them.” -Henri Bergson (Bergson, 2014, p. 3)

As Bergson relates in *Matter and Memory*, interaction is interwoven with perception and cognition and every object is perceived based on an object's interactive potential. In my earlier work, I designed and implemented tangible installations and performance artworks that sought to provoke immediate gestural reactions from participants. These were not games, but rather objects that inhabited spaces and functioned as stimuli that converted the passive viewer into a participant, luring them to act or respond gesturally to the artworks. These responses were studied for their relationship to the stimuli. I was attracted to the immediacy of feedback that interactive artwork drew from participants, something I considered raised new questions within the broader art critical discourse. I began to consider the gestures<sup>4</sup> participants made in response to the stimuli within the interactive environment as the actual artwork and more interesting than the physical objects. While retaining some of the characteristics of

---

<sup>4</sup> Gestures: human actions that may or may not occur in response to stimuli. In painting the gesture is used to describe the artist's intent by the analysis of artistic gestures such as the brush stroke. In interactive art, participant gestures are often tracked and used as input into the system to contribute to the content represented in the work.

performance art<sup>5</sup> and happenings<sup>6</sup>, I identified this as different, primarily since the interactive works established interfaces that became the center and impetus for interaction. Since there is no actual stage in an art gallery or museum, the exhibition context, when participants engage in an interactive artwork that provokes input, they seem to feel more comfortable expressing and immersing themselves within that interactive system, which causes them to forget anyone else may be watching. Each of these elements are important to consider with respect to the experience of apophany, errors in perception, and the application of apophenosis. Without a stage or an audience, participant gestures become more authentic byproducts of their interactions with the system; and, if there are onlookers, they seem more interested in the gestural dialogue between the participant and the system which reduces the importance of other static content.

In Steven Johnson's book *Interface Culture: How New Technology Transforms the Way We Create & Communicate*, he quotes Marshall McLuhan who describes how interactive interfaces<sup>7</sup> will change the way societies think and operate stating about pervasive technologies,

“These metaforms, these bitmappings will come to occupy nearly every facet of modern society: work, play, romance, family, high art, pop culture, politics. But the form itself will be the same, despite its many guises laboring away in that strange new zone between medium and message. That zone is what we call the interface.” (Johnson, 1997, p. 46)

Art objects functioning as interfaces establish a context for interaction from

---

<sup>5</sup> Performance art: an artwork where the artist's actions are central to the content of the artwork often performed for an audience. It often involves the artist using their body or props as the artistic medium. Since performance artworks occur during a span of time, it served to oppose commodification so visible in the valuation of art objects.

<sup>6</sup> Happenings: Similar to performance art but more open to the viewing of normal occurrences in daily life as artworks. These often also represent collaborative and collective efforts.

<sup>7</sup> Interface: a device and tool that functions as a mediating element between two or more things. A door is an interface between rooms. A door is also an interface between someone in one room and their desire to enter the other room.

which ideas about culture and history emerge. Similar to notions of the cyborg<sup>8</sup>, art as interface establishes a foundation for the convergence of new media extensions to apply. Artificial intelligence, human tracking, reactive graphics, and remote kinetic output are a few kinds of mechanisms used within interactive and technoetic artworks. What seemed to fit nicely within the realm of performance art in my early work evolved into a new interactive, local, sub-genre within the academic community that converted the aestheticized art object as a provocation or intentional interactive collaborations between the artist through the designed interface and the participant, that simultaneously and strangely reflected traces of a competitive subtext. The further my works explored the nuances of interactivity the more complex fundamentals of interactivity became. As opposed to static art objects that invited reactions to formal elements, imagery and unchanging content, interactive, technoetic art now introduced a range of new challenges and dialectics that required further research in other disciplines. I began looking into Robert Axelrod's *cooperation theory*. In Axelrod's book *The Evolution of Cooperation*, he described the difference between the “Olympian perspective of a reformer who wants to alter the very terms of the interaction so as to promote the emergence of cooperation” versus new domains where closer analysis of social structures reveal wide potential for conflicts to emerge (Axelrod, 1984, p. 23). He mentions the *Prisoner's Dilemma*, where competitive provocations and reactions might exist simultaneously with cooperative ones (Axelrod, 1984, p. 22).

With the interface as a new artifice and apparatus within the technoetic artwork that invites user input via gestures, it naturally causes one to look further into the intentions behind the fundamentals of gesture. Therein lies questions about why individuals are enacting a gesture or making a movement. When considering the experience of apophany within an interactive technoetic artwork, one must consider the

---

<sup>8</sup> Cyborg: Short for cybernetic organism, the merging of artificial elements with the natural organism in order to extend the capabilities of that organism. (Clynes 1960, 27)

movements and gestures as also potentially witnessed patterns where patterns may not exist. Apophany and apophenosis become much more involved challenges when you apply them to a gesture tracking interface, or an interactive technoetic artwork. The natural phenomena of experiencing apophany occurs with respect to witnessing the gestalt of the interface and all of its possible moving parts, but also with respect to the gestural intent driving participants to move within the space.



## 2.2 Intention and Gesture

Within this section, I will discuss some of my early interactive technoetic artworks in order to establish a foundation that will help expand the analysis of gestural intent, or the intention behind what drive a participant to enact a gesture. This will help in establishing a foundation for how experiences of apophany can apply to reading and understanding gestures within an interactive system as well as assessing them in order to apply apophenosis to the refinement of the interface design.

In early digitally interactive works, I evolved some of the early, much simpler interactive artworks into more sophisticated, technologically-driven, gesture tracking systems that would become multi-user interactive interfaces providing real-time feedback to its participants. Within these types of interactive experiences, I began to notice how physically active and passive gestures would often communicate one's intention more honestly and accurately than spoken language.

Using Axelrod's cooperation theories, I developed the first of these projects which was the interactive installation entitled *A Seesaw & A Scoreboard* (2000), to reveal participant intentions surrounding cooperation and competition. *A Seesaw & A Scoreboard* (2000) invited two participants into an art gallery space to climb onto and play together on an adult-sized seesaw. As the participants levered themselves up and down on the sensor-rigged seesaw (with analog tilt sensors that tracked which participant was up or down), each participant gained points that displayed on a digital projection-screen behind the seesaw on a real-time, updating, competitive two-sided scoreboard. The digital output displayed the score for each player into two horizontally positioned rectangle fields next to one another. The project and its behavior provided two conceptual references: one to a spectator-sport sized, game-like scoreboard, and the other to the readout of a scale of weights and balances. If the two participants played on

the seesaw taking turns rising and falling equally and evenly, the scores would be close in number, like adjusting the weights of a pan scale. Additionally, participants would hear children either cheering or spouting negative rants at them on their side of the seesaw. What seemed to be audio captured from a children's playground was played into the ears of each participant in order to encourage the larger participant to dominate the other by staying in squatting position on the ground thereby suspending the smaller/lighter participant in the air. It was the dominant participant's decision whether or not to cooperate and collaborate, or yield to the other participant, and often caused spectacles of inequity. Debord refers to the spectacle as not being “a collection of images;” but rather “a social relation between people that is mediated by images.” (Debord, 2014, p. 10) Sharing Bergson’s language to describe perception, Debord expands on the human limitation of experiencing reality via a collection of images, by stating that within multi-user interactive artworks, which function as a spectacle, participants are paying attention to one another and their gestures, and the mediation of images are those that inhabit the social space and characterize the interaction.

In *A Seesaw & A Scoreboard* (2000), the seesaw was placed on the gallery floor rather than a stage separating it from other gallery goers. This encouraged spectators to both watch and participate in the interactive spectacle. Many times during the first installation of the piece, spectators would notice the larger person dominating the seesaw and would get involved, often while engaged in conversation, by physically assisting the lighter participants to balance out the two sides. The interactive installation doubled as an artwork and anthropological study. In *A Seesaw & A Scoreboard* (2000) a familiar childhood playground toy became a spectacle inviting audience intervention, which the audience did willingly because they interpreted the intentions of the participants.

Considering consciousness, *A Seesaw & A Scoreboard* (2000) explored the

subconscious intentions of its participants within the context of a game. Connecting the most fundamental cooperative interface to the most fundamental competitive interface created a cognitive error or dissonance for the spectators. This could be considered to be an experience of apophenosis, or an intentional pattern disruption that force spectators to create a new mash-up pattern blending a cooperative and competitive interface. While this dissonance is unresolvable in the mind of the spectator, the two opposing interfaces were functioning together and influencing one another. The seesaw's movements influenced the scoreboard, and when participants were influenced by the scoreboard, they became more competitive.

What I began to realize in my interactive technoetic artworks, is the need for stimuli to generate input. Since, most art galleries and museums have trained their visitors to not touch the artwork, I was tasked with motivating visitors to break through that invisible barrier to interact with the works of art. In *Understanding Media - The Extensions of Man*, Marshall McLuhan describes interactive media using a metaphor of hot and cool media as it relates to the information that the media provides an engaged listener. He refers to a light bulb as cool, requiring user input to turn on and off to get any change in information. The light bulb does not provide captivating content and is therefore cool, while a radio or movie theater leaves the listener or moviegoer static and entranced with the array of information. (McLuhan, 1964 p. 25)

While developing my early interactive works I discovered that they could not be completely cool, only requiring input to generate any content. During the time when interactive art was emerging, my work would tend to be the only interactive technoetic artwork amongst many static works in an exhibition. I often had to invite gallery visitors into an interactive space and stimulate them to confidently engage with the work. I began establishing looping, bating stimuli in the default state of the interactive works that would invite potential participants to interact with the works. These stimuli

would change to the interactive system when someone entered the space.

Around this time I was reading Lev Manovich who opposed the idea that computational space is the space of the machine, devoid of warm organic, human presence. In *The Language of New Media*, Manovich described computer space as being one that is traversed by the human dweller, and that each individual brings their “anthropological framework” with them. (Manovich, 2001, p. 262) Many of my early interactive technoetic artworks functioned as cultural interfaces, inviting more than one participant together to interact with one another via the limitations and expansions that the interface provided. Manovich refers to cultural interfaces as interfaces that,

“try to balance the concept of a surface in painting, photography, cinema, and the printed page as something to be looked at, glanced at, read, always from some distance, without interfering with it, with the concept of the surface in a computer interface as a virtual control panel, similar to the control panel on a car, plane, or any other complex machine.” (Manovich, 2001, p. 91-92)

My works were all designed to be interfered with and interacted with, while functioning as interfaces between participants. These gestures, interferences and interactions are all disruptions within the space that can be seen as evidence of apophany and apophenoesis.

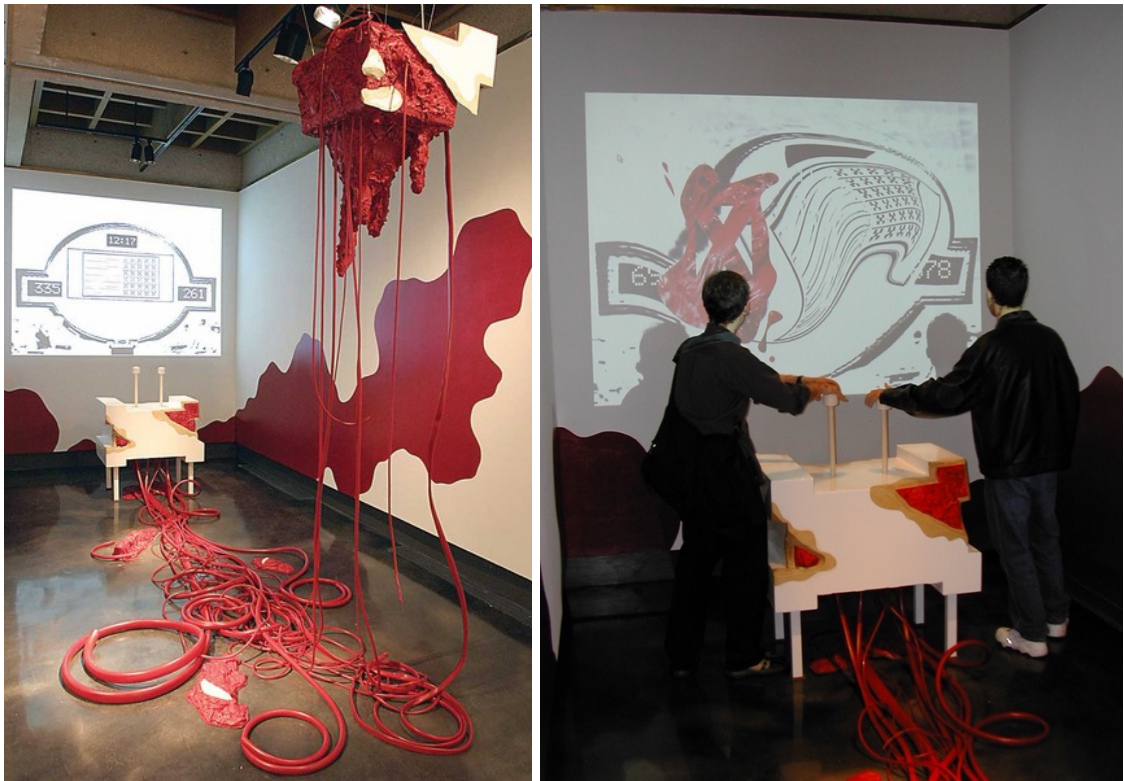


Figure 6 & 7: *Feud* (2004) (by Max Kazemzadeh) - see Appendix 02 – seen above



Figure 8: *L/R I/O* (2005) (by Max Kazemzadeh) - see Appendix 02– seen above

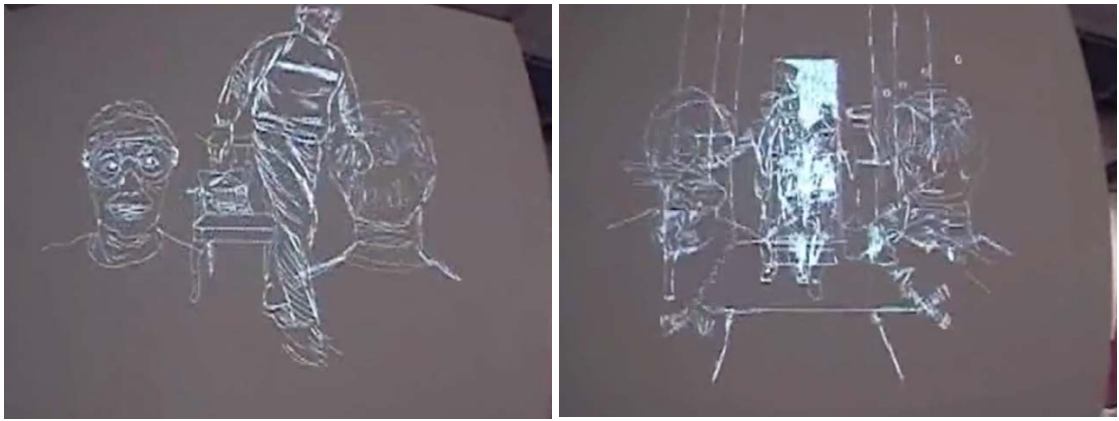


Figure 9 & 10: *L/R I/O (2005) – Interactive Details* (by Max Kazemzadeh) - see Appendix 02 – seen above



Figure 11: *IS.US (2006)* (by Max Kazemzadeh) - see Appendix 02– seen above

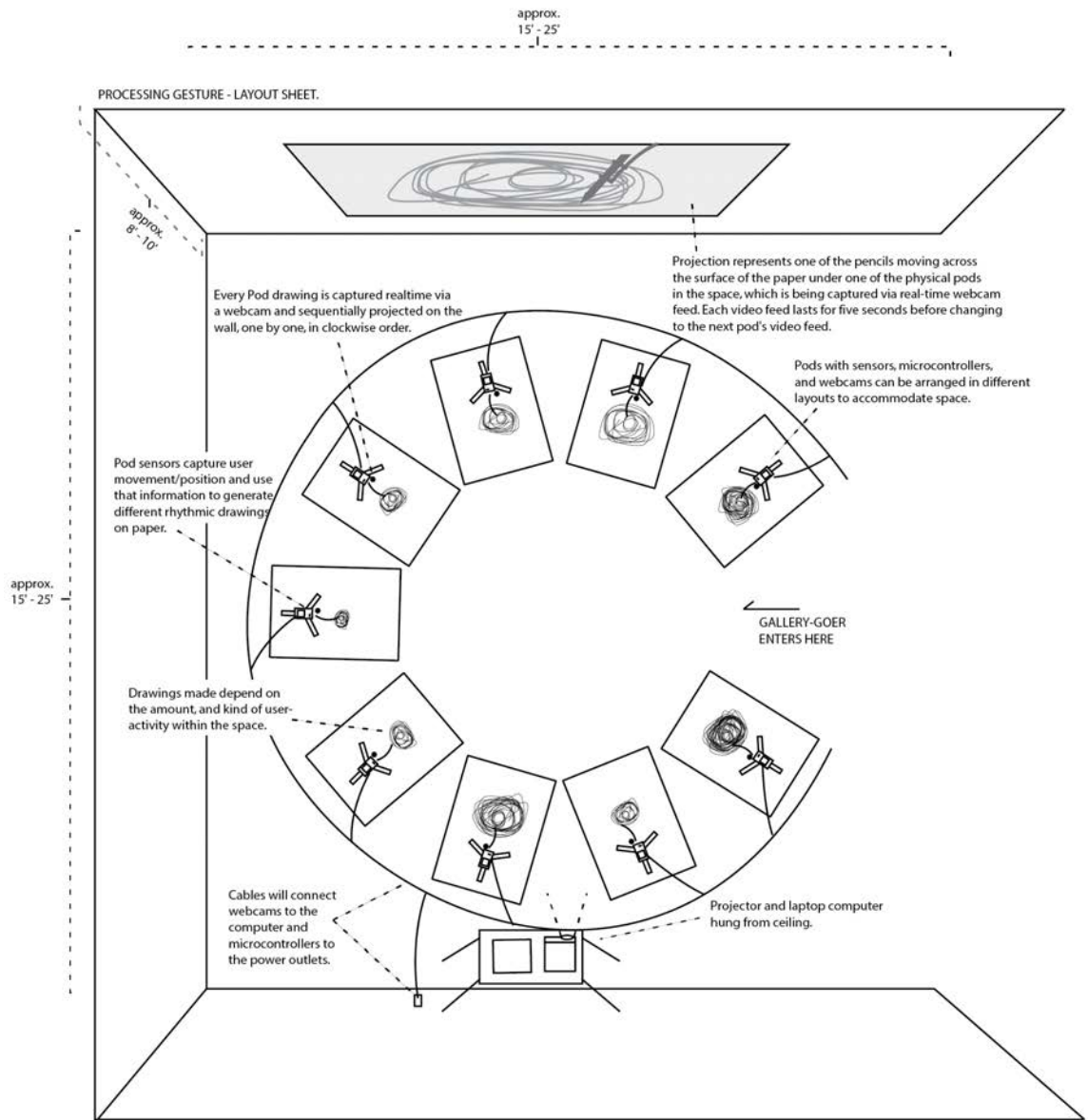


Figure 12: *Processing Gesture* (2006) - Diagram (by Max Kazemzadeh) - see Appendix

02 – seen above



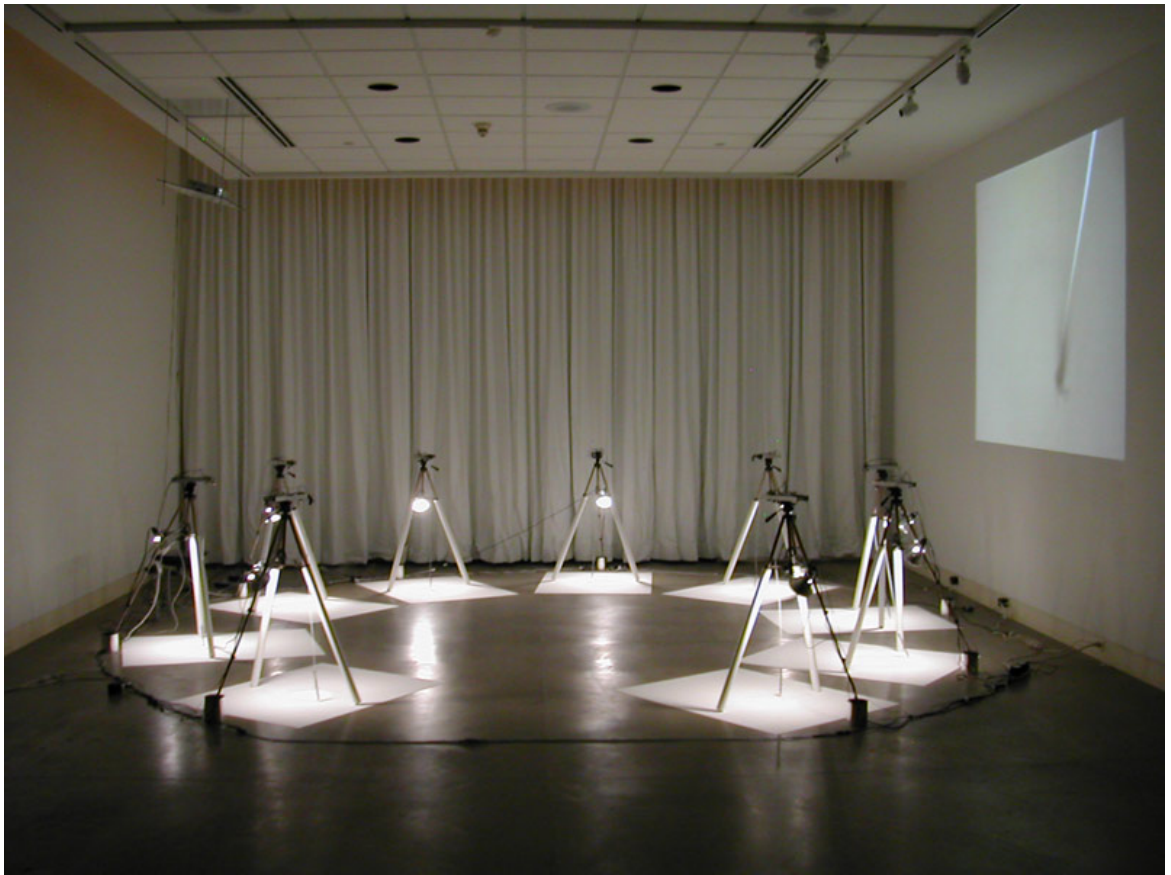


Figure 13: *Processing Gesture (2006)* - Installation (by Max Kazemzadeh) - see Appendix 02 – seen above

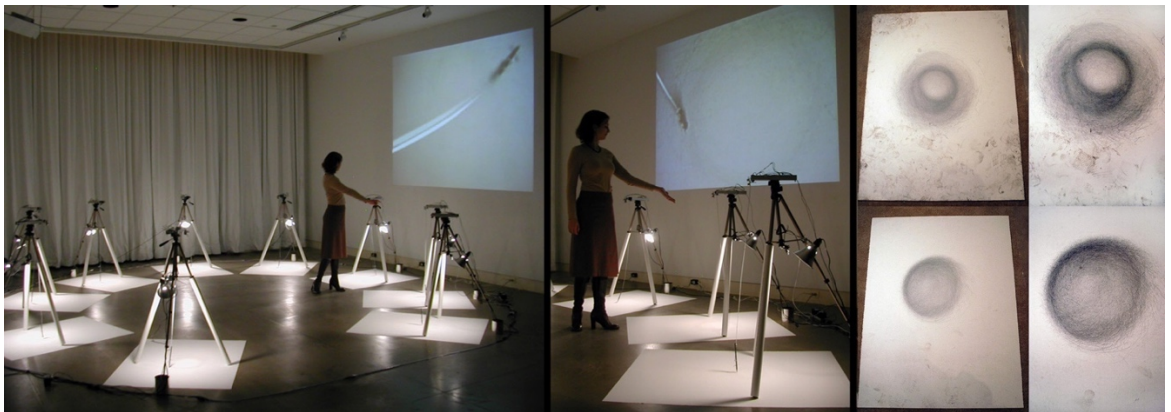


Figure 14: *Processing Gesture (2006)* – Interactive Installation with Drawn Byproducts (by Max Kazemzadeh) - see Appendix 02 – seen above



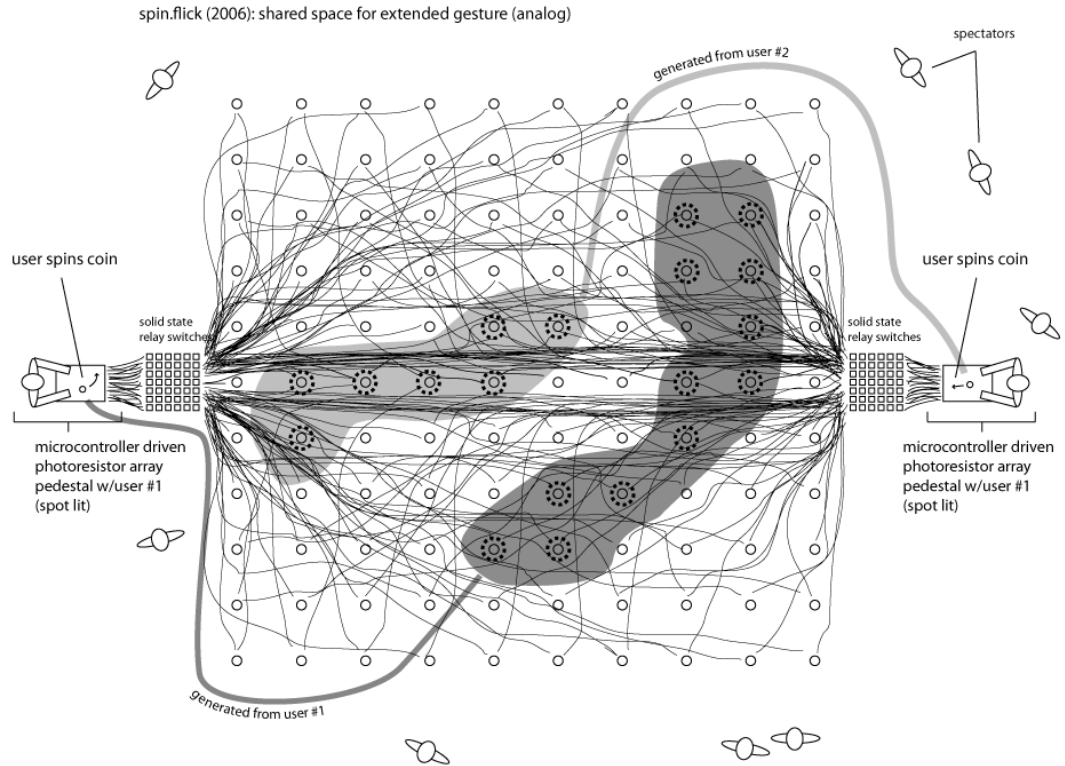


Figure 15: *Spin.Flick* (2006) - Diagram (by Max Kazemzadeh) - see Appendix 02 – seen above



Figure 16: *Spin.Flick* (2006) Installation and Coin Shadow Detection Console (by Max Kazemzadeh) - see Appendix 02– seen above

In a number of projects, including, *Feud* (2004), *L/R I/O* (2005), *IS.US* (2006), *Processing Gesture* (2006), *Spin.Flick* (2006), I explored different strategies for

attracting gallery visitors into the interactive space using default stimuli that would change once the user began interacting with the system. Most of these were subtle elements that were customized to each space to incite interest. In *Feud* (2004), a deep droning, slowed sound-track from the Family Feud game show played in the background to attract participants since the work wasn't fully visible from the entrance to the gallery. The interactive part of the installation was installed within a space that made *Feud* (2004) partially hidden from view. Once within the spaces, each project employed a range of reactive visual, kinetic, and haptic stimuli that would generate third level gestures that would function as apophenoetic byproducts generated by the collective gesture of two or more participants. In the instances of these works, apophenosis functions as a byproduct of subconscious and almost unconscious reactive gestures generated collectively with other participants within socially interactive technoetic environments.

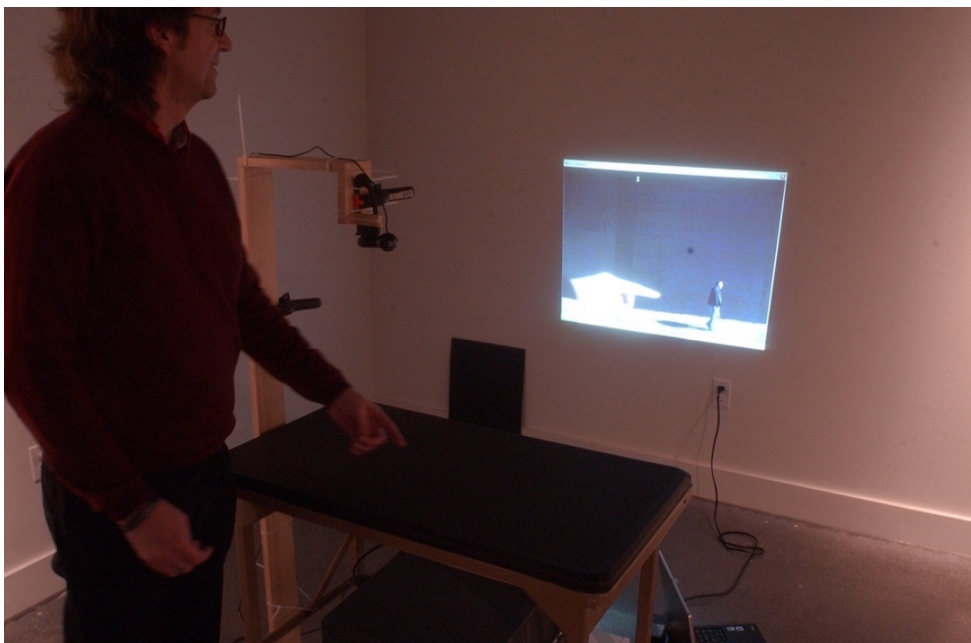


Figure 17: *Max is a Pushover* (2009) - Installation View (by Max Kazemzadeh) - see Appendix 02– seen above

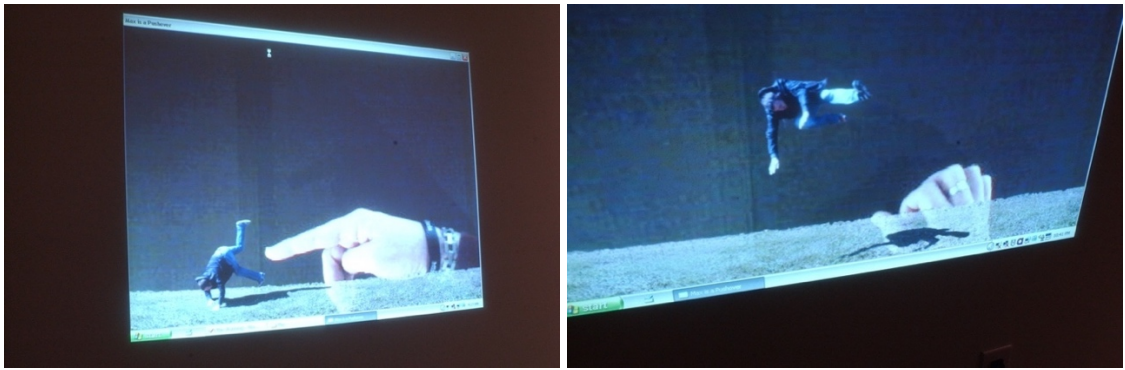


Figure 18 & 19: *Max is a Pushover* (2009) - Interactive Detail (by Max Kazemzadeh and Dr. Ian Parberry) - see Appendix 02– seen above



Figure 20: Image of *i.m.pshovr* (2012) - Installation View with Green Screen Recording Space (by Max Kazemzadeh) - see Appendix 02– seen above

In 2009, I dedicated myself to the development of interactive interfaces that employed computer vision software systems to track user gestures within a given space and amplify their intentions within an interactive spectacle, such as in *Max is a Pushover* (2009), in collaboration with Dr. Ian Parberry, which was exhibited in Dallas, Beijing, Cairo, and Washington DC, and *i.m.pshovr* (2012), in collaboration with Edgar Zu and Mauro Herrera, which was developed and exhibited in Mexico City. In a way,



this work and its predecessor intended to make the gestural intent self-reflective by simplifying the gestures required to generate an animated gestural reaction by the on-screen character named Max.



Figure 21: Image of *Thank You for Recycling* (2012) (by Martina Kalogjera and collaborators) (photo by Reza Safavi) – seen above

Around the same time, I was invited to serve as a technical assistant and collaborator on a few projects at the *Hack the City* (2012) and *Interactivos* (2012) Festivals with the Medialab-Prado and the Science Gallery at the Trinity College Dublin. One project that I worked with in particular, entitled *Thank You for Recycling* (2012) proposed by Croatian artist Martina Kalogjera, was a technoetic artwork that generated an apophenoetic disruption by transforming one's simple gesture of tossing a piece of recyclable trash into a recycling bin into a citywide advocacy effort. With each piece of recycled trash, an automated and instant email was sent to all heads of state and city officials demanding that a proper recycling program be set up within Dublin (Dillon, 2012, p. 52-53) (Safavi, 2012, p.1). While Dublin has labelled and separated their city-managed trash and recycling bins in many locations around the city, after

researching Dublin's official recycling program, the group discovered that Dublin, in fact, does not recycle their trash but rather sells and ships it off to China. In this project each participant's unconscious gesture was magnified into an hidden spectacle applying simple sensor technologies and a WIFI connection extending the definition of unconscious gesture into the realm of social action, where the artists used the passive gestures of the masses as triggers to communicate their true intent to Dublin city government officials. This disruption transforming one's simple gesture into a citywide social action is a direct representation of the apophenoetic transformation into a work of art that can only be possible via technoetic means. This project had a significant impact on the interactive scale of my future apophenoetic disruptions and interventions.

Recognizing that my interactive works became tangible social spaces, I began considering how to link my gesture tracking systems within the physical space with social networking functions popularized in platforms like Facebook and Twitter. *Wishing Well* (2012) was the first of my works that could be identified as a *social-net(art)* work, which sought to connect the inputs from physical gesture of an installation into an activity of a social network. I was interested in how social networks functioned as a complex organism with thousands of gestures and therefore thousands of opportunities for apophenoetic experiences to occur simultaneously, as generated and experienced by users.

The *Wishing Well* Project invited people to submit their *wishes* via their cell phone, Facebook, Twitter or the *Wishing Well* website to the *Wishing Well* server. The *Wishing Well* website displayed the submitted wishes as *wish bubbles* floating in the *Well*, which was a virtual pool of water. The *wish bubbles* displayed with the *Wish*-submitter's photo cropped in the center of each round bubble. In gallery and museum exhibitions, the *Well* appeared as a large-scale projection into an actual shallow pool of water on the floor that functioned as a screen. In *Wishing Well*, the premise for the work

was the initial apophenoetic disruption which established a platform based on the naïve belief that wishing really hard, or intensely thinking about a wish, (i.e. *Wishing*), causes that wish to come true. By establishing an apophenoetic premise, myriad experiences of apophany seem to occur automatically as a result, both conceptually, within the development of the work, and within the final implementation.

It must be mentioned here that this belief was explored via an artwork entitled *Plantenkere*, described in the next section, that adopted the framework of an empirical study to prove not only that thinking-a-wish will makes it come true, but by encoding the wish onto a technological device to intensely think the wish will also result in the wish coming true.

So, for believers in this premise, the *Wishing Well* program was set up to re-read each wish, or think about that wish more than twenty-times per second, thereby raising the question *Can an artificial wishing system also amplify the potential for wishes to come true more quickly?* A second layer of apophenoetic disruption was applied to the Wishing Well system in the form of a technoetic overlay. Onsite visitors were invited to walk up to the edge of the *Well* and waive their hands over the virtually projected pool of water to push the virtual bubbles into each other. When *wish-bubbles* would collide, they would enact automated *wish-bubble-bumps* to both *Facebook* accounts sharing each wish with the other, thereby expanding the readership and thoughts surrounding each wish. In each of these examples of apophenoesis, errors in perception must be considered for the discovery of a new technological and gestural framework. The artist deconstructs the limitations and identity of the system in order to both invent new systems and disrupt the old system in order to achieve a desired result. Prior to this apophenoetic step, the intent was to expose how technology becomes a simple thought machine for the purpose of enacting wishes, however, with Manovich's prior comment about computers as a cultural interface, with this apophenoetic extension the multiple-

users within a social network become additional readers en-mass of the wish as well, thereby extending the goal of the project even further while expanding the audience exponentially.

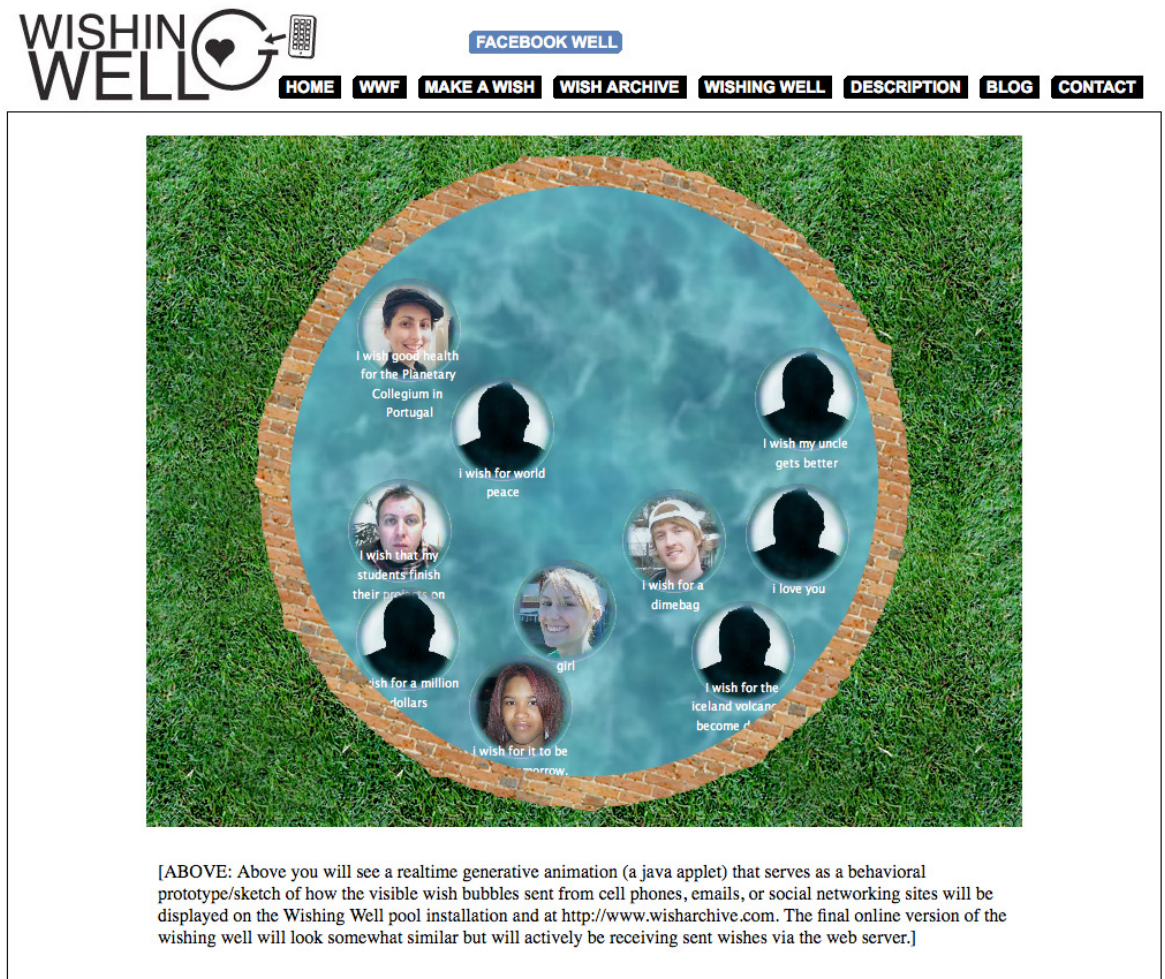


Figure 22: *The Wishing Well (2013)* – Website (by Max Kazemzadeh and Joe Scheinberg) – seen above

### Functional Specification Chart

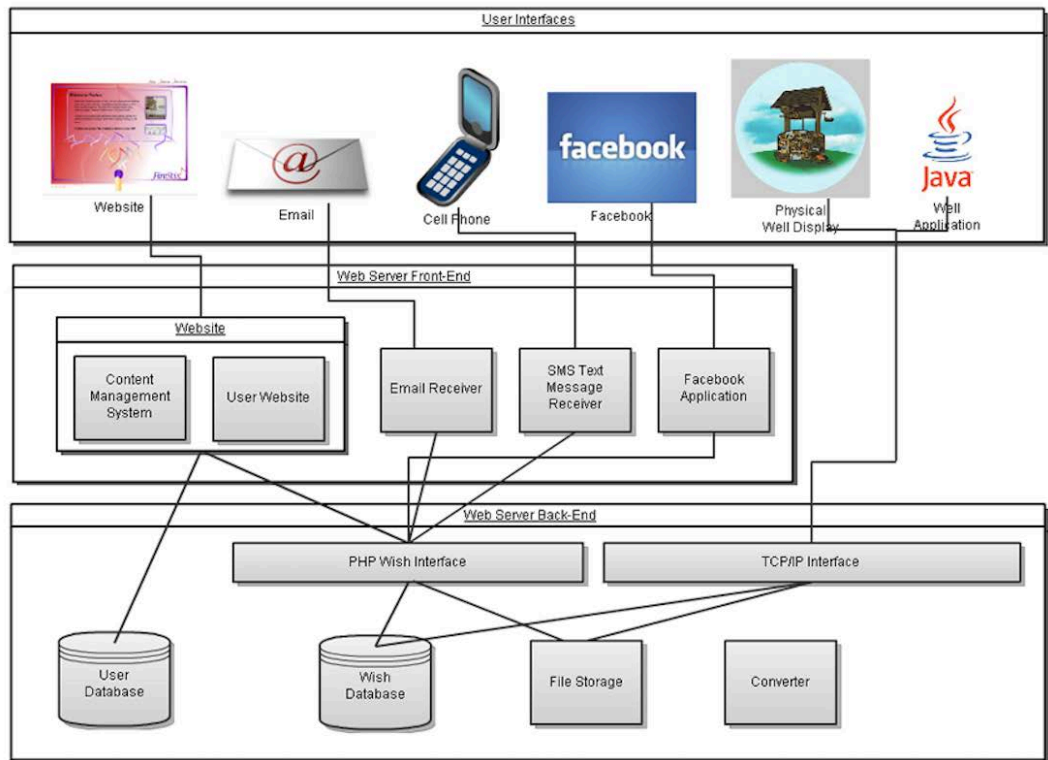


Figure 23: *The Wishing Well* (2013) – Functional Diagram (by Max Kazemzadeh and Joe Scheinberg) (Kazemzadeh, 2010b, p. 1) – seen above





Figure 24: *The Wishing Well* (2013) – Opening with Representatives from the Jackie Chan Foundation (by Max Kazemzadeh and Joe Scheinberg) (Kazemzadeh, 2010b, p. 1) – seen above

The result of *Wishing Well* (2013) and the related projects adopted a more empirical and scientific method to investigate the notion that thought has a tangible, recognizable influence over the world of matter, exposed subjectivities latent within the experience of perception, motivating new questions to be asked directly impacting the scientific method and creative process.

Working with social networks and considering how technology might function as artificial wishing centers to offload the preoccupation usually distracting the public from their responsibilities, I began looking at scientific theories surrounding how one's thoughts might function as a kind of non-visible gesture, the ways in which unseen gesture- and communication-systems might exist in nature, whether biologically, chemically, or electrically, and how this might serve to expand the definitions of consciousness. Consider how the apophenoetic disruption within *Wishing Well* inspired new potential questions for empirical research.

In each evolutionary step beginning from the two-person interactive *Seesaw and a Scoreboard* (2000) artwork to *Wishing Well* (2013) the interactive social network, I noticed progressive paradigm shifts in concept, content, functionality, and technology. Each point of expansion required the implementation of *apophenoesis* to deviate, innovate, and learn from the prior artwork.

In this section, I reflected on some of my technoetic and apophenoetic works that led to the culmination of the three primary works that will be analyzed and discussed using elements from section 1.3 Methodology for Discovery through Apophenoetic Practice. The next section will investigate the earliest integration of consciousness into the definition of apophenoesis through a few artworks as well as theories that inspired this conceptual direction. Note that the element of consciousness represented in these prior works contribute significantly to the three apophenoetic

artworks central to this research.

### 2.3 Consciousness as Apophenoetic Apparatus

This section will analyze how consciousness functions as an apophenoetic apparatus and can be integrated into the creative process. It will also introduce theories that contribute to the formation and definition of what constitutes apophenoetic art as a field of practice.

In *The Devil's Dictionary* Ambrose Bierce defined the brain as “an apparatus with which we think we think.” (Kurzweil, 2013, p. 66) What Bierce is referring to is the many unknowns in science that attempt to identify the relationship between thoughts, emotions and the brain. My interest in tracking human gesture began with the goal of developing a system that can identify one’s gestural intent. This led me to an interest in emerging open-source EEG technologies, which became available in recent years. By tracking multiple distinctly different brainwaves simultaneously, one can begin to study the effects experienced stimuli has on the brain. This makes possible the development of apophenoetic interfaces that employ participant thoughts and emotions as triggers to generate artificially extended gestures.

Gilles Deleuze and Michaux both refer to the rapidity of thought in comparison to the the very slow pace of our physical bodies. (Flaxman, 2000, p. 366.) It is clear that when dealing with thoughts and consciousness, time is one essential component that plays a role in how we understand the data that we capture.

In Dr. James H. Austin's book *Zen and the Brain*, he refers to Gloor's observations who, similar to Bergson, reflects that, “Subjectively, consciousness is a unified experience with a measure of continuity in time and with an invariant central reference point, the 'self’”. Carl Jung shares this view with respect to ordinary circumstances only, while in extraordinary circumstances he states that “The self drops out” which “enables the rest of consciousness to reach a remarkable new perspective of comprehension.” (Austin, 1999, p. 295) Art consistently plays a dual role as both tool

for immersion and sobering wake-up call to one's own stark reality. Immersion within the experience of an interactive technoetic artwork is one extraordinary circumstance, when the self has the ability to drop out. One loses oneself in the experience and gets immersed in the premise and narrative that the artwork presents.

The complex ability of one's mind to simultaneously consider multiple perspectives represents a kind of built-in apophany, experiences which can be put to use through apophenoetic processes. Within interactive technoetic artworks, the system often must be set to remind the participant that the system is aware that they are engaged in that alternate reality. The interactive, technoetic system is an alternate reality, where one is engaged in a kind of lived, but guided narrative, and the participant can influence that narrative through gestures. Thoughts and emotions are often biproducts of an experience and having a participant experience the stimuli or narrative being generated by these triggers creates a closed loop of stimuli and activity unless one considers the elasticity of the brain.

Imagination and articulation cannot be considered without the memory and recollections from prior experiences. In his book entitled *Techgnosis*, Erik Davis recalls "the ars memoria: the ancient mnemonic technique of building architectural databases inside your skull." He continues stating that "Memory palaces could be based on real spaces or imaginary ones; some believed the best palaces combined two modes, so that simulations of actual buildings were infused with impossible properties." (Davis, 1998, p. 198) Techniques for recalling memories don't always result in creative or innovated outcomes. However, in reference to *apophenoesis*, for DaVinci it is through the blending of the stains on the wall with the divergent elements from memory that generates more expanded creative outcomes that go well beyond recall alone. Often this blending of current stimuli with memory opens subconscious pathways to thoughts, emotions and inspiration that are unexpected, and can generate even further creative

outgrowths.

Lynne McTaggart in her book *The Field*, explores the nano level activity of the brain by recalling Pribram's theories, stating

“Our brain primarily talks to itself and to the rest of the body not with words or images, or even bits or chemical impulses, but in the language of wave interference: the language of phase, amplitude and frequency – the 'spectral domain'. We perceive an object by 'resonating' with it, getting 'in synch' with it.” (McTaggart, 2002, p. 84)

Pribram continues “Waves can hold unimaginable quantities of data – far more than the 280 quintillion (280,000,000,000,000,000,000) bits of information which supposedly constitute the average human memory accumulated through an average lifespan.” (McTaggart, 2002, p. 85) Pribram’s theories applying wave theory to help better understand consciousness opens a world of possible creative exploration with respect to convergent fields creative practice and align with the Acott’s definition of technoetics. In 2010, these ideas motivated another apophenoetic disruption in my creative practice, which was to investigate how consciousness could have a direct effect on the matter within varieties of material experience. Helmut Schmidt's mind-over-matter “random number generator,” or “RNG,” experiments became a motivating starting point. (McTaggart, 2002, p. 106) In Schmidt’s experiments, the psychics were successful, however, the question still existed whether it was due to “precognition” or “psychokinesis.” (McTaggart, 2002, p. 107)

I began to consider how thoughts, wishes, hopes, and dreams might relate to one’s consciousness functioning as gesture that has a direct, recognizable effect on the physical world and how I might employ that in works of art. Books such as *The Non-Local Universe* by Nadeau and Kafatos, and the writings of Carl Jung all refer to the potential connection where our conscious reality and physical reality intertwine. Nadeau and Kafatos state,

“Since human consciousness evinces self-reflective awareness in the human brain and since this brain (like all physical phenomena) can be viewed as an emergent property of the whole, it is not unreasonable to conclude, in philosophical terms at least, that the universe is conscious.” (Nadeau, 2012, p. 197-198)

This foundation is essential to consider regarding the framework within what constitutes apophenoetic art as it deals directly with the connection between consciousness and the construction of one’s reality. Considering apophenoetic art’s definition, which includes BCI’s such as EEG’s as creative tracking interfaces discussed in a later section, the emergent art form might be better described using Pribram’s theories of perception being based on wave interference, where “We perceive an object by 'resonating' with it, getting 'in synch' with it.”

To approach such a challenging topic from the position of an artist blending a range of scientific methods with philosophy, I used an apophenoetic disruption adopting Descartes’ method for studying the existence of God from the standpoint of a believer, while employing Coleridge's willing suspension of disbelief, and employed the practice of interactive art to investigate this yet unexplained phenomena.





Figure 25: *indexchange* (2010) (by Max Kazemzadeh) - seen above

I explored theories of quantum non-locality, the EPR Paradox, remote viewing, as well as Jung's description of synchronicity in a project called *indexchange* (2010) where I invited two previously unknown participants who also did not know each other, to stick their index finger into the same container of water at separate times. I then monitored each of the participants for experiences or dreams that might overlap with those of the other participant. When asked after one week, each had experiences of people possessing traits and characteristics of the other participants as well as dreams about similar types of objects and locations. New versions of *indexchange* are being implemented where two participants are brought into two different rooms and asked to place their finger into a collective pool of water donning EEG headsets at which point comparative analysis is done with respect to the alignment of brain activity which is followed by interviews about visions witnessed while their hand was in the water.





Figure 26: ThinkThanks (2010) (by Max Kazemzadeh) - seen above

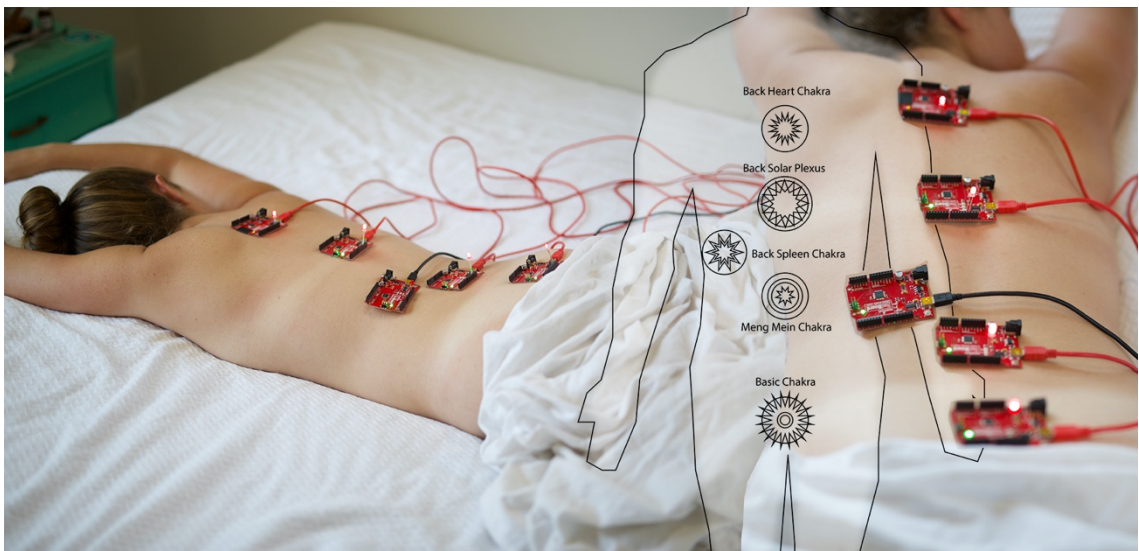


Figure 27: ThinkThanks: Chakras (2010) – Applied to Person’s Skin (by Max Kazemzadeh) - seen above

Inspired by William Tiller's *Intention Imprinted Electrical Devices* (IIEDs), Reiki, and gratitude stones, my next inquiry was whether thoughts could have the same effect, or an amplified one, when programmed and embedded onto an electronic microcontroller device (running or reading the code thirty times or frames per second). In my first technoetic artwork entitled *ThinkThanks* (2010), a microcontroller array functioned as an automated prayer or meditation system, encoded with different healing thoughts as text strings that would contribute towards physical, spiritual, quantum healing. *ThinkThanks* could be placed at chakra points on the body, or strategically around the home. *ThinkThanks* (2010) was installed in homes, and I monitored the health and well-being of the subject over time. Subjects displayed an overall healthier, happier state of mind after living with the *ThinkThanks* (2010) after two weeks. *ThinkThanks* is an example of consciousness in the form of an apparatus. *ThinkThanks* was programmed to think positive thoughts that resulted in the improved wellbeing of the person who hosted the device. While the feelings experienced by the *ThinkThanks* host could have been a placebo effect, it also does represent some of the characteristics reflected in Pribram's wave interference studies or Tillers experiments where the positive messages programmed onto the devices resonated with the host directly. In a paper in 2012 I discuss *ThinkThanks* (2010) as an early step in modeling what I would come to term "Apophenoetic Art" (Kazemzadeh, 2012a. p. 120).

In another *technoetic* and *apophenoetic* artwork called *Plantenkere* (Plant + Norwegian for *Thinkers* - Kazemzadeh, 2011), appropriated phrases from Masaru Imoto's thought experiments with water, which were published in a book entitled *The Hidden Messages in Water*, inspired me to code text strings into the comment tags of the language used to run six Arduino microcontrollers to test if the operating technology had an impact on six different plants. This work is defined as apophenoetic disruption since the work was both carried out and presented in the format of a science experiment

within the context of an art exhibition. In *Plantenkere* (2011), the text strings reflected what Imoto defined as *positive* and *negative thoughts* (Imoto, 2005, p. 72). The first three plants were encoded with the thought strings *Love and Gratitude*, (Imoto, 2005, p. 5) and the second three were encoded with the thought strings *You Make Me Sick*. (Imoto, 2005, p. 8) The microcontrollers were placed beneath individual water collection plates within a waterproof plastic housing. I monitored them for six weeks, during which time I gave each plant the same amount of water and attention. After the sixth week, I stopped watering them. After two weeks without water, the negative plants with the negative messages all died and rotted, and the positive plants stayed in perfect condition and had a few new shoots. I conducted this test numerous times in different environments and with different variations to arrive at the same result and then began setting up a double-blind study with students from my university. For more information, please visit the site: [www.maxkazemzadeh.com/plantenkere.html](http://www.maxkazemzadeh.com/plantenkere.html)

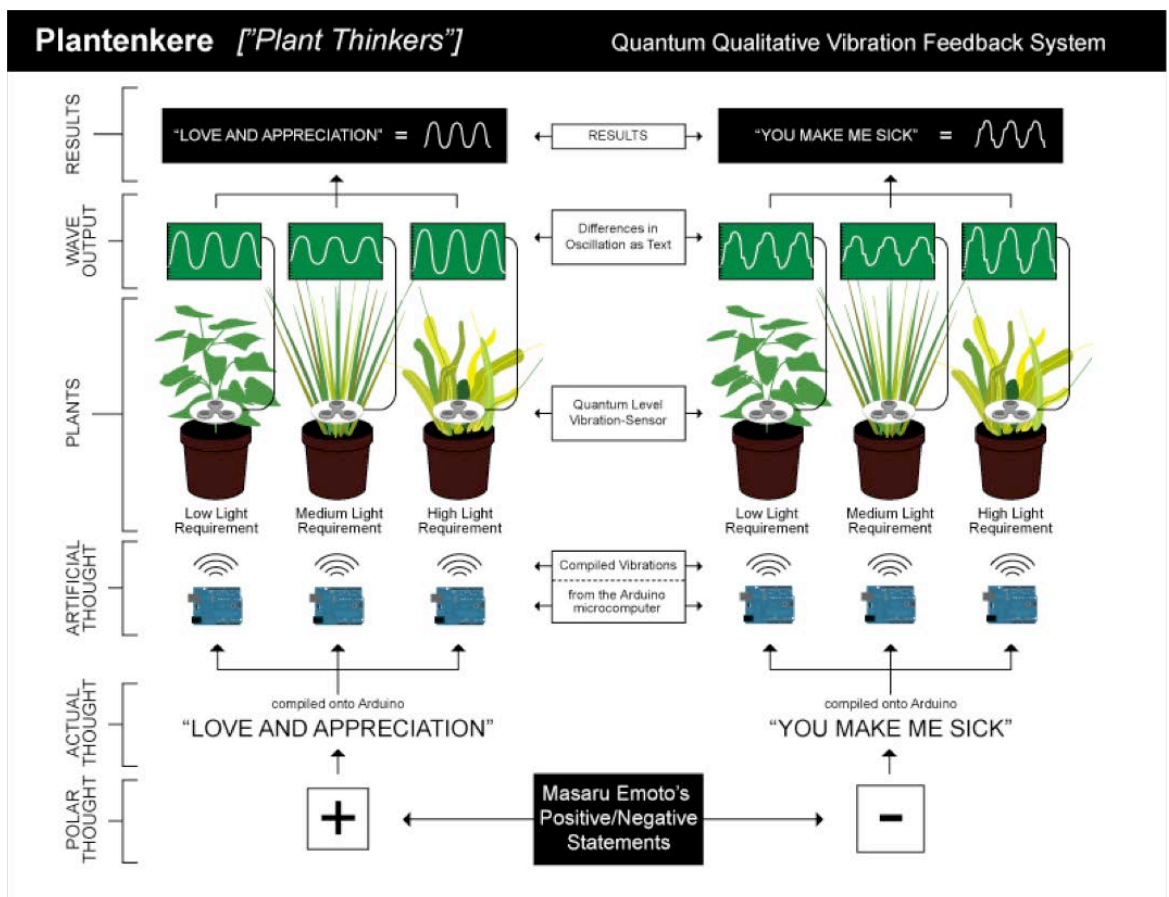




Figure 28: *Plantenkere* (2011) – Diagram (Plant + Norwegian for *Thinkers* - by Max Kazemzadeh) (Kazemzadeh, 2011, p. 1) - seen above on p. 79

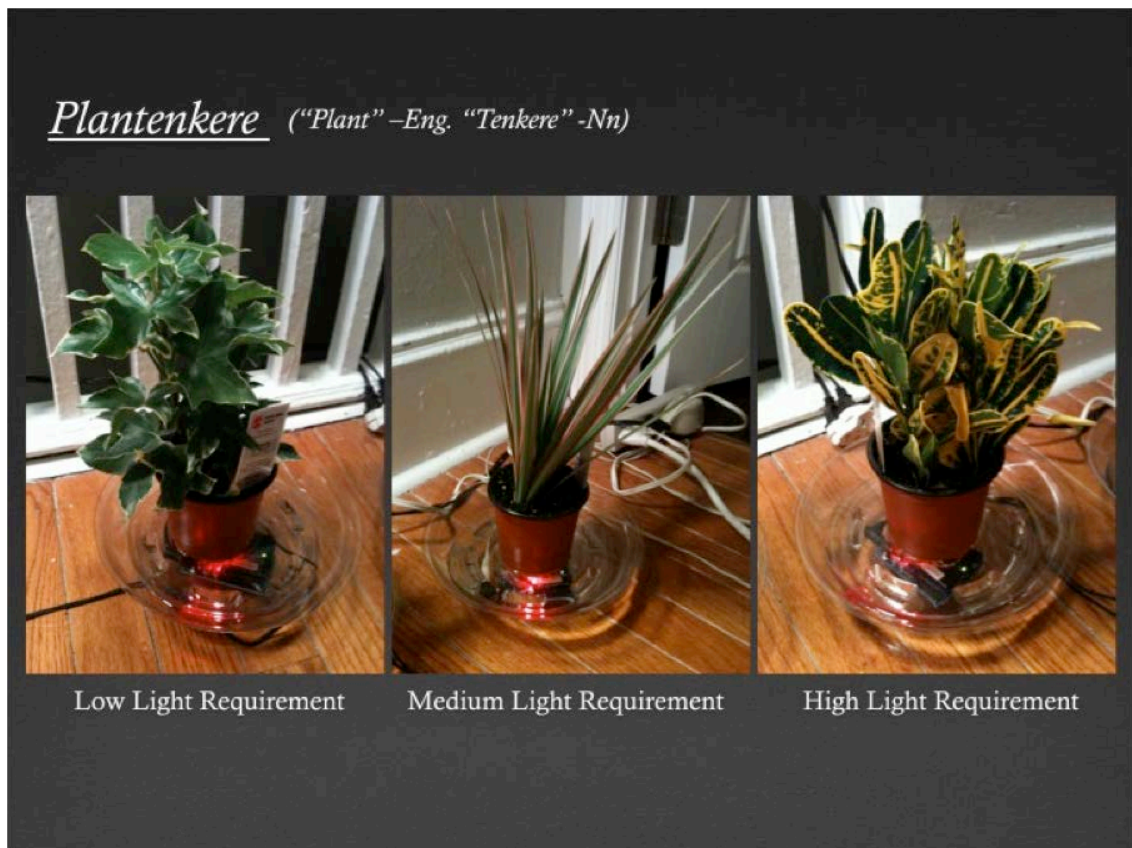


Figure 29: *Plantenkere* (2011) – One of the Two Sets of Three House Plants with Coded Arduino Bases (Plant + Norwegian for *Thinkers* - by Max Kazemzadeh) (Kazemzadeh, 2011, p. 1) - seen above

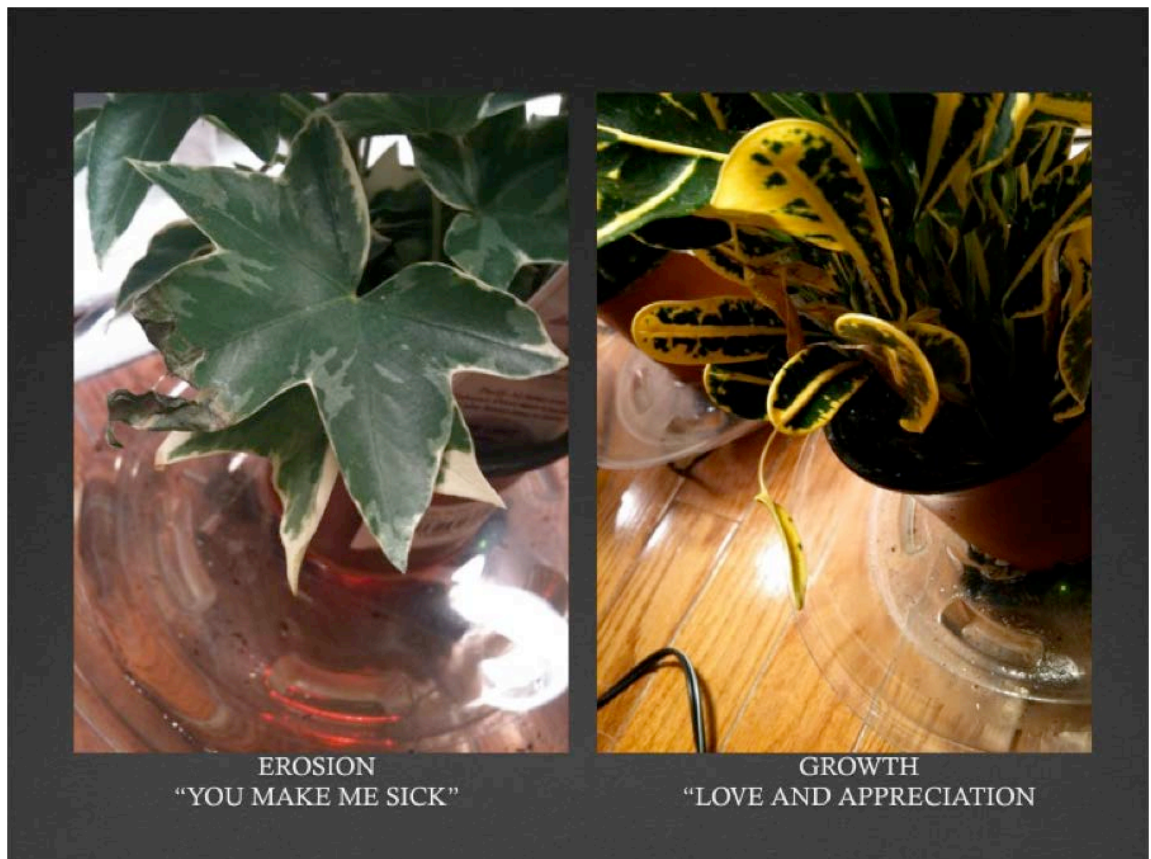


Figure 30: *Plantenkere* (2011) – Evidence of Effects on Plants (Plant + Norwegian for *Thinkers* - by Max Kazemzadeh) (Kazemzadeh, 2011, p. 1) - seen above







"YOU MAKE ME SICK." -Emoto			"PLANTENKE" ThinkT(h)anks - Health Assessment Chart						
WEEKS	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6			
 High Light Req.	No visible change	One eroded and leaf detached from the plant	No visible change	Second eroded leaf is visible	No visible change	No visible change	<b>NOTE:</b> Future Plans to study the 1. Heat given off by each plant as well as 2. Sonic recordings of the oscillation/vibration of each plant as two other formats for comparison will be implemented in phase two of the Plantenke Project.		
 Med. Light Req.	Erosion on one of the leaf tips	No visible change	Erosion on the tips of second and third leaves are visible	Erosion on the tip of a fourth leaf and on the side of a fifth leaf are visible	No visible change	No visible change			
 Low Light Req.	Erosion on two leaf edges	Erosion of third leaf	No visible change	One eroding leaf falls Waxy gloss on outer coating of the tops of most leaves has faded to a matte finish	Additional erosion on third leaf edge	No visible change			
"LOVE AND APPRECIATION" -Emoto									
WEEKS	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6			
 High Light Req.	Leaf shoots grew and extended beyond the leaf tips	No visible change	Leaf shoots extended further in length beyond the leaf tips	No visible change	Leaves broaden New shoots appear from soil	The absorption of water is significantly faster than the "You Make Me Sick" counterparts.		<b>NOTE:</b> Future Plans to study the 1. Heat given off by each plant as well as 2. Sonic recordings of the oscillation/vibration of each plant as two other formats for comparison will be implemented in phase two of the Plantenke Project.	
 Med. Light Req.	No visible change	No visible change	No visible change	Leaves are 2-3mm wider Leaf color is noticeably brighter	Visible Growth in Leaf Size Faster absorption of water than the "You Make Me Sick" counterparts	Visible Growth in Leaf Length and Size The absorption of water is significantly faster than the "You Make Me Sick" counterparts.			
 Low Light Req.	No visible change	No visible change	No visible change	Leaves seem fuller	Erosion on the edge of one leaf	The absorption of water is significantly faster than the "You Make Me Sick" counterparts.			

Figure 31: *Plantenkere* (2011) - Data Collection (Plant + Norwegian for *Thinkers* - by Max Kazemzadeh) (Kazemzadeh, 2011, p. 1) - seen above





"PLANT'S REACTION TO BEING ALONE OR WITH ANOTHER PLANT" TEST

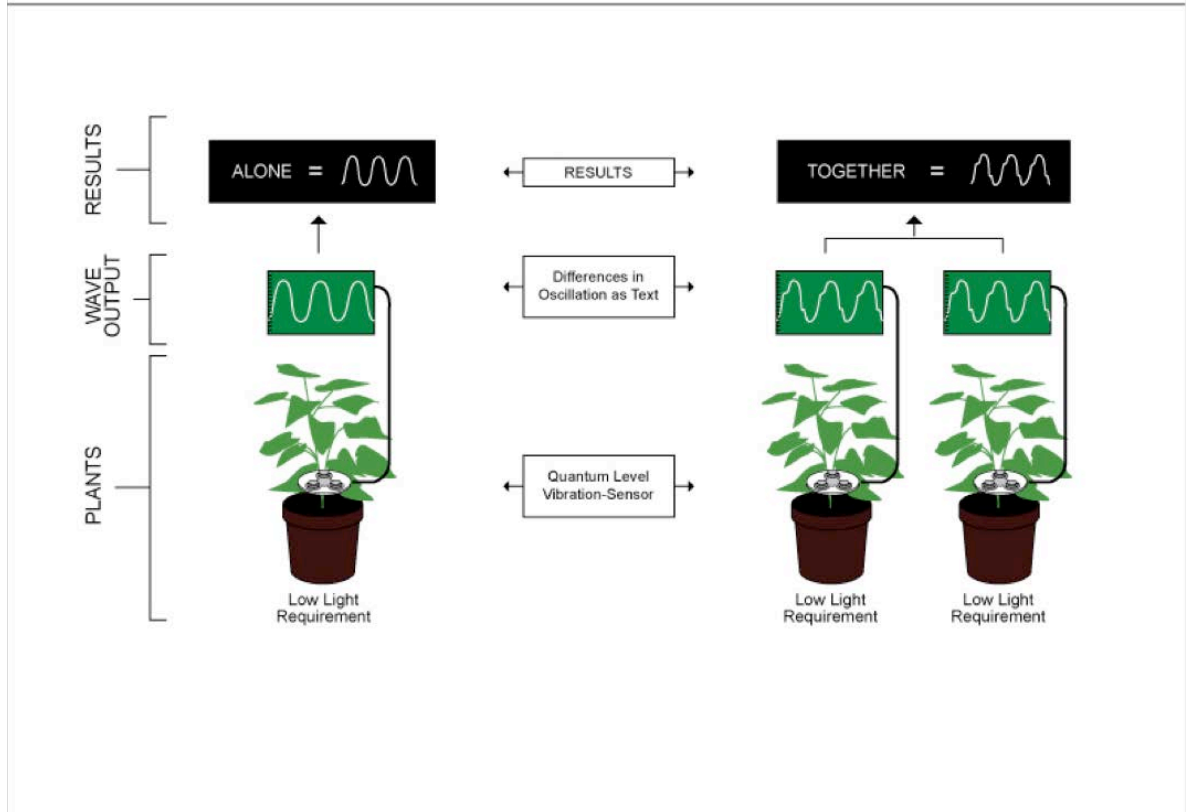


Figure 33: *Plantenkere II* (2011) – Variation Study Diagram (Plant + Norwegian for *Thinkers II* - by Max Kazemzadeh) - seen above



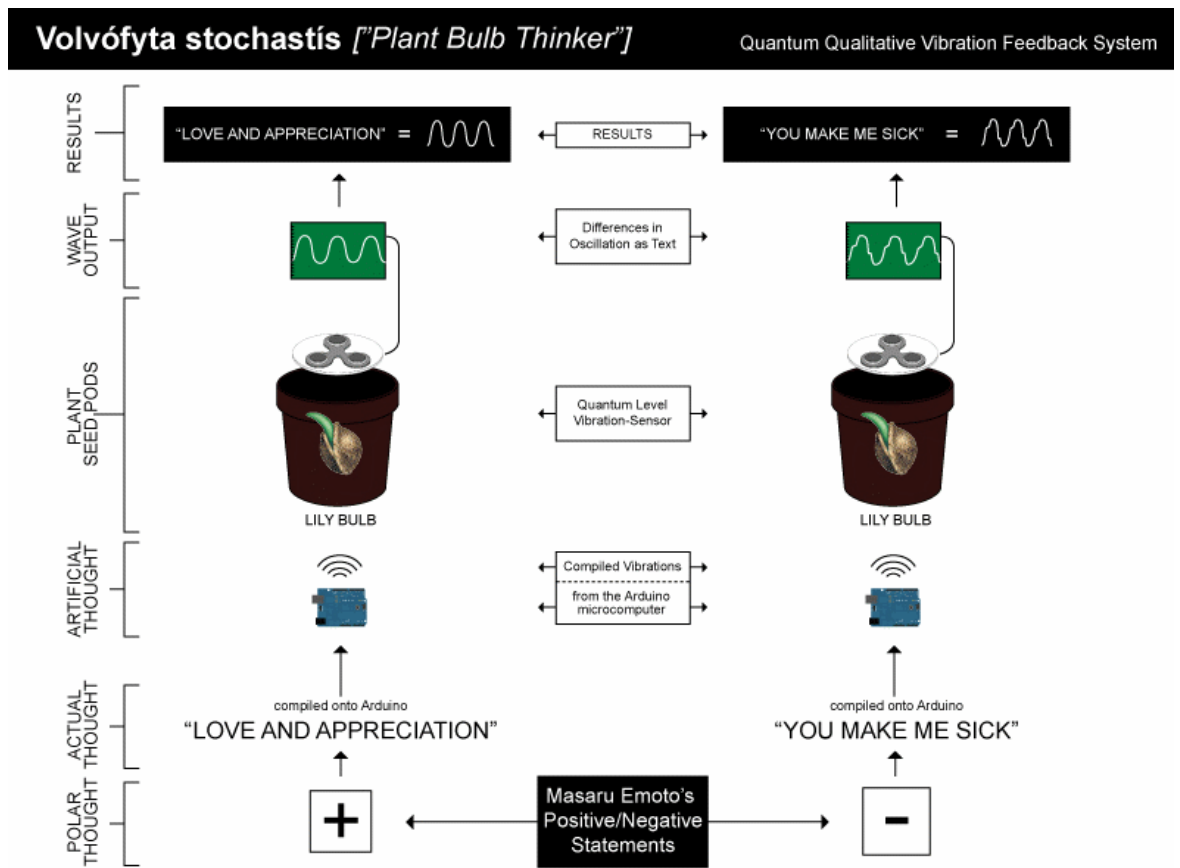


Figure 34: *Volvofyta stochastis* (2011) (Norwegian for *Plant Bulb Thinker* – by Max Kazemzadeh) - seen above

I also used the same system to study the behavior, health, and life of ants in a project called *Myrmoskepsis* (2011) (Norw. for *Ant Thoughts*) or *Antenkere* (*Ant Thinkers*), which had a few iterations. In *Myrmoskepsis* (*Ant Thoughts*), I set up two ant farms with a tube connecting the two farms, so that the ants on the negative farm could escape to the positive farm if they so wished. I also analyzed the differences in the ant's social and farm-building behaviors. *Myrmokyma* (*Ant Wave Text*) would have been the next iteration that intended to measure the quantum vibration of individual ants extracted from each farm after exposure for a given time.

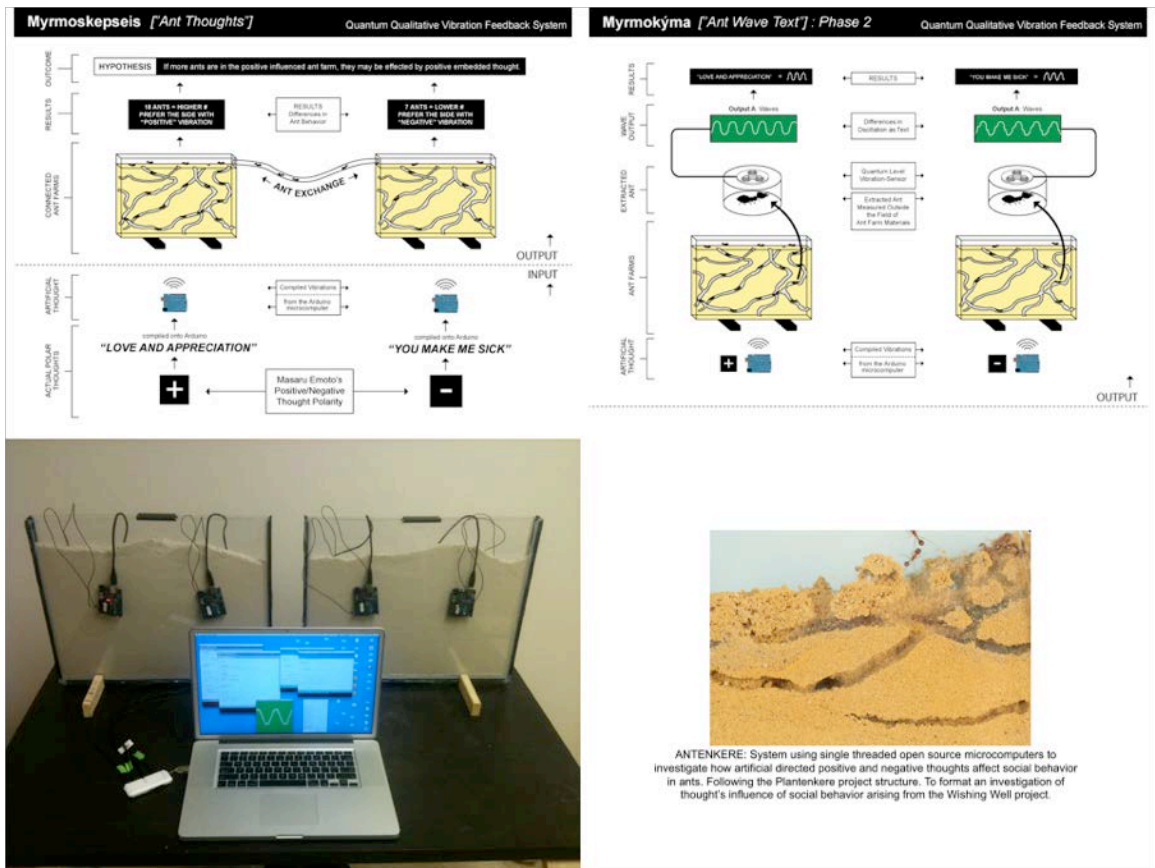
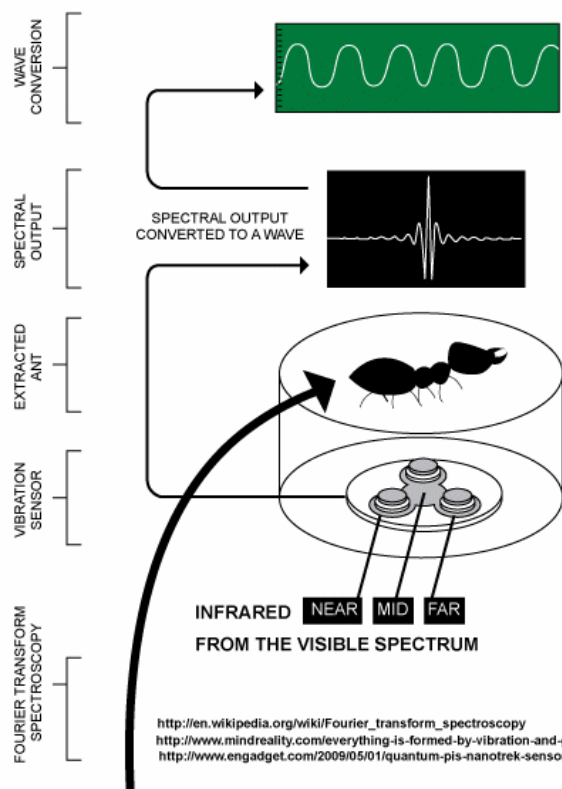


Figure 35: *Myrmoskepsis* (2011) (Norw. for “Ant Thoughts”) aka. *Antenkere* (2011) (Ant + Norw. for “Thinkers”) by Max Kazemzadeh (Kazemzadeh, 2013a, p. 1) - seen above

# Fourier Transform Emission/Absorption Spectroscopy ["Nuclear Magnetic Resonance"]



## Quantum Vibration:

Infrared spectroscopy IR spectroscopy is the spectroscopy that deals with the infrared region of the electromagnetic spectrum, that is light with a longer wavelength and lower frequency than visible light. It covers a range of techniques, mostly based on absorption spectroscopy. As with all spectroscopic techniques, it can be used to identify and study chemicals. A common laboratory instrument that uses this technique is a Fourier transform infrared FTIR spectrometer. The infrared portion of the electromagnetic spectrum is usually divided into three regions; the near-, mid- and far- infrared, named for their relation to the visible spectrum. The higher energy near-IR, approximately 14000-4000 cm<sup>-1</sup> 0.8-2.5 μm wavelength can excite overtone or harmonic vibrations. The mid-infrared, approximately 4000-400 cm<sup>-1</sup> 2.5-25 μm may be used to study the fundamental vibrations and associated rotational-vibrational structure. The far-infrared, approximately 400-10 cm<sup>-1</sup> 25-1000 μm, lying adjacent to the microwave region, has low energy and may be used for rotational spectroscopy. The names and classifications of these subregions are conventions, and are only loosely based on the relative molecular or electromagnetic properties.



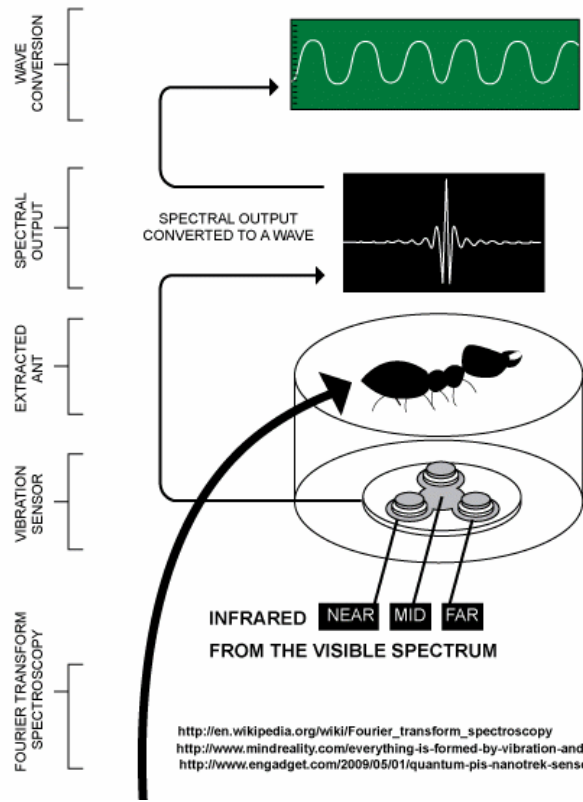
## Fourier transform spectroscopy

Fourier transform spectroscopy is a measurement technique whereby spectra are collected based on measurements of the coherence of a radiative source, using time-domain or space-domain measurements of the electromagnetic radiation or other type of radiation. It can be applied to a variety of types of spectroscopy including optical spectroscopy, infrared spectroscopy (FTIR, FT-NIRS), nuclear magnetic resonance (NMR) and magnetic resonance spectroscopic imaging (MRSI)[1], mass spectrometry and electron spin resonance spectroscopy. There are several methods for measuring the temporal coherence of the light (see: field-autocorrelation), including the continuous wave Michelson or Fourier transform spectrometer and the pulsed Fourier transform spectrograph (which is more sensitive and has a much shorter sampling time than conventional spectroscopic techniques, but is only applicable in a laboratory environment). The term Fourier transform spectroscopy reflects the fact that in all these techniques, a Fourier transform is required to turn the raw data into the actual spectrum, and in many of the cases in optics involving interferometers, is based on the Wiener-Khinchin theorem.



Figure 36: Fourier Transform Emission/Absorption Spectroscopy (Nuclear Magnetic Resonance) - by Max Kazemzadeh in 2012) - seen above

# Nuclear Magnetic Resonance [NMR]



**What is NMR:**

Nuclear magnetic resonance (NMR) is a property that magnetic nuclei have in a magnetic field and applied electromagnetic (EM) pulse or pulses, which cause the nuclei to absorb energy from the EM pulse and radiate this energy back out. The energy radiated back out is at a specific resonance frequency which depends on the strength of the magnetic field and other factors. This allows the observation of specific quantum mechanical magnetic properties of an atomic nucleus. Many scientific techniques exploit NMR phenomena to study molecular physics, crystals and non-crystalline materials through NMR spectroscopy. NMR is also routinely used in advanced medical imaging techniques, such as in magnetic resonance imaging (MRI). All stable isotopes that contain an odd number of protons and/or of neutrons (see isotope) have an intrinsic magnetic moment and angular momentum, in other words a nonzero spin, while all nuclides with even numbers of both have spin 0. A key feature of NMR is that the resonance frequency of a particular substance is directly proportional to the strength of the applied magnetic field. It is this feature that is exploited in imaging techniques; if a sample is placed in a

non-uniform magnetic field then the resonance frequencies of the sample's nuclei depend on where in the field they are located. Since the resolution of the imaging technique depends on the magnitude of magnetic field gradient, many efforts are made to develop increased field strength, often using superconductors. The effectiveness of NMR can also be improved using hyperpolarization, and/or using two-dimensional, three-dimensional and higher-dimensional multi-frequency techniques. The principle of NMR usually involves two sequential steps: The alignment (polarization) of the magnetic nuclear spins in an applied, constant magnetic field  $H_0$ . The perturbation of this alignment of the nuclear spins by employing an electro-magnetic, usually radio frequency (RF) pulse. The required perturbing frequency is dependent upon the static magnetic field ( $H_0$ ) and the nuclei of observation. NMR phenomena are also utilized in low-field NMR, NMR spectroscopy and MRI in the Earth's magnetic field (referred to as Earth's field NMR), and in several types of magnetometers.



[http://en.wikipedia.org/wiki/Fourier\\_transform\\_spectroscopy](http://en.wikipedia.org/wiki/Fourier_transform_spectroscopy)  
<http://www.mindreality.com/everything-is-formed-by-vibration-and-geometry>  
<http://www.engadget.com/2009/05/01/quantum-pis-nanotrek-sensors-pick-up-vibration-and-motion-you/>

Figure 37: Nuclear Magnetic Resonance [NMR] (by Max Kazemzadeh in 2012) - seen above

In the context of an empirical study, the outcome is binary, reduced to an oversimplified result of true or false which often provide foundations for creative rationalization. Each element within artistic exploration functions as cultural artifact, or as Manovich refers, “cultural interface” or “cultural machine.” with the intent to stimulate the expansion of creative discovery. In *Plantenkere*, for example, while the interface has a utility, the host is in fact serving as a willing participant in an interactive artwork that uses language from an empirical or pseudo-empirical context. This broadened perspective posed by the question or the challenge leads to expanded thoughts and potentially creative outcomes. The mistakes and failures embedded within art practice become valuable contributions to meaning within a work of art.

While “error” often is used to describe mistakes within practices that employ empirical methods, errors in the context of art are absorbed, reconfigured, redefined, and valued as contributor to the creative practice as apophenosis. These factors can be witnessed in the conceptual art movement from the mid-1960s to the mid-1970s and highlighted the process of art creation thereby directly attempting to address unknowns with respect to sourcing creativity. While the medium for conceptual artists was information, the manipulation of information as it related to the content of a work of art or the context within which the art was exhibited became the medium explored. This served as a disruption in many ways because the representation of the work often challenged art contexts and expectations and often was hard to commodify. (Norvell, 2001, p. 1-4, 10-12)

The general public widely accepted the *Plantenkere* and *Wishing Well* projects in the US, China and Europe, which always exhibited together. There seems to be a shared belief in the larger international community, both east and west, that one’s thoughts alone hold power and reflect a certain energy, while having a profound impact on the self, community, and the material world, and that when recognized is best expressed through the form of a artistic medium. Both creative, scientific, religious and secular communities seem to agree that negative thoughts and intentions have an adverse social and physiological impact on people and communities, and positive thoughts have a positive impact. Semantic and psycholinguistic questions regarding what constitutes positive and negative regarding words, phrases, statements, and linguistic intentionality, requires more intensive research in order to identify where language separates from intention to more clearly identify the reasons for such effects. Following the *Plantenkere* project, I explored how words through expressions in American Sign Language (ASL) conveyed via video might have a similar effect on the plants. The exhibition of *Plantenkere* and *Wishing Well* was discussed in 2006 in a radio program on

Radio Austria (ORF) in connection with the Ars Electronica conference. The program is transcribed from Austrian-German, and an audio recording of the program has been posted on my personal website. (Kazemzadeh, 2006, p. 1)

Within this section, I shared a few significant earlier works that more directly explored how consciousness integrates with the experiences of apophany and applications of apophenoesis within the creative process. Definitions of Apophenoetic art were formed using the foundations that these artworks introduced. The next section will analyze and discuss the works that are central to this research using each topic discussed in the from section 1.3 *Methodology for Discovery through Apophenoetic Practice*.

## 2.4 Apophenoetic Artworks

While *indexchange*, *Wishing Well*, *Plantenkere*, *Antenkere*, and *Myrmoskepseis* all reflect how topics of consciousness merge within apophenoetic practice, the following three technoetic projects: *Gestures of Change* (2013) or *GoC13*, *Dabarithms* (2013) of *The ...rithms series*, and *Poseidon's Pull: Revisited* (2018) illustrate a more recent complete collection of *apophenoetic* contributions toward the creative process, innovation, problem-solving, and discovery.

In the following works of art, an auto-ethnomethodological approach was used to conceive, create, and or experience these works of art. Each project was exhibited in an international group exhibition at a museum, gallery or art institute, and different forms of feedback from participants confirmed the intent of the artwork achieved its goals.

While many of the artworks leading up to these examples are central to this research, these three works provide a range of apophenoetic practice and experience that best encapsulates the central theme of this research. These works possess the characteristics necessary to understand the language and methodology used in the formation of the research questions, and will provide the content necessary to answer them.

### 2.4.1 Gestures of Change (2013) aka. GoC13

Download of a copy of the *GoC13* executable file. (Kazemzadeh, 2017, p. 1)

Twitter Account: @GesturesOChange

Refer to the electronic submission of *Gestures of Change (2013)* (Kazemzadeh, 2013c., p. 1)

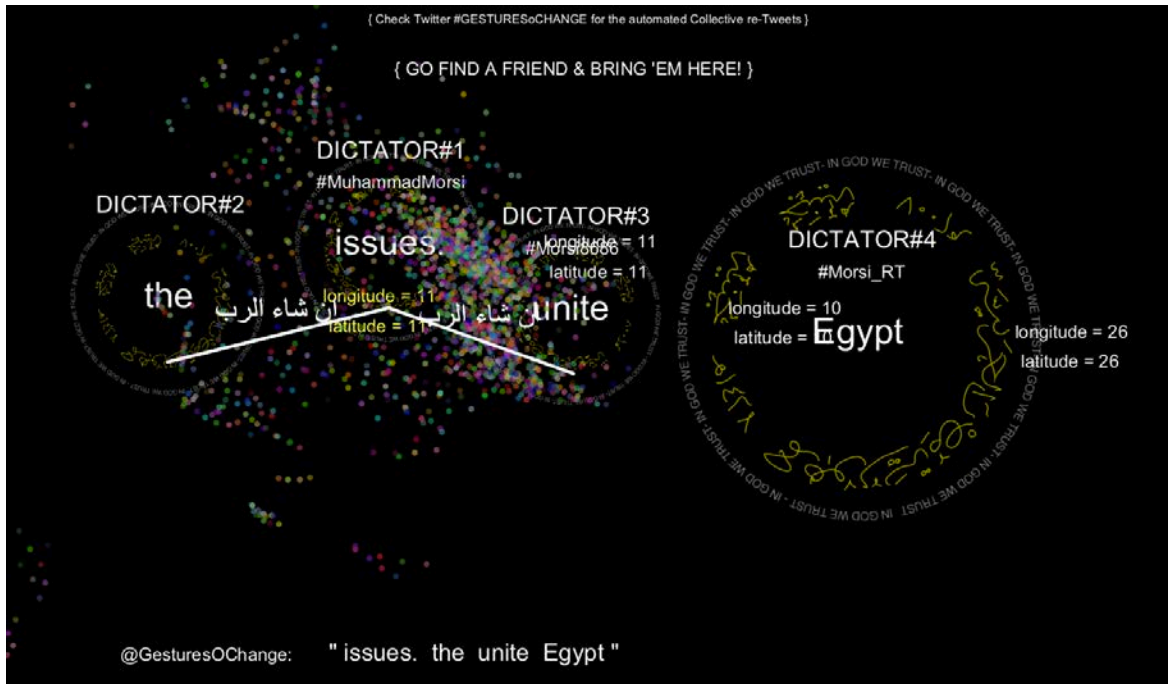


Figure 38: *Gestures of Change (2013)* – Four Participants (by Max Kazemzadeh in 2017) - seen above





Figure 39: *Gestures of Change* (2013) - Installation Space at the Gezirah Art Center in Cairo (by Max Kazemzadeh in 2013) - seen above

### 2.4.1.1 Project Summary

*Gestures of Change (2013)* was an interactive networked installation that exhibited at the Di-Egy 2013 Festival in Cairo, Egypt, that integrated apophenosis as a creative tool to invite participants into an experience that shared what so many Egyptians were feeling during the civil and political unrest that occurred in the spring and early summer months of 2013 in Cairo.

The installation engaged viewers to collectively interact with the interface in the gallery merely by facing in the direction of the projection screen. The system tracked the participant's faces and their positions in the room in order to generate content. Once a participant's face was located in the room it would appear on screen in the form of a rotating Egyptian pound that doubled as the scope of a drone target, and would impose an overlay of word-for-word Twitter feeds one word at a time, from different accounts that reflected similar names to the then current 2013 Egyptian president, Muhammad Morsi. The account name would appear right below a numbered Dictator #1, Dictator #2 and so on.

The collection of the word-for-word Twitter feeds from all accounts represented onscreen at a given moment are used to create mash-up sentences that are then reTweeted to the @GesturesOChange account every few seconds. Depending on the number of participants in the room, one, two, three, or more words will be used to generate the new tweet to the @GesturesOChange account.

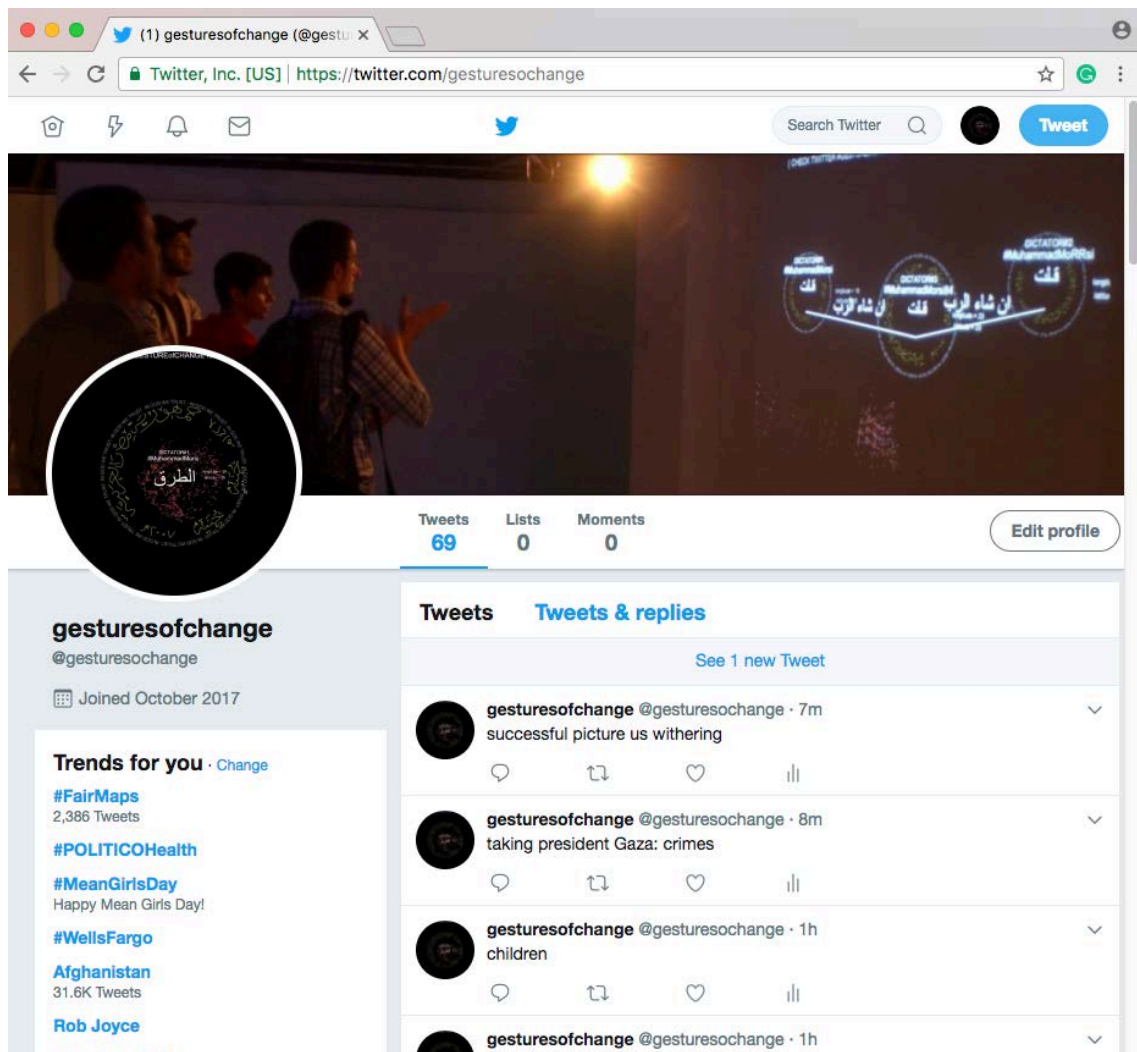


Figure 40: @GesturesOChange Twitter Page: Full View (see list of collective reTweets fed realtime from the Gezirah gallery installation to the Twitter account) - seen above

Notice in Figure 40, the sentence changes from one, two, three, or four-word Tweets. This reflects the number of participants in the room and therefore posting at that moment. New Tweets are generated from the one, two, three, or four different accounts feeding into each participant's coin-face during the live exhibition event. Note also, in the original installation many more participants were able to enter the screen and post at a given time. The referenced demo only allows for four participants at a time, which is sufficient for experiencing the function and meaning behind the project.

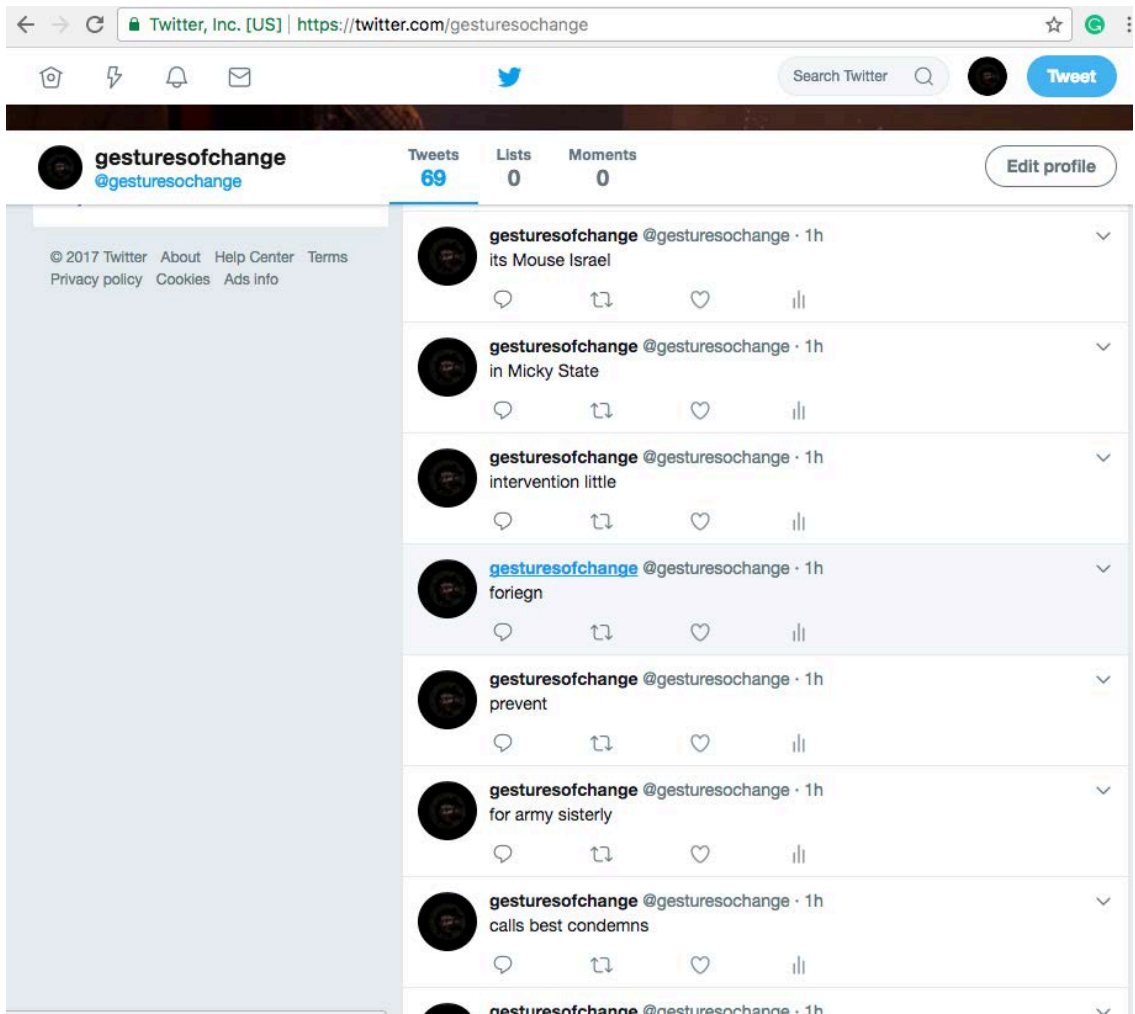


Figure 41: @GesturesOChange Twitter Page: Scrolled Down View (see list of collective reTweets fed realtime from the Gezirah gallery installation to the Twitter account) - seen above



Figure 42: @GesturesOChange Twitter Pages: Scrolled Down Detail 1 (see list of collective reTweets fed realtime from the Gezirah gallery installation to the Twitter account) - seen above



Figure 43: @GesturesOChange Twitter Pages: Scrolled Down Detail 2 (see list of collective reTweets fed realtime from the Gezirah gallery installation to the Twitter account) - seen above

Sounds of the chaos in the 2013 streets of Cairo can be heard and abstract digital swarms of people as dots on screen seem to be attracted to the face of each participant or Dictator on screen in order to create malice and disrupt their efforts. Every few minutes the swarms of people scatter to the edges of the screen and explosions go off with a flash of light in the center of each participant's face.

When viewer-users are close to the screen they become dictator #1 and the viewer-user furthest from the screen is the last of the dictators numerically. When viewer-users are close to one another a white line with the arabic word "inshallah," meaning if God wills it, it will come true" appears between them. (Kazemzadeh, 2013c., p. 1)

#### **2.4.1.2 Formation of the Artist's Intent**

In most countries, all industries are influenced, supported, and thrive on a political system that establishes stability upon which a society and culture can exist. To make art in times of war and revolution make it nearly impossible to discuss any other topics than the socio-political unrest. The challenge for me within this context was that I am not Egyptian, nor did I ever visit Egypt previously, but the work was to be seen and experienced mostly by Egyptians as well as a smaller group of international visitors. To be relevant, the exhibited piece had to at least account for the socio-political climate in Cairo at the time. The exhibition would take place in a building owned and operated by the Egyptian government named the Gezira Art Center. Other venues, such as the British Embassy, had more artists' works participating in this first Di-Egy Festival.

To prepare for the development of this project while living in the United States, I began by reading all publications both online and in the many daily newspapers about present-day Cairo. Accessible information on Cairo at the time was presented in the following places:

- \* mainstream and alternative news media which changed daily and was quite polarized,
- \* blogs which in most instances were also polarized and contradictory, providing no credibility nor traceable logic by which to identify which groups were aggressors, and which were victims,
- \* social media, which was also polarized, however, content represented via Twitter did seem to lean in a particular direction, and
- \* individual artist websites, which were also quite polarized.

At the time, the available polarized elements represented in the media concerning the socio-political landscape were stewarded in two groups, one siding with the current president at the time, Muhammad Morsi, and the other siding with a group

calling themselves the Muslim Brotherhood. Some positive and negative articles and online posts seemed more real than others existed on both sides, but only created more confusion when using them to decipher the rationale supporting each position. While I had friends living in Cairo, I intentionally avoided conversations with them, especially regarding politics, to avoid potential bias. I established these limitations order to force myself to try to find significance within a sea of polarized and confusing information to see if a significant element might reveal itself through the range of available media. This crucial element would have to be significant to me as the artist, a universal truth that might apply to any political revolution, sensitive to the apparent chaos and suffering that certain Egyptian's faced, but also provide something new that would justify the work of art as a contribution to the zeitgeist of a global community. While finding significance within the sea of random content wasn't easy, I considered the inability to find any information as content that would only contribute to the final work. Note that searching for significant information without having a context of a work of art or even medium already in place may seem like a senseless pursuit.

Forging onward in the realm of the unknown, completely unbiased, was refreshing, however, identifying truth within context of any media platform proved challenging. This search was also known to be one leading to folly because even if I were able to find any content of significance, it might only be significant with respect to my life and personal experience. Being open to disruptions in the creative process helped to evolve and transform the initial idea of the project into a completely different project with different goals and outcomes. My primary goal in the first phase of my research was to identify patterns of significance by consuming all available news on Cairo, the Arab Spring and the socio-political unrest to be able to distinguish which of the groups might be right and wrong.



### 2.4.1.3 Apophenoetic Transformation

*Gestures of Change* (2013), or *GoC13*, was a project that sought to use the unknown as the apophenoetic disruption in the conception, creation, and analysis of a site-specific, technoetic and telematic artwork. Similar to DaVinci's application of apophany within his wall with stains, *GoC13* was a site-specific artwork that analyzed patterns relevant to the location, culture and socio-political landscape of the exhibition as a source of inspiration in the research and development of significant content that could contribute to an interface of an interactive apophenoetic work of art.

Initially, the curator of the Di-Egy Festival invited me to participate in the exhibition with an interactive artwork before it was created. The process of planning and preparing for an exhibition with a still incomplete artwork in a location never previously visited, it was challenging, to say the least. Everyone involved, from the curatorial director and the conference sponsors to the British and Egyptian Embassies, did not know what to expect. As an artist, with so many unknowns, I decided to embrace the unknown as the center of the work. If I knew nothing about Cairo other than what was shared in the media and movies, then why not really embrace the only access to Cairo that I had at the time and make the work about my access to information about Cairo.

The lack of the initially expected significance led to the implementation of *apophenoesis*, which changed the intention and outcome of the search leading to a new kind of significance. Using empathy in a situation where both polarities were reacting with violence only served to conceal the original purpose for the violence, and it was equally difficult to identify who was the oppressor and who was the oppressed. When the topic being researched is too narrow, and the outcomes all result in chaos, the researcher is then forced to “zoom-out” to analyze the lens or system itself, through which the information is being shared. In the case of *GoC13*, this was the media itself.

If the media was failing to provide answers, then what alternatives were there available to all that could be pursued for more accurate content? Social media and blogs represented some of the few alternative media communication options that allowed individuals to maintain a certain anonymity while sharing opinions and other content with the public.

After this shift in thinking, I almost overlooked a response to a blog post from an unknown identity and generic username. This response was listed at the bottom of a long scrolling page of responses which expressed that due to the confusion sparked by the revolution and violence in Cairo, they haven't been able to identify which side was right or wrong for themselves, nor find any that they were interested in supporting. This post continued sharing their frustration that due to one family member's strong and vocal political position or affiliations, the community imposed the position of the one onto the whole family. They were expected to assume that political position and adopt it as their own, both personally and publicly, whether or not they agreed. When seen in public, or asked, these relatives who upon which were imposed bias were expected to outwardly portray themselves as affiliates of that party.

After discovering this blog entry, other similar comments became more noticeable, and began to appear more often. One's own identity and position becomes absorbed into another's based on proximity, affiliation, and relationship. This first discovered blog post was the one of the most pronounced, honest, widely-prevalent messages contributing to the understanding of an individual's experience within the Cairo reflecting surmounting chaos and duress during and before 2013, especially due to the religious affiliations and social morays that were expected socially from adopting each position. These affiliations and expectations affected the natural movement and access to the city that each citizen felt. Some coffeehouses and restaurants in Cairo were affiliated with one of the parties, and if you were recognized for being of the opposing

party, citizens might find themselves in an awkward space. This experience of being imposed upon with an ideology, by surprise, became the topic and experience I chose to pursue in my interactive installation artwork. This also worked well with what was possible using the technology and the social networking content.

I take inspiration from artist Gabriel Orozco who mentions in many interviews and publications that he chooses not to work in a studio, which serves as an “abstract bubble of formal circulation,” but rather wants his work or visual language “confront reality, the reality of the street and what goes on there.” (Boullosa, 2007, p. 2) I found that letting ideas incubate and develop in my mind rather than forcing them into being, even on paper sometimes when they aren't yet formed during the research phase of work, often result in “aha”-moments, where the appropriate patterns present themselves at the right time. This aha-moment serves as a complex synapse, a blending of significance and creation, with a collision of a range of thoughts, ideas, inspirations, and accidents. In the development of *GoC13*, each individual's voice has significance, as does the position of one dot in the patternless noise. While it may not seem significant, when an individual calls attention to one of the random dots, or imposes a pattern on a grouping of dots, and begins to analyze it for its position, size, color, relationship to other dots, and how long it lasts on screen, it becomes significant. Similar to the EPR Paradox, developed by Einstein, Podolsky and Rosen, our attention contributes to the significance of a pattern and entity within the human experience.

This dot now has the analysis content that can be referred to as the dot to which one gave attention. Drawing attention to something to derive information from it is the intuitive act of learning and creation and is embedded within the experience of apophany. Drawing attention to something is the moment when patterns previously insignificant become significant. Revolution, war, violence, and chaos drown out the logical, creative, and intelligent patterns that could provide a salve to the community.

#### 2.4.1.4 Auto-ethnomethodology: Evaluation of Practice

In a few of the works like *Plantenkere*, data collection on the behavior of the autonomous system was collected in order to generate a hypothesis. In *GoC13*, the data collection was about the process of development using an auto-ethnomethodological approach that resulted in an analysis of the development and implementation process, which is integrated into the evolution of the project's intent.

Using an auto-ethnomethodological approach for analyzing my practice, in figure 40 below, the *GOC13 Development Process* reveals how a site-specific work was developed using the experience of apophany to discover feelings Egyptians were experiencing during a very difficult socio-political time in Cairo in 2013 it should be noted that I did not have any previous first-hand knowledge or experience of life or the culture of Cairo. Figure 40 also represents how apophany was integrated into the interactive experience in such a way that the participants would have heightened experiences of apophany.

Considering the significant influence that the socio-political climate had on the people of Cairo at the time, a site-specific work of art had to consider and address this conflict within the overall experience. The first step in gaining an understanding of Cairo was to search all sources of relevant information, including available media sources in order to decipher what provides the most relevant insights. News publications and magazines display clear bias. At this point in the process, one must impose *the apophenoetic toggle*, which is stepping back in order to shift directions and try alternate types of media such as discussion boards, personal blogs, twitter feeds, posts on social networks and more, that seem to be originating in Egypt. The *apophenoetic toggle* is that paradigm shift derailing linear thinking and directed practice that seems to result in unfamiliar environments and innovative discoveries. With respect

to this *apophenoetic toggle*, a discovery was made of some significance, which originating from one singular comment on a blog post. Reading more individual accounts via social networks and blog posts revealed that many individuals experienced exactly the same thing. These personal blog posts revealed that many Egyptians that held passive positions on the polarized political conflict were either seen as favoring one or the other political side based on their family or business associations, and even trying to explain this position failed to convince others of their passiveness. The next step in the *GOC13* Development Process was to find a way to represent the Egyptians' experience described in the blog post within an interactive artwork. Considering the range of hardware and software technologies used in the past, as well as the many elements necessary to include for the participants to have a genuine experience, apophany had to be strategically implemented. To immerse the viewer, computer vision was used to mimic the mirror experience so that one could see themselves on screen. The face of each viewer was replaced with the graphics from the Egyptian pound, a label Dictator #1, 2, 3...., and one of the Muhammad Morsi like Twitter account feeds. Each coin functioned also as a target for a birds-eye-view of Tahrir square with swarms of people following the position of one's face on screen. When faces on screen get close together a line appears connecting the two with the word inshallah (or *what god wills*) between them, representing the connection of self to other in that this experience of the daily life challenge is something that many people share. Elements of *apophany* were implemented in multiple instances, each to impose distortion.

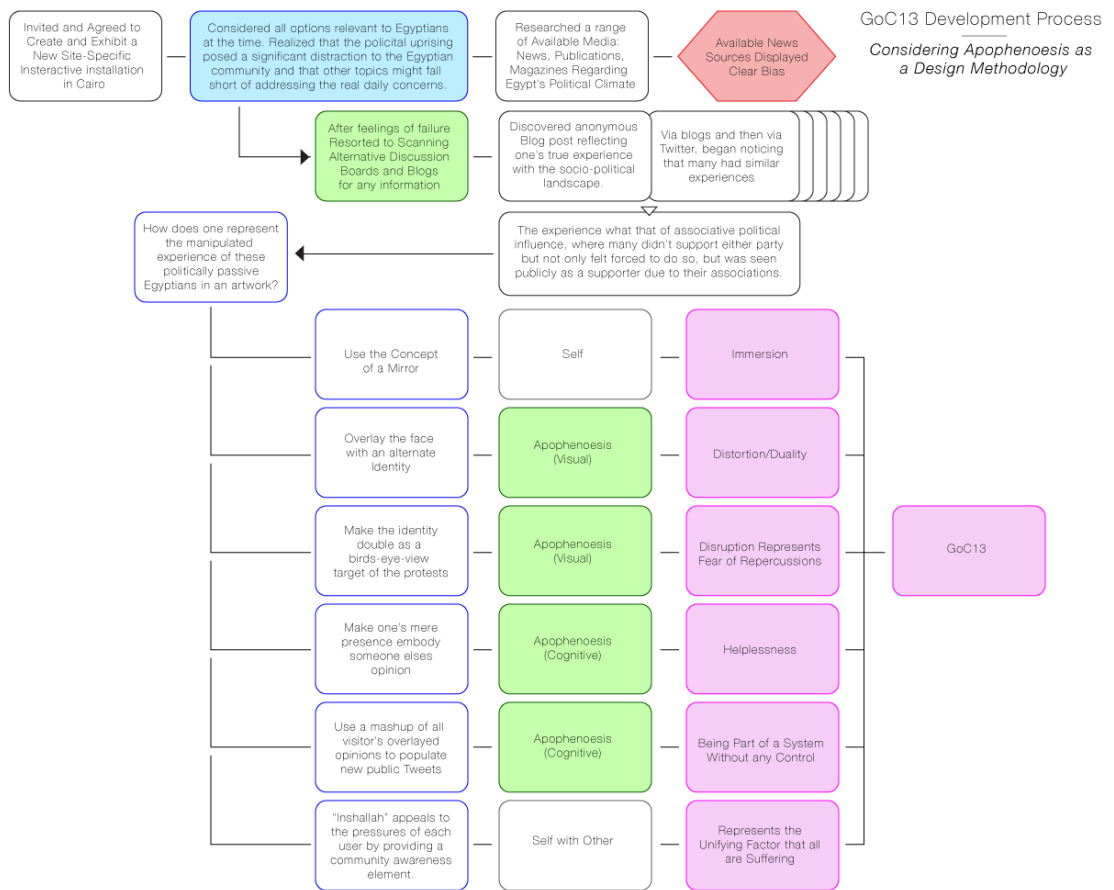


Figure 44: *GoC13* Development Process (by Max Kazemzadeh in 2018) - seen above

When considering how significance was realized within the context of the design methodology, during the development of *GoC13*, the following steps were taken.

1. Site and Scope of Task: The invitation to exhibit at the Gezira Art Center in Cairo established the task and also provided the location. I began looking at images online regarding various locations throughout Cairo as well as the exhibition space. I researched the current news and media regarding the current socio-political state of affairs within the city, as well as the history of Cairo and the surrounding area.
2. Research.... Search for Significance: Due to the many unknowns regarding Cairo, I decided to rely on available media sources for all of the content that I would use to find significance that would lead to the creation of a site-specific work of art. As expected, the research had no clear or confirmable results regarding the experience and nature of

life, present culture, and environment in Cairo at the time. The media reporting on the current climate surrounding Cairo seemed either biased or at conflict with other news. Significant patterns emerged within the array of media that were significant, whether or not they were confirmed valid sources.

3. Compiling and Reflecting on a Collection of Significance: The media either reflected conflicting or biased narratives which raised questions of validity. News media used language to represent narratives that seemed very distant from the actual personal experience of individuals in Cairo. While there was conflict which resulted in instances of violence, it was unclear who was fully responsible. Due to the unsettled feeling that the media wouldn't provide answers, I applied the *apophenoetic toggle model* and changed my vantage point completely with respect to research. During this shift, I realized that the personal accounts of individuals might be a bit more accurate to what was going on. I came across a blog that shared a more personal and intimate experience regarding how they were perceived by their peers regarding their political affiliation. After finding this, many more comments appeared echoing this same sentiment. I decided to make this experience the premise for generating creating a work of art.

4. Search for Available Artistic Materials: In this case, Twitter, which failed at being a source for answers to the initial question, served as an engine representing a variety of perspectives most likely living in or connected to Cairo, due to the list of strongly opinionated Tweets regarding the government. There were some words in other languages, such as French, that appeared within the array of English and Arabic words. These individuals and their thoughts and opinions could have been posted from outside Egypt but were, nonetheless, according to Carl Jung, strong synchronistic contributions to the *GoC13* artwork. Twitter searches for and blocks bots that post repeating content, so sources for posts must be people, somewhere.

Separately, I wanted to use a face tracking system in order to generate a mirrored

environment in order to immerse and personalize the experience of the content presented.

5. Merge Patterns to Generate Significance, Overlaps, and Connections: Using an apophenoetic disruption, I decided to merge the face tracking system with real-time posted content from Twitter to superimpose the thoughts and feelings of those posting to Twitter accounts into the faces (or identities) of participants in the room. From the blending of two disparate systems new significance emerged. Participants experienced another person's political affiliation imposed upon their identities within the space, as did so many Egyptians during the Arab Spring.

6. Repeat the previous step until it yields. If it yields or doesn't, still move to the last step, and continue moving backward and forward in the list until you find layered relational significance and complexity that awakens new patterns in the participant: Continuing this apophenoetic process even further, the word-for-word Twitter feeds of all participants in the space at one time were merged into a new sentence and Tweeted, thereby adding to the overarching chaos of opinions and perspectives happening on social networks at the time.

*GoC13* utilized a range of different technologies within a new space that functioned as a site-specific and time-specific interactive work of art, the experience of which began with a dark projection screen displaying no content. The project used computer tracking and real-time streaming content from Twitter, to invite and immerse the user into the gallery experience. A second segment in the software automatically reposted the sequence of Twitter feeds that came to the gallery as word-for-word posts to the @GesturesOChange Twitter account, merely by participants being present in the space. Depending on the number of participants experiencing the work at one time, the one-word Tweets coming in from each disparate Muhammad-Morsi-like account



collectively generated a mash-up sentence that appeared at the bottom of the projection screen and was reposted on the @GesturesOChange Twitter Account page. This work integrated and utilized unknowns in order to generate disruption with the use of real-time user-posted content that was fed to the *GoC13* interface and space.

The *GoC13* continually kept its participants in anticipation, searching to find the midpoint between recognizable and abstract, constantly swaying between the two, in order to create a unique immersive experience that successfully highlighted aspects of the everyday experience of many Egyptian civilians at the time. While the content addressed a harsh reality, the interface was engaged with a playful spirit, due to the fascination with the face recognition software and the many interactive facets of the work.

*GoC13* included a variety of interactive elements fused together to create a context within which a simple message containing an elaborate list of subtexts, could be conveyed. The global message during the time of Cairo's political revolution was that the voice of humanity was stifled during periods of political unrest and strife. The only voices given a platform were the ones chanting a binary option regarding one of two political agendas, which in most instances had no connection to real human interests. By forcing Egyptians to comply with one of two binary options, it thus limited individual expression and freedom of speech to one of the two platforms. The topic also served as a gravitational vacuum within which all subjects were consumed.

In *GoC13*, the aha moment surfaced in remembrance of Twitter's March 2006 release of a new Application Programming Interface (API), which provided programmatic access to read and write Twitter data, author a new Tweet, read author profile and follower data, and more. At the moment access to Twitter's API, just happened to inspire some people to develop open source libraries and tools for Java-based languages. Further inquiry into the Twitter feeds of Cairo's polarized groups

resulted in numerous politically charged accounts in 2013, and therefore large numbers of tweets. Most Twitter users at the time used some variant of the Muhammad Morsi name to either express disdain for the president or as a platform to express their frustrations with how they felt the violence and revolution were hurting Cairo, Egyptian culture, international relations, and the future of Egypt. Since then many of those accounts have been closed. The accounts that still exist have evolved into retweet accounts or have become much more passive.

One aspect of Twitter is that one person can have many Twitter accounts since all that is necessary is an email address to confirm it. Secondly, controversial topics usually motivate individuals to obtain accounts with keywords surrounding the subject, to generate conversations, influence trends and more by tweeting. Muhammad Morsi, being a public figure, reflected many Twitter accounts that were distinct variations on the name. By investigating a number of those variants, I discovered that the account name that most accurately matched the president's name *@MuhammadMorsi* was the only one speaking positively and professionally about the role of the Morsi presidency, and every other one, was extremely opinionated, with a majority of those accounts in direct opposition of the president. Views within one post were expressed in different languages, which means there were probably groups retweeting each other's statements. *@MuhammadMorsi1*, *@MuhammadMorsi5*, *@MMorsi*, *@MorsiMorsi*, and what seemed to be hundreds of other accounts. While the majority of the Tweets seemed opposed to President Morsi, the minority seemed to be a mix between topic-specific platforms complaining about how the revolution creates social disruption or those who had a general distaste for the recent political and violent occurrences in the city, without a decisive political stance.

I realized that I could create a portal to feed each Muhammad Morsi related Twitter account variant, using keywords such as Egypt President, Morsi, Cairo

President, Mmorsi and more, to be captured and transmitted through the custom Java software I created from the Twitter API in real-time. Once each Tweet word-by-word populated the live running and connected software, they were positioned on screen in the location of the mirrored faces of each gallery-visitor on the projection wall, more specifically near the location of the mouth of the mirrored representation of the gallery-visitor on screen. In the space below the face or coin, a numerically defined *Dictator #1* or *Dictator #2*, etc. appearing as an incrementing numbered identity for each new participant, along with a newly associated and automatically assigned Twitter account.

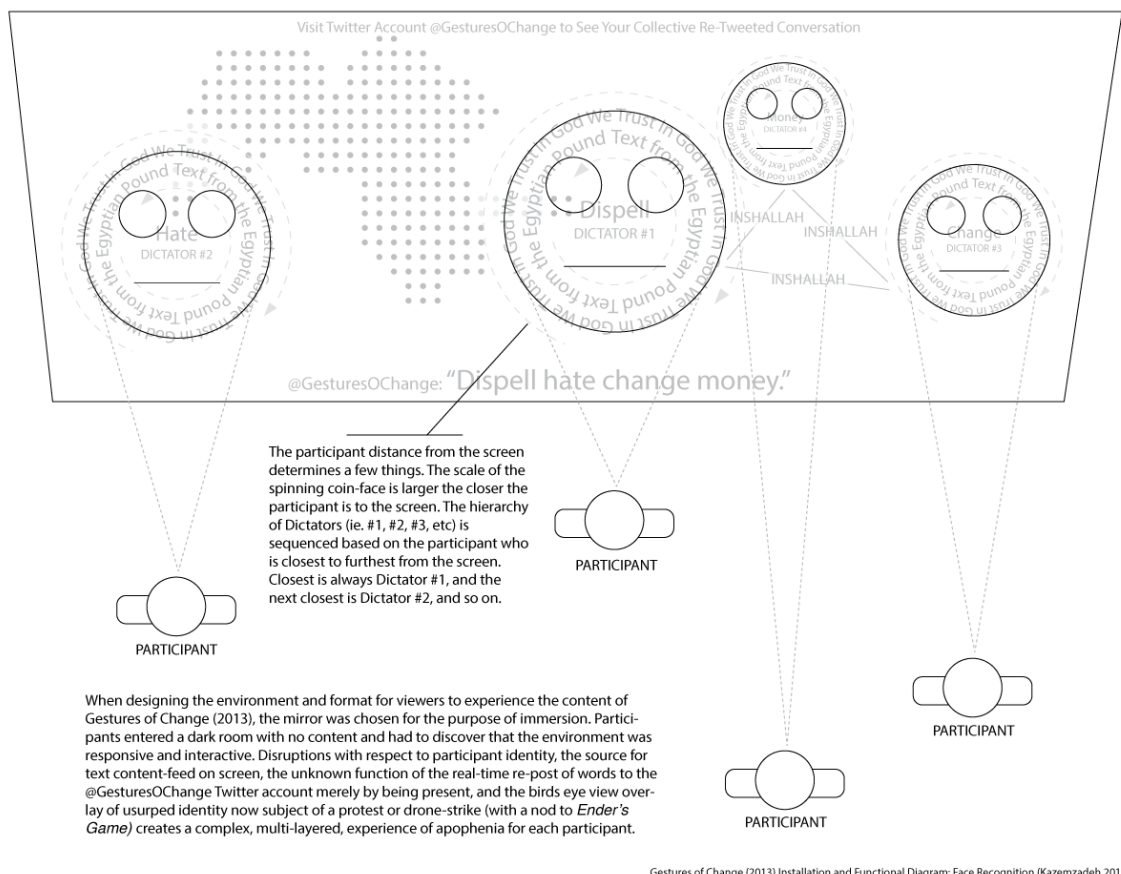
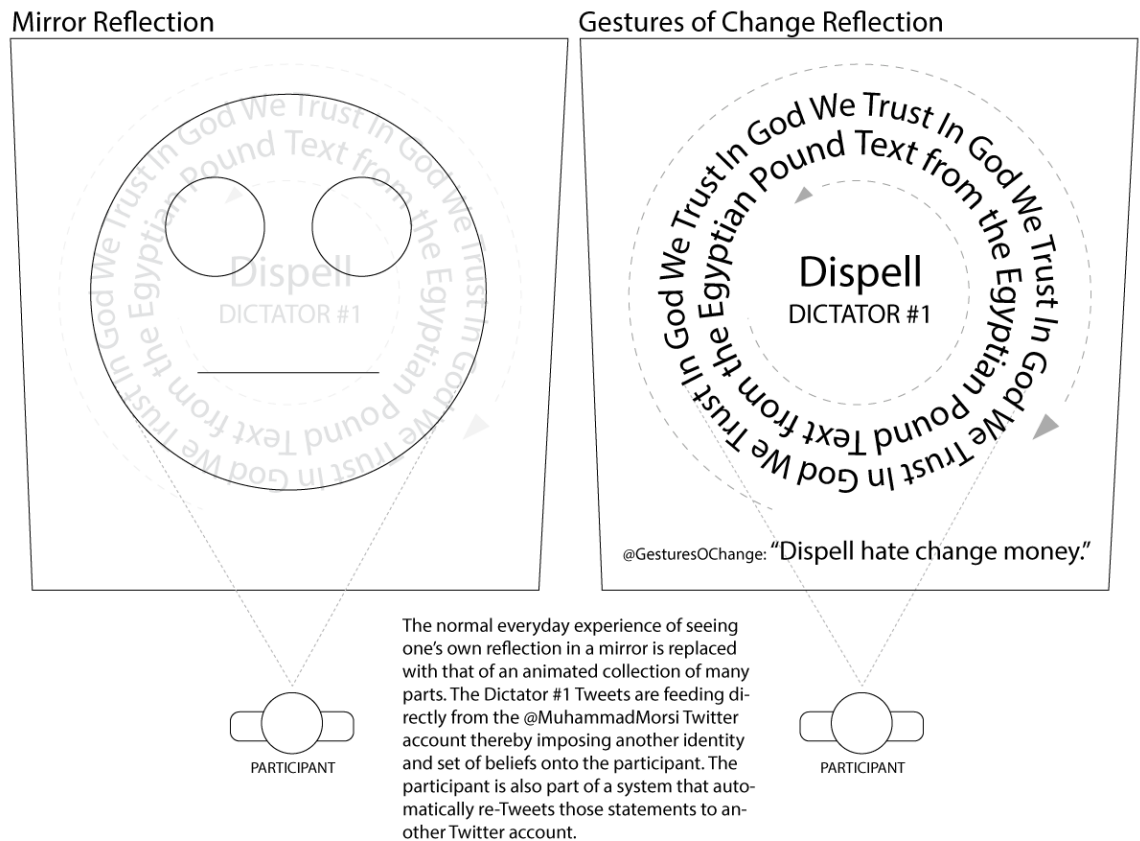


Figure 45: *Gestures of Change (2013)* - Installation and Functional Diagram: Face Recognition (by Max Kazemzadeh in 2017) - seen above

Identities toggled based on their location in the room. The person closest to the screen who was represented the largest would toggle and become Dictator #1, thereby representing feeds from @MuhammadMorsi in the center of the position where their mirrored face would be. Instead this was represented with a number of dynamic and animated graphics. Perception of the self on the screen provides a gesture associated with reflection and confirmation of identity. Face recognition served to be the best method for tracking individuals because they only appear when they are looking at the screen. Face recognition is also a technology that many governments, law enforcement agencies, and national immigration offices use to identify and track individuals in a country. With a corrupt or unstable government, this surveillance only adds to the fear and sense of unrest with relation to political opinion, position, and affiliations as well.

The *GoC13* system would allow for individuals to automatically be given, or imposed upon, a political platform, via Twitter feed overlay. This would occur outside of their control or choosing, and the spectacle would represent them among others as having a political position that would sometimes counter the political platform of the person standing right next to them in the museum space. This overlay created a clash in one's own typical experience with mirror systems and notions of self, concerning the impact of one's belief system. It is as if their own identity and self-image turned against them by representing a belief that they didn't outwardly accept. Even avid supporters or opponents tended to not be very public about their position, especially in social situations such as art exhibition openings. The collision of the randomly combined behavior of mirrored self, merged with the political position of another forced each user to find the meaning behind the *mash-up* through feelings of discomfort. The experience of being labelled as accepting a political position different from their own was a feeling and experience that so many Cairo inhabitants faced during that time. This experience of apophany, led *GoC13* participants to understand via first-hand experience how others

may feel within the society of Cairo and became a new foundation for dialogue.

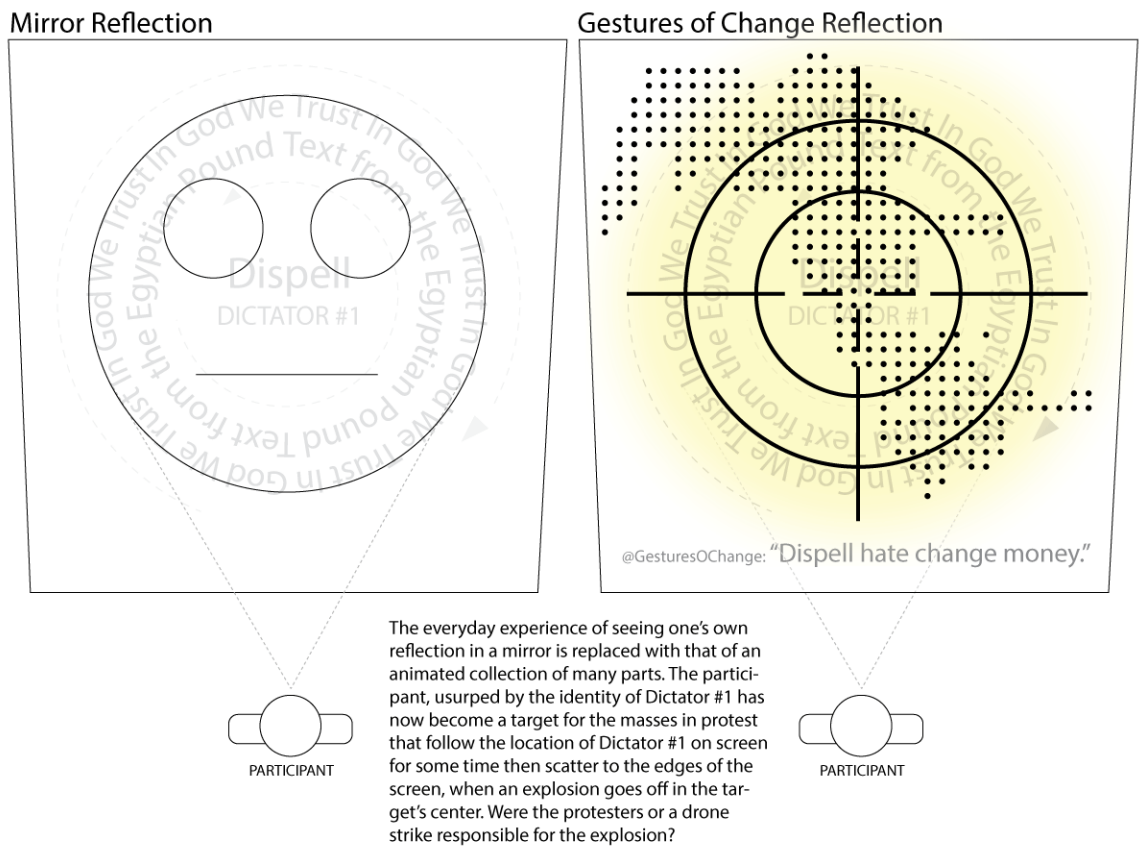


Gestures of Change (2013) Apophenia and the Mirror Effect (Kazemzadeh 2017)

Figure 46: *Gestures of Change (2013) - Apophenia and the Mirror Effect (by Max Kazemzadeh in 2017) - seen above*

Onscreen in the approximate location of the participant's mouth the direct and live Twitter feed from the respective account displayed word for word quickly, which made it easy, and almost subconscious, to read as it fed from Twitter into the system. The Twitter text and the graphics around the face would grow larger and smaller as the participant moved closer and further from the projection wall or screen, which functioned as a mirror for the participants. The participant nearest the projection, with therefore largest Twitter feed lettering, would immediately be switched to and adopt the Dictator #1: @MuhammadMorsi account identity and feed which, in Twitter is the first in the list of Muhammad Morsi related accounts when one searches the president's

name. The rest follow numerically and concerning the relevance of the search for the name as *Dictator #2: @Mmorsi, Dictator #3: @MorsiMorsi, or Dictator #4: ....* and continues to increment.



Gestures of Change (2013) Apophenia and the Mirror Effect with Target (Kazemzadeh 2017)

Figure 47: *Gestures of Change (2013)* - Apophenia and the Mirror Effect with Target (by Max Kazemzadeh in 2017) - seen above

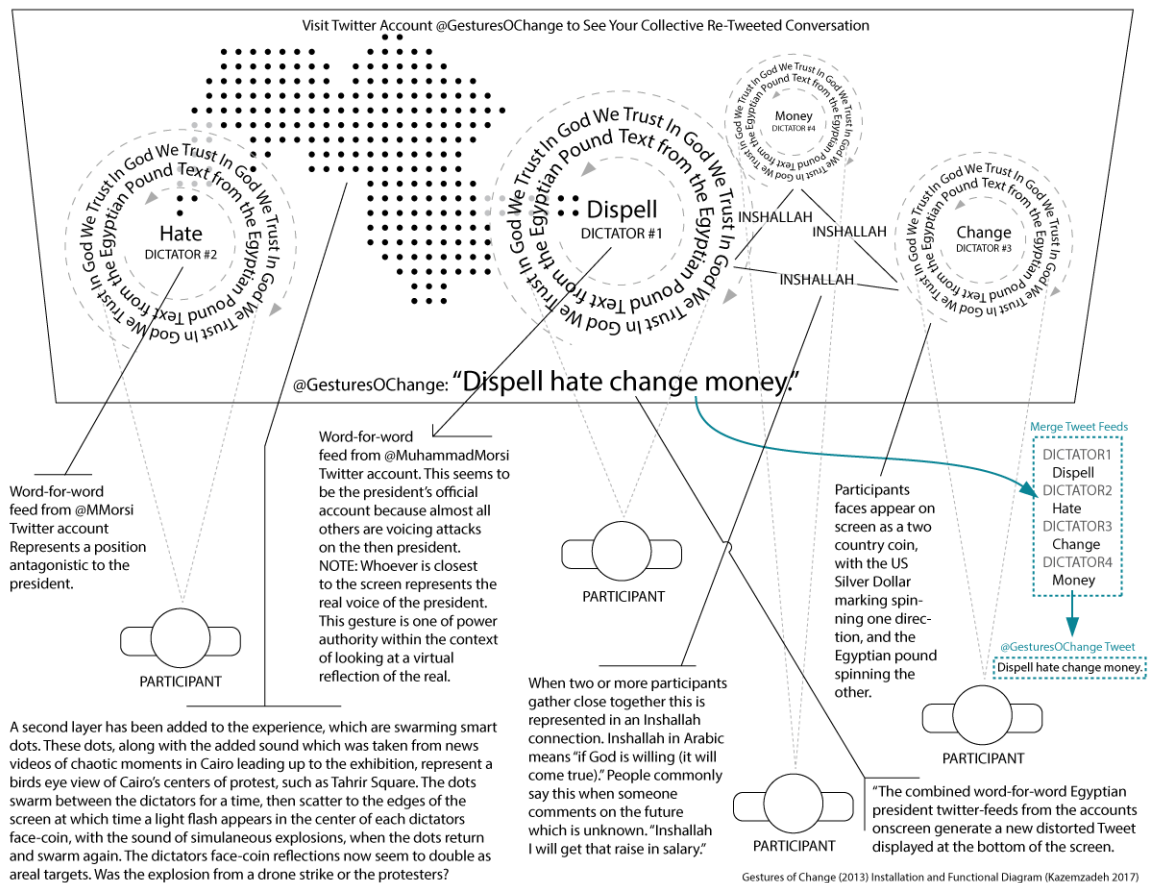


Figure 48: *Gestures of Change (2013)* - Installation and Functional Diagram (by Max Kazemzadeh in 2017) - seen above

Also, as the separate word-by-word Twitter feeds enter into the center of the coin-face projected on screen, and each coin-face receiving from a separate Muhammad Morsi name-related account, a new sentence is automatically constructed every second, using the number of separate words on screen from each of the accounts. This sentence is then the content that is reformatted and reposted to the @GesturesOChange Twitter account. As seen in the diagram above, the most recent word for Dictator #1 is *Dispell*, for Dictator #2's is *Hate*, for Dictator #3 is *Change*, and Dictator #4 is *Money*. A new sentence and tweet are created blending all of the words thereby reading *Dispell hate change money*. This phrase is then tweeted to the @Gestures OfChange Twitter page. The functions of the text alone have many layers of distortion and identity shifts that generate an interesting environment for creative errors and apophenia to take place.

When a wide array of elements are all partially abstract, but functioning, animating, living and responding simultaneously, then visitors aren't only met with an iconic message, but rather a living environment that contains layers of activity and meaning that resemble the complexity and the chaos of the then Egyptian every day.

Concerning the face recognition system, removing the video feed from the projection provided a blank, black, dark surface upon which any graphic element could be used to represent the face or location of the face onscreen. The strategy was partly functional since it would allow for more participants to participate, the graphics to be processed faster, especially with the Twitter feed, but also a strategic designed element which would allow for a more intimate reflection on one's association concerning the politically charged and decisive Twitter content. The dark also refers to a certain complexity that led to the degree of anonymity each would prefer to maintain when imposed upon with an ideology they don't necessarily agree with, while their mirrored form was represented on screen. This treatment also allowed for an overlay of tangential animated graphics to be included as abstract references to other aspects of Cairo street activity. Faces were identified by a redrawn circle containing the drawn circular markings on a rotating Egyptian pound, merged with that of the US silver dollar rotating in the opposite direction. Financial control equates to power within a political system, and serve as the crux within a society, and when political instability occurs, it puts the monetary and value systems at risk, which impacts everyone within the community and abroad. The words from the Twitter feeds would appear in the centers of the coins around the location of the mouths of each participant on screen. The secondary graphic overlay included vector graphics that allowed for the screen to function in two perspectives, both as a mirror and as a topological map of different locations in the Cairo city-center, where collections of people were represented from above as multicolored dots. These dots, or people, would follow in a swarm, the tracked-faces or



animated-coins which in this context double drone air-strike targets. The swarms of dots, or abstractions of people, would gravitationally attract to the center of the coin where the tweet words appeared as a kind of target, for approximately seven seconds. After that time the dot-people would scatter to the edge of the screen allowing for explosions to go off as bright expanding lights emerging from the center of the coins. Sound naturally followed the actions of the swarm and explosions, which were captured from news feeds of the revolution spanning the two years prior leading up to the exhibition. When two participants, and therefore, faces or coins came too close to one another in actual space and therefore virtual space, the word *inshallah* appeared in Arabic, like this "ان شاء الرب" with a line between the nearing participants. Inshallah ( or ان شاء الرب ) is an Arabic word meaning *if God wills, (it will come true)*, and reflects the sense that when individuals get close to one another, a connection has been made through that gesture. When paired with the expression, Inshallah ( ان شاء الرب ) represents more of verbal gesture of comfort, especially when contrasted to such a chaotic environment that generates feelings of fear and unknown. Inshallah represents another real aspect of the society's coming together as a metaphor for neighbors who find strength in sharing, especially when being pulled into opposing polarized political directions.

This installation provides a space for reflection and an experience of understanding in the midst of being targeted for one's socially imposed political positions. Frequent violent protests and uprisings all over Cairo and in the media raised fears of losing one's finances, daily needs and resources and generated unknowns concerning whether one's family was safe at home, school or work.

With so many designed interfaces influencing how we act, communicate, vote, and think of others and ourselves, my work since 2000, beginning with *A Seesaw & A Scoreboard (2000)*, has continually intended to address how designed interactive multi-

user interfaces have the potential to influence human interaction. These environments also lead participants to reflect on notions of self and one's relationship to the collective. *GoC13* serves as an environment employing and projecting the experience of apophany onto a group of participants sharing both space, time and screen, while simultaneously serving as an environment for creative reflection.

Every word-for-word Twitter feed from the different Morsi accounts appearing in the *GoC13* exhibition was then formatted into a sentence, and then re-Tweeted by the software to the @GesturesOChange Twitter account page real-time. The sentence was a result of multiple single-word *mash-ups* with the Dictator #1 always first, with Dictator #2 appearing second and so on. GesturesOChange is an abbreviation due to Twitter's fifteen-character limit for account names. Literal confusion was used to signify the real confusion on the ground in Cairo. Retweeting to the @GesturesOChange Twitter page is the part of the project that highlights that within this environment, where one's affiliations, relatives, friends, neighbors, and sometimes one's mere presence in a particular location in the city, can serve to impose political positions and beliefs onto them. These affiliations, in the context of bandwagon advertising strategy, can be used to influence others, sway public opinion, alter polls in elections and more. Note in Figure 45, the blue arrows signify the Tweets feeding directly from the variant accounts with names similar to Muhammad Morsi. In the diagram, the red arrows signify the merging of the feeds into a new *mash-up* sentence, and the orange arrows reflect the automatic re-Tweet to the @GesturesOChange Twitter page.

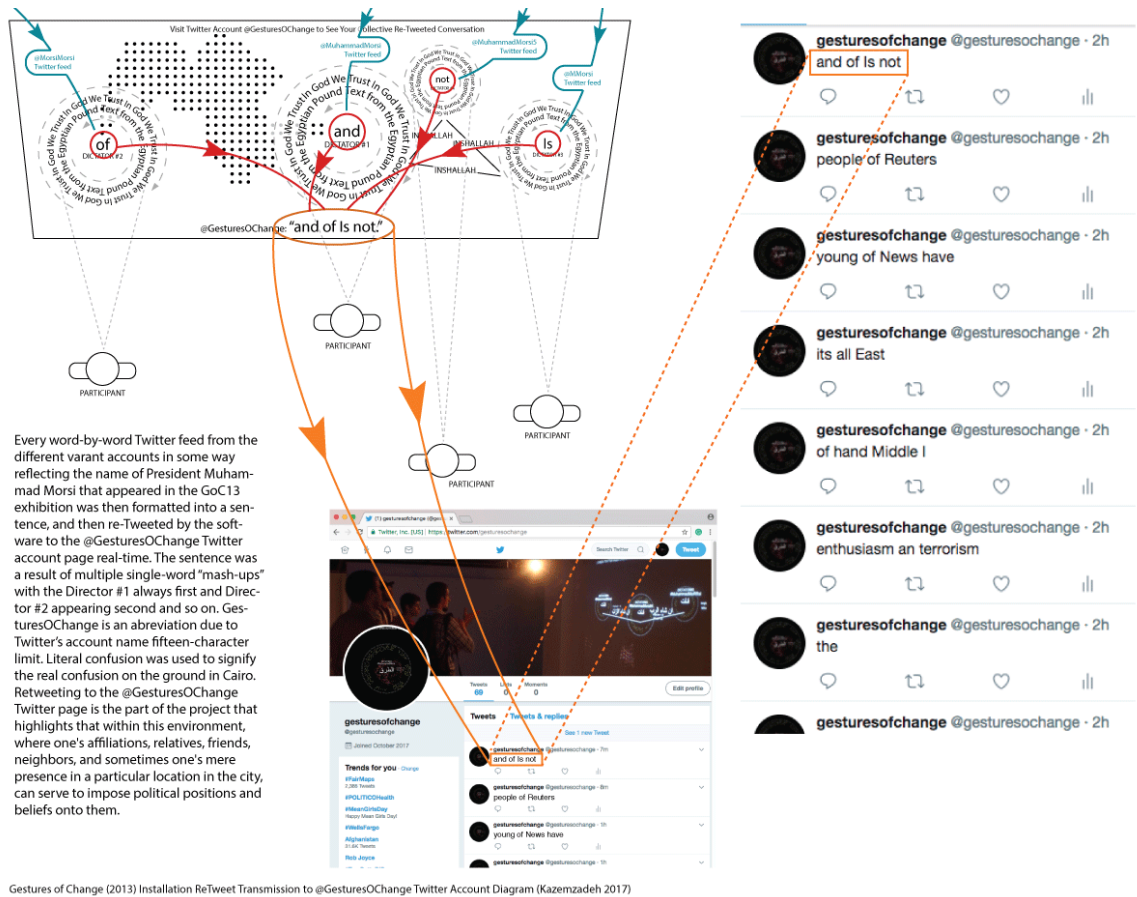


Figure 49: *Gestures of Change (2013)* - Installation ReTweet Transmission to @GesturesOChange Twitter Account Diagram - seen above

The Description of *GOC13* that was published in the 2013 Di-Egy Festival Catalog included,

“Being situated in the heart of a revolution, sometimes based on our gestures, associations, and affiliations, we can be seen to wear and reflect others beliefs in this storm of confusion. This exhibition and festival took place after Muhammad Morsi was elected and after some violent events occurred in Cairo and before the second resurgence of violence.” (Alexander, 2013, p. 32)

Watching how people from Cairo, including artists, curators, political figures, the security guards, and the cleaning crews responded to *GoC13*, there was a wide array of participant responses. Concerning interactive computer vision related projects and environments that have become so popular in recent years (i.e. Snapchat, computer vision stage performances with reactive graphics, interactive human-computer

shopping-mall installations), gallery visitors arrived with the knowledge of how these types of systems work and initially responded with excitement, surprise, inquisitiveness and experimental playfulness.

In *GoC13*, computer vision functioned as a reference to surveillance, but the initial exposure to a digitally interactive space generated some excitement. Once the initial fascination passed, the work intended to provide a cumulative and reflective experience over time, rather than an immediate or literal one. The functions were intentionally layered and scaled for the participants so that each new functional element would be introduced to a new user in accessible stages.

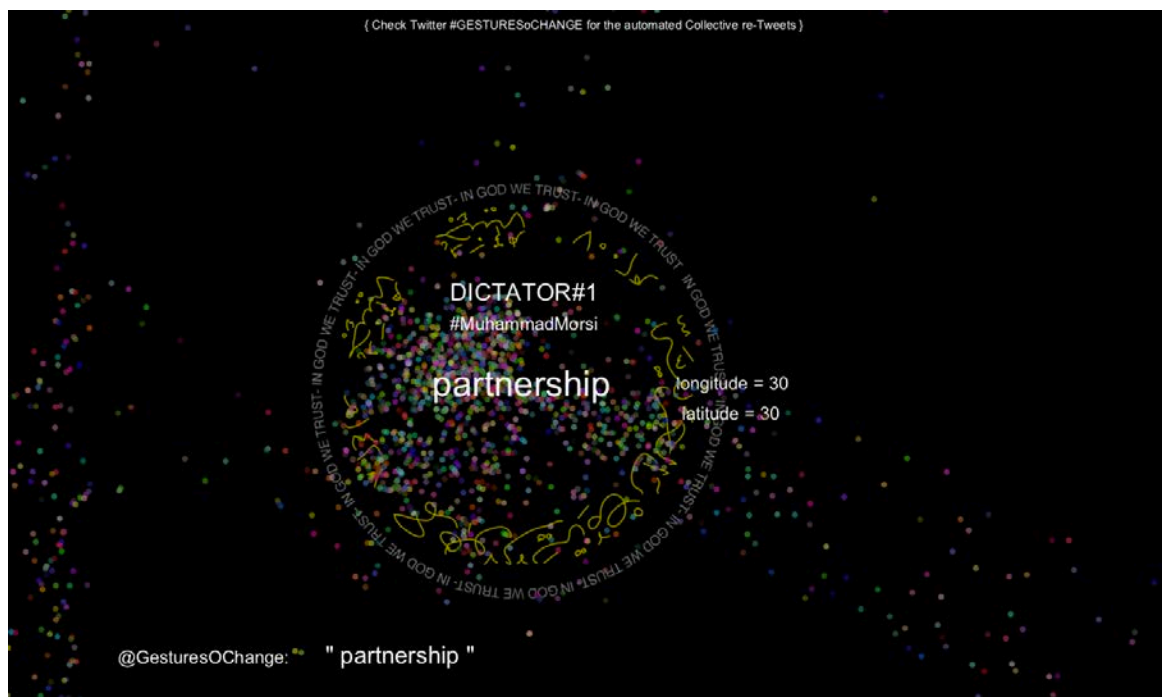


Figure 50: *Gestures of Change* (2013) - Screenshot with One Participant (by Max Kazemzadeh in 2013) - seen above



Figure 51: *Gestures of Change (2013)* - Screenshot with Two Participants (by Max Kazemzadeh in 2013) - seen above

Participants were able to gain from the range of stimuli over time, as overlapping abstract and familiar patterns seem to reference what local Egyptians experienced living with the chaos of political unrest. Representing these converging elements away from the city streets and daily hustle may offer a vantage point for reflection, potentially allowing individuals and groups to consider solutions in order to improve one's quality of life. While this installation does have live feeds from Twitter that are continually updated with new content, the content isn't random. The Twitter account content is populated by a living entity and therefore has the potential for constantly new content. I positioned Twitter as the element of the unknown, as political affiliations appear within moments of political unrest, unexpectedly. The continuously updating live content feeds from Twitter and the Egyptian president are associated with the identities of each participant. Since *GoC13* is a multiuser system, while interacting with the system participants also serve as spectators viewing the feeds of all other participants in the space. Associations are made within familiar but partially abstracted

environments, iconography, and systems. Maintaining partial ambiguity within the graphical experience activates accidental over-interpretations of significance, where blurred content and somewhat unclear iconic references lead participants to experience apophany. The animated and interactive aspects of the experience also serve as layers of immersion and distortion that contribute to the experience of apophany.

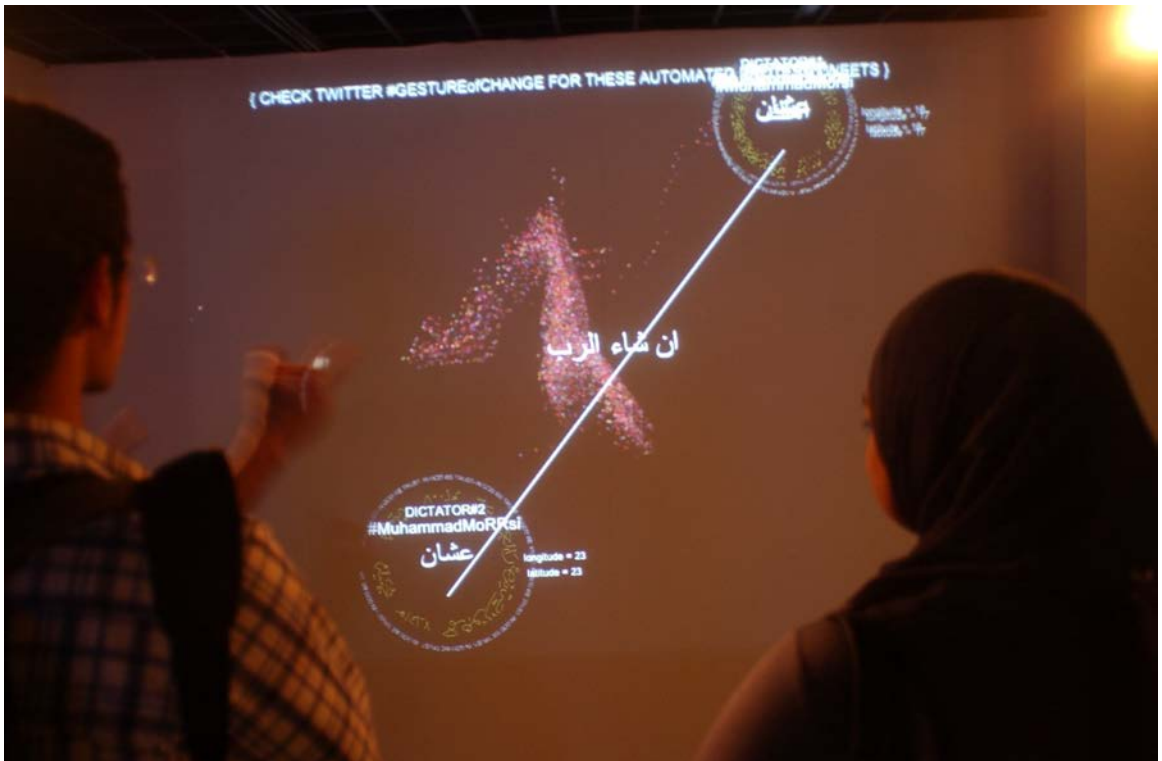


Figure 52: *Gestures of Change (2013)* - Installation Space with Two Participants at the Gezirah Art Center in Cairo (by Max Kazemzadeh in 2013) - seen above

With the advent of continuously expansive open-source communication technologies, social networks, software and hardware initiatives, the formats of which messages are shared, exposed, distorted and transformed, influence how we understand them, and therefore respond. We are increasingly required to intelligently and carefully sort through the mass of information with more sensitive pattern recognition filters that alert us to when the array of content, in the form of messages, social networking posts, links to external news sources, and more seem to be unconfirmed sources.

In the making of and experiencing *GoC13*, there were many instances where layering of patterns were designed with the intention to guide participants to consider and possibly empathize, but not completely identify with the non-literal references made by responsive animations and gestures in the interactive projection. The collective experience was both approached and implemented with an anticipated holistic response in mind. In the fundamental core of computer vision lies color and pattern recognition along with a technique called blob-detection or creating blobs from similarly colored pixel clusters within a video feed, that all serve as necessary elements for the computer to see and recognize faces and the differences between them. Within the computer vision system, depending on how developed and complete the process, errors sometimes occur causing some environmental color pixel-cluster arrays to be mistaken for faces. The computer can be said to sometimes experience apophany, or associating significance where there might not be any, mistakenly recognizing faces where they don't exist. One could attribute the same for the human natural tendency to see faces where they don't exist.

In the installation, an interactive area was established by the use of spot-lighting, leaving the non-interactive background space in the dark. The movement of the oversimplified swarm of flat graphic multicolored dots on screen reflects a crowd-like movement pattern which is intended to reflect the behavior of what might be a top-down view of Tahrir Square during the riots and protests. The symbolic line that appears when participants move closer together is also generated symbolic patterns of closeness, signified by the word *Inshallah*.

Pattern recognition is required to design and create as well as access and engage interactive installations. When viewing the code set up to enact *GoC13*, one will notice that there is no connection between code and the gestures or behaviors they generate graphically onscreen. The general disconnect between writing code and managing a

sequence of events through numbers in other numeric categories, with numbered identities, is quite distant from the physical experience that a museum visitor, participant, or user will experience when they enter the interactive space.

Below is an example of the code written for *GoC13*. This includes required protocol for communicating with Twitter servers concerning receiving and posting real-time feeds.

```
int offset = 0;

for( int i=0; i<faces.length; i++ ) {

//-----character 1 = tom cruize
if (i==0){
  noFill();
  stroke(255);
  strokeWeight(.25);
  //ellipse(faces[0].x+(faces[0].width/2), faces[0].y+(faces[0].height/2), faces[0].width, faces[0].height);

  pushMatrix();
  translate(faces[0].x+(faces[0].width/2), faces[0].y+(faces[0].height/2));
  rotate(rot);
  image(coin, -faces[0].width/2,-faces[0].height/2, faces[0].width, faces[0].height);
  popMatrix();
  int g=5;
  pushMatrix();
  translate(faces[0].x+(faces[0].width/2), faces[0].y+(faces[0].height/2));
  rotate(-rot+rot/2);
  image(coinus, -faces[0].width/2-5,-faces[0].height/2-5, faces[0].width+10, faces[0].height+10);
  popMatrix();

  //TEXT //TEXT //TEXT //TEXT //TEXT
  String helloa="longitude = ";
  int hello1= faces[0].width/2;
  String hellob="latitude = ";
  int hello2=faces[0].height/2;

  textFont(f,dttext-3);
  text(helloa+hello1,faces[0].x+(faces[0].width/2)+35, faces[0].y+(faces[0].height/2));
  text(hellob+hello2,faces[0].x+(faces[0].width/2)+35, faces[0].y+(faces[0].height/2)+5);
  //TEXT //TEXT //TEXT //TEXT //TEXT

  //image(tom[(frame0+offset) % numFrames0], faces[0].x-36, faces[0].y-36, faces[0].width+72, faces[0].height+72);
  //timer for the birds. Get dizzy from all of the gossiping
  noStroke();
  for(int p=0; p<particle.length; p++){
    particle[p].run(faces[0].x+(faces[0].width/2), faces[0].y+(faces[0].height/2)); //run() method takes two arguments - x and y values to apply forces to
  }

  noStroke();
  if(ftime<210){
    ftime++;
  }else{
    ftime=0;
  }
}
```

Figure 53. *Gestures of Change (2013)* - Original Code Extract (by Max Kazemzadeh in 2013) - seen above

The act of writing computer code to design interaction functions serves as a mediated space for both artist and designer to create user-centric interactive experiences for participants to then use in the finished installation. Within this polished interactive environment, participants experience and gain exposure to the subtle messages and intentions embedded within the composition that can be discovered only through



immersion. Concerning operating as an artist or designer as well as serving as a willing participant, both mediated activities require pattern recognition by way of interpreting the system within which they design and interact. Within all pattern recognition there are errors. One can say all mediation has embedded within it a disruption, distortion, or error. Society tends to discard errors and only sees the value in error or mistakes as lessons to learn from rather than the content within which interesting and valuable patterns exists. Perceptual error occurs as a distortion in pattern recognition, and if placed into the apophenoetic process unexpected discoveries can be made.

In the book *Dimensions of Creativity*, Margaret A. Boden referred to the communication between Alice and the Mad Hatter during the Mad Tea-Party saying that the change in conceptual space generates a disruption that leads to new ways of thinking that can lead to creativity. She says "A small change (a 'tweak) in a relatively superficial dimension of a conceptual space is like opening a door to an unvisited room..." and "A large change (a 'transformation')," "is more like the instantaneous construction of a new house, of a kind fundamentally different from (albeit related to) the first." (Boden, 1994, p. 80)

Lastly, evidence of participant behavior reveals that they were immersed and engaged within *GoC13*, that they experienced the intended disruptions necessary for them to draw significance, and that they experienced apophany during their interaction within the work. When no participants were present in the dimly lit passageway of the gallery where *GoC13* was installed, the screen or wall would be blank, presenting no content. Once the gallery visitor turned their face toward the screen, they would notice a rotating animated Egyptian pound with words appearing in its center. This often would surprise gallery visitors thereby initiating the first stage of what might refer to as an *apophenoetic transcendence*. Participants would react similarly when experiencing *GoC13* for the first time. They would often react in stages, beginning with an initial

smile, then they would show excitement and run to find their friends to come to experience the work with them. Once a second or third visitor entered the space, they would often react with surprise and the initial participant would be intrigued in the realization that *GoC13* was designed to be a multiuser experience with even more content. This multi-user technoetic artwork recognized many people and drew connections between them. Intrigue would often be represented by a second smile paired with intense focus where it seemed that participants were attempting to decode all of the symbols, animations and functions that appeared on screen. Most participants would read the statement at the top of the screen listing the @GesturesOChange Twitter account where the results of the gallery activity would be posted checked the Twitter account on their phone. Once participants realized that their actions within the gallery resulted in real-time Twitter feeds at @GesturesOChange they would often laugh and discuss together with their friends. This previously quiet space frequently became very active, with groups of people clustering together, exploring the different functions that existed within the interactive system. The reactions would often follow the same order, starting with surprise, a smile, elation, contemplation, then dialogue with friends or others within the space. This would often be followed by the same sequence after realizing that all of their actions were reflected in real-time collective Tweets.

During the contemplation stage, participants would often begin reading the words which were fed from different Muhammad Morsi like Twitter accounts, appearing one word in the center of their mirrored rotating coin. Once participants realized these words originated from another source they would begin to feel uneasy since other people's statements would be imposed into one's mirrored image. It was at this point that participants would walk up to the *GoC13* description placard on the wall to read more about where the words originated. At this point, they also realized that the activities in the space were being reposted to the @GesturesOChange Twitter account.

Most participants familiar with technology or interactive art seemed to realize that the whole installation was a portal for reframing and reposting Twitter feeds. This added layer of significance was expressed through excitement, laughter, and discussion with other participants. One local student mentioned that this is the most passive form of activism that they know of regarding Egypt's recent political struggle.

One interesting reaction came from an official in the current Morsi government who visited during opening night. When he entered the space with four other participants, many of the Twitter feeds voiced opposition to the Egyptian President. The official's first response followed the normal process of surprise, smile, elation, etc. However, during the contemplation stage, prior to reading the descriptive placard on the wall, he deduced that the artist must really hate the current Egyptian President. Once he read the placard describing the work, and discussed it with others he seemed to realize that this system was merely an elaborate portal that imposed beliefs on their mirrored representation of participants on screen, in the same way that Egyptians felt forced to follow one political party due to their familial and community affiliations. The official commended me on the work and expressing that he hasn't experienced an artwork with such complexity prior.

While most of these reactions were collected on opening night, with many visitors in attendance, similar reactions occurred with fewer people in the space. During the opening many visitors came with friends or in groups. During other times, participants would often interact in the space with another participant that they didn't know. While their reactions were less obvious, they often stayed for long periods of time and experimented with the functionality, repeatedly moving closer and further from other participants in the space. Because the Twitter feeds were from live and functioning Twitter accounts, the posts would grow in number every day and the content that was fed through the system would be different, and hence so would the Tweets to

the @GesturesOChange account. Most of the Twitter feeds would also have up-to-date content, like a real-time news feed notifying what was happening in different parts of Cairo each day. This provided another layer of interest and significance for participants.

The ultimate draw to *GoC13* was that divergent, unrelated and disruptive forms of content seemed to merge together and generate feelings of significance in the participants. Meanwhile, the format with which the interactive system presented content generated the deeper sense of helplessness within an environment that labels your political position based on your familial affiliations. One could argue that due to the high tensions within a country and city facing considerable political unrest, that making a politically charged technoetic work would generate interest and reaction. While this may be true, the reactions of the participants to *GoC13* were strategic and intentional. The technoetic work had to strategically attract participants, captivate their attention, motivate them to play within that environment, then have them realize how their mere presence and gestures within the space functioned as a passive cog in the political discourse, pulling content from and posted content to a public and social network platform.

#### **2.4.1.5 Identifying the Contribution to New Knowledge**

Why this site-specific and time-specific work (*GoC13*), which took place in Cairo in May 2013, was so successful in broadening the definition, application, and understanding of apophany was due to the variety of applications and perspectives of the term implemented in one project. During the research phase and project development, significance emerged by attempting to apply apophany as a method to enhance immersion for each participant. The search for significant patterns was challenging with respect to the Egyptian daily experience within the discourse surrounding Muhammad Morsi and the Muslim Brotherhood. There were many layers of cultural complexity and strategies which distort any positive truths about the opposition when considering the polarized entities. The appropriation and integration of significance as material into the interactive artwork made it difficult to frame the content into an Egyptian-centric experience for gallery visitors.

*Gestures of Change* (2013) was designed in such a way to highlight the gestures of the participants, the activity of the many online Twitter accounts, and the interactive generative graphics overlay. While the first version wasn't designed to explore the effects of apophany for-visually impaired individuals, I plan to develop future iterations that would address the experience of apophany for individuals with visual impairment and who are aware that the outcomes could expand the definition and scope of the term. Additional technological layers are being considered for future iterations such as data collection and capture including EEG systems that would track brain activity during the experience and use haptic feedback as a method for receiving information. These future investigations and installations intend to integrate brain activity in ways that can serve to reveal participant's mental process while experiencing apophany in order to address more directly the steps and stages one encounters.

While many artists employ elements of disruption and error in their creative process, not many fully understand and apply apophany as a method of creating art and experiences for others, especially for the purpose of challenging the viewer. These feelings of significance, especially when embedded within a complex functional, intelligent, and interactive system, establishes an order and authority that only enhances the significance experienced. When a range of interactive elements that have patterns of significance are collaged together to be experienced over time, the different identities and behaviors embedded within them incite questions and possible interpretations regarding the artist's intent. Art as a context is established in such a way to reexamine and reevaluate content that is presented and exhibited in order to find meaning and significance. Bergson writes in *Matter and Memory* regarding perception that,

"there is no perception which is not full of memories. With the immediate and present data of our senses we mingle a thousand details out of our past experience. In most cases these memories supplant our actual perceptions, of which we then retain only a few hints, thus using them merely as 'signs' that recall to us former images." (Bergson, 1896, p. 11)

*GoC13* was exhibited in a context where the memories confronting the Cairo community were recent and ongoing. Much different from a static work of art and being an interactive immersive artwork, *GoC13* required some time to experience every aspect of the work, and the content was always changing and evolving with new Twitter posts. Of this, Bergson states "However brief we suppose any perception to be, it always occupies a certain duration, and involves consequently an effort of memory which prolongs one into another a plurality of moments."

#### 2.4.2 *Dabarithms* (2014)

Taken from the *Internationale Situationiste* #2, "one of the situationist practices in the *derive*,\* a technique of rapid passage through varied ambiances. Derives involve playful-constructive behavior and awareness of psychogeographical effects and are thus quite different from the classical journey or stroll."(Knapp, 2006, p. 62)

*The ...rithms Series* was a series of complex interactive networked systems inspired by the French Situationists who experimented with numerous rules for re-navigating their city of Paris with the intention to break from routine in order to re-experience Paris from new perspectives.

In *Society of the Spectacle*, Guy Debord states of the situationists, "Dadaism sought to abolish art without realizing it; surrealism sought to realize art without abolishing it. The critical position since developed by the situationists has shown that the abolition and realization of art are inseparable aspects of a single transcendence of art." (Debord, 2014, p. 17)

Each iteration of *The ...rithms Series* was a site- and culture-specific interactive installation that received wireless input from a ubiquitous computing network. Each project was implemented on location in eight different countries around the world encapsulating some significant cultural component in that location. The eight iterations included: *Poseidon's Pull* (2012) in Kefalonia, *Egyrithms* (2013) in Cairo, *Dabarithms* (2014) in Dubai, *Beirithms* (2014-2016) in Beijing, *Madritmos* (2016) in Madrid, *Colombiritmos* (2017) in Manizales, and *Paggank Daywaygun* (2017) in New York City (See Appendix 02. b. Apophany as Cognitive Translation).



Figure 54: *Beirithms* (2016) – Navigating Phone App (by Max Kazemzadeh with Reza Safavi) Beijing, China at the Central Academy of Fine Arts Gallery. see Appendix 02 (Kazemzadeh, 2016a, p. 1) - seen above



Figure 55: *Beirithms* (2016) – App Directs Rice Bag Drop Location (by Max Kazemzadeh with Reza Safavi) Beijing, China at the Central Academy of Fine Arts Gallery. see Appendix 02 (Kazemzadeh, 2016a, p. 1) - seen above



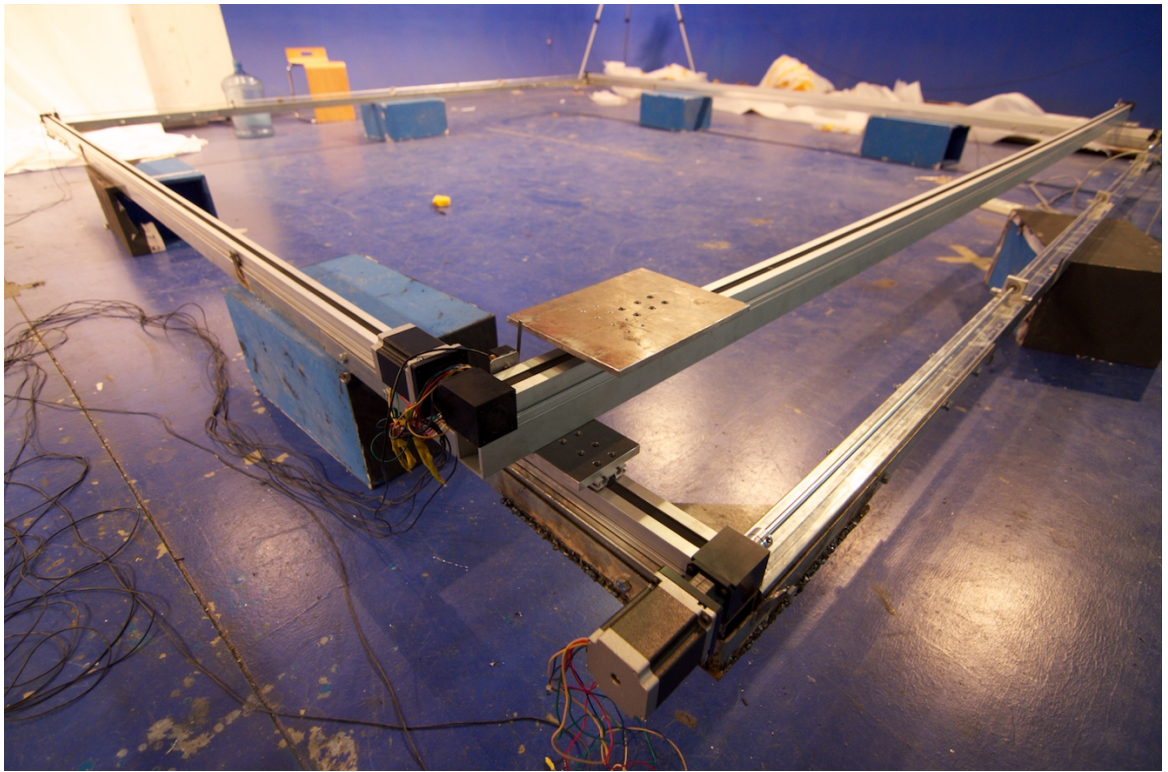


Figure 56: *Beirithms (2016)* – Testing Ceiling Mounted XY Mapped Rice Dropping Mechanism in Development (by Max Kazemzadeh with Reza Safavi) - seen above



Figure 57: *Beirithms (2016)* – Installation View (by Max Kazemzadeh with Reza Safavi) Beijing, China at the Central Academy of Fine Arts Gallery. see Appendix 02 (Kazemzadeh, 2016a, p. 1) - seen above



Figure 58: *Madritmos* (2016) - Tracking App (by Max Kazemzadeh with Reza Safavi) - see Appendix 02 (Kazemzadeh, 2016b, p. 1) - seen above

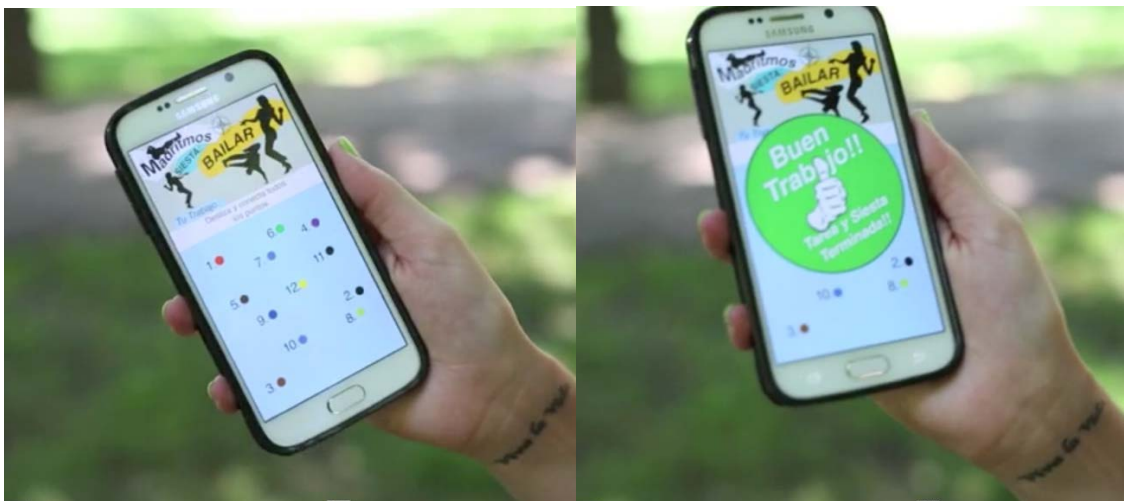


Figure 59: *Madritmos* (2016) – Navigating App Takes a Working Siesta. Participant Must Complete App Task (i.e. Dormir, Amor, Bailar, Cantar, or Jugar). Until Complete, the Curtains will animate accordingly in the Exhibition (by Max Kazemzadeh with Reza Safavi) - see Appendix 02 (Kazemzadeh, 2016b, p. 1) - seen above





Figure 60: *Madritmos* (2016) – Responsive Curtain Installation that either Tracks or Does Task (i.e. Dormir, Amor, Bailar, Cantar, or Jugar) (by Max Kazemzadeh with Reza Safavi) - see Appendix 02 (Kazemzadeh, 2016b, p. 1) - seen above



Figure 61: *Colombiritmos* (2017) – Installation View – Offer 1 of 5 Coffee Bean in Gondola (by Max Kazemzadeh with Reza Safavi) - seen above - see Appendix 02



Figure 62: *Colombiritmos (2017)* – Installation View – Select 3<sup>rd</sup> Coffee Bean, in Gondola (by Max Kazemzadeh with Reza Safavi) - seen above - see Appendix 02



Figure 63: *Colombiritmos (2017)* – 3<sup>rd</sup> Coffee Container Drips on 3<sup>rd</sup> Sugar Cube Detail (by Max Kazemzadeh with Reza Safavi) - seen above - see Appendix 02



Figure 64: *Paggank Daywaygun* (2017) – Installation View (by Max Kazemzadeh with Reza Safavi) - seen above - see Appendix 02

With each new site-specific project the materials, content, rules or algorithms, interactive experience and overall message changed to accommodate the rich histories and culture of each location. Each work incorporated materials significant to those cultures and from each location.

Each of *The ...rhythms Series* had a similar intention, which was to employ the technique established by the French Situationists to direct individuals throughout a city in order to experience the diverse areas and experiences in that city through the *derive* or wandering, and to have that documented in ways that connect directly with the physical and cultural materials of that city. In *The ....rhythms Series*, mapping is a myth and experiences of apophany exist within the experience of wandering when the natural human tendency is to know where they are at all times. Aphenoesis functions within this series in the context of dogma and belief (see Appendix 02), where custom creative technologies create an environment for experiences spanning surprise and delight within a medium that demands authority. While in these projects there exists an element of



randomness, i.e. by the shake of the phone to select a random direction, these activities are very formulaic and mechanistic. Much of the experience of apophany emerges from the participant's willingness to relinquish control over one's location and path forward while being fully cognizant of the experience. *The ...rhythms Series* projects may take the participant or passenger to an area of the city that is familiar but might also lead them to one that is not. As taxis were used in *Egyrhythms* (2013), the document mentions "If in the course of a derive one takes a taxi, either to get to a specific destination or simply to move, say, twenty minutes to the west, one is concerned primarily with personal disorientation." (Knapp, 2006, p. 64)

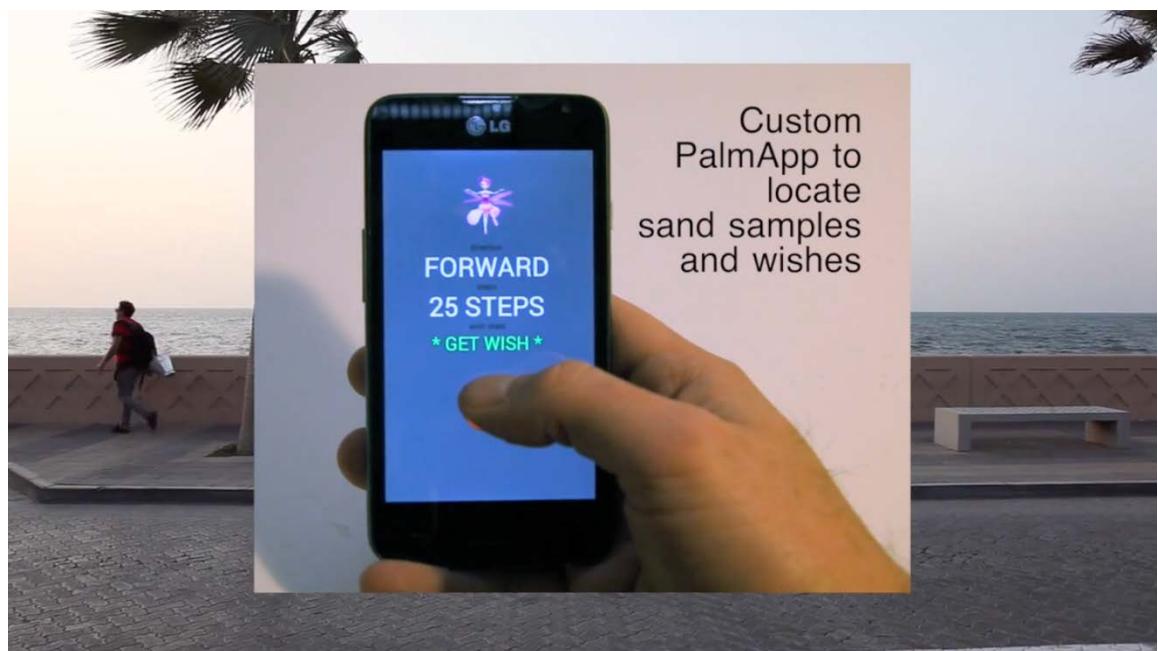


Figure 65: *Dabarhythms* (2014) – Navigating Phone App (by Max Kazemzadeh with Reza Safavi) (Kazemzadeh, 2014, p. 1) - seen above



Figure 66: *Dabarithms (2014)* – Collected Wish (by Max Kazemzadeh with Reza Safavi) (Kazemzadeh, 2014, p. 1) - seen above



Figure 67: *Dabarithms (2014)* – Wish-specific Sand Sample (by Max Kazemzadeh with Reza Safavi) (Kazemzadeh, 2014, p. 1) - seen above



Figure 68: *Dabarithms (2014)* – Each Wish Placed in Wish-specific Sand Sample (by Max Kazemzadeh with Reza Safavi) (Kazemzadeh, 2014, p. 1) - seen above



Figure 69: *Dabarithms (2014)* – GPS Tracks with Collected Wish Locations on Palm Jumeirah (by Max Kazemzadeh with Reza Safavi) (Kazemzadeh, 2014, p. 1) - seen above





Figure 70: *Dabarithms* (2014) – 9 Fairies on Trees Mapped to Each Wish (by Max Kazemzadeh with Reza Safavi) (Kazemzadeh, 2014, p. 1) - seen above



Figure 71: *Dabarithms* (2014) – GPS Playback Uses Wishes to Trigger Fairy to Launch  
(by Max Kazemzadeh with Reza Safavi) (Kazemzadeh, 2014, p. 1) - seen above

### 2.4.2.1 Project Summary

*Dabarithms: Palm Wish (Daba: Dubai rhythms: Algorithms)* was an interactive digital, kinetic, geo-location performance project that used algorithmic functions calculated in a custom GPS Tracking Android phone application to direct a *wish-scavenger*, around the man-made Palm Jumeirah Island in Dubai, UAE in search of wishes. (Kazemzadeh, 2014, p. 1) Similar to the rules established by the French Situationists which were intended to create a navigation system that would lead them to experience areas of their already familiar city of Paris, *Dabarithms* used an Android phone application, which used an algorithm to establish the directions, rules and directives for the *wish-scavenger* to navigate the city of Dubai. (Knapp, 2006, p. 62) During the ISEA Festival Dubai 2014, the rules directing the *wish-scavenger* in the algorithm were designed to navigate the man-made Palm Jumeirah Island (Dubai, UAE) in search of wishes. The Palm Jumeirah is named for the island's direct architectural mimicry of the shape of the fronds of a palm tree. *Dabarithms* selected this fabricated, excessively priced, investor-targeting, Disney-like island for the purpose of collecting nine wishes from the inhabitants of this island, who are some of the wealthiest people in the world. The choice of location was also a bit ironic due to the fact that the International Situationist movement was Marxist and quite anti-capitalist in its design. One question driving the project was "What would you wish for when you already had everything?" Nine wishes were collected due to the numerological significance of the number nine in the Baha'i Faith, a progressive and humanitarian-centric religion originating in the middle east. Nine is the direct numerological equivalent to the word *Baha* in Arabic, which translates as *Light* in English. "In the Semitic languages—both Arabic and Hebrew—every letter of the alphabet had a numerical value, so instead of using figures to denote numbers they used letters and compounds of letters. Thus, every word had both a literal meaning and also a numerical value." When decoding "the

numerical value for the word 'Bahá'. (B=2, h=5, a=1, and there is an accent at the end of the word which is also = 1; the 'a' after the 'B' is not written in Persian so it does not count.)” (Hornby, 1988, p. 415). Additionally, the number nine “represents the number of perfection being the highest single number” before adding an additional digit, for instance 9 comes before 10, 99 before 100, 999 before 1000. (Hornby, 1988, p. 415)

In *Dabarithms*, once each wish was collected, sand was gathered in a bucket from the location where the *wish-contributor* stood and transported back to the installation thereby reinforcing the ritualistic component. A signal transmitted from the location of the wish-collection was also sent to the installation to launch the store bought, hacked, electronic flying fairy drone from its perch, symbolically activating each wish of the *wish-contributor* in the field.

The performance was exhibited on the American University Dubai (AUD) campus with the buckets, lights and fairy drone perches attached to a gridded arrangement of nine trees. After the festival, the exhibition continued and the GPS tracks of navigating the Palm Jumeirah was played back in software, and the moments in time when each wish was collected activated the fairy drone associated with its respective wish to launch into the air. The fairy drone would continue to fly around campus until the batteries ran out. AUD students became supporters of the installation and returned the fairies to their perches to enable them to recharge and fly again. This supported the exhibition to continue long after the ISEA conference ended.

*Dabarithms* (2014) paired the magic associated of a touchless kinetic gesture within a familiar child's toy to activate the inner child of the visitors to the installation space. This created a system complex enough to generate feelings of magic even in the most skeptical visitor. Because the work represented wishes that reflected religious and ideological beliefs, visitors from all faiths and backgrounds shared their belief that the installation possessed a strange potential to activate the wishes of *wish-contributors* in

the field.

From the conception to implementation of *Dabarithms* (2014), Reza Safavi and I worked in tandem to collect materials and technologies, create custom hardware, hack found objects such as the fairy drones, fabricate necessary elements, develop software, install and test the work onsite prior to the exhibition opening. Reza Safavi worked as a collaborator with equal responsibilities on *Dabarithms* (2014), often conceiving project ideas via brainstorming sessions, developing hardware and software while often improving ideas and its application midway through the process. We worked so closely it is difficult to separate out each task. Rather it must be said that what we achieved within the given time frame could have only been possible with the context a collaboration.

While Reza Safavi and I worked in tandem conceiving and creating the technoetic works of art that serve as the core practice analyzed within my PhD Thesis, the application of an autoethnomethodological approach to better analyze and understand the role of apophany and apophenoetics within the creative process was maintained as a separate effort directly tied to my PhD research. During *Dabarithms* (2014), Safavi made significant contributions as a collaborator conceptually, from a design standpoint, and with respect to implementation that he could qualify within the context of a completely different methodology unique to his creative process. It is for this reason that collaboration was used as an apophenoetic apparatus contributing disruption to the creative process in order to splinter linear thinking and enhance creative output. Through the clash of our differing opinions, apophenoesis emerged, and sparks of creativity were shaped into a technoetic and apophenoetic experience.

#### 2.4.2.2 Formation of the Artist's Intent

Similar to the *Gestures of Change* (2013) or *GoC13* project, Dubai was a city that neither Safavi or I had previously visited, but we felt it necessary to develop a site-specific work of art. Initial research was done in the pursuit of information regarding Dubai's culture, history, and local community in order to establish a foundation upon which an artwork could emerge. Similar to *GoC13*, it was difficult to understand the culture through the available media sources. Instead, we called upon an apophenoetic technique they used in the development of a number of previous site-specific technoetic projects, which repurposed the Situationist' *derive* into a device that directed them around the city in search of content. In the instance of *Dabarithms*, we waited until arriving in Dubai to develop a site-specific, custom set of rules, or algorithms, that would function within the city of Dubai properly. The question emerged that would drive the project, which was "What would you wish for when you already had everything?" The algorithm integrated the collections of wishes from the wealthiest area of Dubai. Additionally, materials were sourced while we acclimated to the city, that intended to reflect the extravagant wealth there as well as the impermanence of the commercialism. The magic of a wish would both be stored and made real through the launching of automated flying toy fairies that would fall to the ground in random locations. While the spectacle demanded attention, it was intended to merely function as a momentary series of gestures valuing the real wishes individuals possessed.

### 2.4.2.3 Apophenoetic Transformation

The application of apophenoesis appears in *Dabarithms* from the project's initial stages. The use of the Situationist *derive* was used as apophenoetic disruption, to develop a set of rules of directives to which Safavi and I would have to relinquish control and submit. This mechanistic *derive* comes in direct conflict with the characteristically emotional content that is being collected and ritualized. One could identify this as a conceptual apophenoetic disruption.

Apophenoesis is also integrated into the application of the wish as a cognitive disruption, as well as the ritual as visual disruption. These two elements serve as mechanisms to break from reality and enhance the creative experience in such a way that elevates the participant feelings of transcendence and play. The wish and its ritualized technoetic extension serve to enhance the experience by generating sensations of belief in the fantastic premise and magical narrative. The apophenoetic disruptions of the wish and the ritual also serve to immerse the participant with respect to one's experience of the technoetic work. The act of Wishing is assumed by Safavi and I to be substantive and is integrated as a cognitive disruption with respect to the application of apophenoesis. The automated technoetic ritual is used as an apophenoetic disruption which contributes to feelings of immersion in the participants.

## 2.4.2.4 Auto-ethnomethodology: Evaluation of Practice

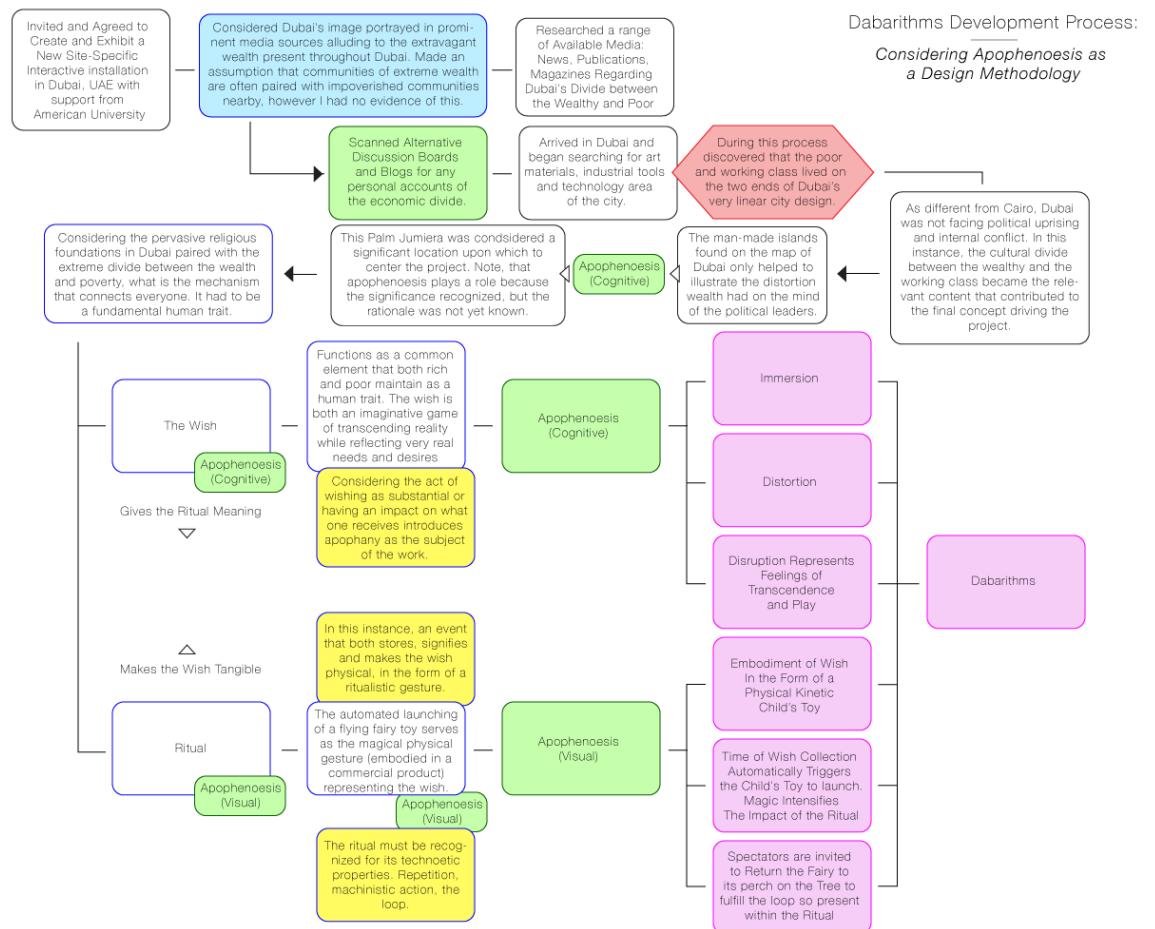


Figure 72: *Dabarithms* Development Process (Kazemzadeh, 2018) - seen above

Please refer to the *Dabarithms Development Process* when reading the following list of the in-process outcomes.

1. Site and Scope of Task: Development of a scope and project prior to arrival in Dubai seemed pointless with respect to developing a site-specific work. While few of the concepts developed during this early phase continued to be applicable, much of this changed once on location. Early in the ideation process, Reza Safavi and I decided to develop the project on location using the Situationist *derive* that we applied to the development of a few other projects like *Egyrithms*, and *Beirithms* prior. While ISEA selects participants based on artist submissions, Safavi and I submitted the concept of *Dabarithms* with an alternate physical installation that had been done in another



location. This also was revised and improved for relevance once on location.

2. Research.... Search for Significance: As different from Cairo, Dubai was not facing political uprising and internal conflict. In this instance, the cultural divide between the wealthy and the working class became the relevant content that contributed to the overall final concept of the project. The man-made islands found on the map of Dubai, which housed its wealthiest inhabitants, was also interesting as a location selected to perform the situationist-like *derive* with the phone app in the collection of wishes. The concept emerged on location to center the project around the idea "What would you wish for when you already had everything?"

3. Compiling and Reflecting on a Collection of Significance: At this stage in *Dabarithms* patterns of significance were forming, however, there were still too many unknowns. This resulted in the decision to wait until arriving in Dubai to begin development. Once in Dubai however, acclimating to the long linear spread of the city, which could only be navigated by car or train, was challenging. Much of the outdoor area of the city was devoid of life which also posed another challenge. The artists found themselves at the mall daily for meals because it was the only convenient centralized location. The Palm Jumeirah was selected as the center for the *derive*, and a custom algorithm was developed to navigate the island fronds in the collection of wishes and soil (i.e. sand) samples.

4. Search for Available Artistic Materials: Being that Dubai was a wealthy city, and discovering that Dubai had an inexpensive technology district, it was decided that materials would be gathered from the city. An upgrade to an old wind-up toy was found in the mall that at the time hadn't been released internationally yet. It represented something magical, due to the fact that the toy could fly, but also reflected a sense of empty materialism that lacked history, something that we as visitors felt characterized the current culture of Dubai, during our short visit there.

5. Merge Patterns to Generate Significance, Overlaps, and Connections: Try connecting different patterns to see if new significance emerges: The divide between the wealthy business people and the working-class laborers seemed to be the most interesting narrative within the Dubai landscape. This divide could be made ridiculous and extremely real by asking inhabitants in the wealthiest neighborhood in Dubai, the Palm Jumeirah island, for what they wish for. This would be followed by the activation of those wishes by a ritual of collecting the soil (i.e. sand) from the wish-contributor's feet and launching a flying toy fairy from a grid of trees outside. This collection of odd elements seemed to reinforce the characteristics through which divergent members of the local community could connect. It was also significant that this exhibition was taking place on a university campus.

6. Repeat the previous step until it yields. If it yields or doesn't, still move to the last step, and continue moving backward and forward in the list until you find layered relational significance and complexity that awakens new patterns in the participant: While searching for the perfect physical event and developing the phone app in such a way that would correctly direct the wish-scavengers on a narrow frond instead of the architecture of a known city were adaptations that occurred before deciding on the automated flying fairy. The initial location for the exhibition was inside one of the exhibition spaces. The shape of the Palm Jumeirah mimicking that of a palm tree merged with the consideration of the flying fairies as physical, ritualized outgrowths that enacted the collected wishes, Safavi and I requested a move with respect to the exhibition location to an outdoor area on the American University Dubai campus that had a grouping of nine trees that stood in a grid surrounded by bushes. A perch could then be custom made for the fairies to launch from, almost like fronds projecting out of the side of the tree. Each tree had the original wish written by the wish-contributor taped to the tree under the fairy perch and the bucket of sand hanging from a nail on the

tree. Since the exhibition ran through the night, each bucket had a bright light that would flicker immediately prior to the launch of that particular fairy.

Also, refer to the model in figure 3, the *Apophenoesis as Disruption within a Cybernetic System for Creative Development and the Interactive Experience* as it parallels the integration of the apophenoetic disruptions within the development of *Dabarithms*.

Lastly, evidence gathered from participant behavior revealed their immersion and engagement within the *Dabarithms* installation. Participants experienced the intended disruptions necessary to draw significance and experience apophany during their interaction with the work. First, the *Dabarithms* was installed in a grid of nine trees covered in green bushes in an outdoor area on American University's campus. Students, faculty, staff, and passersby would be confronted by this elaborately technical and quite disarming technoetic kinectic sculpture in the form of nine children's toys perched on nine trees with nine steel buckets, each which held a scoop of sand and a 100-Watt light bulb. In addition, the nine wishes that were written on paper and collected from the performative part of the project were taped to each of the nine trees under each toy fairy. A placard helped describe the process of the work of art and refer to more information about the work online. Many wires ran from tree to tree and to the center of the green bushes. At different moments in time, each bucket would begin by gradually blinking 20 times more rapidly over time before the respective fairy would start flapping its wings and launch from its perch.

The opening event was quite different than the ongoing exhibition in that the opening event was scheduled as part of the larger ISEA2016 festival. Bus-loads of visitors were dropped off for a tour of the artworks at that location and when the group stopped at the work of art, the timing of what was an entire day was compressed into five minutes. During the opening, visitors responded as they would with interest and

intrigue. Each visitor sensed there was some significance to the timing of the launch and to the placement of the budgets, lights, paper with writing with diverse languages represented and the fairy drone standing on a rigged perch. While this was merely a looping cycling event of blinking lights and launching fairy drones, there was significance in the application of what seemed to be a very complex blending of hacked technology, custom hardware and software systems to make such an elaborate system work. Once the fairy launched and flew around campus for two or three minutes then it would land on the ground. Visitors knew without asking to return the fairies to their perches. This worked so well for three days that the curator asked us to leave the work installed for a few months after the festival ended. Students continued to find the fairy drones around the grid of trees and return them to their perches for months after the festival. Children loved the installation and watched with elation. Students also watched, smiled, and discussed the work with their friends. Some of the people that contributed the wishes during the first performative part of the algorithm on the Palm Jumierah came to visit the exhibition. They expressed that after participating in the algorithmic ritual of placing their wish in the sand, they already felt it was a ritual gesture that caused them to believe their wish would be fulfilled. They mentioned that after witnessing the installation in action, there was no doubt that their wish would come true and that each time the fairy that corresponded to their wish would launch, they were one step closer to their wish coming true. At another moment a mother with her child mentioned that she stops by almost daily to see the living work of art as it seems to bring feelings of joy and luck to both her and her daughter.

#### 2.4.2.5 Identifying the Contribution to New Knowledge

*Dabarithms* contributes new knowledge through the diverse applications of apophenoesis from the project's inception to completion. *Dabarithms* first established an apophenoetic disruption as its premise, introducing fantasy by centering the project around wishes and rituals. Centering the project on fantasy was in direct response to Safavi's and my first experience in Dubai, often feeling a sense of disconnection and isolation with in city that seemed to lack an accessible culture and community. Fantasy would provide an escape from a seeming intentionally divided city separating those with extreme wealth from the working-class community. Wishes and the rituals are also characteristics that are very human and could be a common ground for the rich and poor to connect.

Integrating the *derive* process from the Situationists into a project based in fantasy served as yet another apophenoetic disruption. The extremely real process of connecting with one's city and its inhabitants with the goal of uncovering yet unknown spaces, overlaid on to a project that accepts the belief that wishing intensively and complicating the ritual just enough can make a dream come true, posed yet another apophenoetic disruption.

These apophenoetic disruptions performed as intended, blending the realm of fantasy with the very real experience of daily life, and within every stage of the project, there was success. Localizing the *derive* to a space that embodied a fantasy in the real world, the Palm Jumeirah, proved to be the perfect binding interface between the wish collection and the ritual of the installation that made the work relevant and successful. Those wealthy individuals consistently and willingly participated in contributing their wishes, and those witnessing the fairy drone's launch to activate that wish mentioned their belief that the interface would grant those *wish-contributors* their wishes.

The difference between passive experiences of apophany and apophenoesis as

an active integration of disruption into the creative process is that the clash of disruptive opposites, and the merging of items that don't yet seem to work well together, can be sculpted or guided into relevant cohesion because it is part of the creative process.

*Dabarithms* is an example where an artist works to find common-ground with the most disparate elements and the most challenging of media. It is through the clash of the apophenoetic disruption that the magic and true creativity emerges from the creative process into a work of art.

### 2.4.3 *Poseidon's Pull* (2012) and *Poseidon's Pull: Revisited* (2018)

#### 2.4.3.1 Project Summary for *Poseidon's Pull* (2012)

(by Max Kazemzadeh and Reza Safavi) (Kazemzadeh, 2012b., p. 1)



Figure 73: *Poseidon's Pull* (2012) – Installation View (by Max Kazemzadeh with collaborators) - see Appendix 02 (Kazemzadeh, 2012b., p. 1) - seen above

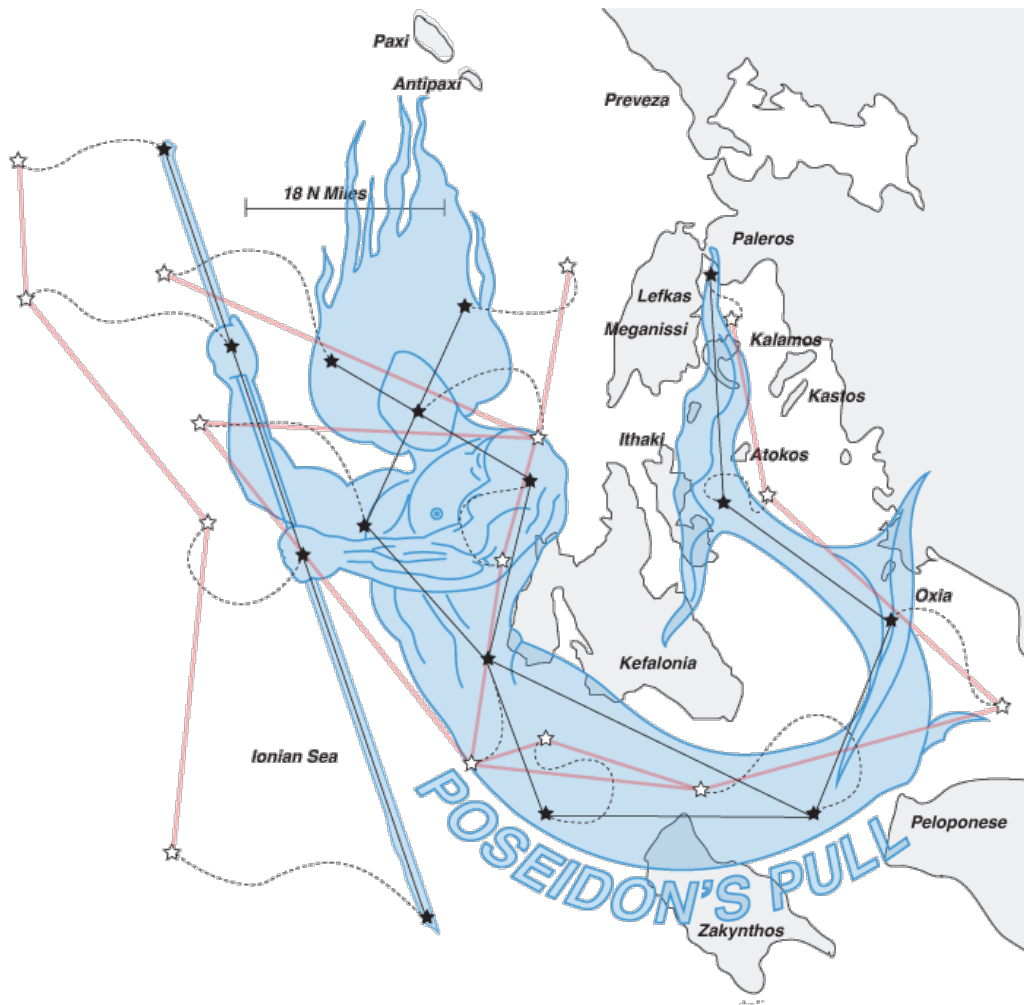


Figure 74: *Poseidon's Pull* (2012) – Constellation and Drifting Star Points (by Max Kazemzadeh with collaborators) - see Appendix 02 (Kazemzadeh, 2012b., p. 1) - above





Figure 75: *Poseidon's Pull* (2012) – Message from Poseidon, Poseidon’s GPS Tracking Water Vessel, and Hardware Interface for Selecting Drifting Star Narratives (by Max Kazemzadeh with collaborators) - see Appendix 02 (Kazemzadeh, 2012b., p. 1) - seen above on p. 156

Repurposing the Situationist concept of the *derive*, drifting or wandering in a city following a set of rules, in *Poseidon's Pull* (2012), the *derive* took on the form of actually drifting in a raft on the Ionian Sea in order to receive a message from Poseidon himself. *Poseidon's Pull* (2012) was a precursor to *Poseidon's Pull: Revisited - Part 1: Channeling the gestures of a god* (2018), and was implemented with a group of international collaborators that created a collective technoetic constellation drawing of Poseidon, the “God of the Sea”. Each star point in the constellation drawing represented a different collaborator from a different part of the world that entered a raft in an open body of water accessible to them to freely drift while tracking their GPS location. Each collaborator would therefore drift in a direction guided by Poseidon over the course of 6 hours. The GPS track would then be translated to the central drift server where the starting point of the drift would align with the star point on the constellation drawing of Poseidon. After collecting all of the collaborator GPS tracks, and positioning these drifting points into the drawing of Poseidon, each frame of the evolving, drifting drawing was used to find the most relevant Google image search result which was placed into a slide show. The slide show of all of the Google image search results served as a layered and encoded message from Poseidon. (Kazemzadeh, 2012d., p. 1) (See Appendix 02 for more on *Poseidon's Pull* (2012))

### 2.4.3.2 Project Summary for *Poseidon's Pull: Revisited* (2018)

(by Max Kazemzadeh and Reza Safavi) (Kazemzadeh, 2018, p. 1)



Figure 76: *Poseidon's Pull: Revisited* (2018) – Raspberry Pi, GPS Tracker and Receipt Printer (by Max Kazemzadeh and Reza Safavi) (Kazemzadeh, 2018, p. 1) - seen above



Figure 77: *Poseidon's Pull: Revisited* (2018) – Computer (by Max Kazemzadeh and Reza Safavi) (Kazemzadeh, 2018, p. 1) - seen above



Figure 78: *Poseidon's Pull: Revisited* (2018) – EEG (by Max Kazemzadeh and Reza Safavi) (Kazemzadeh, 2018, p. 1) - seen above



Figure 79: *Poseidon's Pull: Revisited* (2018) – Drifting Collecting GPS Messages (by Max Kazemzadeh and Reza Safavi) (Kazemzadeh, 2018, p. 1) - seen above

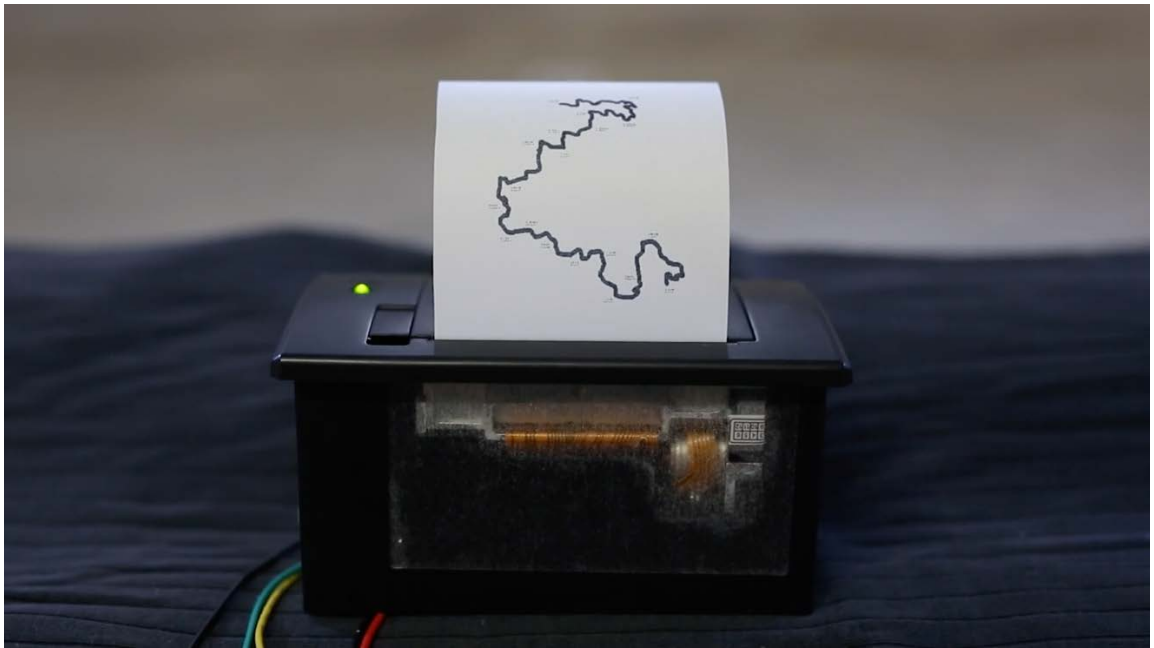


Figure 80: Poseidon's Pull: Revisited (2018) – Printed EEG Framed GPS Messages (by Max Kazemzadeh and Reza Safavi) (Kazemzadeh, 2018, p. 1) - seen above

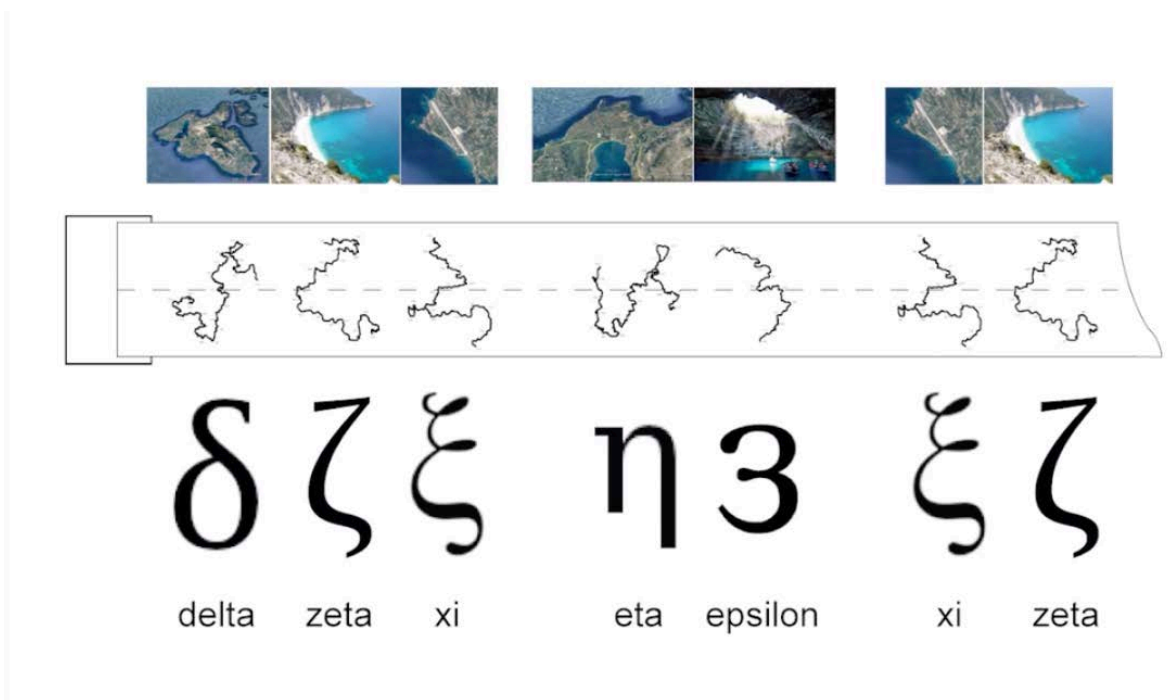


Figure 81: *Poseidon's Pull: Revisited* (2018) – Studying GPS Tracks for Significance (by Max Kazemzadeh and Reza Safavi) (Kazemzadeh, 2018, p. 1) - seen above





Figure 82: *Poseidon's Pull: Revisited* (2018) – Installation (by Max Kazemzadeh and Reza Safavi) (Kazemzadeh, 2018, p. 1) - seen above

Pulling from the foundation discovered in *Poseidon's Pull* (2012), that revealed Poseidon could communicate messages through his gestures represented as the sea drift, as Poseidon controls the sea and ocean currents, *Poseidon's Pull: Revisited - Part 1: Channeling the gestures of a god* (2018) took the gestural interpretation of Poseidon even further. In collaboration with artist Reza Safavi, *Poseidon's Pull: Revisited* intended to channel the gestures of Poseidon through the mind of the artist using an EEG headset tracking system. This functions similarly to *Dabarithms* in the sense that the premise itself is a bit hard to believe, but it is these types of apophenoetic disruptions in thought, a kind of logic game, that results in creative innovations and discoveries that value the imagination as a contributing element.

*Poseidon's Pull: Revisited - Part 1: Channeling the gestures of a god* (2018) intended to explore connections between Greek myth and actual Greek location through the experience of apophenoesis. In *Poseidon's Pull: Revisited* Poseidon's gestures were tracked via GPS by the Safavi and I as we each separately drifted in a raft in the Ionian

Sea, off the coast of Kefalonia.

Safavi and I created a custom technoetic system that used EEG headsets to identify if we were currently in a meditative state. GPS tracking would only record while the artists were in that meditative state, and once they dropped out of that state, the GPS track would end. Each GPS track would display as a linear path functioning as a shape drawn by Poseidon himself as filtered through the meditative state of the artist, with a start point and an end point, as a kind of spiritual typographic mythology, which collectively functioned as encoded messages to Grecians and all humanity. Reza and I drifted in the Ionian Sea to collect a number of GPS tracked messages, which were then apophenoetically analyzed for significance. This analysis was done matching the linear GPS tracks with Greek alphanumeric characters and Kefalonian landforms.

In the gallery installation, visitors were invited to enter a raft and put on the EEG headset where they noticed a red circle on a computer screen inside the raft. An expanding sphere appeared on-screen which represented the participant's meditative state as measured by the EEG headset. Once achieving an 80% meditative state, the screen turns green and one GPS track (in the sequence recorded by the artists in the raft at sea) is printed at the boat's stern. The shapes generated by the GPS tracks that were recorded while drifting the sea were then compared to Greek letters, imagery, and land forms in an around the island of Kefalonia that followed a similar contour, in order to decode messages from Poseidon via his gestural control of the sea currents. *Poseidon's Pull: Revisited - Part 1: Channeling the gestures of a god* exhibited in the Ionian Center for Arts & Culture in Kefalonia, Greece in June, 2018 and again as part of the *SEA(S) Exhibition* in August, 2018.

Similar to *Dabarithms* (2014), from the conception to implementation, Reza Safavi and I continued to collaborate to design, collect materials and technologies, create custom hardware, fabricate necessary elements, and develop software necessary

to carry out both parts of *Poseidon's Pull: Revisited - Part 1: Channeling the gestures of a god* (2018). We worked together in the development and implementation of part one, or the performance-like “channeling” of GPS tracks in the boat on the Ionian Sea, and part two, or the installation of the interactive exhibition in the Ionian Center. Safavi worked as a collaborator with equal responsibilities on *Poseidon's Pull: Revisited - Part 1: Channeling the gestures of a god* (2018), often conceiving project ideas via brainstorming sessions, developing hardware and software while often improving ideas throughout the process.

As in *Dabarithms* (2014), while Reza Safavi and I worked in partnership conceive and create the technoetic works of art that serve as the core practice analyzed within my PhD Thesis, the application of an auto-ethnomethodological approach to better analyze and understand the role of apophany and apophenoetics within the creative process was maintained as a separate effort directly tied to my PhD research. During this project, Safavi made significant contributions as a collaborator conceptually, from a design standpoint, and with respect to implementation that he could qualify within the context of a completely different methodology unique to his creative process. It is for this reason that collaboration was used as an apophenoetic apparatus contributing disruption to the creative process in order to splinter linear thinking and enhance creative output. Through the clash of our differing opinions, apophenoesis emerged, and sparks of creativity were shaped into a technoetic and apophenoetic experience.

### 2.4.3.3 Formation of the Artist's Intent

Because *Poseidon's Pull (2012)* and *Poseidon's Pull: Revisited - Part 1: Channeling the gestures of a god* were developed in series, I will pull from both projects regarding the development of the artist's intent. Having been to Greece prior, and witnessing the economic struggles that faced the beautiful country that was home to the foundations in epistemology and ontology, I was driven to express these feelings through an artwork that might be considered a conceptual and cultural homage to Greece, and with respect to *Poseidon's Pull (2012)* specifically, it might be something that turned the world's attention to Greece. The project included a group of over ten international collaborators that performed a ritual imagining as if they were in the waters of Greece, drifting and contemplating Greece for a period of six hours.

While the intent of *Poseidon's Pull (2012)* was to create a collaborative drawing of Poseidon, the "God of the Sea," it was in fact to believe in a myth to the point that time and energy would be invested in an impossible theory that one could use the drift to cull a message from the Greek god Poseidon, himself. *Poseidon's Pull: Revisited - Part 1: Channeling the gestures of a god* the intent was only refined to a more spiritual and localized apophenoetic artwork that further immersed the participant into the experience of connecting with Poseidon, resulting in a technoetic phenomenon that employed the participant as spiritual medium, opening and closing the pathway to Poseidon's communication.

The artist's intent is essential to understanding the initial goals of the project, however, during implementation the artist's intent only matured and expanded to include more apophenoetic outgrowths of significance with respect to the data collected.



#### 2.4.3.4 Apophenoetic Transformation

The apophenoetic transformation of *Poseidon's Pull* (2012) and *Poseidon's Pull: Revisited* (2018), can be seen to appear in a number of instances within the creative process from inception to exhibition. Just as seen in the *Wishing Well* (2010) and *Dabarithms* (2014), the premise upon which the *Poseidon's Pull* project was established applied the apophenoetic disruption by adopting new compound myth, that with the appropriate technologies, Poseidon's control of the sea currents would allow humanity to gather messages from him through different forms of tracking one's drift in a raft in the open sea or ocean. This of course makes many assumptions. The first assumption is Poseidon is real and not a myth. Since there is a written history of Poseidon, with a number of stories dating back to Homer's *Iliad* in the 8<sup>th</sup> century B.C., then Poseidon's existence must be considered a possibility. Another assumption is that Poseidon is in fact a god as described in the narratives. Yet another assumption is that Poseidon is able and willing to communicate with humanity and would be willing to communicate via his ocean currents. If Poseidon is able to communicate via the ocean currents, then will the drifting movement of a raft in the ocean or sea allow for GPS tracking to accurately record Poseidon's manipulation of the current? Once GPS tracks are collected, will those linear tracks be feasible enough to decode a message? While this premise is fantastic, it is not beyond logical consideration. When one engages within the process and study of this apophenoetic disruption, data is collected, and messages are received. While they may not be messages from Poseidon, they are elements of significance that an artist can use to justifiably generate creative outgrowths with that content. Additionally, when apophenoetic disruption is employed with a creative intent, creative time spent translates to effort made towards that intent, which results in an outcome that is generative and often inspiring. *Poseidon's Pull* represents a complete example of apophenoetic disruption as infused into a creative process. The outgrowth and

discoveries of the work of art contains significance and relevance that can be shared through the experienced and collected stimuli.

### 2.4.3.5 Auto-ethnomethodology: Evaluation of Practice

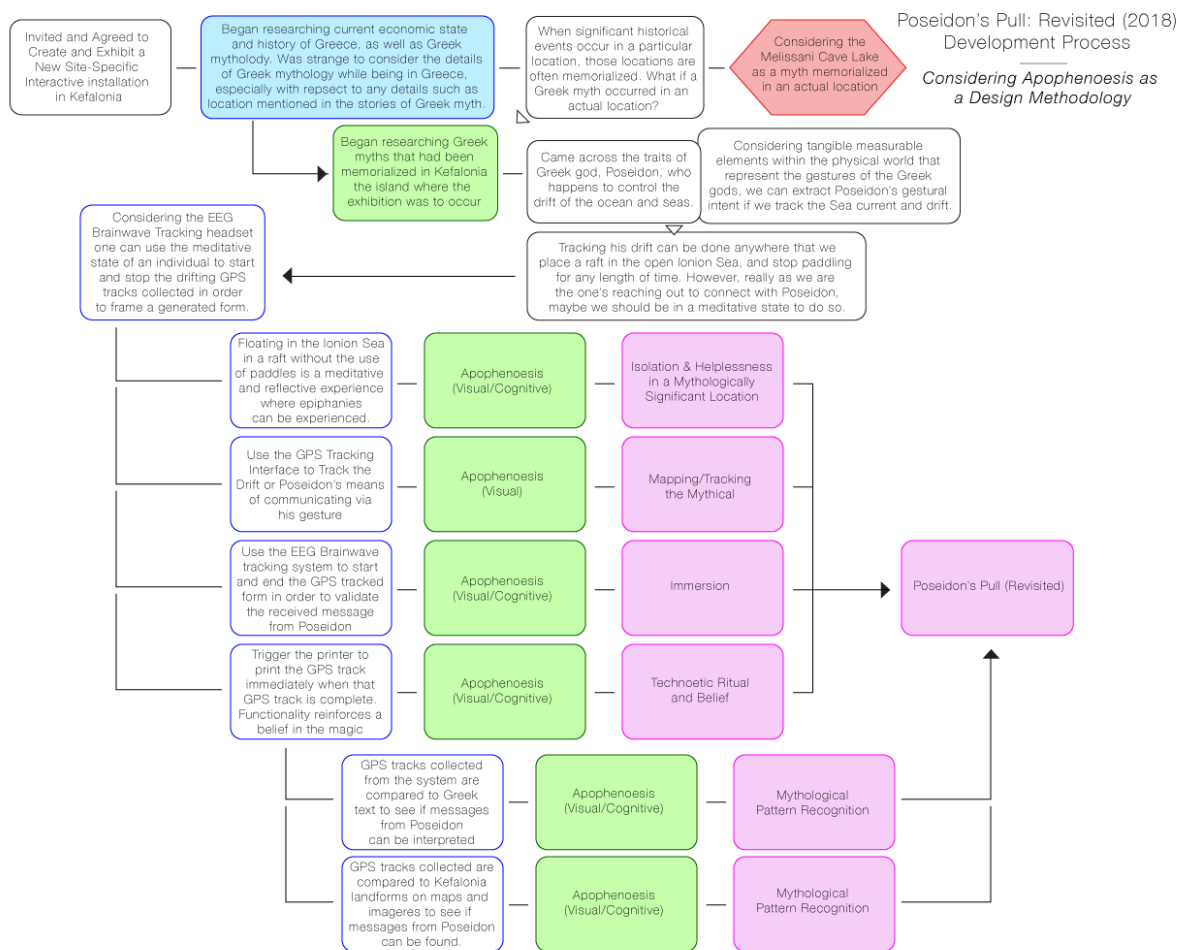


Figure 83: *Poseidon's Pull: Revisited (2018) Development Process* (Kazemzadeh, 2018)

- seen above

Please refer to the *Poseidon's Pull: Revisited (2018) Development Process* diagram for more information regarding the following steps relating details of this project's development.

1. Site and Scope of Task: For both iterations of *Poseidon's Pull*, I was invited by the Ionian Center for Art and Culture to exhibit a work of art which established the site and the scope of both projects. With *Poseidon's Pull (2012)* there seemed to be a growing interest among international artists to collaborate on the project. The initial project scope expanded dramatically to accommodate this interest, and the concept shifted to

become a collective application that received GPS drift tracks and video documentation from individual participants in their home countries, who would turn their attention to Greece during a time when the country's economy plummeted. The collaborators collectively worked together to ask the Greek god Poseidon for help.

2. Research.... Search for Significance: The situationist-like *derive* coincidentally was made literal in the *Poseidon's Pull* series. Collecting the GPS tracks while drifting in an open body of water became the significant process by which the collaborators could communicate with Poseidon. The later iteration in 2018 introduced the EEG headset as an interface to frame the GPS tracked drift messages. The participant's meditative state was used as a means of establishing this framework by which to collect the tracks or messages. This premise established apophenosis at the outset, making this functioning technoetic framework one that plays a convincing role in aligning the GPS tracking with something more mystical, the human mind.

3. Compiling and Reflecting on a Collection of Significance: While *Poseidon's Pull* (2012) was successful in generating meaning from a distance, by working on location with *Poseidon's Pull: Revisited* (2018) provided both a cultural and environmental tangibility that allowed for certain apophenoetic disruptions to occur. For instance, collected GPS tracks seemed to resemble letters in the Greek alphabet as well as Kefalonian landforms. Messages could then be decoded for the sequence in which the messages were received.

4. Search for Available Artistic Materials: Many of the flexible technological materials such as necessary hardware were carried to Greece by Safavi and I. Software was designed and developed on site. Any additional materials, could be procured on the island of Kefalonia, in local stores. The materials necessary for *Poseidon's Pull* just happened to coincide with recreational interests of the island visitors. For example, a raft was purchased in Kefalonia to be used in the Ionian Sea to track drifts. Containers

and straps for the computer systems and hardware were also procured from local fishing shops. For an upcoming project *Poseidon's Pull: Revisited - Part 2: Think Like Poseidon*, two outboard boat motors have already been purchased and is current undergoing development.

Poseidon's Pull: Mortal Emulation of Drift Control ("thinking like a god") [05/2018] - onsite live performance

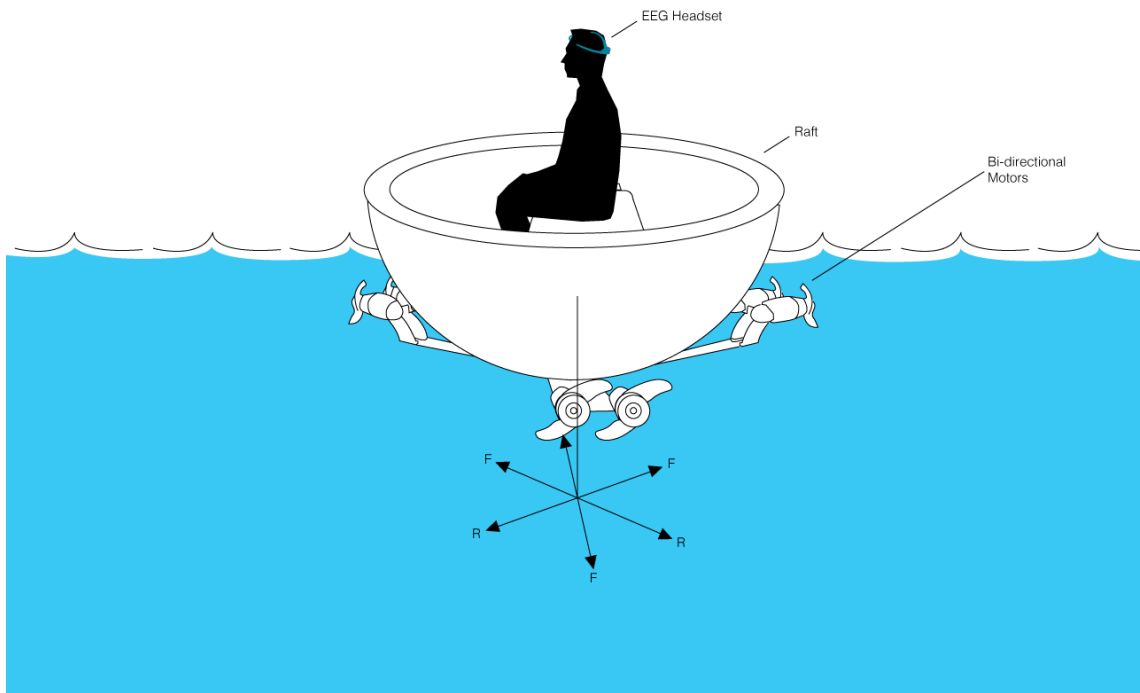


Figure 84: *Poseidon's Pull: Mortal Emulation of Drift Control (thinking like a god)*(2018) – In Field (by Max Kazemzadeh and Reza Safavi) - seen above

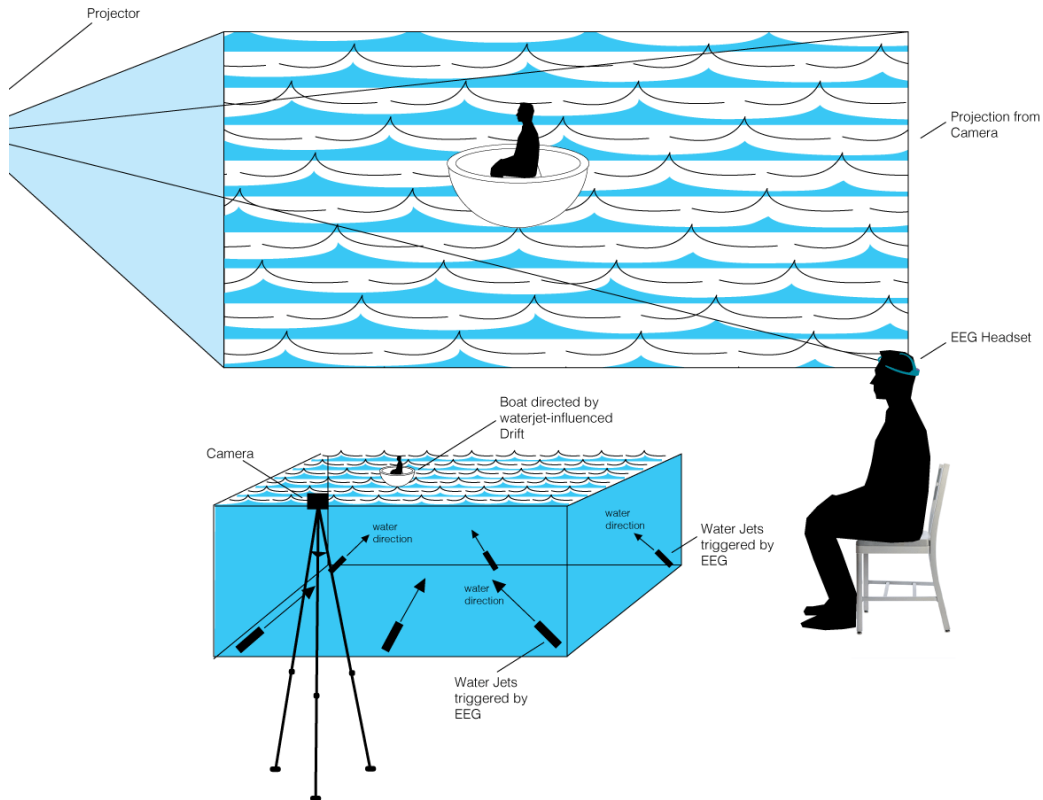


Figure 85: *Poseidon's Pull: Mortal Emulation of Drift Control (thinking like a god)*(2018) – Installation View (by Max Kazemzadeh and Reza Safavi) - seen above

5. Merge Patterns to Generate Significance, Overlaps, and Connections: After collecting data within *Poseidon's Pull*, the GPS tracks were quite different. Each GPS track mimicked the typographical shape of a Greek letter and coastal landform on the map of Kefalonia. Meanings were matched for significance in efforts to discovery for messages from Poseidon.

6. Repeat the previous step until it yields. If it yields or doesn't, still move to the last step, and continue moving backward and forward in the list until you find layered relational significance and complexity that awakens new patterns in the participant: After collecting the GPS tracks, it generated the desire to return to the sea and collect more tracks that could then be related into messages. During the project installation in the gallery, the system had to be altered in order for the participant to be able to

experience the system in such a way that reflected the experience at sea. Based on the alignment of the GPS tracks with Greek characters, Safavi and I realized that we actually created a tangible communication system using the symbols collected during the drift experiences. This raised new questions. If we set the system to randomly provide participants with one of the many GPS tracks collected, that would allow Poseidon to select the GPS tracks, or letter forms, to provide each individual. With that additional apophenoetic disruption, each participant could have their own message from Poseidon, without having to go to sea.

Lastly, evidence of participant behavior revealed that participants felt immersed and engaged in the *Poseidon's Pull: Revisited* installation, that they experienced the intended disruptions necessary for them to draw significance, and that they experienced apophany during their interaction within the work. Similar to *Dabarithms*, *Poseidon's Pull: Revisited* was a two-part project. The first part employed an algorithm directing the artist to complete certain tasks which functioned like a kind of performance artwork where the artist attempts to receive messages from Poseidon by collecting data from drift of the sea currents. The second part of the project took the form of a technoetic installation artwork in the Ionian Center for Arts and Culture that allowed participants to enter the same boat used by the artist, and put on an EEG headset. Documentation of the first part of the project was also displayed in the Ionian Center, looping video of the artist performing the algorithmic set of rules in the sea. Visitors often watched part of the presented video before entering the boat and donning the EEG headset and would mimic the artists gestures from the video and would begin to meditate. When they achieved a relaxed and meditative state one of a sequence of GPS tracks would print out behind them. Even the most skeptical participants felt that the work was layered with so much interwoven significance that it inspired the belief that Poseidon was sending the messages. While the installation only allowed participants to enter into the boat one at a

time, each seemed to feel comfortable staying for long periods of time, exploring their mental states and the impact their thoughts had on the software system represented on a digital screen in the boat. Other visitors seemed comfortable waiting for their turn seated on the center's amphitheater steps watching the participant as if watching a performance.

Participants often recounted the experience as a kind of ritual, whereby using the same tools to access messages from Poseidon seemed to motivate to access more information from Poseidon. Some participants asked if they could join in the next message collection effort. Many participants began working to decipher meaning from the artist-collected GPS tracks that were printed on the printer. Every participant wanted to engage more with the data collection and decoding process. The installation became more like a workshop environment where visitors didn't leave, but rather stayed and continued to discuss the work with other visitors present.

Each visitor seemed that *Poseidon's Pull: Revisited* had a lasting impression on the visitor's notions of belief, myth, and the unknown due to their experiences of apophany within the work.



#### **2.4.3.6 Identifying the Contribution to New Knowledge**

Similar to *Wishing Well* (2010) and *Dabarithms* (2014) initiating a project with apophenoesis as its premise establishes a foundation for further apophenoetic disruptions to occur more naturally and repeatedly. These are creative outgrowths within the system that ensure a nonlinear creative process will provide further opportunities for innovation and alternate outcomes. Both iterations of *Poseidon's Pull* developed new myths based on actual characteristics or powers that Poseidon was said to possess within the narratives of Greek mythology. The new myth was based in logic and employed a very technoetic process to achieve the theory supporting this new myth. Paired with the intent to receive a message from Poseidon that might aid in solving the economic problems facing Greece paired with the real efforts given to the process of realizing the complex technological system by which actual diverse content can be collected and used in the formation and discovery of messages from Poseidon creates a model and system by which impossible tasks can be confronted and goals achieved. Separately, the convergence of intent with creative effort can result in a creation that can be inspiring. Fundamental truths exist about mortality and daily life within mythical narratives and its creative extensions, but by connecting these to actual life through belief, it creates a fundamental apophenoetic disruption that serves as a creative premise that can lead to other discoveries.

## 2.5 Conrad's *Apophanie*

While developing interactive installations, I discovered the German neurologist and psychiatrist, Klaus Conrad, who coined a term “apophanie” in his book *Die beginnende Schizophrenie* (Conrad, 1958, p. 88) or “The Beginnings of Schizophrenia,” and found its definition and further descriptions of this phenomena to draw similarities to experiences latent within my own creative process while envisioning, designing, and building technologically involved interactive experiences. While Conrad's term seems to appear from time to time in random non-scientific magazines, journals and blogs referring to playful found objects that embody facial patterns, reading further into Conrad's research reveals a more indepth analysis and definition exists that can provide some insight to how the mind processes content via the senses and how ideas form.

As Conrad's book is in German, and is still yet to be translated to English, one significant paper written by Aaron L. Mishara in 2010 entitled “Klaus Conrad (1905–1961): Delusional Mood, Psychosis, and Beginning Schizophrenia” discusses Conrad's description of apophany in some detail. In the paper abstract, Mishara mentions that “The literature in English concerning his work is sparse, in part because Conrad's work contains complex concepts that lose much in translation.” (Mishara, 2010, p. 1) Mishara uses the term *apophany* as the English spelling of Conrad's *apophanie* (Mishara, 2010, p. 2). This spelling is shared by Frank Fish in his 1960 paper published in the *Journal for Mental Science* entitled “*Die Beginnende Schizophrenie*. By K. Conrad Georg Thieme, Stuttgart, 1958.” (Fish, 1960, p. 1595). The Merriam Webster's Collegiate Dictionary, however, uses the spelling *apophenia*, as does neuroscientist Dr. Peter Brugger, who defines it as “The tendency to perceive a connection or meaningful pattern between unrelated or random things (such as objects or ideas).” (*Apophenia*, n.d.) When discussing the term, Conrad's spelling of *apophanie* will refer to the pre-schizophrenic syndrome while *apophany* will be used to describe the broader cognitive

and creative processing of patterns. *Apophenia* from the Merriam Webster's Collegiate Dictionary served as the basis for the original formation of the term *apophenoetics*, which was coined in a paper I wrote in 2012 (Kazemzadeh, p.115-118) referring to the use of *apophany-in-practice*, or the intentional integration and application of apophany into one's creative practice, and can also be used interchangeably with *apophanoesis* to maintain consistency with Mishara's translation of the term.

In Mishara's paper, he quotes Conrad describing his term *apophanie* stating “Borrowing from ancient Greek, the artificial term 'apophany' describes this process of repetitively and monotonously experiencing abnormal meanings in the entire surrounding experiential field, eg, being observed, spoken about, the object of eavesdropping, followed by strangers.” While *apophanie* might be paired with experiences such as paranoia, Conrad refers to paranoia as slightly separate, which seems more focused on the details regarding how patterns of significance are recognized cognitively. He continues stating, “At the aha-moment, the patient is unable to shift 'frame of reference' to consider the experience from any other perspective than the current one.” (Mishara, 2010, p. 9-13) While this point is thoroughly embedded within the experience of *apophanie*, Conrad also seems to mention it as a separate optional characteristic that seems more like characteristics that fluctuate between patients as well as mannerisms relating to attachment or obsession. Conrad's *apophanie* could be experienced without the characteristic paranoia or obsession.

In another paper entitled *Trema, Apophänie, Apokalypse*, it states,

“In this operationalization 'trema' was confirmed as the frequent first stage of the disease process, whereas Conrad's hypothesized order of the two following phases (first 'apophany', then 'apocalypse') could not be validated. Therefore, Conrad's model cannot completely be generalized. Because the methods employed so far have some limitations, analyses of additional data (especially reports by significant others) may control and probably enhance the presented results.” (Hambrecht, 1993, p. 418–423)

It is possible that because with experiences of apophany patients are attributing increased feelings of significance to actual shared stimuli in the perceptual field, that the characteristics defining illusion and illness should be considered as separate and may not apply here. Since Conrad, and as reflected in parts of Hambrecht's paper, apophany has been considered to be a normal function of the human mind.

Mishara relates that “Each stage of beginning schizophrenia involves the subjective “reorganization of meaning” with the view of preserving the subject’s “vital” relationship with the environment (mediated by what Conrad's contemporary, von Weizsäcker described as a perception action cycle)” (Mishara, 2010, p. 9-13) This reorganization of meaning may be a representation of how apophany leads to learning. Take for example the optical illusions, such as the double image of the young lady and old woman. Upon first glance, one sees either the young lady or the old woman in the image. However, after further consideration one then reorganizes the formal elements of the image in order to see the alternate image.

In one paper by Conrad, “certain symptoms of schizophrenia, such as delusions, can be approached as a response to the threat to the patient's being-in-the-world, ie, *the sense that one exists* and continues to exist from moment to moment.” Conrad refers to this as “coenesthesia, or coenesthesia [*Gemeingefuehl*].” (Uhlhaas, 2006, p. 142-156) In philosophy, coenesthesia might be described as an existential crisis, dilemma, or transcendence. Heidegger states in his book entitled *Basic Writings* that “Da-sein means: being held out into the nothing. Holding itself out into the nothing, Dasein is in each case already beyond beings as a whole. This being beyond beings we call 'transcendence.’” (Heidegger, p. 103) He continues “In the Being of beings the nihilation of nothing occurs.” (Heidegger, p. 104) For Heidegger, the existential experience has a relationship to nothingness as is possible the experience of coenesthesia for Conrad's

patients diagnosed with schizophrenia. In the conclusion of Mishara's paper, he mentions

“Due to its complexity and originality, Conrad's work presents us with conceptual and linguistic challenges. Conrad felt that classical psychology and psychopathology did not possess the 'vocabulary' to describe the phenomenology of a patient's experience of beginning schizophrenia. Although his concepts are difficult, he tried not to hide in the obscurity of esoteric language. He did introduce new terms, albeit apologetically, because he felt that earlier work had not been adequate in conveying the patient's experience.”  
(Mishara, 2010, p. 9-13)

While Conrad's discoveries helped explain certain aspects of the debilitating and inescapable pre-schizophrenic experience that many of the patients in his study faced, it is necessary to consider the fact that apophany is something that everyone in the world experiences at some time in life. For artists, whose work it is to search for significance via perceived stimuli and to represent that stimuli through a creative practice, and for scientists who work with empirical method which is centered around witnessing and recording the reaction of an experiment, Conrad's discovery is a significant contribution to both disciplines insofar as describing the way in which the mind naturally processes patterns via the senses.

With this definition of apophany, it seems to then be a necessary step for creativity and discovery, as well as learning and innovation, while possessing cognitive similarities to the formation of thoughts and ideas that result in learning to see, perform a task, and solve a problem.

Artist Bruce Nauman referred to Rene Dubos' discussion of the distortion of experienced stimuli in his “Notes and Projects (1970).” Nauman stated, in reference to the human process of perception, that “we tend to symbolize stimuli and then react to the symbol rather than directly to the stimuli” and that he “assumes this to be true of other senses as well...” He says that “it has been shown that at least part of the information received by the optic nerves is routed through and affected by the memory

before it reaches the part of the brain that deals with visual impulses (input).” (Stiles, 2012, p. 717)

It is important to note that the recognition of significance from sensorial stimuli experienced in apophany is different from and preliminary to the formation or extraction of meaning from these patterns of significance. In *Empire of Signs*, while addressing the Western contrast to characteristics of haiku, Roland Barthes states “The West moistens everything with meaning, like an authoritarian religion which imposes baptism on entire peoples.... the first meaning of the system summons, metonymically, the second meaning of discourse, and this summons has the value of a universal obligation.” Barthes goes on to say that the West spares this discourse through nonsense or attributes it to the significations, or “active fabrications of signs” through “symbol, reasoning, metaphor or syllogism.” (Barthes, 1982, p.70) Barthes' comments differentiate significance from meaning. According to Barthes, in the West, significance is often superimposed with meaning when it doesn't necessarily need to.

For instance, a painting that has green and red in it may attract one's attention for its formal or aesthetic make-up, but the meaning behind the significance may not be known or even describable. While green and red are complimentary colors, and while they might be popular Christmas colors, it might not be the reason the painting is significant. There is significance in abstraction, non-objective art, and minimalism. Robert Ryman's white paintings are significant, but the meaning behind the significance can only be defined as a discourse. Deconstructionism, a term coined by Jacques Derrida which describes the critical analysis of a sentence, statement or in this case the meaning in an artwork, reveals that true meaning dissolves through further analysis, or deconstructive analysis. Barthes purports that significance can be disconnected from meaning in the same way that Jung's synchronicity can function outside the format of cause and effect.

Similar to Conrad, as physicist N. David Mermin describes, Einstein discovered something that fell outside of the realm of traditional physics maintaining,

“that quantum metaphysics entails spooky action at a distance [spunkhafte Fernwirkungen]; experiments have now shown that what bothered Einstein is not a debatable point but the observed behavior of the real world.' The new reality has replaced the assumption of locality with the concept of nonlocality.” (Radin, p. 221)

Discoveries in quantum physics transformed the field of traditional physics and required new language and theories to adequately do so. As Daniel Greenberger states, “Einstein said that if quantum mechanics was correct then the world would be crazy.” Some of the most conclusive series of tests regarding nonlocal entanglement of photons was completed by Nicholas Gisin's group at the University of Geneva up to 50km in distance. A number of other physicists agree that discoveries made in the area of quantum physics are quantifiable and that scientists will need to revise their theories regarding space-time. (Radin, 2006, p. 227)

Thomas Armstrong writes in his book entitled *Neurodiversity* that “The primary metaphor used to describe the workings of the brain for the past four hundred years has been the machine.” He quotes Rene Descartes as the first to use this mechanistic language in describing the body and its functions. Armstrong describes the brain as *messy wetware*, which is extremely adaptable to its environment and provides a diversity of aptitudes for the range of job-types on the current market (Armstrong, 2010, p. 9). Neuroscience has moved from a field not to dissimilar from an auto-mechanic to a field with the level of complexity that almost any field of study might contribute a unique perspective. What might seem a disability within one context might be a required trait in another.

For Conrad, apophany is the first recognizable stage in the pre-schizophrenic experience and is the first stage in recognizing significant patterns within the listed interactive artwork above. When placed into the context of a creative practice, however,

apophany-in-practice uses those moments of recognized significance as starting points for further analysis, reflection, and creation.



### 2.5.1 Disruption

In Shelley's *Frankenstein*, the character Victor mentions,

"As I stood at the door, on a sudden I beheld a stream of fire issued from an old and beautiful oak, which stood about twenty yards from our house; and soon as the dazzling light vanished, the oak had disappeared, and nothing remained but a blasted stump." (Shelley, 1992, p. 42-43)

An advisor shares the idea of electricity and galvanism in the context of the lighting strike. It was at this moment that Victor dedicates himself to science and mathematics in preparation for the moment where he finally witnessed "the dull yellow eye of the creature open." (Shelley, 1992, p. 58) Throughout the story, Victor refers to the disruptive moment of the lightning strike with regret for creating Frankenstein, as the moment that inspired his passion for science.

Disruption is "a break or interruption in the normal course or continuation of some activity, process" (Disruption, n.d.). Consciousness is an apparatus, an operational engine that has the potential to perceive, draw on memories, imagine, meditate, problem solve and deconstruct in isolation.

Because the human body has myriad sensors and stimuli-collecting apparatus, i.e. eyes, nose, ears, tongue, skin, finger-tips, hair follicle nerve endings, apophany often occurs from a range of stimuli collected by any number of different types of apparatuses simultaneously.

Zizek states in his book *Organs Without Bodies*, that the

"usual polemics about the respective roles of 'genes versus environment' (of biology versus cultural influence, of nature versus nurture) in the formation of the subject misses the key dimension, namely, that of the interface that both connects and distinguishes the two. The 'subject' emerges when the 'membrane,' the surface that delimits the Inside from the Outside – instead of being just a passive medium of their interaction – starts to function as their active mediator." (Zizek, 2004, p. 118)

Since apophany is an attribution of significance in actual stimuli where significance doesn't exist, or doesn't exist yet, one could see apophany as the interface that Žižek refers to, and then therein lies a potential for disruption. Apophany requires a disruption or intervention in the process towards comprehension to be useful in accessing creativity. This disruption could be as simple as witnessing something new, a new face, a new scene, painting, or object. The act of one's intervention in the perceptual field can also serve as a disruption that imposes significance.

### **2.5.2 Doubting the Senses**

From a very young age, children are introduced to the formation of relationships between seeing, or perceiving, and objective identity formation. Later in life, this translates into acceptance of the possibility that an image perceived via the senses may have been misidentified in error. The nature of sight and perception integrates this doubt as a possibility, being that the senses comprise of organic systems that are constantly attempting to decode images using gestalt and formal elements, such as color, hue, contrast, and more, within a field that provides additional disruptions like sound, drastic changes in lighting, or multiple forms of additional stimuli in diverse formats. These disruptions in the perceptual field increase the potential for doubt with respect to what one perceives. Integral to the work of visual artists is the analysis, deconstruction of visual information in their work. These edges where recognizable patterns bleed into abstract imagery is a border full of interesting associative questions that feed into the content that drives a creative practice. Many artists are comfortable exploring and experimenting in this space. In interactive art, this experience can be highlighted in an even more pronounced way. Within interactive artworks, the passive viewer becomes an active participant immersed with an active interface in an interactive environment. When engaged as a conscious participant, one is thoroughly engaged in the feedback between self-inputted stimuli and the anticipation of the reaction. The strategic integration of significance must cover a much broader array of possible types of input, understanding that there are many types of participants with numerous backgrounds and interests. Within interactive environments, systems often track the participants, wait for input, or mediate interaction between multiple participants, which creates a sense of the presence of an artificial other that is aware of your presence and involvement within the space. Sensations of significance may appear merely by the fact that a system is tracking you with the purpose to provide you an experience. Not to dissimilar from an amusement ride or a haunted house, the interactive artwork is designed for the safe inclusion of participant. These feelings are only enhanced when one's face, body, or

body part is mirrored on screen, such as in *GoC13*. In this work the participant is interacting with the system but also watching themselves do so. One such example is William Forsythe's interactive installation entitled *City of Abstracts (2000)* which exhibited at the Institute of Contemporary Art in Boston between Oct 31, 2018 and Feb 21, 2019. (Forsythe, 2000, p. 1)

When experiencing immersive works, or works that apply some form of distortion on reality, one's immediate natural response is to doubt one's senses. In Forsythe's artwork, a live video feed of the room representing its inhabitants was projected on one of the walls. The video feed had a progressive line-by-line (pixel-by-pixel) delay from top to bottom while processing the screen display, where at the top of the screen one would see a more present video rendering of the room which gradually evolved downward into a more than five to ten second delay of the room. This resulted in the movement of the participants being twisted into long drawings of distorted selves across the screen. In this work, the system distorts the real image of self and motivates play in order to find new elements of functionality within the system. While after experimenting with the interactive artwork for some time, participants adapt to the environment, begin to learn the rules of the interactive system, and move beyond the stage of doubting one's own senses and into the realm of the expert.

While interactive artworks often highlight one's attention to one's own gestures, what they seem more interested in is identifying the elements within the interface that influence the decisions and motivations of participants to act. In interactive artworks, participants actions become the central content rather than the spectacle or perceived stimuli that motivates those gestures or actions. For example, within *GoC13*, the function within the system that motivates individuals to move closer to one another is the addition of a graphic that draws a line from your face to the person you have moved closer to and the word "inshallah" appears labelling that connection. Learning what triggers this graphic element to appear motivates participants to share these discoveries with others in the space and make that experience both more immersive and real for

them.

Apophany is a significant step toward bridging the gap between empirical and creative ideologies, in that it is a phenomenon that most humans naturally experience. Apophany is both physiological and psychological. In vision-based aphophenia, prior experiences and the gestalt of an object or environment can affect the patterns perceived by the participant. Apophany raises questions about the relationship of empathy to perception, and how some recognize significant patterns due to feelings or memories relating to the subject or scene witnessed. Apophany's description of how we overlay significance onto patterns that we see and experience may or may not be valid assessments of the real, but must relate how the human mind tends to imagine and explore potentialities.

### 3. APOPHENOESIS IN CONTEXT

Artists have both the power and responsibility to elevate the mundane. In many instances that is drawing the viewer's attention to an aspect of the human experience that might normally be overlooked or considered insignificant. When considering apophany with respect to identifying significant ideas, and then imposing significance into a construct or object to then make it art, is actually the deconstruction and reconstruction of apophany itself, which I refer to as apophenoesis. Examples exist within the static arts, and even more within the context of interactive art. The art world, auction houses, art faires and festivals, art historians, art critics, and art collectors exists as a secondary contributor to the elevation of the less significant to cultural artifact. One of the most universalized representation of significance is valuation in currency. In 2015, the global art market achieved total sales of \$63.8 billion, falling seven percent year-on-year from its previous high of \$68.2 billion in 2014. This was the first year that saw a decline since 2011. (Kinsella, 2016, p. 2) Placing any artifact into a gallery or museum instantly carries with it significance as a contribution to culture, ideology, belief, and/or interest as a global community. Consider Duchamp's urinal piece entitled *Fountain (1917)*. When the art world lays claim to discovering significance, in that moment it transforms the object into cultural artifact, thereby attaching certain significance. Powerful galleries and museums consult with the artist to see what would be feasible and spectacular. Much of contemporary museum work functions in the realm of the spectacle, and they are institutional collaborations with the artist and their identity.

### 3.1 Apophenoesis in Static Arts<sup>9</sup>

Modern and contemporary artists alike apply what DaVinci relates as experiences of apophany in a range of ways. For example, Rene Magritte's image-with-text paintings entitled *The Key of Dreams* (1898-1967) (Berger, 1977, p. 7-8) had to have had a direct influence on John Baldessari's *Goya Series: AND* (1997) (Baldessari, 2019, p.1) which bring together a photograph of a paperclip and the word "AND" onto one canvas. The word causes the viewer to consider the curves of the paperclip as a significant possible reference to the ampersand symbol &, while simultaneously referring to the functional use of the paperclip as a tool to join multiple pieces of paper together thereby presenting a tangible reference to word "and" which joins thoughts. The work also functions as a hyper-aware moment in the experience of walking around an exhibition at an art gallery, where multiple works line the walls like a sentence. These aspects of significance, or apophany, are not even implied by the artist except for the fact that they share one canvas and white background. While Baldessari is considered to be a vital contributor to the *Conceptual Art* movement (Stiles, 2012 p. 890-894), which tends to playfully frame the art world and its subtle nuances as content within the artwork, this work amplifies the strange relationship each and every viewer has with significance and apophany.

In the *Secret Life of Salvador Dali*, there is a drawing by Dali with the inscription "False memory of a lady in the shape of a spoon" (Dali, 1942, p. 49) and then another stating, "False memory probably inspired by a lawyer of my father combined an antique mythological painting" (Dali, 1942, p. 39) and yet another "False memory of a puff of smoke resembling a human face during a walk with my father." (Dali, 1942, p. 37) Dali states regarding his view of form as "Form is always a product of 'inquisitorial' process of matter." (Dali, 1942, p. 3) Salvador Dali was extremely

---

<sup>9</sup> The term *static art* is used in this instance to refer to works that result in objects such as painting, sculpture, photography, collage, or assemblage, etc. as opposed to interactive or technoetic works of art.

successful in envisioning a malleable world of clay and interchangeable identities, dynamically able to take on the shape or characteristics of another entity. He experimented and imagined as he drew, painted, sculpted and assembled, freely associating traits of one object with another and then blending them together. Dali embodied his experiences of apophany investing a great amount of time to share these in process cognitive processing of the images he witnessed with images in his memory. Giuseppe Arcimboldo, an artist in the 1500's, took a more detailed and strategic approach to constructing each still life to which he would refer for his paintings. One example is the painting entitled *The Waiter (1574)*. Arcimboldo placed random objects and food together in order to create something that partially resembled the human form when stacked in a certain way. However, Arcimboldo didn't paint an actual waiter, but rather painted the objects as a still life and allowed the viewer of the painting to experience the apophany. Arcimboldo was fully aware of the natural occurrence of apophany and used it to make the painting more of an interactive apophenoetic work of art. The viewer was given control in the act of decoding the artists visual strategy and called the viewer to reflect on one's own cognitive process as they worked through the image and experienced apophany.





Figure 86: *The Waiter* (1574) by Giuseppe Arcimboldo – Creative Commons - seen above

A contemporary painter that employs the abstract expressionist brush stroke as Arcimboldo used found objects, is the painter Cecily Brown. Many of Brown's paintings embed images and scenes within an array of layered abstract expressionistic brush strokes on canvas. At moments, usually when you aren't looking directly at the work, clear images and scenes seem to emerge as fully recognizable scenes for a moment, and then they disappear. In Brown's work, it seems as though apophenosis was used to generate the works of art, and then each viewer is stuck midpoint between recognition and pure abstraction, experiencing apophany with every attempt to identify recognizable, significant imagery when viewing them. A few well known examples of artists in the static arts that employ apophenosis in their creative process as well as

create work that entices the viewer to experience apophany are Mark Bradford, Julie Mehretu, Matthew Ritchie, Kara Walker, Inka Essenhigh, Glenn Brown, Jennie Saville, Iza Genzgen, Manfred Pernice, Richard Tuttle, Lucian Freud, Francis Bacon, Gustav Klimt, and Egon Schiele. Each employ apophenosis differently in their work. Bradford creates a stepped process and system to implement his large installations. These require him to tear and peel back layers of his work, revealing multiple layers of content below inspired by his younger years living in downtown Los Angeles surrounded by the layered wheat paste posters that are ripped down and pasted over daily. Ritchie creates a narrative cosmology around his abstract painted and sculpted forms that allude to an existence with organic entities, communities, and the zoomed out and microscopic representations of that reality. In Inka Essenhigh most rivetting works, she successfully represents scenes of events with characters and props, however, upon closer examination the viewer finds that these are merely lifeless abstractions of fabric blowing in the wind with mundane objects that only embody behavioral characteristics of figures and life. Similar to Cecily Brown, in some of Glenn Brown's paintings the artist applies thick brushstrokes of paint that resemble portraits that can't ever be completely resolved by the viewer. Iza Genzgen's work from 2004-5 were simple stacked objects that seemed to resonate importance and significance. The same exists in the work of Manfred Pernice, probably the most impactful in the area of apophenosis within the context of these artists. Within Pernice's work exist a collection of forms that resonate significance, but it is very difficult to identify what in particular is significant about it, as well as how and why. It is almost as if the works evade the significance that is expected because they are placed in the gallery. The handmade works are larger constructions of simplified forms out of cheap materials. This is the area relating to apophenosis and apophany in art that is most fascinating.

When two or more elements are positioned in a work, in a collage or figurative painting for instance, the second element can provide a disruption necessary for the

work to create an internal dialogue or clash in contexts. This can establish opportunities for the viewer to overlay patterns of significance and incite experiences of apophany.

This internal dialogue can be seen in the work by Max Ernst, entitled *La femme 100 tetes, 1929: Continuation of morning, twilight, and night games* (Krauss, 1994, p. 39) and Pablo Picasso's *Dejeuner sur l'herbe d'apres Manet Sketchbook, 4, July 1961* (Krauss, 1994, p. 227) or *Girl before a Mirror, Boisgeloup, 14 March 1932* (Krauss, 1994, p. 279). The internal interactive dialogues between the subjects in each artwork become the new focal point of significance. This strategy can be seen in art since the beginning of time. Historic paintings such as the famously themed *Saturn Devouring His Son (1636)* by Peter Paul Rubens, and in the painting with the same title by Francisco de Goya (1819-23) represented this dialogue. Hilaire-Germain-Edgar Degas incorporates the strategy a bit differently drawing significance between his dancers and the blank space of the floor in *The Star (1876)* or *Dancers at the Old Opera House (1877)*. More recently, Robert Smithson draws that significance from the interaction between the sand and mirror in his work *Slant Piece (1969)* (Bois, 1997, p. 77).

While static or passive objects, images and film can generate experiences of apophany, immersive, interactive and responsive environments and experiences, where technology, automation, performance, or elements from the natural world converge. Within these environments a deeper and more complex encounters with apophany are possible due to the fact that the artwork itself has the potential to directly respond to participant presence and input.

### 3.2 Apophenosis in Interactive, Technoetic and Telematic Art

Norbert Wiener wrote in the *Human Use of Human Beings* in 1954 that “Society can only be understood through a study of the messages and the communication facilities which belong to it.” (Packer, 2002, p. 47) “Weiner claimed that the quality of man-machine communication influences man's inner well-being.” (Packer, 2002, p. 48) Roy Ascott furthered Wiener's vision stating “The cybernetic spirit constitutes the predominant attitude of the modern era, the computer is the supreme tool that its technology has produced. Used in conjunction with synthetic materials it can be expected to open up paths of radical change and invention in art...” (Packer, 2002, p. 95)

In the area of interactive, technoetic art, apophenosis is used to generate experiences of disruption and immersion unlike any other art medium. While technoetic media has been somewhat dependent on the accessibility of open source hardware and software, over the last fifty years this has proven to become growingly more accessible and ubiquitous. Many festivals and publications have shared innovations in this field from events like Ars Electronica in Linz, the ISEA traveling festival, the DiEgy Festival in Cairo, the Microwave Festival in Hong Kong, Print Screen Festival in Israel, Transmediale in Berlin, the Bam Festival in Belgium, Interactivos in Madrid, Sonar in Barcelona, Pixelache in Helsinki, DEAF in the Netherlands, Píksel in Norway, FILE in Brazil, and SIGGRAPH in the United States.

Experiences of apophany and strategies applying apophenosis take on a range of different forms in the various types of experiences in interactive, technoetic art. In a more literal application of apophany, the work by Philip Worthington entitled *Shadow Monsters* (2004) invites participants to use their hands and bodies to cast a shadow on the adjacent wall. Within this computer vision environment, the computer interprets the identity of the monsters being formed and adds the necessary body parts to complete the imaginative play. For instance, the shadow of a handshape that represents an alligator

will grow teeth and eyes and when the participant opens alligator's mouth with their hands, a *roar* sound is generated by the system. (Fung, 2006, p. 29) While these additions seem to be logical linear extensions of what the participants are already imagining, displaying these elements in a real and animated way serve as an unexpected apophenoetic disruption that generate feelings of excitement add to the immersive characteristics of the artwork.

One of the earliest examples of the computer vision shadow-play as well as virtual reality was Myron Kruger's *Video Place* in 1974-75. Participants witness a live silhouetted image feed of themselves on screen captured by a security camera. "In response to the participants actions (mirrored by the silhouette), the computer system modifies the location, motion, and other attributes of the graphic objects." (Shanken, 2009, p. 166) In the development of each of these interactive environments it was necessary for the artists to use an apophenoetic approach in anticipating how familiar and yet unknown images, interfaces, and experiences would form in the minds of the participants. Visual and interactive cues were established within the environment to motivate gesture-play and experimentation in a system previously unknown to the participants. Other important works that reflect these characteristics are *Boundary Functions* (1998) by Scott Snibbe, which used a Voronoi diagram to separate people in a room by a line (Paul, 2008, p. 174), *Wave Function* (2007) by Rafael Lozano Hemmer which tracked movements of people in the room that would influence a cluster of chairs to bob up and down like waves in the ocean (Lozano-Hemmer, 2019, p. 1), *Manual Input Sessions* (2004) by the collaborative group Tmema, made up of Golan Levin and Zach Lieberman, that allowed performers to make shapes and sounds with their hands with an overhead projector (Levin, 2019, p. 1), *Text Rain* (1999) by Camille Utterback that allowed letters of words in poems land on participant's contour displayed in video (Utterback, 2019, p. 1), *Khronos Projector* (2004) by Alvaro Cassinelli which allowed

participants to push into a stretchable projection screen which would allow for the participant to gain access to the object's past or future (Fung, 2006, p. 24). In each of these interactive projects, computer vision was used to allow participants to disrupt virtual imagery in order to generate experiences of apophany for themselves to internalize and interpret. In each the language of the object was transformed and the “conceptual space” altered as mentioned by Boden regarding requirements for achieving creativity. (Boden, 1994, p. 80)

*The Giver of Names (1991)* by David Rokeby is an interactive, technoetic and apophenoetic artwork that “quite literally gives objects names by trying to describe them....Visitors can choose an object or set of objects from those in the space or from the ones they might carry with them, and place them on the pedestal, which is observed by a camera.” (Paul, 2008, p. 149) Computer software, running an object-tracking, computer-vision system, uses an evolutionary dataset to identify as many characteristics for each object as possible. These characteristics are metaphorically linked to a database, which one could interpret as apophenosis, or apophany in practice, as on-display while being implemented. Descriptive sentences that follow grammar rules are read aloud like deconstructed poetry. The gallery visitor becomes a voyeur into the mind of the computer system. Apophany is experienced by the visitor when comparisons are made between the actual object on the pedestal and the deconstructed descriptive narrative generated by the apophenoetic system.

“The idiosyncratic 'dialect' of skewed sentence structures and grammatical mistakes that evolved in *Giver of Names* prompted Rokeby to develop *n-Cha(n)t* (2002), a networked community of *Giver of Names*” that would listen to the sentences spoken by gallery visitors and use them to generate conversations within the network about the statements made. (Paul, 2008, p. 150) Another work that falls in line with Rokeby's work is *Autopoiesis* (2000) by Kenneth Rinaldo. In *Autopoiesis (2000)*

Norbert Wiener's Simplified Feedback Cybernetic Model is employed within an artificially intelligent system that drives fifteen interactive robotic-arm/sound-sculptures that react to the presence of people that pass through the space. The sculptures communicate using audible telephone tones, and sensors direct arms to move in the direction of the viewer. Each arm stops within inches of the viewer, seemingly both attracted and repulsed. Robots compare their sensor data through a central-state controller. The visitors experience apophenosis when interacting with the evolving system as their behavior, the input, changes to adapt or play with the system. When watching the gestural movements of each arm one could parse the decision-making process and relate it to the cybernetic loop or the apophenotic toggle. (Shanken, 2009, p. 160)

*Robotic Chair (2006)* by Max Dean, Raffaello D'Andrea and Matt Donovan is the autonomous interactive performance of a common chair that falls apart and put itself back together. (Leopoldseder, 2006, p. 140-141) The installation used a computer vision system in the ceiling of the room that remotely communicated with the seat of the chair on the ground which housed all of the technology and led to the rebuilding of the chair. While *Robotic Chair (2006)* was not an interactive project and did not engage user participation physically, the interactive language draws the viewers into the role of quality assurance testers, following the procedural calculations of the system to see if and how the interactive system achieves its goal. Apophany is generated in that the identity of the chair is transformed from static object into a self-directed interactive system. It is important to note that Conrad's term *apophanie* was a made up term that is very similar to the term epiphany, which while having religious connotations to the experience of witnessing the supernatural, it seems to denote feelings of sudden great revelation or realization that changes a person. Many of these works generate feelings of joy and disbelief due to introduction of the unexpected and what might have

previously been considered to be magic is now real. When Conrad adopted and transformed the term to serve as a scientific one, it introduced the potential for apophany to describe and be further analyzed for what occurs in the mind while one experiences such phenomenon. This also introduces a range of questions regarding apophany's relationship to inspiration which will be addressed in the discussion section below.

*Augmented Fish Reality* by Kenneth Rinaldo and the *Roach Controlled Robot* by Garnet Hertz fall within what Hertz calls *Experiments in Galvanism*. In these two works the viewer functions as an onlooker as well as a possible participant. Because these works have living things driving them, it is up to the roach or the fish to decide whether or not to interact with the participant. The experiences of apophany are imposed as participants have to reconfigure the relationship with automaton now as an entity with preferences... one that may choose to turn away. Where interactive art tends to be centered around the participant, *Experiments in Galvanism* relinquishes control to that of the cyborg roach or fish (Leopoldseder, 2004, p. 122-125).

Telematic Art is also an area in which fundamental foundations are abundant with the integration of apophenoetic practice. Telematic systems alone have numerous elements of disruption that provide opportunities for creative exploration. This paired with elements of the spectacle are some of the primary characteristics latent with the three works central to this research. Ascott writes in his 1990 book, *Is There Love in the Telematic Embrace* that

“Telematics... involves the technology of interactions among human beings and between the human mind and artificial systems of intelligence and perception. The individual user of networks is always potentially involved in a global net, and the world is always potentially in a state of interaction with the individual.” (Packer, 2002, p. 333)

Debord states “The spectacle is a concrete inversion of life, an autonomous



movement of the nonliving”, and continues, stating “The spectacle presents itself simultaneously as society itself, as a part of society, and as a means of unification.” “The spectacle is not a collection of images; it is a social relation between people that is mediated by images.” (Debord, 2014, p. 10)

The following are some examples of works that integrate current forms of telematics or networks, into the work of art: *Botanicalls* (2006) by Rob Faludi, Kate Hartman, and Kati London which establishes an intimate communication system with one's plant that contacts the owner with requests to water them (Faludi, 2008, p. 1), *Telegarden* (1995-2004) by Ken Goldberg and Joseph Santarromana was the physical embodiment of the intended gestures of the thousands of possible users interacting online from different locations around the world to control a single robotic arm that planted, watered and uprooted plants in a miniature garden (Greene, 2004, p. 68-69), *Police State* by Jonah Brucker Cohen that represents information from the FBI Dataveillance software nicknamed *Carnivore* through the movement of a number of toy police cars (Greene, 2004, p. 175), and *WebFrog* (2003) by Garnet Hertz where the artist “implanted a Web-server in a preserved frog, the legs of which twitch when electrically stimulated via the internet.” (Shanken, 2009, p. 39) Apophany works within interactive artworks that pull from networks both for the user driving the decisions and for the participant in the gallery that perceives those decisions via the controlled gestures of the installation. For the user at home there is the almost out of body experience that is generated via telepresence, where the user realizes that they now have control beyond the limitation of traditional space while over time the gallery-visitor begins to adapt to the gestures made by the system to then understand and interpret the organic decisions as separate from the automated operational ones.

Apophenosis also functions in the context of the spectacle raising questions about boundary-lines and the delineation of public and private space. Experiments

integrating hardware and software by artist Julian Oliver, integrate these apophenoetic disruptions in the following works: *The Artvertiser* (2008-2010), which is an augmented-reality platform that replaces billboard advertisements with artwork in real-time (Dillon, 2012, p. 12-13), *Newstweek* (2011) which manipulates and distorts news feeds read by other people using wireless hotspots (Dillon, 2012, p. 30-31), or *Border Bumping* (2012) which temporarily redraws the borders of a country based on the reports made by cell towers regarding which country an individual is currently making a call, especially if near a border (Oliver, 2012, p. 1-3). In these examples the communication infrastructures upon which the masses rely with expectations of how they operate, without too much scrutiny regarding rules-of-use, provide disruptions that serve to rethink the consumer-centric sales of social networks that rely on significant systems that have their individual security. Within the integration of apophenosis into interactive artworks, artists must consider the messages that existing technologies are sending through their design in order to discover apophenoetic disruptions that can contribute adequate commentary on those limitations. While integrating hardware and software development into one's creative process can be empowering, there are often societal and infrastructural limitations that require apophenoetic solutions. In Golan Levin's work with Scott Gibbons and Gregory Shakar entitled *Dial-Tones (A Telesymphony)* (2001), it is rumored that due to the crescendo of the composition/performance requiring almost 200 phones to ring simultaneously, a new cell-tower had to be purchased for the city of Linz for the performance to occur. (Shanken, 2009, p. 118) Innovating new creative systems often pose barriers that require new languages, perceptions, and disruptions that the apophenoetic process can provide.

### 3.3 Best Praxis in Apophenoetic Art

It is in the mind that the range of divergently formatted content and experiences come together, mesh, mix and disappear in a field of noise, allowing for new kinds of patterns to form as new thoughts and ideas (See Figure 2 for the *Apophenoetic Black Box Diagram*). It is in this moment when the random input absorbed via the senses are decoded with the help of their associations, thereby generating new patterns that result in decisions to act. In the context of the creative process, when this convergence of information is structured into the *Apophenoetic Toggle Model*, the result is creative action. In the context of perception alone, this process results in new synaptic pathways. Applying Brain Computer Interface (BCI) systems such as accessible Electroencephalogram (EEG) and other brain tracking technologies into an artwork make it possible to frame and represent some part of this cognitive convergence.

In the following apophenoetic projects, BCI's are used in order to track and decode brainwaves in order to generate some strategic output. The works are quite limited at this time since the availability of functional open source sensors have only recently become consumer-accessible and artists are now considering how to experiment and implement the sensorial device in their works. One of the earliest works exploring this realm was *Wave UFO* (1999) by Mariko Mori that functioned as a large-scale sculptural spectacle that was inhabitable and used EEG technology to generate an immersive interactive experience. Since Mori's project, numerous other artworks emerged such as *Praystation* (2012-2017), the *Mutual Wave Machine* (2016), *Thoughtforms*, *Visualize and 3D Print Your Thoughts* (2016), the *Brain Factory* (2016), Lisa Park's *Eunoia* (2013) and *Eunoia II* (2014), the Neurowear *Necomimi* EEG-Reactive Bunny-ears Product (2011), Yehuda Duenyas' *Ascent* (2011), *Octopus Brainstorming* (2017), *You are the Ocean* (2017), *Mind-Controlled Sperm: Woman of STEAM Grabs Back* (2017), *2ch* (2016), *E.E.G. Kiss* (2016), *Subconch* (2009),

*Fragmentation* (2014), *(un)Focussed* (2013), *Staalhemel* (2010-2011), each with their own view on cognition and technological extensions of the self created using an apophenoetic process with the intentions to generate experiences of apophany or establish an environment for the participant to employ the apophenoetic process within the interactive experience. Most of these systems either study the phenomenon of cognitive, internal pattern recognition or highlight the flux between recognition and error.

In the interactive technoetic work entitled *PrayStation* (2012-2017) Justin Love and Philippe Pasquier establish an environment within which a gallery-visitor approaches a pedestal with an EEG headset and a custom hardware controller containing a toggle switch that invites the participant to select one of eight religions. Once the participant has donned the headset and selected a religion, depending on the thoughts of the participant, religiously-relevant images conducive to prayerful meditation begin to emerge and form on the screen adjacent to the participant as if emerging from a dust of pixels. It is possible that any number of relevant religious images will emerge simultaneously on screen, in different parts of the screen. Since the formation of these images requires time, visitors tend to leave the installation prior to the complete formation of their images. The screen stays the same for the next participant, who is then asked to select a religion etc. After a full day the screen looks like a vivid tapestry of overlapping religious imagery, reflecting a mystical and original composition every time. *PrayStation* functioned on many levels as an apophenoetic experience, where multiple users over time collectively wove beautiful multi-religious tapestries. The aesthetic of each religion was morphed, and new patterns of religious stylistics were imposed. Participants were forced to consider the significance they had known with images from one religion in the context of images from many other religions. (Love, 2017, p. 1-2)

In Mariko Mori's 1999 large-scale installation entitled *Wave UFO* (1999) only a few participants at a time were invited to ascend into a large UFO like sculptural space after donning EEG headsets. Once inside the futuristic space, the participants recline in form-fitting daybeds and stare up at the ceiling of the UFO where animated graphics generated by the thoughts of the participants are projected and converge into a collective abstract image. These collective images were generated by multiple participants, which caused an aspect of the imagery that may have been controlled to mix with another which was controlled by the other person in the space. (Public Art Fund, 2003, p. 1-2)

In the project, the *Mutual Wave Machine* (2016), by Suzanne Dikker, Matthias Oostrik, Peter Burr, Diederik Schoorl, and Matthew Patterson Curry, developed at the Marina Abramovic Institute (MAI), two participants enter into a spherical space composed of two half-spheres slightly separated, and sit in chairs facing one another with mounted EEG headsets, speakers, and a camera aimed at the opposite-seated participant. The two half-spheres serve as projection surfaces that display graphic-projected, vibrating-patterned animations that are generated by the brainwaves of the respective participant. Both participants are encouraged to work to achieve a rhythmic alignment with the other participant by attempting to manipulate their own mental states and brainwaves. Being out of alignment with the opponent generates chaotic visual noise projected as imagery paired with a sustained ringing sound through the speakers. In the *Mutual Wave Machine* (2016), each participant could be said to be engaged in a collective apophenosis, searching through the patterns of their own mind with the intention to cognitively align. (Dikker, 2016, p. 1-2)

In a project entitled *Thoughtforms, Visualize and 3D Print Your Thoughts* (2016) by artists Kellyann Geurts and Dr. Indae Hwang, with support from Elliott Wilson, sensiLab and Monash Art, Design & Architecture, participants wearing an EEG headset

had the ability to generate a range of 3D forms that would morph and change in an animated way in direct response to their brainwaves. The system was programmed in order for certain rules to dictate what brainwaves would generate which particular forms. The participant can select the moment when the system exports the evolving form to be 3D-printed. Significance was attributed to the abstracted 3D form that was generated because of its association to one's brain activity. (Geurts, 2016, p. 1-3)

In another very similar but much more immersive experience entitled *Brain Factory* (2016) an immersive installation project created by artist Maurice Benayoun and Tobias Klein, invited participants to wearing an EEG headset generate three dimensional shapes and forms with their thought patterns. The three-dimensional forms generated by the brainwaves of each participant are then 3D Printed. Participants watch and test how their own mental states affect the animated 3D projected object prior to the printing step (Benayoun, 2016, p. 1-2). In both projects, *Thoughtforms, Visualize and 3D Print Your Thoughts* (2016) and *Brain Factory* (2016), each participant can be said to be engaged in the apophenoetic process as they iterate real-time through the direct representation of their thoughts mapped to morphing 3D forms. Since moods or mental-states seemed to generate changes in the 3D form, participants seemed to try to disrupt their own mood or thoughts to transform the output, engaged in apophenoesis. (Refer to the Apophenoesis within an Interactive System diagram above). In this example, the 3D artifact has a visceral correlation to the mind-state of the participant. This experience gives the details and nuances of the abstract form meaning, and the association between the thoughts and moods are drawn to memory.

In the performance artworks *Eunoia* (2013) meaning *good thinking*, but which the artist translates to *beautiful thought*, and then in the more recent *Eunoia II* (2014), artist Lisa Park combines EEG scanning with forty-eight metal plates filled with water that sit inside forty-eight upward facing speakers. While Park thinks and experiences

different emotions, her brainwaves are visualized by vibrating the pools of water more or less intensely in the gallery space. (Park, 2014, p. 1-2)

Yehuda Duenyas (AKA XXXY) an MFA student at Rensler Polytechnic Institute (RPI) developed a mind-controlled levitation system for a project he called *The Ascent* (2011) which uses an EEG system and Open Sound Control with stepper motors, to allow for a human performer to use their mind to control their position levitating vertically in 3D space. The closer the user's mind reaches alpha states, the faster their body is lifted upwards toward the ceiling of the room. (Duenyas, 2011, p. 1)

*Octopus Brainstorming* (2017) is an art-science collaboration between artist Dr. Victoria Vesna and neuroscientist Dr. Mark Cohen that uses custom EEG head-mounts in the shape of LED Octopi that gather the brainwaves of the participants and uses that data to generate real-time system responses with sound, changing LED colors on the head-mounts, and projected video. This brainstorm is in fact a concert spectacle of sound and light that invites audience participation. (Vesna, 2017, p. 1-2)

In *You are the Ocean* (2017) by Özge Samanci and Gabriel Caniglia, the thoughts of the participants in an immersive cinematic space wear a BCI that directs the intensity of the waves and movements of the ocean and the sky with their brainwaves. The ocean gradually moves from calm waves with clear skies to aggressive ones with dark storms depending on the brainwave activity of the participant. (Samanci, 2017, p. 1)

In Ani Liu's *Mind-Controlled Sperm: Woman of STEAM Grabs Back* (2017) work, a seated participant dons an EEG headset and their brainwaves direct the movement of projected sperm in a round space on the floor in front of them, thereby controlled by the participant. (Farley, 2017, p. 1-2)

*2ch* (2016) by Dmitry Morozov aka ::vtol:: This project is a kinetic interactive sculpture that serves as a brainwave communication interface between two people, each

generating sound, mechanical motion and video with their thoughts. The goal is for the two participants to align their thoughts in order to fully activate the sonic and kinetic sculpture. (Morozov, 2016, p. 1-2)

In *E.E.G. Kiss* (2016) by Karen Lancel, Hermen Maat, biofeedback data is used to generate sound and direct waveforms in a ritualistic environment where the two kissing participants are the center. Both visual and sonic feedback are directed by the mental states of the participants before kissing, while kissing, and after. (Lancel, 2016, p. 1-2)

In *Subconch* (2009) by Mats Sivertsen, participants are invited to sit directly in front of a suspended conch-shell shaped speaker from which a voice directs the participant to consider their greatest desire, and then the voice states that it will begin to reverberate the participant's thought patterns sonically, alluding to the fact that this gesture and these reverberations may have a mystical impact on granting the desires. The artist describes this work as a musical instrument. (Sivertsen, 2009, p. 1-2)

In *Fragmentation* (2014) by Alberto Novello a.k.a. JesterN, post-modern man represented by a performer on stage is blanketed in the projection of changing patterned imagery. The brainwaves of the performer move the Pacman character in different directions across the maze projected on the floor to which the performer follows. The sound is generated from the position of the Pacman character and the visual projections are generated from the sound. The performance ends when the performer arrives at end of the maze. (Novello, 2014, p. 1)

*(un)Focussed* (2013) by Alberto Novello, Marion Traenkle & Ivo Bol is an EEG performance translating the brainwaves of two performers into sound, light and laser control. (Novello, 2013, p. 1)

*Staalhemel in Bozar* (2010-2011) by Christoph De Boeck, is an interactive sonic installation with a grid of 8 x 10 segments of suspended steel sheets in the ceiling that



tap more rapidly with solenoid drumsticks as the eight channels of one participant's brainwave data become more active. (De Boeck, 2011, p. 1)

Due to the recent growth in the accessibility of low cost functional open-source BCI hardware and software interfaces, much more experimentation is occurring with BCI technologies. While BCI systems are complex, experiments that integrate a more diverse set of bio-sensing systems, such as body temperature, perspiration, heart-rate, facial expressions and optic movement together with a BCI system, can provide more accuracy to connecting the content of actual thoughts and emotions to brainwave activity. These various inputs can also be checked against one another for accuracy. Within the interactive installation entitled *The Einstein Brain Project* (1995-2005) the sections entitled *Derive*, *The Madhouse* and *Pandæmonium* by Alan Dunning and Paul Woodrow integrate a range of touch, temperature, electronic resistance, motion, and sonic sensors with what they call ALIBI, an Anatomically Lifelike Interactive Biological Interface, along with the EEG, to more clearly define aspects of the experience of human cognition. (Dunning, 2005, p. 1)

*Naos* (2008) by Carlos Castellanos, Philippe Pasquier, Luther Thie, Kyu Che integrates a hand-held capacitive sensor that detects the participant's heart-rate along with the application of an EEG headset seem to integrate a variety of inputs with the goal of establishing a more complete understanding of participant thoughts. (Castellanos, 2008, p. 1-2)

The range of these works can be termed apophenoetic art because of the way that they were developed and the way that users were inspired to act and interact within them. The developers for all of these artworks had to think deeply about the mind-state of the participant by establishing a context within which these interactive systems would function. They had to research some of the neurological studies done about the relationship between activity centers in the brain and the thoughts and emotions to

which they refer. They had to select certain areas of the brain to track as it connects with the interactive installation and establish thresholds for how the stimuli would be detected. Then they had to consider the output or feedback to the participant or audience that would be generated in the installation space, and how that feedback might affect the brain activity immediately following. The *Apophenoetic* model encapsulates these experiences as compressed versions of the creative process creating interactive artworks for participants and onlookers, and in each of these artworks one can recognize the loop as discussed in the model.

### 3.4 Apophany External to Art

Outside of the realm of art and interactive art apophany can be found as a recognizable contribution within a range of disciplines. Already mentioned is Conrad's challenge finding the appropriate terminology within the field of psychiatry to describe the experience of apophany in his patients, which caused him to venture into the terminology of philosophy and art to aid in the clarification of what is a normal experience of perception. Psychologist and philosopher, Carl Jung, has his own term, *synchronicity*, which falls into this kind of experience of apophany, referring to events that are related, but outside the direct realm of cause and effect. Jung believed that the *collective unconscious* governed the whole human experience and could cause such things. (Jung, 1960, p. 8) Within the field of literature, Fernando Pessoa developed a peculiar invention and use of the heteronym, or false names, to enhance his writing. This was a significant representation of apophenosis that led to his creativity. Pessoa wrote under the identity of more than eighty heteronyms, some of which were female and some which were his own name, but a different identity. This disruption or apophenosis allowed Pessoa to both distance himself from his own monotonous self and taking on new strengths temporarily on a whim which had a profound impact on his writing.

It is rumored that Marcel Duchamp was influenced by Pessoa when signing *R. Mutt* on his urinal piece entitled *Fountain* (1917). I channeled Pessoa and therefore Duchamp in *GoC13* by imposing layered Twitter identities onto each participant.

## 4. THE APOPHENOETIC DISCOURSE

### 4.1 Conrad's Apophenoesis

By using vocabulary and vernacular outside of the discipline of psychiatry to describe his discovery within the discipline, Conrad was engaged in apophenoesis to do so. Conrad discovered something in his practice that didn't yet have a definition within his discipline. While most might develop a new psychiatric term, even though the definition might exist with another name in another discipline, Conrad chose to appropriate terms from other disciplines to describe his psychiatric discovery, one in which he is still considered a front-running expert. Conrad's scenario is a special one, primarily because with the degree of success he possessed within his field along with the respect from his colleagues for the contributions he made, he still chose an interdisciplinary approach to defining the pre-schizophrenic experience. His intentions still seemed in line with the Hippocratic oath, and his research methods were sound as Mishara mentions in his paper (Mishara, 2010, p. 12). What Conrad confronted was the requirement for disruption, for apophany in practice, or apophenoesis, in order to address the fundamental need to discover, create and innovate within the field of psychiatry. This was an example of the change in *conceptual space* that Boden referred to (Boden, 1994, p. 80), and the change in the "symbolic domain in the culture" that Csikszentmihalyi discussed (Csikszentmihalyi, 2013, p. 8). One could argue that Conrad's discovery was one for the field of psychiatry and for art, as well as any number of disciplines.

## **4.2 Art is Apophenoetic**

When apophany is taken out of context and placed into the context of creative practice and art, it not only causes apophany to take on a new meaning, it establishes a container for further analysis and explanation for the cognitive disruptions that occur within creative processes surrounding the areas of learning, innovation, invention, and inspiration. One could argue that because the field of art is one that intentionally and actively elevates the mundane, or rather instills significance into objects that may not have had any prior significance through creative processes, then the experience of apophany is really at the mercy of the artist's hand and can be determined by the artist.

### 4.3 Inescapable Senses

G. M. Beard stated in 1879, "Not our houses but our brains are haunted" (Brugger, 2001, p. 2) Our perception and the construction of our reality is established by our thoughts with the range of stimuli that exists via the senses. While chemical or vegetal inputs into the brain and body chemistry might provide numbness and partial disconnect from our senses, they cannot fully be shut off while retaining a conscious state. Sensory deprivation chambers/tanks have explored the potential for such experiences, and some artists have investigated this phenomenon such as *ZEE* (2008) by Kurt Hentschlager, which uses a reverse approach for achieving transcendence by providing participants a range of custom stimuli in his immersive audiovisual environment that contains fog, pulsing strobe-lights, and immersive sound. (Hentschlager, 2006 p. 1)

While sensory deprivation systems prove to be calming for the mind and possibly healing in ways, for almost everyone, perception of reality is patterned by the relationships between sensory input, interpretations of that input, and reflections.

Conversely, experiences of apophany seem to motivate apophenosis and apophenotic art when dreams, hysteria or psychosis cause perceptual narratives to be superimposed onto sensory stimuli. William James describes this as *photism*, when "sublime and ineffable feelings have been accompanied by the experience of radiant luminosity." (Sacks, 1998, p. 166-168) "In the case of Hildegard of Bingen (1098-1180), a nun and mystic....who experienced countless 'visions'.... they were indisputably migrainous, and they illustrate, indeed, many of the varieties of visual aura." Of these visions, Hildegard created what seem to be surrealist drawings which appear in one of two manuscripts entitled *Scivias* and *Liber divonorum operum (Book of Divine Works)*. (Sacks, 1998, p. 168) It is no doubt that these disruptions in stimuli-processing and perceptual interpretation lead to identifying significance, creative visions, innovations

and ideas.

With respect to memory, Sacks discusses *forced reminiscence* or *deja vu*, stating,

"and (in Jackson's term) 'a doubling of consciousness' occurs rather commonly in attacks of migraine and epilepsy, in hypnotic and psychotic states, and, less dramatically, in everybody, in response to the powerful mnemonic stimulus of certain words, sounds, scenes, and especially smells." (Sacks, 1998, p. 151)

According to Sacks, forced reminiscence or *deja vu*, when they occur from a range of stimuli, have the potential to uncover embedded subconscious sensorial experiences from memory.

Sacks continues stating that,

"Penfield and Perot have been able to evoke stereotyped recalls by stimulating epileptogenic points in the cortex, and surmise that naturally occurring or artificially induced seizures, occurring in such patients, activate 'fossilized memory sequences' in the brain. We surmise that our patient (like everybody) is stacked with an almost infinite number of 'dormant' memory-traces, some of which can be reactivated under special conditions, especially conditions of overwhelming excitement." (Sacks, 1998, p. 152)

In Conrad's research, he conducted a microgenetic experiment, where he applied perceptual stimuli to one healthy patient and one experiencing pre-schizophrenic characteristics. In stages Conrad,

"diminishes the percept by means of taticopic presentation (often too briefly to be consciously experienced), by reduced illumination of the field, by diminished stimulus size, or by presentation of objects to peripheral vision, tasks in which schizophrenia patients have been shown (during Conrad's time) to be impaired."

"In a final phase..., the healthy subject recognizes suddenly, with relief and surprise, the actual Gestalt. The delusional patient, on the other hand, remains attached to the earlier arrested phase of meaning. This marks a stable and sometimes relatively permanent loss of the capacity to shift frame of reference (ie, the ability to test reality) as 'the subject is unable to shift back from the previously passive-receptive attitude to a critical attitude.'" (Mishara, 2009, p. 9-13)

In Conrad's research, he studied subjects on a gradual scale between healthy and

diagnosed schizophrenic. While *apophany* might function as the first phase in the experience leading toward schizophrenia, there seem to be a number of other characteristics that relate to creative thinking.

Neurobiologist, Dr. Peter Brugger, at the University Hospital in Zurich refers to early 20th century Swedish playwright, August Strindberg, “At the age of 45,” when he

“experienced the first in a series of psychotic episodes. Strindberg's accounts of these episodes in the works *Inferno* and *From an Occult Diary* (Strindberg, 1897/1979), are an impressive testimony to the association between genius and madness (Galton, 1892; Karlsson, 1970).” (Brugger, 2001, p 12)

“He refers 'seeing a horn and a besom' in the unstructured surface of a rock (Table 2), immediately integrated these two stimuli into the single percept of 'insignia of witches'. A similar propensity to over appreciate semantic similarity may also be responsible for the attribution of meaningfulness to coincidences in healthy people.” (Brugger, 2001, p. 22)

Strindberg was someone who benefited from the apophenia in his writing while suffering from more deep-rooted psychotic episodes. He is known to have seen patterns in randomness, gave them significance, and applied those experiences to his expressive writing style, however, he was also known to have problems turning it off. While language is at the root of Strindberg's creative work, much of his writing could be said to be influenced by experiences of *apophany* he had with visual stimuli.

Brugger says of Strindberg,

“He kept a diary of his first schizophrenic episodes, a remarkable collection of 'meaningful' coincidences and, on the literary level, a highly creative work. It is also a particularly attractive example of the 'relativity of creativity', i.e., the continuum from creative detection of real patterns at one end, to the 'hypercreative' interpretation of patterns in 'noise' at the other end.” (Brugger, 2001, p. 22)

Brugger's description of Strindberg's experience is very close to Conrad's definition of *apophanie*. Likewise, if one considers the functionality of the human body and mind as apparatuses central to how perceptions form, it must be noted that our



management of this system can considerably impact and alter what is perceived.

Michael Shermer, a historian and the director of the Skeptics Society shares his experience competing in an enduring bike marathon in his *Scientific American* column saying,

“while I was traveling alone a lonely rural highway approaching Haigler, Neb., a large craft with bright lights overtook me and forced me to the side of the road. Alien beings exited the craft and abducted me for 90 minutes, after which time I found myself back on the road with no memory of what transpired inside the ship...” (Sacks, 2012, p. 43)

Shermer explains that his experience was triggered by sleep deprivation and physical exhaustion, where he transformed his team into aliens. (Sacks, 2012, p. 44)

While this was clearly a disruption causing an error in perception due to a functional breakdown of the system, it establishes the potential for perceptions to be influenced and in some instances impaired by systemic needs of the body and mind.

#### 4.4 Sensorial Extensions

Ars Electronica's Interactive Art Prize has consistently maintained a key benchmark from its inception in 1990 for works that have strong innate potential "to expand the scope of human action and participation." (Hieslmair, 2018, p. 1) Of this, the jury writes,

"The Prix Ars Electronica jury has had the task of reflecting critically on this wherever it moved: from viewer interactivity to artificial life; from aesthetics of software to the politics of the information culture; from the growth and nurturing of a new discipline to its incorporation into the others." (Leopoldseder, 2004, p. 102)

Telepistemological Implications have had significant impact on achieving capabilities that expanded human action and potential. Oliver Grau writes in his book *Virtual Art*,

"Telepresence combines...three archetypal areas of human aspiration: automation, virtual illusion, and a nonphysical view of the self. These notions...enable the user to be present in three places at the same time: (a) in the spatiotemporal location determined by the position of the users body; (b) by means of teleperception in the simulated, virtual image space...; and (c) by means of teleaction in the place where, for example, a robot is situated, directed by one's own movements and providing orientation through its sensors." (Grau, 2003, p. 285)

*The ...rhythms Series* all employ aspects of telepresence as a means to distance itself from the notion of the static commercialized art object on display while applying apophenosis to the project as it relates to recognizable trope in art's history. In *Virtual Art: From Illusion to Immersion*, Oliver Grau relates Ascott's telematic view, who describes telepresence as "a multiplicity of bodies, each one equally and potentially telepresent, each with their own perceptual qualifications, each in their environment, each wearing their own reality." Grau continues by saying, "Our physical skin, our protective sheath from the world, will be breached, and at the same time as the telematic body is extended, we shall see it penetrated by an amalgam of technologies that will

bring forth a biotechnological hermaphroditic life form, which Donna Haraway has named a cyborg.” (Grau, 2003, p. 291) Apophenoesis is paired with fantastic potential because it includes perceptual error as a valid path to pursue for arriving at creative ideas. When these disruptions are introduced into the commonplace, solutions that result in paradigm shifts become more possible.

#### 4.5 Bio-Apophenoesis

Author of Bio-Art and artist Edwardo Kac stated in an online symposium entitled *Visual Culture and Evolution* that

"Moholy-Nagy is among the first to point out that the question of art is not one of reproduction but of production. That is to say, an artist, by definition, is not interested in simply replicating something that is already out there, but in producing new ideas, new relationships, by engaging with materials and processes in ways that don't necessarily obey the logic that led to the production of these materials and processes." (Wilson, E.O., 2012, p. 27-28)

He continues, "I do not work with science or comment on science or engage with science in any way. I simply make art and I use the media of my time, the twenty-first century, to make my work. To summarize, science is in the eye of the beholder." (Wilson, E.O., 2012, p. 27-28) With the range of open source technologies and tools that may have been invented and founded for the purpose of one of the sciences, as Kac mentioned, these tools are the media of the time, and are now available to artists. Open source bio-sensors provide information about the human experience that serves as a new frontier, especially for electronic artists skilled to work within this medium. While Art-Science collaborations are valuable, experiences of apophany or creative practices that employ apophenoesis may function more effectively when a creative practice is inserted into the scientific context, or into the framework of an empirical practice. Beatriz da Costa writes in *Tactical Biopolitics: Art, Activism and Technoscience* about the SymbioticA research lab at University of Western Australia where "a team of artists (Oron Catts and Lionat Zurr) and scientists have convinced officials and administrators within the School of Anatomy and Human Biology to house a collaboratively run research lab dedicated to the development of artistic science projects." She continues that the group has "developed cheap do-it-yourself techniques to build usually very expensive lab equipment (such as a laminar flow hood) out of readily available home construction materials and are conducting workshops around the world in order to

spread their knowledge." (Da Costa, 2010, p. 373) By approaching the context of science with a different perspective with a different language, vernacular, and set of rules, characteristics within scientific labs as well as research methodologies can be provided a fresh perspective that can lead to apophenotic discoveries. With respect to interdisciplinary collaboration, such as in Art-Sci projects, where artists work with scientists in the lab, or scientists work with artists in the studio, this provides the distortion necessary. In the compendium for an international online conference entitled *Bioscience and Visual Culture*, artist Jill Scott responds to Richard Twine's question: "What happens when the artist enters the scientist's space and starts working with the same materials as the scientist?" stating that artists and scientists tend to debate the subjects of "method" and "methodology." Scott believes that "these debates suggest that sharing methods might be easier than swapping methodologies and that learning in consortium teams leads to new discussions about these issues." (Anker, 2009, p. 95)

Placing the artistic definition of disruption into the context of science can also provide positive results for science. Dr. Andrew Pelling, a scientist, has developed an *augmented biology* in which he reuses materials he finds in the garbage to lead to his discoveries. *Wired Magazine* (UK) describes Pelling blends science with creativity searching the trash for old technological parts that he then hacks and applies to a creative/scientific research methodology within his lab. Pelling says that he often works with artists, engineers, and people from a range of disciplines because it keeps him thinking creatively. (Rowan, 2016, p. 1)

#### 4.6 Attention and Engagement

In his book *Simulations*, Jean Baudrillard states after quoting Walter Benjamin about film saying,

"No contemplation is possible. The images fragment perception into successive sequences, into stimuli toward which there can be only instantaneous response, yes or no-- the limit of an abbreviated reaction. Film no longer allows you to question. It questions you, and directly. It is in this sense that the modern media call for, according to McLuhan, a greater degree of immediate participation, an incessant response, a total plasticity." (Baudrillard, 1983, p. 119)

Roy Ascott termed "Telematic Art" as mediated interfaces using communications technology that serve as an interface between people. Ascott's term is a more pronounced description of interactive technoetic art that connects multiple participants. (Ascott, 2007, p. 53)

While interactive art may describe a system such as Dean's *Robotic Chair* (2006) or Arcangel's *Clouds* (1994), which is an enclosed interactive system that is operating using some internal localized hardware/software communication system but not actually engaging a user or participant, Telematic Art has the underlying intention of serving as an interface between participants. (Ascott, 2007, p. 58)

#### 4.7 Gaining from Obsolescence

The challenge facing all artists is to reflect upon and contribute one's perspectives to the culture and zeitgeist of their time. While it is in the artist's toolbelt to be able to bring something insignificant into the realm of cultural significance, there must be a context and a reason or intent. Together, these attribute meaning and significance. Significance can't be separated from context. If something is significant, it must be significant within or in relation to something else. With respect to the materials used within which to uncover some truth about the world and our existence and experience within it includes looking at history and historical objects.

In Cory Arcangel's work entitled *Clouds* (1994), he hardware-hacks Nintendo's *Super Mario Brothers* video game cartridge, deleting all elements of the game except for the scrolling clouds against the blue background. In this seemingly simple hack, Arcangel alters an almost valueless cultural artifact into a completely different cultural artifact, placing it into the art gallery on display. Arcangel efficiently exhibits the hacked cartridge running *Clouds* (1994) via a projector connected directly to an operating Nintendo. The project isn't interactive, but it is a real-time operating program, and the artwork's story, or development history, invites gallery-visitors into the Do-It-Yourself realm of hardware hacking, to learn of open-source communities and technologies. At the time *Clouds* was made, the game was quite old. One could find the *Super Mario Brothers* game and Nintendo game system for a few dollars at a thrift store. Arcangel drew significance to the aging technology with a bit of solder and a lot of failed attempts before achieving *Clouds*. (Archangel, 2019, p. 1)

Similarly, artist and curator Paul Slocum, from the famed 8-bit band *Treewave*, hacks obsolete technologies, like the Atari and Commodore systems, in order to blend the current ideas with the historic nuance. (Slocum, 2000 p. 1) *PaperRad* and *Jodi.org* are also artist groups that embody this process of collecting internet media ephemera as

well as reusing obsolete hardware in order to expose aspects of culture.

In addition to interest in obsolete media to serve as efficient opportunities for modifications of cultural artifacts, the use of obsolete media also addresses a direct concern about environment which the groups above were aware.



#### 4.8 Ethics and Apophenoesis

Art functions as a reflection of the ideas, systems, organizations, hierarchies and social relationships latent within society. Whether critical or visionary art retains its relevance requires the test of time. Projects like the *Ice Stupa - A Form of Artificial Glacier* (Wangchuk, 2013, p. 1) which establishes a cultural framework to the building of artificial glaciers in the Tibetan mountains that can help provide the people in that region with water during the warm months, are growing and taking on expanding iterations in different parts of the world. Similar to many Do It Yourself (DIY) initiatives, the *Ice Stupa* project represents apophenoesis through distorting the lens and blurring the idea that glaciers can only exist as a naturally occurring phenomenon.

The ethical constraints for the acquisition and use of certain materials parallels a certain discourse that permeates the global zeitgeist. For instance, the reuse of water bottles collected from cleaning a local waterway to create a translucent plastic sculpture would simultaneously reinforce and invite the global discourse surrounding reuse, recycled goods, global warming, and DIY products. Artworks like 2005 Turner Prize winner *Shed Boat Shed (Mobile Architecture N0. 2)* (2005) by Simon Startling, where the artist "dismantled a shed and turned it into a boat; loaded with the remains of the shed, the boat was paddled down the Rhine to a museum in Basel, dismantled and re-made into a shed." (Tate, 2005, p. 1) The artwork naturally invites the reuse, eco-friendly discourse without limiting the project frame to just that, which runs the risk of dilluting the universality of significance in the work. New policies have been implemented in businesses within the US that requires xerox machine settings be set to double sided printing. While the reuse of obsolete media addresses a direct concern with respect to the public zeitgeist surrounding environment, it also functions as another apophenoetic layer to be explored within the work of art. While technology companies are generating more and more plastic products that only serves to contribute to the

already endless amount of non-biodegradable techno-waste piling up in our landfills and polluting our oceans and waterways, artists must consider how these materials are being perceived within the context of collective community engagement and new strategically sound ethical concerns as they relate to creativity. Experiences of apophany require distortion and disruption to occur, but there is a line where those concerns begin to infringe on collective beliefs and opinions.

During a session on *Disruption* moderated by Jonah Brucker-Cohen at Ars Electronica, he recalls

"Science fiction writer Bruce Sterling provided the comedy and rants on the panel speaking on the wastefulness of 'bobjects' (consumer goods designed on workstations) and 'spimes' (gadgets with infinite functions). He pointed to his Palm TREO, calling it a gizmo or the defining artifact of our time that has 'crazy' amounts of functionality, but little inherent value." (Cohen, 2018, p. 1)

What Cohen didn't mention in his post and what I remember from the conference was the moment where artist and presenter Krzysztof Wodiczko responded to Sterling's less optimistic future where he mentioned society's growing consumer-centric approach is only expanding the throw-away society which will ultimately lead to earth's dark future buried in over-abundant techno-trash. Wodiczko stated something to the effect that Ars Electronica is a forum of international artists from around the world that come together to address issues of concern within society. These challenges are no problem for the artists of the world to solve because artists are optimistic about their future, because artists are problem-solvers, outside the box thinkers, and inventors of solutions. He continued that artists are creators and are willing to create that which is necessary to activate change, and they know that it is their responsibility to do so. The artistic application of apophenosis to find solutions in the creation of a work of art or interactive art can also be ported to issues facing the planet or society. Then there are ethical considerations relating to how one operates technological systems that are developed by companies or by a community of collaborators. Ethical foundations must

be considered when tools or techniques are borrowed and shared within a network.

#### 4.9 Apophenoetic Communities

Collaborations within the fields of art and design can serve as the clash, disruption, and potential inspiration necessary for the experience of apophany to appear within one's creative process. Conversations about one's own ideas and perceptions of significance is altered through collaborative and cooperative creative practice with others where significance shifts as a result of learning and exposure to another perspective. Within these communities the term Do-It-Yourself (DIY) has been substituted with Do-It-With-Others (DIWO), which reflects the exponential increase in the creative power of collaborative efforts. Many artists groups in history engaged in these communities specifically for this reason.

The Situationistas Internationales of which Guy Debord was an influential component, whose creative practices are repurposed within *The ...rhythms Series* above, is a good example of a creative, collaborative group that worked together with any number of creative processes along a theme to innovate new ways of looking at art, society, and the spectacle within the context of art activism.

In *Society of the Spectacle* Debord writes,

"The self-emancipation of our time is an emancipation from the material bases of inverted truth. This 'historic mission of establishing truth in the world' can be carried out neither by the isolated individual nor by atomized and manipulated masses, but only and always by the class that is able to dissolve all classes by reducing all power to the de-alienating form of realized democracy — to councils in which practical theory verifies itself and surveys its own actions." (Debord, 2014, p. 80)

While apophenosis exists at the heart of almost every art collective or organization, the following reflect a new group of artists working with interactive technologies and biological systems that attempt to introduce creative interventions into the art-critical discourse.

*Medialab-Prado*, previously named *Medialab Madrid*, founded in the early 2000's, is an example of a publicly funded institute that through onsite workshops and

exhibitions supports the development of projects dealing with current contemporary themes in interactive media art for social activism and reform in the city of Madrid, Spain. The institute has a number of workshops with different themes including *Interactivos?* which has the theme *interactive art*, and where I worked to develop a number of projects with different groups of collaborators. (Garcia, 2004. p. 1)

During the development of one project for which I was one of a handful of collaborators was *Waterworks (LiliPod)*, where I worked alongside biologist Kelly Andres from Canada to create interactive electronic and remote-controlled lilipods as tools for studying, implementing and monitoring DIY bioremediation efforts to convert one's polluted local pond into drinkable water through community stewardship. Within the project, a DIY bioremediation system monitored and controlled the potability of a local pond remotely from an Android cell phone application. An online site was also in process for the community of pond remediators to connect their activities and share their technical and bioremediation strategies publicly and socially online.



Figure 87: *Waterworks (LiliPod)(2010)* - Lilipod collecting data from the simulation of a nearby pond and sending it to the application. (by Kelly Andres with collaborators) (Kazemzadeh, 2010a, p. 1) – seen above on p. 225

*Ars Electronica* is one of the largest of the annual international festivals in the world dedicated to discussing and exhibiting innovations within the field of interactive, electronic and digital art. Residencies and research runs year-round at the Linz-based venue. (Hieslmair, 2019, p. 1)

The International Symposium of Electronic Art (ISEA) festival is one of the largest traveling festivals dedicated to electronic, interactive and digital art in the world. Every year new partnerships are established with institutions in each new location that only exponentially expand the ISEA community annually. I participated as an artist exhibitor in ISEA 2014 in Dubai, UAE with *Dabarithms* (2014), and again in 2017 in Manizales, Colombia with *Colombiritmos* (2017). (van der Plas, 2008. p. 1)

*Dorkbot.org* was a less formal group of local individuals organized with at one point 80 different outposts in cities around the world interested in the local discourse surrounding interactive, electronic and digital media art. Members claim to be "people doing strange things with electricity" and hold regular meetings with symposia, artist talks, performances and workshops. I presented at the *Dorkbot.org* in Washington, DC in 2009 and in Mexico City in 2008, and served as a faculty advisor to the University of North Texas School of Visual Art Chapter of *Dorkbot*. (Repetto, 2000, p. 1)

*Rhizome.org* was a web-based collective of artists, curators, and theorists in the area of electronic, digital and net art that connected, exchanged artists works, ideas, and public exhibitions within the *Rhizome.org* portal. (Beasley, 2000, p. 1)

*Jodi.org*, *Graffiti Research Lab (GRL)*, the Free Art and Technology Lab (FAT Lab), and PaperRad were artist collectives that generated works of art with a particular

theme that tended to be about open source efforts to generate expressive works from hacking or granular exploration within the areas of either net art, software or hardware systems. (Heemskerk, 2003, p. 1)

Since 2003, Jonah Brucker-Cohen's *Scrapyard Challenge Workshops* sought to establish an environment for exploration, learning, play and reuse by building and connecting creations using found electronics, sometimes tossed out toys and tech from public dumpsters. (Brucker-Cohen, 2003. p. 1)

Within these communities individuals with diverse backgrounds, experiences and skillsets come together to collaborate on ideas, exchange knowledge about a range of media, research specific locations for socio-political, environmental issues latent within that locale, and work together to create an interactive work of art that addresses some aspect of those issues. My almost annual attendance and participation within the *Interactivos?* events at the Medialab-Prado resulted in such significant learning opportunities and had such a profound influence on my practice that I made annual attendance a requirement for my own creative process for many years. I also travelled to Mexico City and Dublin with their satellite *Interactivos?* events.

(Garcia, 2003. p. 1)

Ellen Levy mentions in a publication from the online symposium entitled *Visual Culture and Evolution* that “conferences assembled to discuss shared critical public concerns have ben including artists and art-sci teams, and not scientists alone.”

(Talasek, 2011, p. 150) Levy continues mentioning the Hinndensee workshop of Aesthetics in Environmental Change which “brings art and artists into the discussion, asking such questions as: How can arts widen our perception of nature? How are aesthetics and ethics connected to each other in habitats?” (Talasek, 2011, p.150)

## 5. CONCLUSION

Dali recalls the experience of a childhood game where he would drop on the floor and swing his head until he became dizzy,

"With eyes wide open, I could see a world that was solid black, suddenly, spotted by bright circles that gradually turned into eggs fried 'sunnyside down'. I was able to see a pair of eggs in this condition...as if in hallucination...I felt that I was at the source of power, in the cave of great secrets." (Caws, 2009, p. 116)

As apophany is a naturally occurring phenomenon that is not limited to those with mental illness, the extent of Conrad's research on apophany is not very accessible since most of the content describing this term is explained within the pages of his yet to be translated book, *Die Beginnende Schizophrenie*, written in German in the 1958. In a few translated well-written papers that discuss his research methods, Conrad describes how he struggled with applying the language of psychiatry to describe the experiences latent within his clinical interviews with a over a hundred injured soldiers, each expressing their experiences with apophany, what Conrad believed to be the first stage in the pre-schizophrenic condition. The result of Conrad's research and the descriptions which he uses to describe experiences of apophany seem to be rooted in a range of disciplines. By making this interdisciplinary gesture, after long history of dedication to research in the field of psychiatry, apophany was hence made available to serve a diversity of disciplines. To this day, the nuances of apophany as a naturally occurring phenomenon have yet to be realized by much of the world.

A work of art results from a creative and often interdisciplinary practice that intends to introduce new thoughts, ideas, and entities that contribute a perspective of the world that may not already exist. Within its core the creative practice requires experiences of apophany to achieve its goals especially in the context of technoetic art practice. It has been previously considered that creative ideas come from a tireless effort



in a particular discipline, such as in Gladwell's ten-thousand hour rule, or Csikszentmihalyi description of the flow state and how it motivates discovery and progress in a particular discipline. However, latent within the experience of apophany is a process that lends itself to the generation of creative discovery through valuing errors in perception as a contributor to recognizing significance in randomness. What Conrad would describe to be an illness resulting in the over-signification of stimuli within an experience, is for technoetic artists a natural step in the process of cognitive clarity and the pathway to creativity, discovery and innovation.

While being a universal phenomenon that all may experience, Conrad's *apophanie* would be better described as a passive experience, where apophenosis is an intentional proactive effort to use experiences of apophany for creation and innovation, the elements of which naturally occur within creative processes. Apophenosis is the expansion of moments where significance is mis-attributed for the purpose of finding new and often associative relationships to subjects. At times these associations are made between quite random, blurred or distorted elements, which seems to appeal to the logic. Benjamin Franklin and Salvador Dali were known to exploit these moments using a sleep deprivation technique. Others use drugs or tap into their emotional responses to environments to find content for their ideas. While elements of apophenosis may characterize processes that may already be reflected in artist's and designer's creative processes, the apophenoetic models discussed present an intentional implementation of the characteristics latent within the apophenoetic process for accessing creativity. This research has provided numerous examples where the *apophenoetic toggle model* and aspects of apophenoetic disruption have enhanced the creative process by aiding in achieving exponentially elevated boosts with respect to creative outcomes.

In addition to general applications of creativity, the findings resulting from this practice-based research reveal that there are two related areas within which apophenoesis appears with the creation of interactive artworks. Apophenoesis functions as an essential contributor to the creative process and as a valuable apparatus to strategically embed within the interactive experience. Within the creative process, the *apophenoetic toggle model* provides the radial-formatted, outward-facing toggle, as a conceptual design step, that challenges artists to consider how unrelated content, methods, stimuli, and media might fit together to find relevance. This process both diversifies the content while layering significance in order to provide participants a more complete and unexpected experience, splintering linear thinking into a field of ideas and stimuli. One of the challenges within the field of interactive art is in the creation of original experiences rather than merely displaying a complex technological process that fulfills a simple function or augmentation. Apophenoesis and the Apophenoetic Models pose the questions and challenge the user's expectations necessary for it to function as critical art form, while challenging participant's perspectives and beliefs. Apophenoesis provides a form of engagement that pushes the participants beyond the medium, allowing participants to transcend the simple cause-and-effect relationship that technology imposes and provides new approach for how one might experience and create interactive artworks.

## **5.1 Contribution of new knowledge proposing *apophenoesis* as a technique to introduce deviations from familiar content or processes in such a way that new creative pathways can form**

The Key Findings that emerged from applying the *Apophenoetic Toggle Model for Accessing Creativity* within the core practice, reveals that intentionally imposing deviations into the creative process in the form of a toggle encourages the artist to make significant shifts in process, practice, format and methodology. This leads to the discovery of unfamiliar, unrelated, and disconnected content, processes, and materials while challenging the artist to search for relevance and significance in reaction to the previous steps. The toggle serves to dismantle and splinter linear associative ideation resulting in a field of relational content. Based on participant feedback this relational content is what stimulates them creatively. In addition to the toggle, the loop provides reflection, reconsideration, and additional layers of the toggle for both the artist and participant, which adds layers of complexity, significance and density to the interactive artwork. In the creative process, the loop uses the previous findings as a foundation to which one reacts or toggles. The intention of using the *Apophenoetic Toggle Model*, while keeping the *Apophenoetic Black Box Model* in mind, is to challenge one's prior processes and methods in order to find new content and associations, and through this innovative process new creative pathways naturally form. When artists pursue content with a process in search for significance without a designated purpose, relationships between a range of experiential elements and memory naturally forms into creative pathways. Collaborations also serve as an apophenoetic disruption or toggle with the potential to quickly provide unrelated and unique perspectives resulting in new creative pathways. For example, while collaborating with Safavi to develop *Dabarithms* and *Poseidon's Pull: Revisited*, contradicting ideas often occurred regarding significant decisions leading up to the interactive installations. The discussions that followed these

clashes only strengthened the significance of a decision or forced us to compromise, which often resulted in a completely new and more refined idea. However, it was the misinterpretations that occurred within creative brainstorming sessions that really stimulated the new ideas and propelled the creative process forward with rapidity.

The *Apophenoetic Toggle Model* provides many moments where disruptive steps are repeated in order to reassess and layer additional elements of significance adding complexity and history to the artwork. Once the layers of conceptual significance are then satisfactory, or result in creative fatigue, then materials are sought out that apply similar disruptions to a normally linear or logical thought process. This layer is also then repeated as most technoetic works do not function using only one technoetic medium and tend to result in an integrated system with many functioning elements. The User Tested Outcome is a step where the participants are studied for their reaction to the complex system. With each new iteration of an apophenoetic work, the UTO step must be included to repeatedly assess how the layers of conceptual significance blend with the materials and the participants' response. Participant responses to the examples of core practice were often gathered from watching their gestures, reactions and behaviors while interacting with each interface as well as with other participants. Participants have also commented on their experiences. While each work functioned as a site-specific and culture-specific technoetic artwork, the reactions between projects were expectedly different. However, the characteristics relating to apophany and apophenoesis possessed similarities. Within the *Development Process* diagrams of each work lies the steps one can take to discovery layers of significance to enhance the participant experience. While each diagram reveals intentions, participant reactions demonstrate its effectiveness.

Within all three works the common visceral responses were visible in participants, such as the initial smile when participants realized the work was interactive, the excitement when the first significant element was realized, the desire to

share the experience with a friend, the contemplation phase, the discussion about significant elements, and the repeat visits to interact with the work. During the participant's experience, in moments of contemplation, they also reflected gestures of excitement and laughter. It was at this moment that the participant seemed to come to some new realization, a kind of "aha" moment, connecting an aspect of the current experience to something drawn from memory. Within each installation, participants also shared that the experiences generated deep rooted reflections about the subjects of the works, and how they seemed to change how they thought about the topic of the work, whether it be politics, surveillance, society, belief, myth, or the use of technology.

Referring to figure 72, within the *Dabarithms Development Process* diagram an initial application of an apophenoetic disruption in the form of making fantasy real served as the premise upon which the foundation of the artwork emerged. A second layer of apophenoesis was applied through the application of both the Wish, as cognitive disruption, and the Ritual, as visual disruption, that serve as mechanisms to break from reality and enhance the creative experience in such a way that elevates the participant's feelings about play and transcendence, as well as in generating sensations of belief in the fantastic premise of the system. To create yet another layer of apophenoetic disruption, the application of the *derive* served as a quite ironic process to use to seek out the reality of the city of Dubai. This resulted in a wish collecting navigating *derive* device that embodied the premise and system which interested participants and made them more willing to contribute their wishes. Some of the participants attended the exhibition on AUD campus to witness the ritual and see their wish take flight in the form of a fairy drone.

In *GoC13* the application of apophenoesis appeared in the forms of different visual and cognitive apparatuses employed within the system. Depicting one's mirrored face as a coin with an overlaid drone target served as two of the most basic examples

of apophenoetic disruption that further stimulated participant engagement into the content and narrative of the artwork. Characteristics of the mirrored image were applied to those visual and animated elements, such as scaling reflected content as it moves closer and further away. The word-for-word live feed of Tweets from Morsi-related Twitter accounts into one's mirrored image overlaid other peoples thoughts and political beliefs onto one's identity. Bringing together these two apparatuses into one screen created a strategic cognitive disruption for participants which imposed onto participants the experience each Egyptian confronts when being publicly labelled as taking a political position that followed one's familial associations. When participants realize sense this complex set of emotions through interactive art, they form new creative cognitive pathways. These apparatuses resulted from applying the *Apophenoetic Toggle Model* to discover layers of significance while developing the culture-specific project, *GoC13* remotely, prior to ever having visiting Egypt.

In examples with artworks that utilize BCIs, such as EEG sensor systems that function as technoetic inputs tracking and mapping brain activity, sensory stimuli can be used-to generate apophenoetic responses in realtime with active participants in a technoetic artwork. BCI's offer the *Apophenoetic Toggle Model* an in-depth lens into brain activity, thereby adding a different set of options for the interactive experience that allows to digitally trigger secondary encoded gestures, discover additional associations, and make further discoveries through the application of apophenoetic practice. While the BCI's neurological data is a leap from the almost infinite complexity of the human experience, from an apophenoetic standpoint, BCI's provide a new tool for data-excavation and add a layer of relevance, associations, and experiences of apophany for both creator and participants.

BCI's be considered to be an apophenoetic interface, because of how the mind naturally integrates elements of the *Apophenoetic Toggle Model* into the interactive

experience. Referring to the *Apophenoetic Black Box Diagram*, the mind functions as a center of apophenoetic activity where disruptions naturally occur through the blending of distant significant memory patterns with more recent ones which is then disrupted by one's immediate sensory experience. BCI's allow technoetic artists to experiment framing this cognitive activity in such a way to draw significance with perceived stimuli as well as interactive content in order to situate it within a more profound technoetic system.

Technoetic Artworks that merge BCI's with other bio-sensors could be seen as the future of apophenoetic art. As BCI's become more accessible and are used as creative tools, variations on its current system will seek to merge other significant input and feedback thereby identifying more content that address the relationship between brain activity, human perception and experience that will provide even more layers of significance regarding complex emotions that can be used to enhance technoetic experiences.

The key findings reveal that the collective understanding and application of the *Apophenoetic Toggle Model for Perceiving Significance from Stimuli*, the *Apophenoetic Black Box Chart*, the *Apophenosis as Disruption within a Cybernetic System for Creative Development and the Interactive Experience*, and the *Apophenoetic Toggle Model for Accessing Creativity (with references to Cybernetics)* contributes to creative processes and experiences that embody deviations from the familiar in such a way that new creative pathways form. The examples of core practice intentionally layer deviations from the familiar in order to splinter linear thinking into a more ubiquitous and dense outcomes that possess infinite possibilities. With the infinite potential in the application of technoetic practice, the creative process can be endless, infusing apophenosis repeatedly and in different ways to build more dense creative pathways,

practices, and content, with many layers of significance resulting in a deeply stimulating experience.

Within *Poseidon's Pull: Revisited*, BCI's introduced the possibility to earnestly ask questions regarding the truth of myth, belief, and the supernatural by using a very real, physical, tangible and interactive system. BCI's establish pathways to significance and relevance within the creative processes and user-experience by requiring real data from the activity of the brain to open the GPS recording portal in order to glean messages from Poseidon. While this technoetic work may seem unrealistic, the data is real, and the interfaces function. These elements collectively contribute to layered significance, which leads participants to experiences apophany and new creative pathways to form. This is evidenced even more when the technoetic experience challenges participants to consider mythical narratives to be real.

The two other examples of core practice, *Dabarithms*, *GoC13* also employ the *Apophenoetic Toggle Model* to create deviations in familiar content in such a way that they invite, engage and influence participants to consider new ways of thinking thereby opening new creative pathways. With *Dabarithms* these deviations appeared in everything from the establishment of the project's premise which claimed that wishes can be amplified through ritual or hacking and automating a re-appropriated store-bought fairy drone to sequentially launch daily at the moment when wishes were collected on the Palm Jumierah island. *GoC13* re-appropriates Twitter in such a way that it generates feelings of imposition, then is mashed-up with the Twitter feeds of other participants to generate a new senseless mash-up Tweet.



## **5.2 Contribution of new knowledge employing *apophenoesis* to enhance the level of immersion participants experience within technoetic artworks**

Upon further analysis of each of the three technoetic artworks merged with feedback from participants reveals how variations on the application of apophenoesis serves to intensify strategies for employing each immersive apparatus, resulting in multiple layers of significance which draws participants deeper into the technoetic experience. Immersion takes on slightly different nuances within each application of apophenoesis. Layering significance elements within a work only heightens the sense of immersion within an experience. Art often provides the context for apophenoesis to exist comfortably, since bringing together disparate elements in close conceptual proximity in a technoetic artwork forces the participant to consider them as associated. Immersion functions as an asset for artists to cognitively draw participants into the interactive narrative. A visual apparatus or interface, such as the mirror, receipt with GPS track, or reappropriated fairy drone, is only one approach used in each of the examples of core practice. Other immersive apparatuses have taken on the form of the wish, superstition, or myth.

For instance, if we look at figure 44, in the *GoC13 Development Process* diagram apophenoesis is employed in the distortion of the mirror as a immersive apparatus, where iconic graphics are used in place of the actual mirrored interactive video image feed of the participant. The characteristics of face-tracking was employed to maintain the immersive functional characteristics of the mirror while replacing the participant's video image with content more relevant to the artwork's narrative. It is in the distortion of the interactive mirror that heightens the immersion. An additional more complex apparatus displayed real-time word-for-word tweets from one of the many Morsi-like Twitter accounts into the center of each participant's mirrored graphic sought to impose political opinions onto each participant. However, it was in the distortion of the format

that Tweets were being shared that immersed participants. The concealed elements caused participants to inquire and gain interest into this deviation from what was familiar. The feeling of one's identity being intruded upon with the overlay of someone else's Tweets evoked an emotional response which served as a different type of immersion. A third layer of immersion took one's word for word overlaid Twitter feed and reposted it to the @GesturesOChange Twitter account which caused each participant to feel used as a metaphorical cog in the political propaganda machine. This elaborate system that strategically merged together deviated forms of familiar content generated a sense of interest, attraction and immersion for participants.

In another example, referring to figure 72, the *Dabarithms Development Process* diagram, the Wish and the Ritual served to immerse participants in different ways with respect to the premise and experience of the technoetic artwork. During the creative process the act of wishing was believed by the artist to impact outcomes, which was integrated as a cognitive disruption with respect to the application of apophenosis, as seen in the *Apophenosis as Disruption within a Cybernetic System for Creative Development and the Interactive Experience* diagram. The automated technoetic Ritual is the vehicle by which the wishes are activated, and the implementation of a range of integrated custom automated technologies with familiar, hacked and reappropriated toy fairy-drones, only reinforces feelings of belief, immersing the participants even further into the experience. Similar to *Dabarithms*, a fantastic element becomes the premise by which *Poseidon's Pull: Revisited* attracts and immerses the viewer. While the notion that myths are true may serve as a cognitive disruption, when posed with a technoetic system that seeks to analyze certain nuances relating to myth, it draws participants in. It must be noted that apophenosis is not a random disruption, but rather a focused one that emerges from the actual stimuli presented in these artworks as an invitation by a gallery or art institute in a particular location as seen in the *Poseidon's Pull: Revisited*

(2018) *Development Process* diagram. This invitation establishes the foundation for research to take place and for an intent to be established.

Within the examples of core practice, apophenoesis proves enhancing the immersive quality by the way that significance is discovered and integrated from unrelated content, methods, and materials. Participants become further engaged and immersed since the diverse layers of significance are offered via an interactive experience. After interacting with each of the examples of core practice, participants who were also practicing artists, expressed interest in pursuing similar subject-matter in their own work. With *Dabarithms*, the strategy for immersion challenged participants to rethink how their own belief systems formed and question prior notions of the power of the act of wishing and rituals. In *Poseidon's Pull: Revisited*, participants were spurred to rethink their beliefs about the power and relevance of myth and to question whether stories of Poseidon were real. A number of participants expressed their desire to learn how these systems were built and some expressed an interest to join in the research and development of future projects. Participants at the opening event expressed that they had never experienced work that directly confronted questions of myth, belief, or the supernatural in such a tangible way. Some related that aspects of *Poseidon's Pull: Revisited* motivated one to question their own belief system because the artwork itself asked seemingly impossible questions and found logical answers to those questions. The layer which integrated diverse technologies provided a confirming component when paired with the impossible that added to the disruption in belief. The final message from Poseidon didn't seem important to participants, but rather, the artwork represented something more significant which was how to ask impossible questions and then employ a range of technologies to try and find answers to those questions. Participants realized that this process could be applied to anything, and that is what led them to cognitively engage with the work as a more active participant, or potential collaborator, rather than a

consumer. Similar to *Wishing Well, Poseidon's Pull: Revisited* created a following made up of a set of creative “believers” that wanted to pursue similar seemingly illogical questions within a technoetic practice. While users were engaged in the works, they spent extended periods of time exploring all facets of the work with intentions of uncovering more significance.

Ultimately, the key findings regarding immersion are primarily expressed from the reactions of the participants. Within each work of the core practice, each triggered extensive discussions between participants for days following the opening events. Each work developed a group of dedicated repeat visitors and each had a number of artists that wished to join the project or engage in their own iterations of the same investigations. Within *GoCI3*, participants were witnessed engaged in the work for long periods of time following the reactive process previously stated: smiling, reacting with excitement, bringing others to witness and participate, reading the project description on the placard, silently contemplating, and then discussing. Participants would also often tend to return to the work a few times during the first visit, and then return on other days to experience the work and recognize changes in content. With *Dabarithms*, the changes were reflected in the locations of the fairy drones. At one moment, almost all of them would be scattered across that section of campus, while at another they would all be on their perches waiting to be triggered to launch. With *Poseidon's Pull: Revisited*, the work evolved and the print paper coiled into a pile at the back of the boat as the receipt grew in length.

### **5.3 Contribution of new knowledge proposing “apophenoetic art” as a term to define interactive artworks concerned with cognitive disruption and consciousness**

While Ascott’s *technoetics* is the framework within which apophenoetic art exists, apophenosis highlights the areas of technoetic practice where errors and disruptions in perception serve to expand the scope of creative potential, resulting in innovations and discoveries that push the creative practice further. Within examples of apophenoetic art, one will experience that disruption through visual and cognitive apophenosis. Apophenoetic art seeks to more specifically define works that highlight and benefit from these disruptions.

Within some of the examples of best practices in apophenoetic art, works like Rokeby’s *Giver of Names* (1990) employed apophenosis in an artificial intelligent system to expose the errors in machine perception that occur while processing the characteristics of perceived objects into spoken lines of poetry. At the center of Rokeby’s artwork are the linguistic mistakes that occur through the artificial intelligent processing of what to humans might seem to be a simple description of perceived objects. What participants experience is an accurate and performative reading of the linguistic associations generated by viewing and deconstructing an object for its formal visual elements as it sits on the pedestal. The grammatical and linguistic requirements necessary to weave each element together into a narrative is what often fails, and serves as the apophenoetic disruption, and is the source of the work’s beauty and attraction. This is why Rokeby’s technoetic artwork can also be considered as an example of apophenoetic art. It is through exposing and analyzing the errors or failure of a system, medium, or practice that one is able to discover the influence apophenosis has on creativity.

One current area of investigation that will provide fruitful to the study of topics relating to apophenosis and apophenoetic art relates to BCI and EEG interfaces. Within this realm artists are allowed a certain degree of experimentation and investigation that

could be beneficial or successful in deconstructing the details latent within the act of perceiving and processing a new relevant image, object or scene. As seen within the content of *Poseidon's Pull: Revisited* (2018) the meditative state of the individual only served as a framing element within a larger technoetic system. The reason BCI's provide such a valuable apophenoetic component within the realm of art practice is that the study of mental activity as it relates to the brain is still evolving. Numerous questions still exist regarding how different individual's brains respond to eating an orange or a kiss. While they are certain almost universal truths, there still exists a wide array of diversity that raise questions, pose challenges and generate apophenoetic disruptions that need to be integrated into the creative process. Lastly, the integration of physical sensors with bio sensors and BCIs can provide even more opportunities for apophenoetic disruptions and creative misperceptions that can result in a clearer understanding of the mind's relationship to creativity.

Marian Diamond stated, "The brain is a three-pound mass you can hold in your hand that can conceive of a universe a hundred billion light years across." (Kurzweil, 2013, p. 25) Within one's consciousness exists the infinite, and through the application of our creative process we begin to access that infinite consciousness. Apophenoetic disruptions are caused at times when our finite mind confronts that infinitely conscious mind. During the implementation steps of the creative process, this is often an area where apophenoetic disruption introduces even more opportunities for creativity. When we attempt to make something tangible that is sourced from the infinite, we experience apophenoesis.

In summation, the key findings resulting from the Apophenoetic models along with the analyses of the examples of core practice and the ensuing reactions from participants reveal that *apophenoetic art* has the potential to function as a term to define interactive or technoetic artworks concerned with cognitive disruption and consciousness.

When apophenosis is implemented into the creative process the application of the toggle metaphor encourages artists to freely splinter linear thinking in order to find relevance and significance in unrelated stimuli, materials, and methods to generate technoetic experiences. Apophenosis challenges and engages the artist while providing a diverse array of stimulating content for participants to experience. These Apophenoetic models provide a more complete framework to understand the relationship of disruption with the critical assessment of one's own creative process while offering a different perspective for evaluating the technoetic experience, something that has not existed before in the field.

Currently there is no definition for a practice dedicated to exploring the myriad aspects of cognition and creativity through experiences of apophany, and how new creative pathways can emerge through introducing disruption, error, and deviations from the familiar into the creative process and experience. Within this framework also exists the analysis of disruption and error as it relates to an idea, process or system.

Referencing the examples of core practice, Apophenosis functions as both a procedural guideline imposed into the creative process as well as an apparatus employed within a technoetic experience. Apophenoetic Art can serve to describe Technoetic Artworks that integrate Brain Computer Interfaces (BCI) to explore disruption as it relates to aspects of the human experience.

#### 5.4 Concluding Statements: Apophenosis and the Anthropocene

The fantastic, disruptive, contradictory, and potentially random elements that make up apophenosis justify it as a fundamental critical element in the creative process and the interactive experience, at a time when representation is algorithmic and emerging technologies are instrumental. These elements provide the tools necessary to evaluate and assess an interactive artwork's value as well as its contribution to the field, which is currently missing. When the apophenotic process is integrated into the design and creation of interactive experiences, its disruption dethrones technology as an authority accessible to the society's privileged while criticizing it as a utilitarian tool poised merely for augmentation. The fantastic, apparent errors, and altered states of perception which applies the macro to micro or quantum lens present in apophenosis are tactics presenting new ways to experience technology. It is in this new area that technology can more critically contribute to creativity and innovation while reflecting culture and the zeitgeist more immersively.

Donna Haraway quotes Carl Sandburg stating in the Prologue for Edward Steichen in *The Family of Man* "If the human face is 'the masterpiece of God' it is here then in a thousand fateful registrations." (Haraway, 1997, p. 213)

George Lois stated "Creativity can solve almost any problem. The creative act, the defeat of habit by originality, overcomes everything." (Kurzweil, 2013, p. 113)

While this research reveals apophenosis as a functional contributor to the creation and assessment of technoetic artworks, it also has the potential to serve as a practice that reveals truths about our world and significant interventions in the improvement of social, political, and environmental systems. One could argue that inventions and interventions in history embodied the disruptions or distortions of apophenosis necessary



for these paradigm shifts in thinking.

Remnants of apophenosis are present in inventions that seem to have changed how society functions and views social and cultural systems, especially those that have had an impact on the domain of the culture and noticeable changes are evident. Uber, for instance, could be analyzed for its contribution as an apophenoetic disruption in, as Csikszentmihalyi might refer, the *meme* and *domain* of the public Taxi system, as Airbnb still is to the hotel industry. When we consider the emergence of Uber, there must have been a moment when the developers of the idea for a mobile-phone-based Taxi-order application could have been sold to the Taxi companies, with the support of the local government in the implementation of such a system. There seems to have been a consideration to keep the system ubiquitous in every aspect, including the drivers. One could consider the distortion in the definition of the taxi service with members of the public registering with Uber to offer rides as drivers for hire. Uber has since become a corporate giant. Uber's networked phone application became a ubiquitous tool that functioned on a device that everyone already owned, and this lens instantly changed the way everyone viewed the Taxi service, especially in cities that offered terrible service, as the only alternative to public transit. While Uber repeats a common historical model, best represented in the industrial revolution, where a new technology transforms a system of business to transform industry, improve convenience, and access new potentialities provided by that technology, it is in the evidence visible through characteristics within their services and system that reveal the disruptive elements within their creative process that lead to paradigm shifts in thinking. Uber not only critiques, but also disrupts previously established business models, rules and laws that often lack language to describe such significant changes to a system. While Uber only illustrates the point that apophenosis is a potentially universal model to access creativity, Apophenoetic Art has the freedom and potential to go far beyond a system tied to the confines of business.

While Apophenosis provides new insight toward iterative development, it also establishes a foundation for expediting the development of new intricate collaborative networks that lead to resolving environmental, cross-cultural socio-political struggles, as well as new designs for our quickly evolving and growing cities and living spaces. Better understanding the characteristics latent within the experience, apophany and applied apophenosis provide formats for how we as a society can and should be looking forward at the vast array of random data and potential in order to address serious issues that confront the world, to move creatively forward, unfettered and confident into the yet unknown future.

## BIBLIOGRAPHY

- Norvell, P., Alberro, B., 2001. *Recording Conceptual Art*. Berkeley, CA: University of California Press, p. 1-4, 10-12
- Alexander, L., Allcock, C., Nawar, H. Eds., 2013, *Behind the Image and Beyond: Egypt Digital Art Festival 0.1*, Cairo, Egypt: Ministry of Culture, Egypt, p. 32
- Anker, S., 2009, *Visual Culture and Bioscience: Issues in Cultural Theory, No. 12*, Center for Art, Design and Visual Culture, UMBC, p. 95
- Apophenia. (n.d.) In *Merriam Webster's Collegiate Dictionary*. Retrieved from <https://www.merriam-webster.com/dictionary/apophenia>
- Archangel, C. 2019. [ONLINE] Available at: <http://www.coryarchangel.com/things-i-made/2002-001-super-mario-clouds> [Accessed 7 April 2019], p. 1
- Armstrong, T. 2010, *The Power of Neurodiversity*, Perseus Book Group, p. 9
- Ascott, R., Shanken, E. A. 2007. *Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness*. Berkeley, CA: University of California Press, p. 53, 58, 69
- Ascott, R. 2008. *Technoetic Arts: A Journal of Speculative Research – Aims & Scope* [ONLINE] Available at: <https://www.intellectbooks.com/technoetic-arts-a-journal-of-speculative-research> [Accessed 7 April 2019] p. 1

Austin, J. H., 1999, *Zen and the Brain*, Cambridge, MA: MIT Press, p. 295

Axelrod, R., 1984, *The Evolution of Cooperation*. Basic Books. p. 22

Baldessari, J., 2019, *John Baldessari's Unique Works*. [ONLINE] Available at: <http://www.baldessari.org/unique/1ni867x7cmbdsy3t8rx6360m7jp5mr>. [Accessed 7 April 2019], p. 1

Barthes, R., 1982, *Empire of Signs*, New York, NY: Hill and Wang/Farrar, Straus and Giroux, p.70

Baudrillard, J., 1983, *Simulations*, USA: Cambridge, MA Semiotext[e], p. 119

Beasley, M. 2000. *Rhizome.org Website*. [ONLINE] Available at: <http://rhizome.org> [Accessed 7 April 2019], p. 1

Benayoun, M., 2016, *Brain Factory Prototype*. [ONLINE] Available at: <http://benayoun.com/moben/2016/12/26/brain-factory-prototype/>. [Accessed 7 April 2019], p. 1-2

Berger, J., 1977, *Ways of Seeing*, New York, NY: British Broadcasting Corporation and Penguin Books, p. 7-8

Bergson, H. 1918, *An Introduction to Metaphysics*, New York and London: G. P. Putnam's Sons, The Knickerbocker Press, p 1

Bergson, H., 2014. *Matter and Memory*. Kent: Solis Press. pp. 1, 3, 12, 16, 235-238.

Boden, M., 1994, *Dimensions of Creativity*, Cambridge, MA: MIT Press, p. 80

Bois, Y.-A., Krauss, R. E., 1997. *Formless: a user's guide.*, p. 77. Figure 23.

Boullosa, C., 2007. "Art Interview: Gabriel Orozco." *BOMB 98*. Winter 2007. *BOMB - Artists in Conversation*. [bombmagazine.org/article/2862/gabriel-orozco](http://bombmagazine.org/article/2862/gabriel-orozco). [Accessed September 12, 2013.]

Brucker-Cohen, J. 2004. *Report from Ars Electronica 2004*. [ONLINE] Available at: <http://www.coin-operated.com/2004/09/02/report-from-ars-electronica-2004/>. [Accessed 7 April 2019], p. 1-2

Brucker-Cohen, J., Moriwaki, K. 2003. *The Scrapyard Challenge Workshops*. [ONLINE] Available at: <http://www.scrapyardchallenge.com>. [Accessed 7 April 2019], p. 1

Brugger, P, Houran, J. (ed.), Lange, R. (ed.) (2001), "From Haunted Brain to Haunted Science: A Cognitive Neuroscience View of Paranormal and Pseudoscientific Thought," *Hauntings and Poltergeists: Multidisciplinary Perspectives*. Jefferson: McFarland & Company, Inc. p. 2, 21

Castellanos, C. 2008. *Naos*. [ONLINE] Available at: <https://ccastellanos.com/projects/naos/>. [Accessed 7 April 2019], p. 1-2

Caws, M. A., *Salvador Dali*. London, UK: Reaktion Books Limited, 2009. p. 116

Clynes, M. E., Kline, N. S. (1960). "Cyborgs and Space". *Astronautics*. September. p. 27.

Conrad, K. (1958). *Die beginnende Schizophrenie. Versuch einer Gestaltanalyse des Wahns*. Cologne: Psychiatrie-Verlag. p. 88.

Csikszentmihalyi, M., 2008, *Flow: The Psychology of Optimal Experience*, New York, NY: Harper Perennial Modern Classics, p. 6

Csikszentmihalyi, M., 2013, *Creativity, The Psychology of Discovery and Invention*, New York, NY: Harper Perennial Modern Classics, p. 8, 9

Da Costa, B., 2010, *Tactical Biopolitics - Art, Activism and Technoscience*, Cambridge, MA: MIT Press, p. 373

Dali, S., 1942. *The Secret Life of Salvador Dali*. New York: Dial Press. pp. 3, 37, 39, 49

DaVinci, L., Kemp, M. ed., 1989, *Leonardo on Painting: An Anthology of Writings by Leonardo da Vinci with a Selection of Documents Relating to His Career* (Paperback), Yale University Press, p. 222

Davis, E., 1998. *TechGnosis: Myth, Magic & Mysticism in the Age of Information*. New York: Harmony Books. p. 198

De Boeck, C. 2011. *Staalhemel in Bozar*. [ONLINE] Available at: <https://vimeo.com/23862723>. [Accessed 7 April 2019], p. 1

Debord, G., 2014., *The Society of the Spectacle*, Berkeley, CA: Bureau of Public Secrets; annotated edition. p. 10, 80

Dikker, S., Oristaglio, S., 2008, *MAI Presents: Mutual Wave Machine, An Interactive Neurofeedback Installation*. [ONLINE] Available at: <https://mai.art/content/mutual-wave-machine>. [Accessed 7 April 2019]. p. 1

Dillon, T., Gorman M. J., 2012, *Hack the City – Take Control*, Dublin, Ireland: Science Gallery, p. 52-53

Disruption. 1828. In *Merriam-Webster.com*. Retrieved January 8, 2019, from <https://www.merriam-webster.com/dictionary/disruption>

Duenyas, Y. 2011. *Infinity Simulator*. [ONLINE] Available at: <http://www.arts.rpi.edu/pl/iear-events/yehuda-duenyas>. [Accessed 7 April 2019], p. 1-2

Dunning, A., Woodrow, P., 2005, *The Einstein Brain Project*. [ONLINE] Available at: <http://people.ucalgary.ca/~einbrain/>. [Accessed 7 April 2019], p. 1

Faludi, R., Hartman, K., London, K., 2008, *Botanicalls*. [ONLINE] Available at: <https://www.botanicalls.com>. [Accessed 7 April 2019], p. 1

Farley, M. A., 2017, In “*Mind-Controlled Sperm: Woman of STEAM Grabs Back*” *Ani Liu Flips the Script*. [ONLINE] Available at: <http://artfcity.com/2017/06/23/in-mind-controlled-sperm-woman-of-steam-grabs-back-ani-liu-flips-the-script/>. [Accessed 7 April 2019], p. 1-2

Fish, F., 1960, Die Beginnende Schizophrenie. By K. Conrad Georg Thieme, Stuttgart, 1958. *Journal of Mental Science*, 106(445), 1595-1598. doi:10.1192/bjp.106.445.1595, pp. 1595-1598

Flaxman, G. ed., 2000, *The Brain is the Screen*, Minneapolis, MN: University of Minnesota Press., p. 366.

Forsythe, W. 2000. *City of Abstracts* [ONLINE] Available at: [https://www.william-forsythe.com/installations.html?&pid=4&count=42&no\\_cache=1&detail=1&uid=5](https://www.william-forsythe.com/installations.html?&pid=4&count=42&no_cache=1&detail=1&uid=5) [Accessed 7 April 2019], p. 1

Fung, L., Fu, W., Pau, E., Wong, N., 2006, *Animatronica: Microwave International New Media Arts Festival (2006)*. Hong Kong: Microwave Co. Ltd., Videotage, p. 24, 29, 32, 43

Garcia, M. 2003. *Interactivos?* [ONLINE] Available at: <http://www.medialab-prado.es/programas/interactivos> [Accessed 7 April 2019] p. 1

Garcia, M. 2004. *Medialab Prado Website*. [ONLINE] Available at: <https://www.medialab-prado.es/en> [Accessed 7 April 2019], p. 1



Garfinkel, H., 1967, *Studies in Ethnomethodology*. Englewood Cliffs, NJ: Prentice-Hall.  
p. 37

Greene, R., 2004, *Internet Art*, London: Thames and Hudson Ltd., p. 68-69

Geurts, K., Hwang, I., 2016, *ThoughtForms | Visualize and 3D Print Your Thoughts*.

[ONLINE] Available at: <https://www.derivative.ca/events/2016/ThoughtForms/>.

[Accessed 7 April 2019], p. 1-3

Hambrecht M, Häfner H. 1993, “Trema, Apophänie, Apokalypse”—Ist Conrads  
Phasenmodell empirisch begründbar? *Fortschr Neurol Psychiatr*. 61:418–423.

Haraway, D., 1997, *Modest\_Witness @Second\_Millennium*.

*FemaleMan\_Meets\_OncoMouse*, New York, NY: Routledge, p. 213)

Heemskerk, J., Paesmans, D. 2003. *jodi.org website*. [ONLINE] Available at:

<http://www.jodi.org>. [Accessed 7 April 2019], p. 1

Heidegger, M., 2008, *Basic Writings, from Being and Time (1927) to The Task of*

*Thinking (1964)*, New York, NY: Harper Perennial Modern Thought, p. 103

Hentschlager, K. 2006. *Kurt Hentschlager Website: ZEE 2008* [ONLINE] Available at:

<http://www.kurthentschlager.com/portfolio/zee/zee.html> [Accessed 7 April 2019], p. 1

Hieslmair, M. 2018. *Prix Ars Electronica: Interactive Art+*. [ONLINE] Available at:

<https://ars.electronica.art/prix/en/categories/interactive-art/>. [Accessed 7 April 2019] p.

1

Hieslmair, M. 2019. *Ars Electronica Website*. [ONLINE] Available at:

<http://ars.electronica.art/> [Accessed 7 April 2019], p. 1

Hornby, H., 1988, *Lights of Guidance*, Wilmette, IL: Baha'i Publishing Trust, 2nd rev. and enl. ed edition , p. 415

Imoto, M., 2005, *The Hidden Messages in Water*, New York, NY: Atria Books; First Printing edition, p. 15

Johnson, S. A., 1997. *Interface Culture: How New Technology Transforms the Way We Create & Communicate*, San Francisco, CA: Harper. p. 46

Jung, C., 1960. *Synchronicity: An Acausal Connecting Principle*. Princeton: Princeton University Press. p. 8

Kazemzadeh, M. 2006. *Transcription and ORF Sound Recording of the Wishing Well Interview*. [ONLINE] Available at: <http://www.maxkazemzadeh.com/orf.html> [Accessed 7 April 2019], p. 1

Kazemzadeh, M. 2009. *Personal Website – Biography*. [ONLINE] Available at: <http://maxkazemzadeh.com/bio.html> [Accessed 7 April 2019], p. 1

Kazemzadeh, M. 2010a. “*Lilipod (Waterworks)*” (2010) (Collaborative Project) with

Kelly Andres. [ONLINE] Available at: <http://vimeo.com/155249538> [Accessed 7 April 2019], p. 1

Kazemzadeh, M. 2010b. *Wishing Well (2010) - by Max Kazemzadeh and Joe Scheinberg*. [ONLINE] Available at: <https://vimeo.com/124257934> [Accessed 7 April 2019], p. 1

Kazemzadeh, M. 2011. *Plantenkere or "Plant Thinkers" (2011)*. [ONLINE] Available at: <https://vimeo.com/155250422> [Accessed 7 April 2019] p. 1

Kazemzadeh, M. 2012a. Apophenoetics: Virtual Pattern Recognition, the Origins of Creativity & Augmenting the Evolution of Self. *Technoetic Arts*. [e-journal] 10 (1) pp. 115-118. [https://doi.org/10.1386/tear.10.1.115\\_1](https://doi.org/10.1386/tear.10.1.115_1)

Kazemzadeh, M. 2012b. *Poseidon's Pull (2012) Website*. [ONLINE] Available at: [www.poseidonspull.com](http://www.poseidonspull.com) [Accessed 7 April 2018], p. 1

Kazemzadeh, M. 2012c. *Poseidon's Pull Documentation* [ONLINE] Available at: <https://vimeo.com/73144125> [Accessed 7 April 2019], p. 1

Kazemzadeh, M. 2012d. *Poseidon's Message* [ONLINE] Available at: <http://vimeo.com/72278249> [Accessed 7 April 2019], p. 1

Kazemzadeh, M. 2013a. *"Antenkere (Ant Thinkers)" (2011) by Max Kazemzadeh*. [ONLINE] Available at: [www.youtube.com/watch?v=gRqydF-U-0Q](http://www.youtube.com/watch?v=gRqydF-U-0Q) [Accessed 7 April 2019], p. 1

Kazemzadeh, M. 2013b. Postnational technollaboration within the postbiotanical village (an Apophenoetic Prophecy). *Technoetic Arts*. [e-journal] 11 (3), pp. 253-261.

[https://doi.org/10.1386/tear.11.3.253\\_1](https://doi.org/10.1386/tear.11.3.253_1)

Kazemzadeh, M. 2013c. *GesturesOfChange (2013) Di-Egy Fest - Cairo, Egypt*

[ONLINE] Available at: [vimeo.com/72616842](https://vimeo.com/72616842) [Accessed 7 April 2018] p. 1

Kazemzadeh, M. 2014. *DABARITHMS: Palm Wish (ISEA2014)*. [ONLINE] Available

at: <https://vimeo.com/116585386>. [Accessed 7 April 2019], p. 1

Kazemzadeh, M. 2016a. *Beirithms (2016) in Beijing, China (by Max Kazemzadeh &*

*Reza Safavi)*. [ONLINE] Available at: [vimeo.com/176380179](https://vimeo.com/176380179) [Accessed 7 April 2019],

p. 1

Kazemzadeh, M. 2016b. “*Madritmos ‘16*” by Max Kazemzadeh (Developed during

*residency @ Medialab-Prado. Sponsored by Banco Sabadell)* [ONLINE] Available at:

<http://vimeo.com/174589509> [Accessed 7 April 2019], p. 1

Kazemzadeh, M. 2017. *PhD Reference Links and Illustrations Page*. [ONLINE]

Available at: <http://www.maxkazemzadeh.com/apophenia> [Accessed 7 April 2019], p. 1

Kazemzadeh, M. 2018. *Poseidon’s Pull (Revisited, 2018): “Part 1: Channeling the*

*gestures of a god” (by Max Kazemzadeh & Reza Safavi)*. [ONLINE] Available at:

<https://vimeo.com/280070076> [Accessed 7 April 2018], p. 1

Kinsella, E., 2016. What Does TEFAF 2016 Art Market Report Tell Us About The Global Art Trade?. *Artnet News*. [online] Available at: [news.artnet.com/market/tefaf-2016-art-market-report-443615](https://news.artnet.com/market/tefaf-2016-art-market-report-443615). [Accessed 20 June, 2017]. p. 2

Knapp, K., 2006, *Situationist International Anthology*, Berkeley, CA: Bureau of Public Secrets; Revised & Expanded edition, p. 62

Krauss, R., 1994, *The Optical Unconscious*, Cambridge, MA: MIT Press, p. 39, 227, 279 (illustrations)

Kurzweil, R., 2006, *The Singularity is Near*, New York, NY: Penguin Books, p. 470

Kurzweil, R., 2013, *How To Create A Mind*, New York, NY: Penguin Books, p. 25

Lancel, K., Maat, H., 2016, *E.E.G. Kiss*. [ONLINE] Available at: <http://www.lancelmaat.nl/work/e.e.g-kiss/>. [Accessed 7 April 2019], p. 1-2

Leopoldseder, H., Schopf, C., Stocker, G., 2006, *Prix Ars Electronica-CyberArts 2006*, Linz: Hatje Cantz, p. 140-141

Leopoldseder, H., Schopf, C., Stocker, G., 2004, *Prix Ars Electronica-CyberArts 2004*, Linz: Hatje Cantz, p. 102, 122-125

Levin, G., 2019, *The Manual Input Sessions*. [ONLINE] Available at: <http://www.flong.com/projects/mis/>. [Accessed 7 April 2019], p. 1

Littlered. 2007. *Auto-Ethnomethodology*. [ONLINE] Available at:<http://auto-ethnomethodology.blogspot.co.uk/2007/07/auto-ethnomethodologylearning-what-you.html> [Accessed 7 April 2019], p. 1

Love, J., Pasquier, P., 2017, *PrayStation*. [ONLINE] Available at: [http://metacreation.net/artwork/aa\\_artwork\\_exhibitions/praystation/](http://metacreation.net/artwork/aa_artwork_exhibitions/praystation/). [Accessed 7 April 2019], p. 1-2

Lozano-Hemmer, R., 2019, *Wavefunction*. [ONLINE] Available at: <http://www.lozano-hemmer.com/wavefunction.php>. [Accessed 7 April 2019], p. 1

Manovich, L., 2001, *The Language of New Media*, Cambridge, MA: MIT Press, p. 8, 9, 43, 91-92, 262

McCullough, M., 1998, *Abstracting Craft, The Practiced Digital Hand*, Cambridge, MA: MIT Press, p. 269

McLuhan, M., 1964. *Understanding Media: The Extensions of Man*. New York, NY: McGraw-Hill p. 25

McTaggart, L., 2002, *The Field: The Quest for the Secret Force of the Universe*, New York, NY: Harper Collins Publishers, p. 106, 107

Mengbo, F., 2006, *Feng Mengbo Built To Order*, 2006. Hanart T Z Gallery. Hong Kong. p. 63

Mishara, A., 2009. Klaus Conrad (1905–1961): Delusional Mood, Psychosis, and Beginning Schizophrenia. *Schizophrenia Bulletin*. [e-journal] 36, (1) pp. 9–13.  
<https://doi.org/10.1093/schbul/sbp144>

Morozov, D. 2016. *2ch*. [ONLINE] Available at: <http://vtol.cc/filter/works/2ch>.  
[Accessed 7 April 2019], p. 1-2

Nadeau, R., Kafatos, M., 1999, *The Non-Local Universe – New Physics and Matters of the Mind* New York, NY: Oxford University Press, p. 197-198

Noesis. 1828. In *Merriam-Webster.com*. Retrieved January 8, 2019, from  
<https://www.merriam-webster.com/dictionary/noesis>

Novello, A. 2013. *(UN)FOCUSSED: brain-controlled sound and laser performance*.  
[ONLINE] Available  
at: <https://vimeo.com/161614592?cjevent=525718254b9411e98387003c0a240614>.  
[Accessed 7 April 2019], p. 1

Novello, A., 2014, *Fragmentation*. [ONLINE] Available  
at: <https://vimeo.com/61676018>. [Accessed 7 April 2019], p. 1

Oliver, J., 2012, *Border Bumping: In GSM We Trust*. [ONLINE] Available  
at: <https://borderbumping.net>. [Accessed 7 April 2019], p. 1-3

Packer, R., Jordan, K., *Multimedia: From Wagner to Virtual Reality*, New York, NY:

W.W.Norton and Company, p. 47, 48, 95

Park, L., 2013, *Eunoia*. [ONLINE] Available at: <http://www.thelisapark.com/eunoia>. [Accessed 7 April 2019], p. 1

Park, L., 2014, *Eunoia II*. [ONLINE] Available at: <http://www.thelisapark.com/eunoia-ii>. [Accessed 7 April 2019], p. 1-2

Parkinson, C. 2016. [July 19] *Bird Song Mimic: East to West Coast Bird/Human Communication Event*. [ONLINE] Available at: <http://www.harvestworks.org/july-19-bird-song-mimic-east-to-west-coast-birdhuman-communication-demo>. [Accessed 7 April 2019], p. 1

Paul, C., 2008, *Digital Art*, London: Thames and Hudson Ltd., p. 149, 174

Pelling, A. E., Wilkinson, P. R., Stringer, R., & Gimzewski, J. K., 2008, Dynamic mechanical oscillations during metamorphosis of the monarch butterfly. *Journal of the Royal Society, Interface*, 6(30), p. 29-37.

Pollner, Melvin. (1991). Left of Ethnomethodology: The Rise and Decline of Radical Reflexivity. *American Sociological Review*. 56. 10.2307/2096110.

Public Art Fund. 2003. *Mariko Mori: Wave UFO*. [ONLINE] Available at: [https://www.publicartfund.org/view/exhibitions/5825\\_wave\\_ufo](https://www.publicartfund.org/view/exhibitions/5825_wave_ufo). [Accessed 7 April 2019], p. 1-2



Radin, D., 2006, *Entangled Minds: Extrasensory Experiences in a Quantum Reality*, New York, NY: Paraview Pocket Books, p. 221, 227

Repetto, D. 2000. *dorkbot.org NYC Website*. [ONLINE] Available at: <http://www.dorkbot.org/dorkbotnyc> [Accessed 7 April 2019], p. 1

Rowan, D. 2016. *Wired Magazine. Technology*. “Don't like your ears? This man can help you grow new ones” March 15, p. 1. <https://www.wired.co.uk/article/ted-fellows-andrew-pelling-biohacker>

Sacks, O. 1998. *The Man Who Mistook His Wife for a Hat, and Other Clinical Tales*, New York, NY: Touchstone/Simon & Schuster, Inc, p. 151, 152, 166-168

Sacks, O. 2012. *Hallucinations*, New York, NY: Vintage Books, p. 44

Safavi, R. 2012. *Thank You for Recycling*. [ONLINE] Available at: <http://hi-reza.com/thankyouforrecycling.html> [Accessed 7 April 2019] p.1

Samanci, O., 2017, *You are the Ocean*. [ONLINE] Available at: <https://vimeo.com/232792092>. [Accessed 7 April 2019], p. 1

Shanken, E., 2009, *Art and Electronic Media*, New York, NY: Phaidon Press Inc., p.166

Shelley, M., 1992, *Frankenstein*, London: Penguin Books, p. 42, 43, 58

Sivertsen, M. 2009. *Subconch*. [ONLINE] Available at: <http://www.subconch.net/>.

[Accessed 7 April 2019], p. 1-2

Slocum, P. 2000. *Paul Slocum's Website*. [ONLINE] Available at: <http://www.qotile.net>  
[Accessed 7 April 2019] p. 1

Skains, L., 2016, "The Practitioner Model of Creative Cognition: A Potential Model for Creative Practice-Based Research" *The Disrupted Journal of Media Practice*, June 26  
<http://scalar.usc.edu/works/creative-practice-research/practitioner-model>

Stiles, K., Selz, P., 2012. *Theories and Documents of Contemporary Art: A Sourcebook of Artists Writings (Second Edition, Revised and Expanded by Kristine Stiles)*. Berkeley: University of California Press. p. 717, 890-894.

Talasek, J., Welch, R., Finneran, K., 2011, *Visual Culture and Evolution*, Washington, DC: Cultural Programs of the National Academy of Sciences. pp. 150, 151

Tate, 2005. *Turner Prize 2005: Simon Starling - Winner*. [ONLINE] Available at:  
<https://www.tate.org.uk/whats-on/tate-britain/exhibition/turner-prize-2005/turner-prize-2005-artists-simon-starling> [Accessed 7 April 2019] p. 1

Uhlhaas, P. J., & Mishara, A. L. (2006). Perceptual anomalies in schizophrenia: integrating phenomenology and cognitive neuroscience. *Schizophrenia bulletin*, 33(1), 142-56.

Utterback, C., 2019, "*Text Rain*" by Romy Achituv & Camille Utterback. [ONLINE] Available at: <http://camilleutterback.com/projects/text-rain/>. [Accessed 7 April 2019], p.

van der Plas, W. 2008. *ISEA International Website*. [ONLINE] Available at:  
<http://www.isea-web.org> [Accessed 7 April 2019] p. 1

Vesna, V., 2017. *Octopus Brainstorming*. [ONLINE] Available  
at: <http://octopusbrainstorming.com/>. [Accessed 7 April 2019], p. 1-2

Wangchuk, N. S. 2013. *The Ice Stupa Project*. [ONLINE] Available at:  
<http://icestupa.org> [Accessed 7 April 2019] p. 1

Weiner, N., 1948. *Cybernetics: Or Control and Communication in the Animal and the Machine*. 2nd revised ed. 1961. Paris: Hermann & Cie & Cambridge: MIT Press. pp. 112

Wilson, E.O., Welch, R. ed., Finneran, K. ed., Talasek, J.D. ed., 2012, *Visual Culture and Evolution: An Online Symposium, Issues in Cultural Theory No. 16*, Center for Art, Design and Visual Culture, UMBC, p. 27-28

Zizek, S., 2004, *Organs without Bodies*, New York, NY: Routledge, p. 118

## PUBLICATIONS

Kazemzadeh, Max B. "Postnational Technollaboration within the Postbiotanical Village" *Technoetic Arts Journal*, Volume 11, Issue 3, Intellect Publishers, December 2013. DOI: [https://doi.org/10.1386/tear.11.3.253\\_1](https://doi.org/10.1386/tear.11.3.253_1)

Kazemzadeh, Max B. "Art, Skill & Thought: The Moist Machine" *Skilled Art: Engenho & Arte*, Artshare Publishers, May 2012.

Kazemzadeh, Max B. "Apophenoetics: Virtual Pattern Recognition, the Origins of Creativity & Augmenting the Evolution of Self." *Technoetic Arts Journal*, Volume 10, Number 1, Intellect Publishers, May 2012. pp. 115- 118. ISSN: 1477965X, Online ISSN: 17589533 DOI: [https://doi.org/10.1386/tear.10.1.115\\_1](https://doi.org/10.1386/tear.10.1.115_1)

Kazemzadeh, Max B. "From Walls to Walkways, from Facts to Fields: Apopenia, DIWOD, Open Src Everything, the Post Nomadic Community & Syncretic Methods for Exploring Consciousness" CR12 Presence in the Mindfield: Art Identity and the Technology of the Transformation: editors: Roy Ascott and Luis Miguel Girao. Universidad de Aveiro, November 2011. ISBN: 978-972-789-356-0

Kazemzadeh, Max B. "Visibly Invisible: Spukhafte Fernwirkung, *Mechano-Moist & (the) Enlightenment.*" Making Reality Really Real. editors: Roy Ascott, Gangvik, Jahrmann, TEKS Publishing, Trondheim, Norway, November, 2010 ISBN: 978-82-998211-2-4

Kazemzadeh, Max B. "Psychic Systems and Metaphysical Machines: Experiencing

Behavioral Prediction with Neural Networks” Technoetic Arts Journal, Volume  
8, Number 2, Intellect Publishers, pp. 189-198(10), November 2010 , ISSN 1477-965X  
DOI: [https://doi.org/10.1386/tear.8.2.189\\_1](https://doi.org/10.1386/tear.8.2.189_1)

Kazemzadeh, Max B., Parberry, I., Roden, T., Nunn, J. R., Scheinberg, J., Carson, E.,  
Cole, J., Challenges and Opportunities in the Design of Game Programming Classes for  
a Traditional Computer Science Curriculum” Publisher: [larc.unt.edu](http://larc.unt.edu), Publication Date:  
Jan 1, 2010

## **PAPER PRESENTATIONS**

**1. Paper Presentation**, Di-Egy Festival Consciousness Reframed Conference Series, International Research Conference on Art, Technology, and Consciousness, Cairo, Egypt. 03/31/13-04/02/13

**2. Paper Presentation**, CAA College Art Association Conference, presenting the paper “Postnational Technollaboration within the Postbiotanical Village,” New York City, NY. 02/13/13

**3. Paper Presentation**, “Technoetic Teleos: Art, Myth and Media in Consciousness Reframed Series” International Research Conference on Art, Technology, and Consciousness, Ionian Center for the Arts & Culture, Kefalonia, Greece, 04/18/11 – 04/20/11

**4. Paper Presentation**, The 11<sup>th</sup> Annual International Research Conference: Consciousness Reframed: Art & Consciousness in the Post-Biological Era, “CR12: Presence in the Mindfield,” Macromedia University of Applied Sciences (MHMK), Lisbon, Portugal, 11/30/11 – 12/02/11

**5. Paper Presentation**, International Research Conference on Art, Technology, and Consciousness “Transcultural Tendencies, Transmedial Transactions” hosted by Shanghai Institute of Visual Art, Fudan University, Planetary Collegium: University of Plymouth, Shanghai, China, 08/26/11-08/27/11

**6. Poster Presentation**, International Exhibition on Art, Technology, and Consciousness, Ionian Center for the Arts & Culture, Kefalonia, Greece, 04/15/11 – 05/15/11

**7. Paper Presentation**, The 11<sup>th</sup> Annual International Research Conference: Consciousness Reframed: Art & Consciousness in the Post-Biological Era, “Making Reality Really Real,” convened by TEKS-Trondheim Electronic Arts Center, Trondheim, Norway, 11/19/09 – 11/22/09

**8. Paper Presentation**, International Research Conference on Art, Technology, and Consciousness “Skilled Art: Engenho & Arte” Guimaraes, Portugal, 04/23/10 – 4/24/10

**9. Paper Presentation**, The Planetary Collegium’s Xth International Research Conference, Consciousness Reframed: Art & Consciousness in the Post-Biological Era, “Experiencing Design, Behaving Media,” Macromedia University of Applied Sciences (MHMK), Munich, Germany, 11/19/09 – 11/22/09

## EXHIBITIONS

### Solo Exhibitions/Performances:

- 2018** Ionion Center for Arts & Culture. Solo Exhibition of “Poseidon’s Pull (Revisited, 2018): ‘Part 1: Channeling the gestures of a god,’” in collaboration with Reza Safavi, Kefalonia, Greece. 06/28/18-07/28/18
- 2016** Harvestworks SOHO Gallery, New York Electronic Art Festival (NYEAF), “Birdsong Mimic” Bird Song Mimic: East to West Coast Bird/Human Communication Event, in collaboration with Dr. Victoria Vesna, Dr. Charles Taylor, John Brumley, Joel Ong, New York NY, 07/19/16
- Medialab-Prado, “Madritmos (2016),” Madrid, Spain. 07/15/16-11/15/16
- CAFA Digital Media Gallery, “Beirithms (2016),” in collaboration with Reza Safavi. Beijing, China. 06/15/16-7/15/16
- 2015** Times Square, New York Electronic Art Festival (NYEAF), “Birdsong Diamond Project”, in collaboration with Dr. Victoria Vesna, Dr. Charles Taylor, John Brumley, Joel Ong, New York NY, 07/15/2015
- 2013** Ionian Center for Art & Culture, “Poseidon’s Pull” Project, in collaboration with Haytham Nawar, and Reza Safavi, and Joe Hicks, Kefalonia, Greece. 08/28/13-09/18/13



**2012** Ionian Center for Art & Culture (inside the Melissani Cave), “Lake Melissani & the Sensory Syryn: Re-living the Myth of Melissani,” Kefalonia, Greece, 08/12

**2011** Laboral Center for Art & Technology, Artist Residency with Hernani Dias to develop three Refarm Kids custom hardware boards using AVR Tiny, 11/11

Tarragona Bus Station, Bus Station Residency Project Exhibition sponsored by Caldo Cultivo, Tarragona, Spain, 07/11-08/11

Songzhuang Art Museum, “New Age: New Media” Beijing New Media Arts Exhibition 2011 -06/18/11-08/30/11

**2009** Renmin University of China – “Oppressionism,” Beijing, China, 08/05/09 – 11/01/09

### **Group Exhibitions**

**2018** Ionian Center for Arts & Culture. SEA(S) Arts International Art Exhibition (SEA(S) ASYNOROS ΑΣΥΝΟΡΟΣ). “Poseidon’s Pull (Revisited, 2018): 'Part 1: Channeling the gestures of a god,’” in collaboration with Reza Safavi, Kefalonia, Greece. 08/06/18-09/03/18

**2017** Linda Jordon Gallery, Art & Media Design Faculty Exhibition, Washington, DC. 10/23/17-11/17/17

Harvestworks Gallery, New York Electronic Arts Festival (NYEAF), “Pag-

Day' 17" or "PaggankDaywaygun (2017)," in collaboration with Reza Safavi,  
Governors Island, NY. 07/1-07/23/2017

ISEA: 2017: International Symposium of Electronic Art – 2017, "Colombirit-  
mos: Manizales Coffee-Drip (2017)," in collaboration with Reza Safavi, Mani-  
zales, Colombia. 06/10-06/17/2017

**2016** Linda Jordan Gallery, Gallaudet University. Faculty Exhibition. Washington,  
DC. 11/10/16-12/01/16

Governors Island, NY. New York Electronic Art Festival (NYEAF). "Birdsong  
Diamond: Mimic", in collaboration with Dr. Victoria Vesna, Dr. Charles Taylor,  
John Brumley, Joel Ong, New York NY, 07/1/16 – 11/15/16

**2015** Governors Island, New York Electronic Art Festival (NYEAF), "Birdsong Dia-  
mond Project", in collaboration with Dr. Victoria Vesna, Dr. Charles Taylor,  
John Brumley, Joel Ong, New York NY, 06/14/15-8/15/15

Linda Weintraub's Home, New York Electronic Art Festival (NYEAF), "Bird-  
song Diamond Project", in collaboration with Dr. Victoria Vesna, Dr. Charles  
Taylor, John Brumley, Joel Ong, Rhinebeck, NY, 06/12/2015

**2014** American University Dubai, ISEA2014: 20<sup>th</sup> International Symposium for Elec-  
tronic Art, "Dabarhithms: Palm Wish: Chasing Fairies," in collaboration with  
Reza Safavi, Dubai, EAU. 10/30-11/08 (permanent installation)

**2013** Linda Jordon Gallery, Fall Show, Washington, DC. 10/20/13-11/20/13

Washington State University (Pullman) Museum of Art, Group Exhibition, in collaboration with Reza Safavi, Pullman, Washington. 08/19/13-09/19/13

Gezera Art Center, Ministry of Culture of Cairo, Di-Egy Festival Exhibition, Cairo, Egypt. 03/13-04/13

MalMaison Restaurant/Bar/Club, No Kings & iStrategyLabs Sponsored Event: "The Socio-Political Social Networking Social" Exhibited "JabberSquawkey: The Automated Political Gossip Perpetuator" Georgetown, Washington, DC, 02/22/13

MCentral Festival at 700 H Street NE: (Inaugural Weekend), "Americana X Trains" Exhibition: Exhibited "The Other Side of the Tracks" face recognition projection project with the No Kings Collective inaugural ball weekend, Washington, DC. 01/18-01/21

**2012** Submerge Art Fair DC, "Everybody's Gotta Eat...Everybody Can" Exhibition (Nine Day Flash Art Happening) with the No Kings Collective with DC Week at 700 H Street NE, Exhibited "Antisocialbots (2007)" and "Jabbertalkey (2012)". Washington, DC. 11/10/12-11/18/12

Corporation for National & Community Service, "Diversity," Washington, DC. 10/01/12-11/01/12

Linda Jordan Gallery in the Washburn Arts Center at Gallaudet University, Faculty Exhibition, Washington, DC. 09/16/12-10/16/12

The Science Gallery at Trinity College, Interactivos? '12 Exhibition, Dublin, Ireland, 07/12-08/12

**2011** Laboral Center for Art & Technology, Summer Love Lab Exhibition: Ecolab Project, Gijon, Spain, 08/11-10/11

Medialab-Prado, "Visualizar '11," Madrid, Spain, 06/11

Linda Jordan Gallery in the Washburn Arts Center at Gallaudet University, Faculty Exhibition, Washington, DC. 03/01-04/01

## **INVITED PRESENTATIONS, CURATORSHIPS & RESIDENCIES**

**2018 Curator.** “Amber – 'Sun Stone” (Photographs by Andris Zegner) with support from the Latvian Embassy and Gallaudet University. Linda Jordan Gallery, Washington, DC. 10/24/18-11/7/18

**Ionion Center for Arts & Culture.** Artist Talk and Discussion surrounding “Poseidon’s Pull (Revisited, 2018): 'Part 1: Channeling the gestures of a god” Kefalonia, Greece. 07/27/18

**Ionion Center for Arts & Culture.** Residency Program producing “Poseidon’s Pull (Revisited, 2018): 'Part 1: Channeling the gestures of a god” Kefalonia, Greece. 06/28/18-07/28/18

**2017 CRATERS: Finding A Line Skateboarding Photography “DC Slide Jam,”** Worked with Garth Ross, VP of Outreach Programs at the Kennedy Center, and photographers Micheal Kircher and Anthony Smallwood to hold the Skateboarding Photography DC Slide Jam at the Gallaudet Pavilion Lot corner of 6<sup>th</sup> and Penn St. outdoors. Event sponsored by Thrasher Magazine and Bureau Skate Shop. 10/14/17

**CRATERS: Finding A Line Placemaking Panel Discussion,** Worked with Garth Ross, VP of Outreach Programs at the Kennedy Center to set up a panel discussion at the Gallaudet Pavilion Lot corner of 6<sup>th</sup> and Penn St. where three well known international artists that work with the topic of placemaking presented to an audience of 150 people. 06/20/17

**Artist Talk**, MICA, invited by Professor Jason Sloan and IDA Program, Baltimore, MD. 04/18/17

**Artist Talk**, Harvestworks Gallery, New York Electronic Arts Festival (NYEAF), “Pag-Day’17” or “PaggankDaywaygun (2017),” Governors Island, NY. 07/6/2017

**Artist Talk**, ISEA: 2017: International Symposium of Electronic Art – 2017, “Colombiritmos: Manizales Coffee-Drip (2017),” Manizales, Colombia. 06/14/2017

**2016 Conference BreakOut Session**, Worked with Ben Ashworth and Maen Ham-mad to organize a Breakout Session for the Creative Time Summit DC “Occupy The Future,” sponsored by the Corcoran School of Arts and Design @ GW, which took place at the now Gallaudet: Finding A Line (CRATERS) Skateboard Bowl. 10/16/16

**One Day Workshop**, “Madritmos ‘16” Workshop: Creating Apps that Communicate with Devices, Madrid, Spain. 06/27/16

**Residency**: Medialab-Prado, “Madritmos (2016),” Madrid, Spain. 06/25/16-7/25/16

**Four Week Workshop**, “Beirithms ‘16” Workshop: Creating Apps to Generate Remote Physical Actions at a Distance,” Central Academy of Fine Arts, Beijing

China. 05/15/16-06/15/16

**Initiative:** Worked with Kennedy Center for Performing Arts in DC, George Mason University and the DC Pavilion, as well as Ben Ashworth and Dave Mutarelli to move the skateboarding bowl from the Kennedy Center's "Finding A Line" 2 week event in 09/15 to Gallaudet University, which has been renamed "CRATERS: Collaborative Research-space for Art Technology Engineering & Robotics (with Skateboarding)" due to a recent annually gifted NASA Space Grant. Project began in 11/2015 and is ongoing.

**Artist Talk**, MICA, invited by Professor Jason Sloan and IDA Program, Baltimore, MD. 04/15/16

**2015** *Artist Talk*, UCLA Sci/Art NanoLab Summer Institute, Los Angeles, CA.  
07/21/15

**Four Week Workshop**, Basics of Programming thru Micro-Computer Vision, Instructor for UCLA Sci/Art NanoLab Summer Institute, Los Angeles, CA.  
07/18/15-07/31/15

**2014** **Three Day Workshop**, The Hague University of Applied Art, The Hague, Netherlands. 12/14/14-12/16/14

**One Day Workshop**, Dabarithms: Algorithms in Art & Technology "American University Dubai, Dubai, UAE. 10/31/14

*Artist Talk*, UCLA Sci/Art NanoLab Summer Institute, Los Angeles, CA.

07/18/14

**Four Week Workshop**, Basics of Programming thru Micro-Computer Vision,  
Instructor for UCLA Sci/Art NanoLab Summer Institute, Los Angeles, CA.

07/15/14-08/15/14

**Four Week Workshop**, Designing & Coding Interactive Systems w/Processing  
& Arduino, Beijing, China. 05/17/14-06/15/14

**Curator**, “PTSD: Post Technomatic Similacral Deconstructions”, Linda Jordon  
Gallery, Gallaudet University, Washington, DC. 02/14-03/14

**2013** **Coordinator**, Make With Moto (Google) Hackathon Weekend Workshop at  
Gallaudet University, Washington, DC. 08/23/13-08/25/13

**Invited Lecture**, “**Hacking Communication**” American University, Washing-  
ton, DC. 03/22/2013

**Invited Lecture**, “**Art is Hacking**” University of Massachusetts, Boston, Mas-  
sachusetts 06/25/2013

**One Week Workshop**, Designing & Coding Interactive Systems w/Processing  
& Arduino, Di-egy Festival, Cairo, Egypt. 03/25/13-03/29/13



**Curator** (with NASA Program Director, Janelle Turner co-curating), “Mars as Art” Exhibition, Linda Jordon Gallery in the Washburn Art Center at Gallaudet University, (also organized a lecture: Dr. Meyer, lead scientist for NASA Mars Exploration Program at Gallaudet University on the same day) 01/24/13-02/11/13

**2012 Artist Talk (regarding projects with refarmthecity.org)**, Open Hardware Summit, Eyebeam, New York City, NY. 06/2012

**Artist Talk**, Interactivos? ‘12 Dublin Festival, Trinity College, Dublin, Ireland. 07/2012

**Curator (with Jonah Brucker-Cohen co-curating)**, “The D.O.L.L. Show: DIWO, OPNSRC, LMFAO, LHOOQ.” Artisphere, sponsored by WPA, 04/14/12-06/14/12

**2011 Artist Talk**, Parsons School of Design: MFA Design & Technology: organized by Victoria Vesna, "Apophenia, Schizophrenia Artificial Intelligence & Computer Vision," New York, NY. 11/15/2011

**Artist Talk**, Maryland Institute College of Art (MICA): Interactive Digital Art (IDA) Program: organized by Jason Sloan, “Gesture, Perception, Disruption & Response” Baltimore, MD. 11/08/2011

**Workshop**, Creative Coding w/Processing, Summer Love Lab, Laboral Center for Art & Technology, Gijon, Spain. 08/2011

**Workshop**, Creative Coding w/Processing, Visualizar Festival, Medialab-Prado, Madrid, Spain. 06/2011

**Artist Talk**, Visualizar Festival, Medialab-Prado, Madrid, Spain. 06/2011

**Three Week Workshop** – “Interactive Installation w/Open Source Computer Vision and Robotics,” Central Academy of Fine Arts, Beijing, China, 05/11 - 06/11

**Poster Presentation**, International Exhibition on Art, Technology, and Consciousness, Ionian Center for the Arts & Culture, Kefalonia, Greece, 04/15/11 – 05/15/11

**2010 Artist Talk**, Interactivos Festival, Medialab-Prado, Madrid, Spain. 06/2010

**Three Week Workshop** – “Interactive Installation with Computer Vision and Robotics,” Central Academy of Fine Arts, Beijing, China, 05/10 - 06/10

**2009 Artist Talk**, Dorkbot (DC) & Hack DC Lecture Series, "Psychic Systems and Metaphysical Machines" and other works, Washington, DC. 11/03/2009

**Curator**, Houston Center for Photography, Serving as a co-curator for a exhibition highlighting Kinetic Photography with Madeline Yale, Spring 2009 (date still TBD)

**Three Week Workshop** – Central Academy of Fine Arts, Beijing, China, 05/09  
- 06/09

**Artist Talk / One Day Workshop** – The Dallas Museum of Art’s Center for  
Creative Connections, Dallas, TX. Spring ‘09

**One Week Workshop** - Autonomous University of Toluca, Toluca, Mexico,  
03/10/09 – 03/14/09

**Artist Talk / One Day Workshop** - Visual Arts Society of Texas, Denton, TX,  
02/05/09

## APPENDIX 01: REFERENCE MATERIALS

### References to Software and Documentation:

Link to Content and Downloads in Support of this Document can be found here:

**<http://www.maxkazemzadeh.com/apopenia>**

### **Gestures of Change (2013) aka. GoC13:**

Exhibition in Cairo: **<https://vimeo.com/72616842>**

Installed in the Linda Jordan Gallery in Washington DC: **<https://vimeo.com/239352257>**

*Please refer to the following link for executable file for “Gestures of Change (2013),” or “GoC13,” as well as links to all referenced documentation of works in the format of video and imagery. While the video and image formats are universal, the GoC13 executable must be downloaded for either Mac or PC computers and experienced locally. Please note that the GoC13 software is merely a recreation of a time-specific and location-specific installation in an exhibition at the Gezira Gallery in Cairo, Egypt, at the Di-Egy Festival in 2013. The software along with the video documentation and description of the experience, artist's intention, creative process leading up to this installation, and the technical process all contribute to a complete understanding of the experience of the event at the time of installation. This exhibition was never intended to be exhibited ever again at a different location or time in its original form and functioned more like a live performance with live time-specific feeds from Twitter around the time of and relating to the civil unrest in Cairo.*

Also please refer to the Twitter account for reTweets from Gestures of Change (2013) installation. The Twitter account name is @GesturesOChange. See the link below.

Note: This account was recreated and updated recently for the purposes of the demo.

<https://twitter.com/gesturesochange>

***Dabarithms (2014):***

Link to video documentation of Dabarithms (2014):

<https://vimeo.com/116585386>

Additional images and information can be found at:

<http://www.maxkazemzadeh.com/apophenia>

***Poseidon's Pull (2012) and Poseidon's Pull: Revisited (2018):***

Link to video documentation of Poseidon's Pull (2012):

Installation at Washinton State University Pullman: <https://vimeo.com/73144125>

Installation at Linda Jordan Gallery - Washington, DC: <https://vimeo.com/155260063>

Message from Poseidon: <https://vimeo.com/72278249>

Link to video documentation of Poseidon's Pull: Revisited (2018):

<https://vimeo.com/280070076>

The link above is published alongside this document as an essential reference to, and leading to a more complete understanding of, the intentions of this text.

## **APPENDIX 02: CATEGORIZATION OF APOPHENOESIS IN PRACTICE**

This section discusses a number of different additional works that seek to employ apophenia with different strategies for the purpose of different experiential results. These works were all created by Max Kazemzadeh individually or in collaboration with other artists. This section will also categorize apophenoesis into different experiences, not limited to this section, in order to show how apophenoesis can be used as a model to analyze works of art and design.

Designing with apophenoesis in single- or multi-user interactive systems requires interface designers to think from the universal user's perspective, anticipating and testing a wide array of characteristics including 1. how someone may act within the environment to generate a response 2. how the system's response may cause the user to react. In a multi-user system, designers must also need also to consider 3. how users respond to other users within the space. The designer must consider the real/actual patterns that are present as well as the user's wrong or non-existent patterns not present, as potential triggers for user reaction.

From the artist/designer's vantage-point, apophenoesis can be applied to interactive artworks to trigger significance and pattern recognition strategically where patterns may or may not exist, or in the motivation of the making of connections between artifacts and elements that have no real connection. The designer may also consider the possibility that participants may react to non-existent patterns as apophenoesis that can be framed and applied in such a way to enhance the experience. In the context of more complex multi-user interactive media art systems, the definition and application of apophenoesis grow more sophisticated, adopting many possible forms. Seeing how apophenoesis functions within the range of projects may help to

understand better how it can universally and holistically adapt as a tool for creative thinking and critique.

In the following interactive artworks created by Max Kazemzadeh, apophenia has taken on expanded form through a range of applications, incorporating the following sub-categories of phenomena. In the following experiences, Apophenosis can be said to function through the following artistic apparatuses:

- a. Cognitive Adaptation & Interpretation
- b. Cognitive Translation
- c. Cognitive Connection to Identity: Self & the Other
- d. Dogma & Belief
- e. Mediation & Configuration
- f. Behavioral Association

## **Appendix 02. a. Apophenoesis as Cognitive Adaptation & Interpretation**

In this section apophenoesis functions similarly to how Pessoa applies his heteronyms within his writing, which is attempting to mimic a birdsong within an interactive system that scores how well each participant fares. The first step is playful, make-believe immersion into the mind of the bird to cognitively adapt to get a higher score. Most participants believe that if they become the bird, then they will more accurately emulate the birdsong, and therefore receive a better score. In the space of Birdsong Diamond, a new potential participant first must spectate, witness, identify the sequence of steps within the experience, and then interpret how the system functions concerning scoring, i.e., go through bird training, before participation. The system tests for volume and pitch from participants, which doesn't always score accurately. However, participant performers continue to work hard to exhibit characteristics of a bird, high on a pedestal perch, receive a spoken response from the system regarding the calculated accuracy of each attempted mimicry of the birdsong presented. The following three projects and project iterations represents apophenoesis as cognitive adaptation and interpretation.

i. “Birdsong Diamond: Mimic” (Governor’s Island - 2015):

<https://vimeo.com/134160866>

The indoor habitat-specific system itself processes the sound asking participants to mimic a birdsong. Humans are forced to become birds in every way possible to join in with the system.

(by Dr. Victoria Vesna, Dr. Charles Taylor, Max Kazemzadeh, Joel Ong, John Brumley, Aisen Chasin)



and the second mobile iteration:

“Birdsong Diamond: Mimic” (Times Square Performance – 2015)

<https://vimeo.com/134162313>

The indoor habitat-specific system itself processes the sound asking participants to mimic a birdsong. Humans are forced to become birds in every way possible to join in with the system.

(by Dr. Victoria Vesna, Dr. Charles Taylor, Max Kazemzadeh, Joel Ong, John Brumley, Aisen Chasin)

ii. “Birdsong Diamond is the East/West Mimic” (2016):

Perceiving non-local collective space concerning habitat-specific remote bird communication.

(by Dr. Victoria Vesna, Max Kazemzadeh, Dr. Charles Taylor, Max Kazemzadeh, Joel Ong, Mick Lorusso, Claudia Jacques) (Parkinson 2016, p. 1)

**Appendix 02. a. i. Birdsong Diamond: Mimic” (Governor’s Island – 2015)** and

“Birdsong Diamond: Mimic” (Times Square Performance – 2015) (by Dr. Victoria Vesna, Dr. Charles Taylor, Max Kazemzadeh, Joel Ong, John Brumley, Aisen Chasin)

In the Birdsong Diamond: Mimic series, the users are asked to vocally mimic the birdsong that is played to them through a digital system. Once the user replies with their version of the birdsong just played to them, the automated system, programmed in Supercollider and Processing, applies a judgment of the accuracy of the mimicked sound and gives a score to each user of the accuracy of the imitated response. The user instantly has feelings of success or failure. The system is, of course, an artificial logic system that analyzes only two variables, volume, and pitch. The volume level of the participant's response is isolated into a waveform as is the pitch, and each is compared to the volume and the pitch of the original birdsong. Each segment of the waveform is divided into sections and compared. If the volume-level was more accurate than the pitch in that part, then the comparison output is given for the volume. Each segment is calculated and given the highest score of the two regarding accuracy. Ultimately the highest score overall is presented to the user, which comes as a score between 1 and 10. From the user’s perspective, the volume and pitch are too complicated elements to consider or identify while engaged, so they just play along.

Apophenoesis is designed into the project in a few ways. First, apophenoesis exists with the participant’s expectation that the computer system is reacting accurately. Advanced technology naturally carries with it a certain authority with respect to its inaccessibility. Many participants don't have knowledge of advanced technology, programming methods, or the art world artifice, which when hosted by New York City and Time's Square it also carried with it a powerful layer of advocacy. All of these factors contributed to the participant's belief that the software was making accurate judgments. Additionally, the head to head gameplay format, using an artificial digital

voice to read aloud the computer's calculations regarding participant accuracy, using steel stands, paired with an efficiently designed setup, also contributed to participants belief.

Secondly, immersion into the interactive system of the bird call and response system as humans perched at the top of a three-stair pedestal, using the bird's language to communicate to other people also using bird language, immersed viewers out of their identity as humans for a moment. While the project may not have entirely influenced participants to believe that they were birds, the format of the installation was enough to give them a view of the detailed and complex narrow patterned call and response that one bird species engages, and then forcing them to listen as birds do.

The second layer of apophenia was in the actual patterning of the score as they linked to drawing an expanding, shared, animated image of a two-tone diamond (projected on the ground in the Governors Island installation, and displayed on screens attached to each recording-pod in Times Square). A diamond reflects some of Dr. Taylor's research in bird communication in the field. The colors split in the middle of the diamond to identify which pod was being scored and therefore applied to the diamond.

Secondary systems were installed in a separate space that tracked spectator movement, using that action to determine how many birdsongs would play into the room on twenty-five parametric speakers that immersively localized the sound to surfaces around the chamber. This same real-time spectator data was used to toggle between three separate videos which showed nature from a drone, human, and insect points of view. When there was complete stillness, the intimate insect point-of-view video would display, and all of the 25 perimetric speakers playing different species of birdsong would play at full volume.

The project could have exposed the process of how the system was processing and comparing the waveforms, but then the belief in interpreting the system, i.e., the apophenia effect, as accurate would not be as effective. The system would instead be formatted to invite critique in regards to how accurately it was processing the user's mimicked birdsong.

**Appendix 02. a. ii. Birdsong Diamond: East/West Mimic (by Dr. Victoria Vesna, Max Kazemzadeh, Dr. Charles Taylor, Max Kazemzadeh, Joel Ong, Mick Lorusso, Claudia Jacques)**

The most recent iteration was the Birdsong Diamond: East/West Mimic installation, where the two parabolic microphone inputs were installed in Eastern and Western coastal cities of the United States. The installation in New York was placed in Harvestworks, and the installation in Los Angeles was at an environmental preserve. The Los Angeles Mimic system invited visitors to mimic birdsongs indigenous to New York City, and the New York Mimic system attracted visitors to mimic birdsongs native to Los Angeles. When the visitors completed their mimic of the birdsong, the human mimicry recording was played back through the speakers in Los Angeles, and vice versa. This real-time non-local connected performance exchange distorted our expectations of space and served as an immersive tool that made the Eastern and Western installations feel as if they were in the same space, exchanging each other's environments and content in such a way that location disappeared.

## **Appendix 02. b. Apophenoesis as Cognitive Translation**

This section investigates how apophenoesis can function as cognitive translation within particular works of art. Similar to the now popular smartphone networked game, “Pokemon Go,” which allows individuals to play a more involved virtual version of the game capture-the-flag in real space seen through one's handheld device. Pokemon Go has now introduced a new language to the masses that interactive artists have been working with for years via remapping the Pokemon Go space onto GPS mapping coordinates and using a mapping software to overlay the GPS located animations with real live video feeds. Animated characters from the popular children's Japanese founded card game turned television show and video game, allows each person's smartphone to become a window into a blended reality. This inherently causes some interesting issues concerning space. For instance, if there is construction in a particular location and a fence is erected thereby physically blocking you from a particular area that normally would be accessible to the public, one is then stuck. Therefore, if there is a Pokemon character to capture, a tower, or area to navigate within that blocked off area, then one misses an opportunity to advance in the game. The significance is overlaid in the physical reality due to the game, elevating a usually neglected space.

Pokemon has also served as an interesting distortion to tourism, where now tourists, preliminarily plan and map-out areas of the city that have virtual Pokemon rewards, goals, and tasks with their plans to visit the city. If someone is visiting Washington DC for instance, and there are specific power-ups near the Lincoln Memorial but none near the Capitol and one has to choose between the two, Pokemon gaming tourists might more likely visit the Lincoln Memorial and skip the Capitol.

Within the following five projects, apophenosis functions as a tool for translation by remapping significant actions that occur in specific locations in a city into new modeled activities relocated to the spatial constraints and architectural considerations of a gallery or exhibition space. A similar transmission of significance was attempted to distort the existing public space with data transmissions collected from automated performances in a gallery or exhibition space.

In “The ...rithms Series”, “Egyrithms '13,” “Dabarithms '14,” “Beirithms '16,” “Madritmos '16,” “Colombiritmos'17,” and “PagDay'17: Paggank Daywaygun '17” are all interactive digital, kinetic, geo-location performance-projects in different international cities, that uses algorithmic functions calculated in a custom GPS Tracking Android Phone App to direct users or guided “passengers,” to explore their respective cities.

All projects were influenced by the forward-thinking artist group in Paris called the “Situationists” who in the 1960's through the 1970's experimented with numerous rules for navigating their city with the intention to break from everyday routine. Their goal was to re-experience Paris from new perspectives. Each project employed different iterations of a custom phone app that, when shaken, will guide the “passengers” through each respective city using custom rules and tasks called “algorithms.” These tasks appear in the app as a “walk northeast, for 180000 ms” or milliseconds with the numbers counting down. Once the countdown hits 0, zero, then the app played an alarm and asked the passenger to “Shake the Phone” again, which is followed either by another direction, never to immediately repeat the previous direction, or is followed by a special task. For instance, concerning Madritmos, a phone shake could provide a new direction with timer count-down, or one of seven jobs or “trabajar,” which function as screen-based microgames, similar to WarioWare, which appear until completion. All of these functions on the phone, as well as the GPS, tracked movements of the passenger's

movements through the city, each city gets transmitted back to the gallery or museum space to generate physical actions with physical material. One might refer to these transformative associations and connections as mapping. They, however, are playful inventions and distortions that piggyback on existing technologies. These projects use google maps, node.js, javascript and more, that intend to respect the passengers lived experience as they move through and experience each city. For instance, by transmitting abstract and distorted information through outdated and inaccurate maps, seems significant primarily due to the disruption and distortion of the transfer of material from GPS data into the physical form of rice, curtains, fairy drones, and more. This unexpected perceptual error, which disrupts the expectations of the gallery visitors, and provides them with an element of the playful is a direct result of this mapping information being transmitted and recorded as a live document of performance. This aspect of the representation of an individual or group's activities due to play or interest is at the center of what makes these works significant. These experiences all share in this aspect of apophenosis.

i. "Reliving the Myth of Melissani" (2012): Using real location where a myth was believed to occur, reinforces the significance of that myth.

<https://www.youtube.com/watch?v=41KjCPRucsM&feature=youtu.be>

ii. "Poseidon's Pull" (2013): Mapping is a myth, distorting the sense of location, upon which the mind is initially concerned. <https://vimeo.com/73144125>

iii. "Egyrithms" (2013): Mapping is a myth, distorting the sense of location and a wandering. <https://vimeo.com/65597051>

iv. "Dabarithms: Palm Wish" (2014): Mapping is a myth, distorting the sense of location and a wandering. <https://vimeo.com/116585386>



v. "Beirithms" (2014-2016): Mapping is a myth, distorting the sense of location and a wandering. <https://vimeo.com/176380179>

vi. "Madritmos" (2016): Mapping is a myth, distorting the sense of location and a wandering. <https://vimeo.com/174589509>

vii. "Colombiritmos: Manizales Coffee Drip" (2017): Mapping is a myth, distorting the sense of location and a wandering.

viii. "PagDay17" or "Paggank Daywaygun" (2017): Mapping is a myth, distorting the sense of location and a wandering.

### **Appendix 02. b. i. “Reliving the Myth of Melissani” (2012):**

Using real location reinforces the significance of a myth.

<https://www.youtube.com/watch?v=41KjCPRucsM&feature=youtu.be>

As in Eliade's hierophanies that attributed significance as bound to the sacred and profane, while researching for a project in Kefalonia, Greece, Kazemzadeh visited the tourist attraction called The Cave Lake of Melissani, which was driven by a myth that was attached to the physical location which in effect enhanced significance and establish the sense of the sacred. Within the Melissani Cave Lake, Kazemzadeh with a group of five collaborators, designed, built and performed, “Reliving the Myth of Melissani” (2012), a networked interactive performance artwork, employing boats, standing boat operators using paddles, a LAN network, cell phones, custom interactive mobile software, computers, two projectors, two Microsoft Kinects, five female dancers which symbolized five different ghosts of Melissani (which symbolically alluded to the fact that because myth functions as a universally applicable story with a lesson, all Grecian women could invariably feel as though a version of Melissani), and internationally renowned flutist, Wilfredo Terrazas. The myth seems to have been designed to serve as a timeless artifact woven into a specific culture and location that reflects the issues, fears, and opportunities faced by real people.

The Melissani myth told of an experience that the nymph, Melissani had with her unrequited love for the satyr Pan, where she drowns herself in that specific cave-lake in Kefalonia, Greece. The role of nymph's in myth was to guard the waterways and water passages, which was appropriate since the Melissani cave is a special place, where the fresh water from underground and the salt water from the Mediterranean come together and mix and is visible and accessible inside the cave. Pan was a satyr who seduced and hypnotized women by playing his flute. The myth of Melissani could be a story that any woman, or anyone, for that matter, could retell of unrequited love.

The story of Melissani could have also been an actual event mythicized by storytelling through generations. Similar myth's and stories of a feminine character's unrequited love with suicide by drowning as a result of a seducing and insincere masculine character appears in different societies and cultures through artworks and creative writings.

## **Appendix 02. b. ii. “Poseidon’s Pull” (2012)**

Mapping is a myth, distortion of the sense of location. Where the mind is thinking.

<https://vimeo.com/73144125>

Poseidon's Pull (2012) investigates ritual, prayer, and meditation as it relates to the notion of spatial singularity concerning cognition, or when individuals inhabit one location physically while cognitively being mentally distracted or consumed by another. Experiences tend to occur when individuals aren't able to be in the company of close family member during a significant life event such as marriage, a birth, or death. With respect to Greece's current financial crisis, paired with the fact it is considered by most to be the cradle of Western civilization, the birthplace of democracy, the Olympic games, Western literature, historiography, political science, major scientific and mathematical principles, and Western drama, Poseidon's Pull served as the representation of the world's directed attention, sympathy, and daily remembrance, at a time when most of the world felt helpless to influence change. This project concept originated as a result of these reflections as well, when the creators of Poseidon's Pull (2012) were invited to fly, stay, and exhibit at the Union Center for Arts & Culture, they decided to do something remote in order to alleviate any financial burden they may place on the center, and instead expanded the project to include 11 internationally located collaborators to develop the work that would be exhibited via projection remotely.

These 11 participants, or “drifters,” are asked to embark on a sea/ocean voyage, by using the closest accessible body of water, to enter in a boat or raft with a smartphone that runs a custom app tracking and transmitting GPS to a server, and to sit in the boat and drift for a span of 3 hours.

The drifters relinquish control of the boat to the one mythical god responsible for controlling the seas, oceans, and currents, namely Poseidon. Due to this myth, Poseidon's only visible gesture to humanity in everyday life is through his influence on the ocean- or sea-currents. So, if the god Poseidon was real, and if he wanted to send humanity a message, it would be via the only gesture with which we have access to communicate, which is the ocean/sea currents, which could be detected via a GPS tracked *drift*.

To read Poseidon's gestures the GPS tracks are then fed from the server into the "Poseidon's Pull" software or app, that recalculates the GPS position of the drifter to a relational point in a constellation drawing, which is overlaid onto an interactive map of the world at the position of the Ionian Sea in Greece, displayed as a projection on a boat-sail in the gallery space. Each GPS "drift" track begins after being aligned with one of the star points in the constellation.

Once the 11 points are translated and positioned accurately at their respective points in the constellation, then all GPS drifts in their newly translated positions are played back, naturally slowly drifting in different directions away from the original starting position within the constellation. Each drift track is different, and as each GPS track drifts over time, the image of Poseidon gets more and more distorted.

A second system is taking a screen-shot of the new drifted constellation and searches the web for the most relevant image. Once the system finds the most relevant match, a separate screen in the installation displays a slide-show with every relevant matched photo sequentially, for each frame within the drifting and distorting constellation of Poseidon. The slide-show of most relevant image searches that match with Poseidon's evolving constellation serves as Poseidon's message to humanity.

"Poseidon's Pull (2012)" was developed with a group of international collaborators including Reza Safavi, Associate Professor at Washington State University Pullman, Joe

Hicks Assistant Professor of Ceramics at Merrimount University, Haytham Naywar, Assistant Professor at American University Cairo, the Foundland Collective, Manoutch Kazemzadeh, Mark Kazemzadeh Faculty at University of Massachusetts Boston, Adnan Naseem Khan Graduate Student at University of Texas at Dallas, and Stavros Didakis.

(See link for the message: [vimeo.com/72278249](https://vimeo.com/72278249) )

**Appendix 02. b. iii. “Egyrithms” (2013):** (by Reza Safavi, Victor Diaz Barralles):

Mapping is a myth, distorting the sense of location and a wandering.

<https://vimeo.com/65597051>

In Egyrithms (2013) (“Egy”: Egypt “rithms”: Algorithms) the algorithm was to use taxis as the mode of transit through Cairo, Egypt. When shaken, the phone app would select a direction and an amount of money to be paid to the taxi driver. The taxi driver would then drive the passenger in that direction until the money ran out. Once the passenger arrived, they were required to buy something from a vendor and eat something readily available for purchase, then get back into the taxi and repeat by shaking the phone again.

The few specific sets of randomized rules, or algorithms, were established with anticipated outcomes in mind. These anticipated tracks, as well as actual GPS tracks, were transmitted to a computer in the exhibition space real-time as the passengers moved through the city. Two additional app studies concerning the anticipated tracks and actual GPS tracks were made for circling Tahrir Square and the Pyramids.

Egyrithms '13 explored the phenomenon of apophenia through the relationship between the expectation of the outcome and actual outcome concerning mapping one's movements within an unknown space and culture. Two miscalculations occurred, where the notion of North, South, East, West, NorthEast, etc. had no meaning to the taxi driver. The main road that went through downtown Cairo was a straight line and happened to be a vector pointing to the Kaaba in Mecca. No matter which direction the taxi driver was given, they always spent almost the entire time on that main two-way road which was a line going northeast and southwest. When viewed on a map, the line that the way made, and therefore the taxi driver followed, just happened to point to Mecca. These ideas are expounded on in Laura Marks book “Enfoldment and Infinity: An Islamic

Genealogy of New Media Art,” numbers, signs, homes, roads, cities, and everything in life are customized and designed to face Mecca.

Similar experiences occurred concerning Tahrir square and the pyramids regarding discrepancies between expected and actual paths created.



**Appendix 02. b. iv. “Dabarithms” (2014):** (by Max Kazemzadeh and Reza Safavi)

Mapping is a myth, distorting the sense of location and a wandering, and also Apophenoesis Dogma & Belief (See section III D. 6. d. Apophenoesis as Dogma & Belief)

<https://vimeo.com/116585386>

In "Dabarithms: Palm Wish" (“Daba”: Dubai “rithms”: Algorithms) the passenger was termed a “wish-scavenger,” since the rules in the algorithm were designed to navigate the strange man-made Palm Jumeirah Island (Dubai, UAE) in search of wishes. The Palm Jumeirah is named for the island's direct architectural mimicry of the shape of the fronds of an actual palm tree. Dabarithms selected this fabricated, excessively priced, investor-targeting, Disney-like island, for the purpose of collecting nine wishes from the inhabitants of this island, who are some of the wealthiest tourists and investors in the world. One question driving the project after researching Dubai: "When you have everything, then what would you wish for?" 9 wishes were collected due to the numerological significance of the number 9, an ancient belief originating in Babylon, Greece, Jerusalem, Egypt and the Vedas, claiming that there is a relationship between a number and coinciding events. In numerology, the number 9 is the number of universal love, eternity, the penultimate within an eternal system, faith, the concept of karma, spiritual enlightenment, spiritual awakening, service to humanity, humanitarianism, and more. In Dabarithms, once each wish was collected, sand from the feet of the wisher was placed in a bucket, and the techno-ritualistic gesture launching a store bought, hacked, electronic flying fairy drone served to "activate" each field participants wish.

The performance was represented on the American University Dubai campus in a grid of 9 trees. Buckets of sand were affixed to each tree containing lights, along with

each fairy drone. The GPS tracks of navigating the Palm Jumeirah in search for wishes was played back in software, and the moments in time when each wish was collected, the fairy drone associated with its respective wish launched into the air and continued to fly around campus until the batteries ran out. AUD students became supporters of the piece and returned the fairies to their perches to enable them to recharge and fly again.

Dabarithms paired the magic associated with a touchless kinetic action with a familiar child's toy, which activated as part of a complex system empowered by an invented technology that appealed to the inner child of the visitors visiting the installation space at American University. All of these unsuspecting traits brought together created a convincing and complex enough system to believe that the wish would come true when the fairy launched. People from all faiths and backgrounds felt very strongly that the installation was “activating” the wishes of field-participating individuals.

In addition to the wish component, the Palm Jumeirah island, which was advertised for its beauty and accessibility, was hard to navigate and presented many barriers to access. The scale of the island was much larger than anticipated, and there were no taxis. Only the outer ring of the island was accessible and only in particular areas where there existed a hotel. The fronds were very long, too long to walk, and required a whole day merely to walk the outer ring island, which was built to be a sandbar to protect the wealthy homeowners that lived on the fronds. It is on the tip and center of this sandbar that the famous hotel exists. While maps of Dubai make the city seem accessible and entertaining, there are only specific areas where efforts have been made to make them accessible to visitors. While it is not an easily navigable city, Dabarithms found some beautiful, diverse voices that contributed a wide array of wishes including. “Happiness of all my family,” “Bugatti,” “I wish I become famous,” “I wish to be human being like prophet Muhammad,” and “I want to c my mom rite now,” are

just a few examples of contributed wishes. The association between someone offering a wish and that wish being heard and integrated into a publicly accessible project gaining the attention of the art community such as ISEA '14 attributes significance to the wish for everyone that witnesses the project. It is still undefined why this participation is so significant for participants and onlookers.

**Appendix 02. b. v. "Beirithms" (2014-2016):** (by Max Kazemzadeh and Reza Safavi)

Mapping is a myth, distorting the sense of location and a wandering.

<https://vimeo.com/176380179>

In another *The ...rithms Series* project, entitled *Beirithms* (“Bei”: Beijing “rithms”: Algorithms) (2014-2016), involves a custom algorithm running on a phone-app that when shaken, directs and tracks the “passengers,” Safavi and I, around the city of Beijing, China, on skateboards as the mode of transportation, carrying 10kg bags of rice. The phone-app gives a new directive to the passengers each time the phone is shaken. These directives include a direction on a digital compass, a timer which begins its count down, or the randomly occurring directive to drop a 10 kg bag of rice in a specified GPS location. The passengers are then expected to shake the phone again in order to receive the next directive. The movements of the passenger in the city are tracked via GPS and remapped to the museum space, triggering the movement of an automated kinetic interactive funnel that fills and drops grains of rice onto the museum floor into piles. These rice piles create a topological record of how long passengers have been in certain areas of the city, as an expanded, three-dimensional, topological hourglass. When the passengers spend more time in a particular part of the city, the piles of rice in the installation space are higher or taller in that part of the remapped museum floor. When passengers spend less time in a particular area of the city, the piles of rice are lower, shorter, and flat. In addition to the topological rice printer in the *Beirithms* installation, there is also the projection of a real-time updating map representing the path of the passengers moving through the city of Beijing, as well as the locations where passengers have been directed to drop a 10kg bag of rice, which is highlighted by an icon on screen. Similarly, when the bag of rice is dropped, passengers are required to take a landscape photo of the scene in that location of the city, which is then sent to the

installation and represented on screen.

In Beijing, an unopened bag of enriched rice can function as informal currency or a value system for exchange, as significant amounts of the staple are commonly consumed across the city. As a side-note, the artists recently read in the news and blogs that in attempts to cut costs concerning rice production, recently China has been identified as integrating plastic grains into the rice that they sell internally and export. While developing the project, Safavi and I tested to see how many places would accept rice in place of Yuan, the currency in Beijing, as a form of payment. Taxis, assistants, cleaners, restaurants, and more received rice in place of currency. When a sealed bag of raw clean rice is placed on the ground almost anywhere in Beijing, it is taken within minutes by someone that lives there. In *Beirithms*, mapping represents an oversimplification of an extremely complex culture system of exchange and interaction that can only be experienced by the passenger immersed within the phone application driven algorithm that leads them to wander through the unknown of the city. Apophany is experienced at every turn as passengers are continually exposed to unknown environments, ones that require rapid acclimation and interaction with different communities in new spaces. This process only highlights the strengths of the *derive* in the International Situationist process. Likewise, when the expectations of the culture of the passenger comes in contact with the unexpected etiquettes, mannerisms, and gestures unique to another culture or subculture, the result is that of confusion, misunderstanding, disappointment, and more, which translate to experiences of apophany. What may be normal to neighborhood Beijingers from different walks of life may be strange behaviors to those from other parts of the city, country or side of the world. The cognitive clash, surprise, and shock that occurs in these instances of total cultural immersion is that of apophany, a disruption, a gradual formation of cultural morays, themes, and expectations, or the process of acclimation and adaptation.

Grappling elements of significance in a completely new environment by deconstructing gesture, communication, etiquettes and more contains myriad experiences of apophany, and each of these experiences serve as creative stimulus for art-creation and self-expression.

**Appendix 02. b. vi. "Madritmos" (2016)** (by Max Kazemzadeh)

Mapping is a myth, distortion of the sense of location and a wandering.

<https://vimeo.com/174589509>

In *Madritmos* (2016) ("Mad": Madrid "ritmos": Algorithms) the *passengers* move around the city of Madrid, Spain. The movements of the passenger were tracked via GPS and used to control the movements of an automated kinetic interactive tapestry-style curtain in one of the large foyer windows in the entrance of the Medialab Prado. A small gap in the two-sided curtain moves left and right, tracking the perspective location from the point of the viewer to the point of the participant that is out navigating the Madrid.

Recognizing that observance of the tradition of siesta is fading within the larger Spanish cities, at moments a "siesta"-based job appeared in the passenger's phone app directing them to "sleep," "dance," "sing," "eat," "drink," "love" or other. These phone application directives functioned like mini-games, which simultaneously triggered the curtain to animate with familiar associative gestures to the directives. The "sleep" directive, for instance, triggered the curtains to close until the siesta-based job on the phone app was complete, then the curtains returned to tracking the participant as they moved about the city. The *love* directive, for instance, triggered the curtains to quickly open and close repeatedly, emulating the gesture of a kiss, until the siesta-based job was complete, then it returned to tracking mode again.

The distance between the user/participant and the Medialab-Prado window was reflected in the size of the opening of the curtain as it tracked. The distance of the user/participant from the Medialab-Prado was directly proportionate to the gap between the left and right curtain. If the participant was near the Medialab-Prado, then the gap

between the left and right curtain was larger. Conversely, if the participant was a significant distance away, then the gap was small.

The interactive curtain served as a playful and physiologically significant interface when considering the naturally occurring function of circadian rhythms as well as the internal biological clocks in humans. The circadian biological clock is said to be controlled by a part of the brain called the Suprachiasmatic Nucleus (SCN), a group of cells in the hypothalamus that respond to light and dark signals. From the optic nerve of the eye, light travels to the SCN, signaling the internal clock that it is time to be awake. The SCN signals to other parts of the brain that control hormones, body temperature and other functions that play a role in making us feel sleepy or awake. In the mornings, with exposure to light, the SCN sends signals to raise body temperature and produce hormones like cortisol.



**Appendix 02. b. vii. "Colombiritmos - Manizales Coffe Drip" (2017)** (by Max

Kazemzadeh and Reza Safavi)

Mapping is a myth, distortion of the sense of location and a wandering.

<https://vimeo.com/239502162>

"Colombiritmos" ("Colombi": Colombia "ritmos": Algorithms) is an interactive, digital, kinetic, geo-location performance project that uses algorithmic functions calculated in a custom GPS tracking phone application to direct the field-user to enter into a suspended gondola and share coffee beans with shared gondola passengers in downtown Manizales, which is presently the one of the significant historical centers for the production of Colombian coffee. (<https://vimeo.com/239502162>) Influenced by the Situationists who, before the time of computer code, experimented with numerous rules for navigating Paris with the intention of breaking from routine to re-experience Paris from new perspectives, "Colombiritmos" used a custom phone app that, when the phone is shaken, applies an algorithm to direct field-users to offer the shared gondola passengers one of five beans, sourced from different coffee plantations in the region. The phone app is tracking the live GPS location of the coffee distributors in the gondola, as well as the GPS location when the app directs them to offer a bean as well as the GPS location where the random bean is selected. The app and system are also notified which of the sourced beans were selected.

The installation involved one of five containers filled with coffee from different plantations to drip onto one of the five large custom sugar cubes which sat on a long upward-facing mirror on the floor of the exhibition space. These dripping mechanisms were triggered remotely by a gondola passenger selecting one of five different types of coffee beans from my hand to eat and identifying that selection via a cell phone application which transmitted that signal. Each of the five types of coffee in each of the five containers in the exhibition space were made from the five different coffee beans

offered to the gondola passengers. The coffee drips in the gallery created what looked like mudslides in the landform structures emerging from the dissolving sugar cubes. During the exhibition parts of Manizales were experiencing devastating mudslides which the artists had read about in the news and via blogs prior to their visit to the city. During the festival the Safavi and I spent the day in the gondola continuously offering coffee beans to shared gondola passengers. During times when the artists were not in the gondola, gallery visitors would activate a local video feed upon entering the exhibition, which displayed themselves on screen within the gallery and also activated connected and prerecorded video events of artists in the gondola offering coffee beans, that would also trigger the coffee drips in the installation.

**Appendix 02. b. viii. "PagDay17" or "Paggank Daywaygun" (2017):** (by Max

Kazemzadeh and Reza Safavi)

Mapping is a myth, distorting the sense of location and a wandering.

<https://vimeo.com/239383643>

A multi-user interactive digital, kinetic, geo-locative performance media project that uses algorithmic functions calculated in a custom GPS Tracking Phone App that directs participants around Governors Island and back through Manhattan in order to repopulate NYC with nut trees and island soil originating from the 1912 NYC subway system excavation. In Paggank Daywaygun (2017) (<https://vimeo.com/239383643>) (aka. "Nut Island" + "drum sounds") or (PagDay17) participant movements around NYC are physically mapped to a user responsive nut shooting machine here in Building 7a, that propels walnuts toward a target, signifying the gradual historic disappearance of nut trees on Governors Island.

## **Appendix 02. c. Apophenosis as Distorted Mirror: The Altered Self & Channeling the Other**

This section investigates how apophenia functions within interactive, cognitively-immersive environments that employ technology to enable gesturally significant dialogues between an individual and society via social networks in order to disrupt prior notions of self through experience, encourage reflection on the relationship between one's socio-political position and cultural identity, and expand one's view to consider creative alternatives. Channeling “#” trending social networks accounts concerning current international socio-political events provide contributions as extreme views from both directions, which exist as a phenomenon of bringing together feelings of empowerment due to previous experience of disenfranchisement and suppression, with the joys of being able to contribute opposing positions with a perceived virtual audience. The interactive environments and the software systems were designed and formatted to employ distortions in content and perceptual errors, as a means of better conveying the artist’s intent. Through physical and spatial engagement, participants are encouraged to decode meaning through the experienced errors and reflect on their gestural responses to content which resulted from that experience, inevitably to discover deeper patterns of significance through apophenosis.

i. Gestures of Change (2013): Distorting the mirror with other's (twitter) thoughts

<https://vimeo.com/72616842>

ii. Jabbertalkey (2012): Distorting the mirror with other's (twitter) thoughts

<https://vimeo.com/124257693>

iii. Jabbersquawkey (2013): Distorting the mirror with other's (twitter) thoughts.

Ownership of thoughts as self-identity

<https://www.youtube.com/watch?v=s77p0FVW8Qs>

iv. The Other Side of the Tracks (2013): Imposing identity into the mirror to create patterns of dissonance within the context of comparative analysis.

<https://vimeo.com/155243662>

**Appendix 02. c. i. Gestures of Change (2013):** Distorting the mirror with other's  
(Twitter) thoughts

<https://vimeo.com/72616842> Twitter Account: @GesturesOChange

Within Gestures of Change, apophenosis is applied in many ways. First, there is the layered disruption in self-identity, which is represented via the reactive and behavioral graphics constructed and presented by the artist within the computer vision system, or the mirror. Concerning the concept, format, and normal operation of a mirror (whether an actual mirror or a video representation of a mirrored image), one carries out certain gestures to do so, which one could call a pattern. To see the side of one's face, one turns left or right with eyes fixed on the mirror, etc. Within these patterned gestures there lies meaning. When the mirror changes, it forces our patterns of use to change, and then we realize there are the difference and possible limitations in this newfound mirror. Those limitations evoke feelings of limited movement and information access concerning Gestures of Change. For instance in the installation, the viewer does not have access to the mirrored image of self, but instead is met with a black background and the markings of a US Silver Dollar overlaid with separate markings of the Egyptian pound spinning in the exact location where the participant's face should be, at the exact scale. As the participant moves, the spinning coin follows growing larger and smaller depending his or her distance away from the projection. Inside the coin, one notices the words “@MuhammadMorsi1.” This is a Twitter account possibly owned and managed by the president of the Egyptian president at the time, which below appears a rapidly changing word (live feed from that @MuhammadMorsi1 Twitter account), that sometimes changes to Arabic and back to English, with a few French words here and there. Reading word for word the participant realizes that they are reading fed sentences from a Twitter account. The dualistic nature of seeing an already distorted representation of self, with someone else's opinionated comments and beliefs appearing

like an animated brand in the center of one's face, overlaps two experientially dissonant patterns. The first pattern is the meaning inferred from the already distorted computer vision generated mirror. The second is one's natural response to someone writing opinions posted in an online social network. In the mirror, the participant is attracted, and in the commentary, they are repelled helplessly unable to make a change, stuck between staying and leaving. Artist intent is embedded within each element of the project.

On the side of the spinning coin sits the tiny words lat: 30.044539 and long: 31.235266, with constantly changing and updating numbers from GPS coordinates aligned with Tahrir Square. Sounds taken and assembled from rioting activist can be heard in the background, for purposes of immersion. Additionally, there is a cloud of multi-colored earth-tone dots that attempt to assemble, never still, in the center of your coin-face. As the participant moves in a direction, the dots certain in that direction to follow. When a second and third person enters the space in front of the screen projection, their faces become other coins similarly, with respective lat: long: locations. However, the Twitter account at the top of each coin reads @Mmorsi and @MorsiMorsi, each with individual word reading word for word in the same space fed from the entire Twitter feeds looped. This time both accounts, and therefore Twitter feeds have commentary that is extremely opposed to the president. Different languages appear, sometimes in Cyrillic, which isn't a problem reading regarding the left to right or right to left differences with the one word appearing in a time format. When the individuals within the space come close to one another, the words "Inshallah" (Arabic: "God willing") appear with a line from the edge of one coin to the edge of the other. Within the context of the overall experience, there are numerous conflicting viewpoints and positions, which distorts without necessarily confusing. Apophenia is again applied through recognizing patterns in random stimuli or giving significance to something that

has no significance. While some of these elements have recognizable formalistic and behavioral traits and characteristics, they are placed and presented to the participant in multiple formats simultaneously. This creates familiar yet distorted patterns, disorienting the participant while asking them to reflect on the significance present.

Within a few seconds, one hears a slight intensification of the rioting voices, at which moment, the dots scatter to the edge of the screen, which is followed by the sound of a blast and a graphic flash appears in the center of the spinning coin. For that split-second, the participant is unable to see their imposed Twitter feed. With the screen both doubling as a flat mirror and as a flat top-down view of Tahrir Square, the coin serves as its graphic representation while formally laid out as a target. Set either by riot activist or shot by drones, people seem to scatter right before there are simultaneous explosions in the center of all coins/faces/targets. This installation is not established for entertainment in that slight changes could be made for the experience to be rewarding and for there to be a goal. Instead, the project is using elements taken from the experience of apophenia, applying them to the installation to investigate moving changing points of significance generated within the perceptual error, merging elements that are either abstracted and sometimes misplaced or misrepresented patterns out of any literal context.

What has occurred is more than substitution, in that the coin, now being controlled by the position of the face, doubles as a mirror and as what seems to be a potential target for a drone strike as from the vantage point of a helicopter. Formalistically the perspective shift serves as both experiential and referential overlay, drawing the connection between self and target. However, the self in this instance is overtaken by the extreme messages and tweets posting real-time from a particular Twitter account, adding a question to who in fact is being targeted. The self is naturally joined in this overlay, forfeiting one's own opinion for that of the Twitter account. In



this process of being part of, while being separate from, any number of hateful events and slander being directed one to another, creates a division in self. This division is one aspect of the experience of apophenia within this work.

**Appendix 02. c. ii. Jabbertalkey (2012):** Distorting the mirror with other's (twitter) thoughts

<https://vimeo.com/124257693>

In the project "Jabbertalkey!!! The Automated Celeb Gossip Generator" gallery visitors become celebrities and are the vehicle by which gossip is generated for the media. While Jabbertalkie (2012) deals with much more playful and light-hearted content than "Gesture's of Change" (2013), the experience contains similar experiential strategies and design structure. One merely has to be present to begin generating gossip, which is made up of tweets fed into the system from Twitter accounts to be displayed as a speech bubble. The more people present on the screen at one time, the more gossip is generated. Whether you have been assigned to be the vehicle for Tom Cruise, Ryan Gossling, Angelina Jolie, Kim Kardashian, Kanye West, Gwyneth Paltrow, Lindsay Lohan, or another celebrity, you will enable and perpetuate the gossip engine. More specifically, when you enter the screen, you are assigned a celebrity. When you are alone, that celebrity makes comments about him- or herself regarding content collected from online gossip articles or publications in a speech-bubble above their head and is simultaneously being posted to another twitter account to be read by others. When a second celebrity enters that comment becomes a gossip attack on the other celebrity in the room also culled from real gossip.

In addition to the gossip comment, there is a live real-time twitter feed from one of the celebs official twitter accounts, displaying one word at a time. When people have stayed in the screen for too long birds, stars and other icons circle their heads reflecting that you have become dizzy with gossip.

The title Jabbertalkie is a play on "Jabberwocky" a playful poem written in 1871 by Lewis Carroll in his novel *Through the Looking Glass*.

**Appendix 02. c. iii. Jabbersquawkey (2013):** Distorting the mirror with other's

(twitter) thoughts

<https://www.youtube.com/watch?v=s77p0FVW8Qs>

Like Jabbertalkey, in “Jabbersquawkey (2012 and revisited in 2016),” instead of celebrities, the characters participants become when entering the room are, American politician's, with their faces and twitter accounts appearing over the reflected digital mirror faces of the participants. Nearing the 2012 United States Presidential election, in “Jabbersquawkey (2012),” visitor/participant identities were distorted by the masking and commentary.

**Appendix 02. c. iv. The Other Side of the Tracks (2013):** Imposing identity into the mirror to create patterns of dissonance within the context of comparative analysis.

<https://vimeo.com/155243662>

In “The Other Side of the Tracks (2013)” similar distortions of one's identity serve to immerse one or two visitors/participants at a time into an interactive cinematic experience. In this experience, participants find themselves projected on a video screen with a virtual overlay of digital imagery making them into characters that interact with one another in the digital space. One participant is assigned the identity of a "Prince" (w/a crown & an animated chest of gold which opens and closes revealing the gold), and the other participant is assigned the identity of a "Pauper" (w/a tattered hat and an empty paper plate). A train track with an animated train dividing the screen down the middle moves its horizontal position to always stay in between and separate the two participants. When the participants move close enough to touch one another the text appears stating "You have successfully crossed the tracks!"

In the background, one can hear Jefferson's famous American TV show soundtrack "Well we're moving in up..." When the two people physically move close together, the system detects it, and text appears reading "you've successfully crossed the tracks." The theme of the M-Central's Millennial Trains Inaugural Weekend Exhibition & Ball, as well as the conference the following morning investigated the history and influence of trains in the US, our identity, connection to the past, and in our present community. "The Other Side of the Tracks (2013)" highlights the characteristic imposed on train-tracks by corporations and politicians all over the country which utilized train-tracks everywhere as an opportunity to divide cities into wealthy and impoverished neighborhoods, which served to reinforce many other societal and racial divisions. The popular Jeffersons TV show highlighted many racial and social issues in their episodes. The interactive component encourages individuals to cross the tracks as a simple reward

highlighting the unifying gesture.

**Appendix 02. d. Apophenoesis as Dogma & Belief (discussed in the main text)**

1. Wishing Well (2010): Belief in wish makes it true to self. (Also Emoto)

<https://vimeo.com/124257934>

2. Plantenkere (2011): Odd actual representation of empirical test outcome inspiring belief (Also Emoto) <https://vimeo.com/155250422>

3. Antenkere (2011): Odd actual representation of empirical test outcome inspiring belief. (Also Emoto) <https://www.youtube.com/watch?v=gRqydF-U-0Q>

## **Appendix 02. e. Apophenoesis as Mediation & Configuration**

1. Spin.flick (2006): Digital Mapping is false <https://vimeo.com/33815325>
2. Processing Gesture (2005): <https://vimeo.com/34270643>



## **Appendix 02. f. Apophenosis as Behavioral Association**

Within the projects listed in the category entitled “Apophenosis as Animate in Inanimate,” formal gestural re-appropriation and mimicry were used as a human-to-human or human-to-environment cause-and-effect mannerism to trick the viewer into thinking that they are having an effect on the interactive objects in the same way that they do in everyday life. However, what is happening is, in fact, a complex element of mapping inputs to generate a “believable” output. This is something common to kinetics research and artificial intelligence systems that seek to mimic human behavior and intentionality in an artificial object or robot.

i. Antisocialbots (2007) <https://vimeo.com/33815304>

ii. Max is a Pushover (2007) <https://vimeo.com/33815283>

iii. i.m.pshovr (2008) <https://vimeo.com/33815249>

(need to expand on the apophenic categories of the above projects)

**Appendix 02. f. i. Antisocialbots (2007)** <https://vimeo.com/33815304>

Built from Basic Stamp Microcontroller, ultrasonic range-finding sensor, i/o speaker amplifier, servo motor, screw, and a piece of MDF wood, in “Antisocialbots (2007)” a group of small antisocial robots turns away from people and “speak” onboard generated hardware "complaint" sounds when approached. Depending on how far someone is from each antisocialbot, the bot responds with a series of different gestures and sounds. Entering into space with many of them activates a string of avoidance gestures, and they continue until their vision finds rest or no one in their view. Collectively they create a kind of kinetic antisocial orchestra until they gradually feel more alone and find visual peace.

**Appendix 02. f. ii. Max is a Pushover (2007)** (by Max Kazemzadeh and Dr. Ian Parberry)

<https://vimeo.com/33815283>

In the interactive computer vision piece called “Max is a Pushover (2007),” visitors are welcomed to wave their hand over a table that will collide with the virtual character, “Max,” in such a way that he seems to be "pushed" over. Max always falls onto his back on the ground as he continually paces left to right, back and forth, across the screen. In fact, the notion of pushing isn't being employed in this piece, but rather a computer vision technique called blob tracking identifies the hand of the user and creates a virtual object out of it in the location it appears on the screen. When the contour of the viewer's hands come in contact with the right side of the character, Max falls to the left, and visa-versa, giving the feeling that a directional push is happening, when in fact the locational collision between the hand and part of the virtual character instantiates four different animation sequences. And appropriately, when the contour of the viewer/user's hand collide with the character's feet, he either pops up in the air or does a flip, and then again falling, to his back, after which time he stands up and continues pacing.

**Appendix 02. f. iii. i.m.pshovr (2008)** (by Max Kazemzadeh, Edgar Zu, and Mauro Herrera)

<https://vimeo.com/33815249>

This format was again implemented in the full-body room-sized interactive installation of i.m.pshovr (2008) in Mexico City, where viewers were able to record themselves against a green-screen and then push full-sized versions of themselves over in a mural-sized projection on the wall.