



Becoming Humidity as a Diversion

A Good Idea for a Very Good Book
Or, Earth in Other Worlds

Andreas Ervik



paraform
moreword

Becoming Humidity as a Diversion

A Good Idea for a Very Good Book. Or, Earth
in Other Worlds.

Andreas Ervik

© Andreas Ervik

Duplication is allowed with attribution. This is a work of fiction. Where information is based on actual events, the names have been changed. One may email questions, compliments and corrections to ad.saffronhouse@hotmail.com.

PLEASE NOTE: There is a person in Finland who has bought a copy of this book and asked us to take it back for her because she didn't want anyone to think she supported this awful enterprise.

This information is provided by RNS, the company news service from the London Stock Exchange.

Publisher Paraform Moreword ISBN-10: 978-0-470-48365-8

The company has published books by many renowned international authors.

The paper is sourced from pines and is made from a renewable and pollution free process. The FCA incorporates a harmonized system of Technical Regulations, thereby facilitating effective implementation of the legal framework

American Type Founders Library collection

From Caricature Books

Shoelaces, Paths, and Gear Choices. Or, A More Technical Explanation of Stoic Journeying. Leon Botstein.

in "Keywords and headings" index

ISBN 978-1-4039-9694-1

1. Everyday culture - iOS, Android, 8-bit. 2. Technology - computer. 3. Interface - analog.

2019-09-13 10:00 pm (GMT)

10 35 46 34 54 65 81 92 95 103 127 154 168 185 195

Firstly issued in 1797 and usually sold for 6d.

Contents

Acknowledgments	vii
Awareness of World	1
Foreword	2
Conventional Modifications	7
Basic Human Appeal	12
Characterization and Conceptualization	15
The Emergence of User-Created Cohesion	18
The Rise of 3-D Modelling	18
User-Generated Cohesion	21
Physical Basis of Connection	32
To Cloud or Not to Cloud?	37
3 Emotional Play	44
Browsing for Gaming Sites	44
Gaming Imaginative Models	48
Not Content Yet? Check out the Media	58
Healing	67
4 Divining the Fungi Network	76
Coherent Universal Intelligence	76
What Now?	81
Fungi and Cybernetic Evolution	86
The Technical Mysteries of How I Became CEO of the World	102
5 Mutual Manipulation through the Social Petworks	121
Clicker Cats	122
Understanding Aliens Through World Cat Television	126
Lizards on Steroids	139
Dancing Horses	151
6 Twitter Energies	162
Where are you all going now?	163
The 4 Min Rule of Global Politics	169

The Triggers of Cyber Bullying	177
What Ever Happened to Psychedelic Theorists?	193
7 Recognizing Recurring Identities in Distractions	204
Promising Resolutions for Stopping	204
What About the Magical Brain?	206
Bio-based Structures	210
Magic Treehouse A-Z	219
Notes	224
Bibliography	245
Index	294

Figures

1.1 According to data from MIT's Senseable City Lab, participants who have the app installed, show a significant reduction in distraction and a decrease in average phone use when compared with participants who do not have the app installed.

2.1 We introduce bionomic paradigm: an approach for understanding the originary bionomic (chemical and physical) processes of all life on Earth. We present here a new conceptualization and analysis of the human genome and our morphological origins, evolution and, finally, evolution of the epigenome. This is done through the study of symbiotic microbial symbionts.

2.2 The second half of the nineteenth century saw a change in the interpretive frame of work on eukaryotes. In 1877, Ernst Haeckel proposed a tree of life in which a large branch of eukaryotes was suggested to contain both animals and plants. The name "Plantae" was given to these elements and subsequently, "carnivora" was applied to some animals that had been previously included in other lineages.[

2.3 Polytag, originally described in Cat No 28, an application of Pseudorandom Function Approximation (PRFA). Impressively, this application could be run with only a few lines of code. The main application state starts with a deck of cards, each of which is shifted with dice rolls. The cards are drawn sequentially as the shuffle continues, then the results are recorded in a "playfield"—an on-screen display of player information, each of which is a function of a real card.

3.1 A screenshot from Mario's New Super Mario Bros. U Deluxe (2019), showing Mario's target.

4.1 Screenshot of clickbait from ladyandbooks.com, showing attractors for a bait-clicking population: Hannibal Lector, pink, maggots, shark, sexy, dangerous, curious, "wow", scary, and troll.

4.2 xkcd webcomic by Randall Munro shows some of the debates which might have been unnecessary online. The xkcd

webcomic above is accompanied by the classic 1980s era phrase “I Can’t Believe I’m Going To Say This Out Loud”.

5.1 Facebook ad for Lil Bub, on line ad from Facebook, link to Lil Bub Facebook page, courtesy Facebook, since deleted.

5.2 This video, posted by @bloodtear_ on 25 September 2020, appears to be of the same aircraft at what appears to be the same time (same visibility).

5.3 A number of DeepDream images that ‘hallucinate’ the presence of animals. These images are recreated in this paper as “images of real things when algorithmically deformed”. Image by Ivan Santesteban/Wikimedia Commons.

5.4 Artist Takami Takemura reveals emotions of his ten-year-old self (a girl from the internet) through the works of American artists Ed Ruscha and Christian Marclay. Original photo by: Atsuko Satō.

5.5 Lil Bub seen in January 2016, 11 months after her cancer diagnosis. She is a healthy 7-year-old.

6.1 A meme contrasting prehistoric politics with modern politics. The image follows the format of ‘swoldo doge versus cheems’, which is itself a version of the format ‘virgin versus chad’. Both of these meme formats are accompanied with binary opposing views, attached to either the brute or the meek. The specific image above also follows the common set-up in which the brute holds the ridiculous, yet favorable position – in contrast to civil discussions and differing political ideologies, it achieves success by raw power. Unknown origin/Know Your Meme.

6.2 An image macro from one of the Facebook groups used to propagate the meme. This image from “Tens of Thousands Call for Trump’s Impeachment.”

6.3 I use this bit of image-generator software to make funny images of the impending end of Trump’s presidency.

7.1 Emoji depicting the state of the H₂O molecule.

Acknowledgments

Thanks to the Faraday Monitoring Center (from ILSSEN). The EEG signals recorded in Norway by the University Hospital of Bergen were acquired by physician Andreas Krogsvik at the Bergen Neurological Institute. Two of the authors of the University of Maryland) and the US Naval Research Laboratory for their assistance with various aspects of this experiment. It was this project that inspired me to attempt such a low power frequency switching experiment, and even the internet being the internet, I still have a lot to learn. The second thanks goes to Kent Inkelas, the person who had the first of these demonstrations in 1995, and his MOSFET based atmophone. The third and final thanks goes to my university, the Laboratory for Organic Electronics, for making this research possib

1

Awareness of World

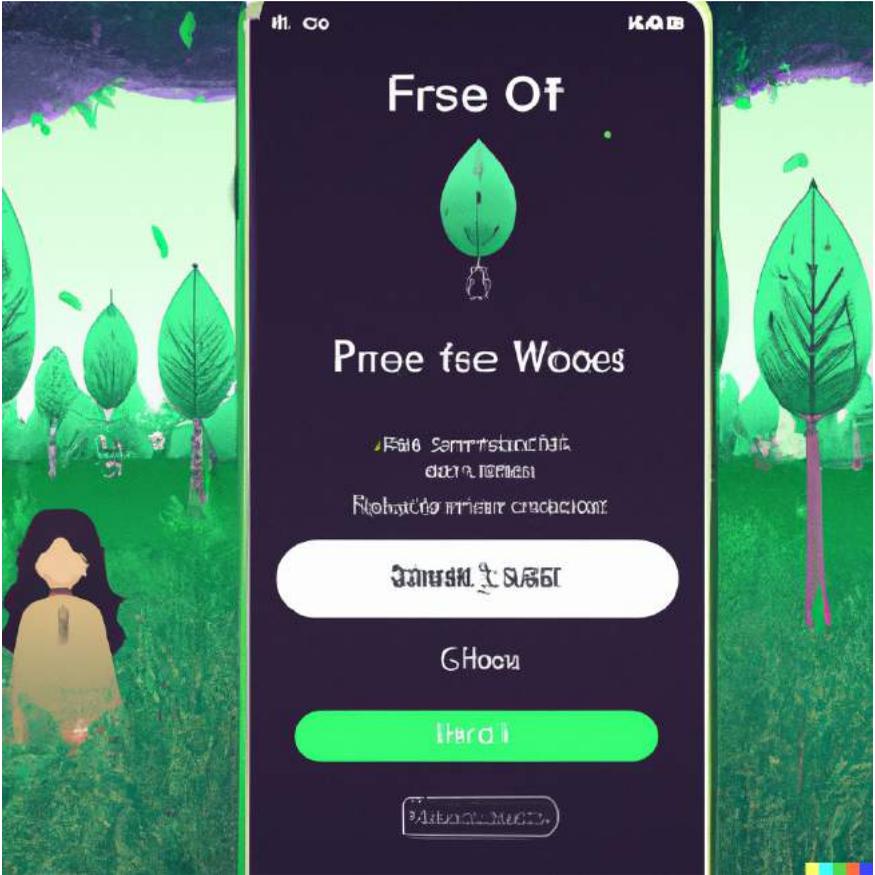


Figure 1.1: According to data from MIT’s Senseable City Lab, participants who have the app installed, show a significant reduction in distraction and a decrease in average phone use when compared with participants who do not have the app installed.

Foreword

To avoid distraction, I know that I need to be disciplined about my time management. To this end, I turn to an app called Forest. An attention to detail includes the ability to digitally mark individual trees in the digital field of the app, just like I use pencils in my real field of plant science. To enforce this incentive, I set a timer from 30 minutes to a couple of hours. The app's smart timer then asks me to perform various tasks: to mark a particular tree and keep it alive, to look after the one closest to me, and so on. If I am actively paying attention, the device I carry with me, the phone, can automatically adjust the environment to reflect my attentional state, or alter the stimulus to re-train my brain.

As I remember from my biology lectures, my brain needs regular breaks from constant stimulation. Computer-based tasks demand concentration, whereas nature provides a break from being constantly stimulated. When we have an instant-gratification society in which we are besieged with stimuli, we need to find ways to maintain a well-balanced brain to be more effective in our lives and in our careers. Besides self-care, it is good to use strategies to cope with daily challenges. Forest might help me take some "hard" breaks from my day job, and give me more time to create a balanced, healthy mind.

Although anti-distraction tendencies are widely manifested, there is a number of things that can be done in order to move in the direction of less screen time. This, of course, is related to self-control, where people try to prevent themselves from making or taking ill-considered decisions and failing to create good habits. Obviously, it's hard to resist the temptation of that first 20 minutes of lazy work to finish the short story you've been planning on all week, or that slot to watch some "Arrested Development". How we react to stimuli, the more intense the reaction, relates to willpower and what we do with it.

The amount of willpower one needs to curb a negative reaction to a stimulus, like being pressured by a boss, seems to be proportional to the response (I want that drink so I'll eat and skip work and you don't want that promotion so you'll stop doing what you're doing so you can work more hours, etc.).

In other words, the more a person responds to a stimulus, the more one needs to exercise willpower, in order to prevent that stimulus to be experienced with such a strong negative response. When faced with a problem, such as one colleague constantly bribing a job

application to the competition with her credit card, the reaction in the brain has to be changed to the first-aid-kit mindset, which helps to establish a peaceful mind, and gives way to the user's ability to use both the willpower as well as the opportunity. In other words, the change in perception is part of the solution to deal with a pressure or undesirable event. So, while no use in isolating ourselves from others, we can try to confront the problem rather than "prick" our eyes with a finger. In the end, our body is a "branch" in the cybernetic forest, the heart of the individual. Our mobile phone, laptop, television, iPad, radio, and television have the possibility to break this branch.

I will focus in particular on the diversion of attention in context of young people, a demographic whose decision to engage with digital media is perhaps more in danger than any other. Young people do not make up the majority of our population, but are likely to shape the future digital media landscape in far greater proportions than their elders, much more so than other demographics. On this note, and for a different set of reasons, I will also look at the design choices and practices that lead to diversion by children and adolescents, and how to combat them. Finally, I will compare and contrast diversion and addiction in order to understand the issues that arise from media dependence.

All in all, I find myself with a collection of things I can offer: the life lessons and challenges I've navigated myself, some interesting observations and critique, and an abundance of insights into the design and development of digital media.

So far, I have explored how we understand media, but have not yet explored how media is understood. In this section, I examine why it is that we think of media as made up of bits and bytes. This paper will be neither an exhaustive history of media or a sociological analysis of the structure of the media industries and technologies, but instead a series of references to other works and texts in order to promote a more complex account of media processes. After a series of passages that analyze media as viewed from several specific perspectives, such as texts, various fields of history and the philosophy of media, the paper moves into a final section that aims to lay out the methodological and theoretical framework that can better discern and account for how media are mediated, and how they contribute to human life. The authors pay special attention to the political economy of media, how commercial

imperatives come to play such a central role in the design and creation of media.

It is when the conditions of the everyday allow us to escape our mental torpor that we are able to search for freedom. Time is removed from concepts such as work, money, place, time, career, even time of consumption. Most diversions are free from mass consumption and are constructed in response to individual wants and desires. We find it difficult to imagine we exist within this world. We are so free that we can disregard the existence of institutions that would constrain our thinking or programming. More than that, we are free to play around with these assumptions and habits without consequences.

This book is divided into two parts. The first, *The Politics of Becoming Human*, offers a framework for becoming human as a self-evolutionary, instrumental process. As I suggest in the Introduction, becoming human can be read as an entry point to understanding human culture. Consider a child. It begins with delight and is inevitably followed by the desire for more. For the sake of building a child, parents spend hours teaching that child to look for the positive in anything, to avoid failure and to see beauty in everything. Children are precious resources whose excess is to be avoided lest they “throw it all away.” The child is taught to see opportunities everywhere. As adults, however, we eventually arrive at the place where our needs are met and so we ignore the opportunity for human happiness we have missed. In seeking our needs, we ignore and diminish the potential of other humans. However, becoming human is not a self-evolutionary process from birth to death. Becoming human is a continual process through which human beings are constantly engaged in shaping their environment. Becoming human entails a critical engagement with the range of possibilities offered by life. The “subject” is free to experience a range of possibilities for being human.

Thomas Meighan and Anna Narenkova present their perspective on the contemporary world of distraction through video testimonies. The subjects’ testimonies provide an insight into a wide variety of ways that one can be distracted. These people are from all kinds of backgrounds and professions, but are all united by the fact that they find themselves increasingly distracted. We are, it seems, all getting distracted. These testimonies are almost certainly unique, but their collective impression is that our current distractedness is relatively pervasive. Eric Mill’s

chapter takes a different perspective, emphasizing the role of politics in the way people are distracted. Mill argues that the arguments of the political right cannot be dismissed as the views of a particular section of the population. On the contrary, Mill argues, this view reflects a widely shared collective reality: the majority of the population is distracted and has lost its capacity to think critically.

On the other hand, it might be argued that the mediums we use have a special role to play in our society. If you rely on gadgets to stay focused, then you will be one of the more productive members of society. Clearly, as individuals we are at the mercy of what others choose to make available to us. Whether we are allowed to see ads on Facebook or never even know about them might be something we should be able to choose – and what does it mean to opt-out? In the UK, we recently considered the possibility of all material available online being subject to a ‘straight goods’ mark indicating whether it is reliable and moral (of course, being able to trust such a mark might be tricky, as its allure is hardly matched by the investment in research and development). However, if we thought our current predicament concerning technology was depressing, our near future is set to be even worse. There is a disturbing prospect of our machine overlords, who have access to all of our information, whether consciously or not, ensuring that the process of creating and consuming media continues to accelerate. If you’re worried about this kind of thing, then you might be happy to hear that Google has now started its own online encyclopedia.

It’s important to remember that distractions aren’t necessarily bad. It’s a problem when they become an excuse to procrastinate or a form of hiding from discomfort, but they can also offer an opportunity for some creative reflection. When you’re playing a video game, you’re engaged and at one with yourself. You may find yourself thinking about your day, about someone or something in your life, or about the person or thing you would be if you could have any superpower. Social media is addictive and distracting, but some people use it to make important connections or reach out to people who have otherwise become inaccessible. All distractions are forms of capture in that they use the vices of the internet to distract us from what we should be doing. The ease with which we can escape from distraction makes it all the more important that we be careful about how we entertain ourselves. We should think carefully about what kinds of distractions we engage in.

The social-media phenomenon brings together the notions of an age of distractions and television. Through social networking, users engage with one another, creating a novel form of entertainment, derived from television. In a sense, the social-network phenomenon has similar characteristics as the advent of television. The relatively informal and rather immersive nature of the interaction, with the delineation of audiences through the gate-keeping structure of platforms, has the potential to create an aura of diffusion of influence, along the lines of broadcast media and the polio vaccine.

We can think about this from the angle of the Michelson-Morley experiment of a century ago, which would later be used in the 1930s to underpin the social-network concept. The experiment concerns a light beam that is split into two parts, one passing through the body and the other through the spectator's head. They are travelling at the same speed and have the same average velocity, which determines the relative delay. The power with which the viewer sees through the beam, measured by the duration of the 'light penetration', is constant for the viewer and the observer. In this case, viewers experience a subjective delay, as they perceive the difference in the passage time. By measuring the duration of the light penetration, it is possible to determine the body's duration of light penetration. Thus the observer who experiences the instantness of the light, has the same duration of light penetration as the person who experiences a greater delay. This conclusion provides a quantitative way of measuring the subjective experience of the medium.

In the 1950s, attention economics, or theories of attention allocation in social organizations, began to make an impact in popular culture and politics. As attention has become a scarce resource in an age of information overabundance, many people find it difficult to manage their individual attention, let alone manage the larger attentional resources of a social group. In this climate, distraction could be viewed as an egalitarian, egalitarianizing practice in which attention is exchanged for conformity, free from notions of narrow rights and entitled entitlement.

Dislocation from work and the more liberal sexual culture in the 1960s also created an environment in which distraction was seen as liberating for people experiencing political or emotional instability. The character of Miss Havisham in Charles Dickens' *Great Expectations* is a type of ghost-filled servant who embodies the idea that we create and manage our personal space, and who is a reminder to us of the

importance of maintaining balance between living our lives in safety and taking risks and being vulnerable.

Even the Catholic Church began to treat the newspaper as a distraction by the 19th century, a subject that Freud refers to in *The Interpretation of Dreams*. F.W. Thackeray mocks newspapers, “so many shop-fronts, so many flags, so many words”, in his novel *Vanity Fair*. But the novel also makes clear that advertisers and the newspaper cause people to lose their moral bearings. The association of newspapers and class divide is also as old as the Gospels, a matter that has been raised as early as 1732 by the Marquis de Sade in his book *Les Enfants Terribles*. The remarkable distance between the truth of a newspaper’s facts and how they are interpreted by the elite and general public can create a moral crisis for its readers, often regarding them as immoral. The German sociologist, Max Weber, understood that the distinction between truth and falsehood in the same newspaper can prove important:

This has to do with the character of the concepts of public and private in modern society; this is what moderns call the distinction between truth and lies. Of course, a man should not claim to be a liar. This would not be a lie, but the truth; the liars will claim to be liars, and to be satisfied with this. No wonder that Sartre, after discussing the differences between real and false news, would agree with a proposal by another modern philosopher of technology, Ernest Nagel, that the newspaper be banned in the US, on the grounds that it is “not a medium for the dissemination of information, but a medium for spreading lies”.

Conventional Modifications

We tend to be fond of light comedies, and avoiding the trivial is our natural instinct. Many a time it seems that living a virtuous life requires being more patient, more calm, more honest, more accepting. Things would seem simpler and much less complicated if we only did these things, but it’s also clear that human beings are not like computers, nor like data. We need some of what makes us human. If there is one antidote to distraction, it would seem to be actually being human. For that reason, we will try to make progress on topics of distraction this year.

In this regard, should we at least consider quitting social media for a month? In considering the difficulty of confronting the problem, a word of caution is in order: while seeing social media and technology as a

problem is certainly healthy, taking on an anti-tech or anti-consumerist position might actually be counterproductive to our movements. Our goal should not be to convince people to keep using social media platforms or smartphones, but rather to shift the focus from technological manipulation to a broader view of how and where technology intersects with our everyday lives. If the individual simply stops using a smartphone in public, and opts for a phone-free environment, we could actually be encouraging people to engage more in virtual community, while distracting them from in-person ones. These platforms are an indispensable way of organizing communities, and the more they are used, the more we are also affected. The more people use social media, the easier it will become for the authorities to monitor their behavior.

The introduction of the internet and the proliferation of cellphones in the last decade have changed the world and how we interact with it. There are claims about the “rapid rise of the habit” of distraction and there is debate about whether this has brought about a “digital disorder”. Some blame smartphones and social media for the rise of distractions and the consequent harm to cognitive ability. At the same time, there are those who point to the rise of the smartphone as a tool for recording social and economic changes. These are the “smartphone-snapping” studies that have some merit. Facebook, YouTube, and Snapchat are appealing to youth because of their immediacy. And perhaps it is indeed true that with the rise of these social media and the difficulty of capturing these images, people are seeking the visual of happier times in youth. But this raises the question of whether it is a wonder that social media has emerged.

But attention is less a technological problem than a political one, one that runs deeper than the normal market. As with the other problems in the mediated economy, it is the role of a political agent that determines our abilities to listen or not, make distinctions, and make things. As Tocqueville, a keen observer of Western political practice, notes in *Democracy in America*:

All popular authorities, whether monarchs, presidents, or parliaments, are perpetually competing for attention, by means of modes of publicity, by invitations to speeches and debates and other such means. What is required is a special

talent, the “power of concentration,” so that these bodies might be seen in motion and understood.

Whatever state of the art the content industries bring to the table, none of it is going to mitigate this problem. And, with the added complication of fake news, the technological fix just adds to the moral, political, and aesthetic challenges.

Whatever its unique historical function, journalism too plays a role in the dynamic of distraction, often without the best intentions. In a situation where distraction is widespread, how can a solution be devised to ameliorate it? The modern quest for helping viewers overcome their distractions has had mixed results, and efforts to enhance media literacy have not yet proven completely successful. At the same time, technologies aimed at ensuring viewers are less distracted exist. One example is the recently introduced “native viewing” of free-to-air television news, where the screen seems to “become one with the picture”. One goal for media professionals may be to devise, through technology, techniques to combat the onset of distractions, as well as to mitigate the effects of the effects of distractions, including on their audiences. For example, designers are currently experimenting with visual context.

The pervasiveness of literature has long ceased to be a safety warning but a continual danger. With texts joining the internet, shopping, texting and Facebook, popular science and especially engineering departments in many universities and institutes of technology are becoming text central. As in France during the Renaissance, students at engineering schools are presented with texts such as *The Elements of Mechanized Botany*, which presents a world populated by monotremes (bird egg-laying mammals), with many more components to the self in man from conception through reproduction. Distraction itself seemed well understood to be an evolutionary phenomenon: "In order for the genome to reproduce and to evolve, the component genes must be separated and recombined in a sexually reproducing organism" (Climber-tiger-tank-bicycle). This reproduction also made our perception of such changes in information mediums potentially very high.

An indication of the ways people might be following the collapse of traditional meaning-making systems is that, in a world where a meaningful end-state of the human race is in question, we will scramble to acquire the best information possible, even if what that information

says might be wrong. This is already happening. There are certainly many people who put the latest polls to trust, and the most often cited study (s.a. 1) of the scientific consensus on global warming has been plagued with methodological errors, as have related surveys (I use these latter as “guinea pigs” in more general experiments to see how people respond to information coming from those sources). At the same time, these polls have informed the consensus of the scientific community, even as the climate change phenomena continue.

Distractions and boredom have a long history as major regulators of society, along with their converse, anxiety. Two key concerns for human beings in the modern world have been the increased quantity and intensity of distractions, and the fear of boredom. From the colonization of the Americas to the rise of cities, the increasing importance of distractions, which are presented as an important opportunity for liberation, has been a central concern in the human experience. New communications technologies have further brought about new classifications of interest, with society presented as increasingly split between “junk food”, “real food”, “health foods”, and the various possibilities of “sports”, “music”, “entertainment”, “nature”, “handcrafts”, etc. An inherent contradiction lies at the core of these vocabularies. A metaphor of recreation or recreation as recreational results in an inherently negative evaluation of work and stress, both of which are unavoidably combined in the work we do.

More importantly, giving them an identity complicates already fraught notions of the rhetoric. Rosenberg concedes that distraction necessitates a sharp conceptual divide between conceptualizing and describing media systems. She admits that “words cannot be our ultimate linguistic technology when our linguistic resources have been so poorly used by a diverse range of agents to frame the world”. Under this reasoning, according to Rosenberg, distraction is an exceptional event for philosophical literature. For this reason, the failure of distraction narratives should not be construed as failing to understand the conceptual framework within which they operate. Even the harshest of critics would have to acknowledge the rarity of distractions in philosophy. Indeed, the question of how to understand media systems will be asked by philosophers in a range of literary genres. Yet distractions do not fit into established categories.

It seems like I may have come across another contradiction: Plato thought that, since Diogenes refused to follow conventions, he was certifiably mad, and yet he was a philosopher of sorts. But this becomes even more confusing when one considers that Socrates could not be accepted as a philosopher because of the actions that were associated with him (lots of ducking out of banquets and debates with the youth), but also because of his adherence to conventional habits and ways of speaking (via his writing). However, Diogenes, also known as Cynocephaly, can be described as a Cynic, someone who rejects convention. In fact, the word Cynicism comes from two Greek words: kynos (meaning dog) and cheiros (meaning star). A Cynic's dog was usually his dog, but in Greek, this word is used to describe people. This identity between philosopher and dog was something that Diogenes himself promoted. In Diogenes Scholasticus, for instance, Diogenes claims to have no interest in keeping any other friends.

But it is in the postmodern condition, in which many universities are playing make-believe, that the philosophical problem of inattentiveness can give shape to a critical play. Soussou suggests that it will fail, but I think this misses the richness of the postmodern condition. For I do not believe that inattention gives us power, as it is falsely advertised to do, but can only demand it. The rest of the essay discusses that need. As noted earlier, postmodernism offers a dilemma for many scholars: it accepts that we know too much, or too little, or too little or the right kind of knowledge. To understand this in relation to inattention, I will put forward a thesis on philosophy and game design. Philosopher Thomas Nagel described two critical notions of objectivity and perspective. Objectivity is about things being in the same place, while perspective is about things seeming to be in different places.

From what vantage is I aiming to look down on readers? How can I come at the reader in a way that produces visceral shock, not so much from the obvious, like hearing the word "hell" or seeing the Christian cross, but from a fresh vantage, as a kind of "unnatural" sight? If readers know exactly what they want to happen, then surely they will never be disappointed? There are many psychological theories to which this is a corollary, but there is also a political dimension. Thus one theory is that bourgeois subjects are anxious about not seeming to satisfy their desires. For instance, they are afraid of appearing as if they enjoyed an activity because they will seem selfish. Thus, they are content with the idea of

work, even if they dislike the actual work (e.g., feminists), since they would never want to appear as if they enjoy work. Other theorists have compared bourgeois subjectivity to an unfinished project.

Basic Human Appeal

Two forms of fundamentalism – Call it fanaticism if you like – often accompany these forms of media. The first concerns limiting access to media, regarding new media as a revolutionary and at times dangerous technology. In the Global South, mobile phones offer a mobile network infrastructure, a copy of Wikipedia and a radio channel. They do not, however, offer the latest smartphone. Rather, they provide access to a platform for connectivity among the masses, to a new set of communication and entertainment possibilities. Across the Global South, mobile phones appear as innovations that, even if the poor cannot afford them, provide them with more of what they could already do via other means – or in particular to resources that previously fell within the reach of the rich. Across the Global South, mobile phones appear as a necessary and revolutionary step forward that one must embrace if one is to fully participate in the revolutionary changes occurring around it.

DeLanda offers the notion of the rubeche as the collective group-identity in a state of discord. The rubeche is an unhappy collective of individuals that shares a massive mindshare and whom all individually perceive as the root of their problems. The source of these problems is actually their widespread agreement on the underlying level of conflict: that the rubeche is in conflict. Their agreement on the fundamental level of conflict itself suggests their shared meaning in a situation of discord. The group-collective which feels most similar to its members, values the same things and shares the same ideas, may seem at first glance to represent the source of these disagreements. But the groups that seem most similar to one another are often in the early stages of development, where tendencies to align along a common trajectory, both of which are manifestations of the inherent needs of the individual.

Here are a few examples of divergent features of objects. First, as previously explained, diversions have attractions for the living, the eternally seeking and the not yet here-today-gone-tomorrow. Like games, diversions sustain a certain ongoing striving for novelty and achievement. Second, divergent features are commonly exotically attractive. Third, divergent features may be intense, but their levels of

intensity are the same for diversions as for achievements. Fourth, diversions satisfy some serious and immediate need. According to G.H.W. Mencken, nothing satisfies the yearning for future happenings more completely than playing the lottery, buying a movie ticket, eating a large meal or getting drunk. Fifth, diversions may compete for the love of someone. Sixth, diversions that require physical activity satisfy some of the underlying physical needs of the human species. Though, again, divergent features may overlap and be fully different at the same time. When asked why a person should put money into a stock or fund, some may say it will work out well in the end. Other may say it is unwise to invest and leave it to chance.

Individuality and shared experiences on this planet, I argue, are actually inseparable from the ability to identify ourselves with other living things. My assumption that humans are the most intelligent beings on the planet also reveals my prior beliefs regarding nature. The notion of humanity as unique, as monadic, as the defining expression of creation has long been the justification for an inexorable hierarchical stratum on the ecological hierarchy. In Nietzsche's view, humanity was an ever-expanding expression of a primal need for peace and freedom. We, at the top of the pyramid, were the only ones who could tame nature, and we deserved the sole dominion over the physical universe. Nietzsche believed humans were the only organisms with consciousness and sentience, and thus possessed the ability to experience desire.

Drawing on Pierre Bourdieu's notion of society as a practice rather than a defining structure, the first point of departure is how the human being came to be. Human history starts as *Homo Sapiens Sapiens*, a historically distributed cluster of peoples migrating throughout the world. These peoples formed what are referred to as *homo civilis*, the "civilized" ancestors, who created the concept of the state and enforced its existence through subjugation, war and economic exchange. The state represented a type of societal organization in which humans, living as individuals, could enter into a social relationship with others. The human being within this context started as a means to an end, an agent of production, until it came to have its own ends, that of creating a human society.

With the concept of media as extensions of man, McLuhan maintains that "a fixed human plan for knowledge, for knowing, and for intelligence in general, that is itself also a fixed plan, is entombed in a

magic tomb.” At the same time, his perspective also holds that “technological change often serves the quality of a diverting (or distraction) ... that often obscures the true path for the understanding of the times in which we live” (1981: 18). The proposition is surely a familiar one: if people who do not follow and subscribe to media content are alienated from it, there will be media that serve to direct attention from the media they are not paying attention to to the media that they are and the media they pay attention to.

As the ancients understood, the modern idea of separation is the result of the failure of our faculties of imagination to come to grips with the living, breathing biological organism that we are. In its place has arisen the demonization of animals and a corresponding anthropocentric mindset. We confuse the life force which animates animal life with our own life force. We confuse socializing with animal play. We mistake the processes of evolution with a program to reduce all beings to our own image, or to ignore that process in pursuit of some other end. In this sense, the human mind is a microcosm of the human species. The classical Greeks recognized this.

I begin with observations on human hunter-gatherers. I consider how, in such a mobile hunter-gatherer society, one can live with others on the margins of the world, coexisting with the largely indifferent system of nature. In doing so, I will explore various adaptive strategies that may allow a human person to remain in the service of evolutionary forces, while taking responsibility for the fate of their children. Subsequent sections of the book will consider multiple species of bacteria, fungi, and plants, all of which help to shape and organize our environment. This study will focus on microbes because we are interested in how bacteria, with their large genomes and great plasticity, shape their world and influence other species. In so doing, they may alter or mold our world and our brains in ways that may be relevant to human psychology and thought.

“Creativity knows no time and it lacks the desire for anything like it, because to create implies within itself a totality of longing, which it alone can realize.” Samuel Beckett, *Translating the Organic Into the Inorganic*, 1961 (original: *Bonjour Blaise*; London: Hamish Hamilton, 1961)

“What is creation?”

“What is creation?”

“What is creation?”

“It is the act of creation, if you like, that someone does, or does not.”

An answer to this question comes in the form of a fragment of a poem composed by Jason, a one-eyed patient and communicant in a hospice. In the poem, we witness the creation of a mouse by Jason. This poem does not follow the author’s poetic self-portrait and evokes an unmediated, simple act of creation, implying a transcendent, unknowable creation that actually takes place.

Characterization and Conceptualization

Chapter 2, “The Emergence of User-Created Cohesion” is concerned with the development of the first user interface systems, and more specifically the work of Alan Kay (1980). We begin by considering the evolution of and contribution to user interface technology. This is particularly useful to think about the earlier relationship between programmer and system. While the topic of evolutionary computation is more traditionally associated with coding evolution, the emergence of the computer mouse and graphical user interfaces is also worth exploring. Human-computer interface systems (HCIs) have grown to become more than just the sole means of communicating with computers, and are now central to how we think of ourselves and who we are. We see the beginning of this transition in the 1950s when CAD was still in its infancy. A new type of user interface was needed to help developers overcome the task of a new, complex technology. Designers created a drawing tool and encouraged users to improve it. Not only did this tool enable designers to better develop the system, but it also helped to nurture a sense of shared ownership over the tool as a user. This type of design was largely unknown at the time and was closely monitored. We see the beginning of the growth of such designs in the 1960s with the introduction of the character based world mouse. HCI systems became a central tool for the development of the so-called personal computer. As the sole means of communicating with the computer, the user was primarily responsible for its development. In the mid-1970s with the arrival of personal computers, the software was developed in the market, not for the software, and the designer was an isolated entity.

Chapter 3, “Emotional Play”, explores the processes of encoding and experience of emotion in human and non-human play. As simple as the play of a cat with a toy mouse may be, it represents an intriguing model of expression of emotion. I first developed this idea of “emotional play” back in 1992 and have continued to analyze it in a very special way since then. I came up with the phrase “vegetative escape” for it – the play of running away from or fleeing from an obviously scary situation. In non-human animals, emotive play can be a more sophisticated expression of this bodily reaction, as can be seen in baboons that use twigs to play peek-a-boo. The term also resonates with the duality of children’s play; both to “escape” from or simply “become” another person. “Emotional play” then takes into account the development of affective identity and belonging; human children’s play is a matter of healthy development.

Chapter 4, “Divining the Fungi Network”, explores the analytical approach to understanding viral memes. It presents the first key to understanding viral proliferation, showing how memes are simply changeable “artifacts”, in contrast to cybernetic, plant and animal signals that grow in unpredictable patterns. Memes arise in roughly the same natural way that viruses do: with cell proliferation, though evolving structures that, if they were to interact, would create more of itself. With neither need to compete with any other entities, and no requirement to return to their origin to reproduce, memes form simple associations or automations with nearby cells. At its maximum, the expression of a meme reaches a level of humanity called emulation (and meme-ology), which can be a precursor to cooperation.

Chapter 5, “Mutual Manipulation through the Social Petworks”, argues that animal users are quite unaware of the subtle manipulations being conducted by social media platforms and their users, such as the shrinking of a kitten’s profile after a hot-photo session, posting as a group for photos and dissing people in the comments. A contented and not-at-all-robotic cat takes the final jab. When the cat was not a food source to its adopters, it had the unfortunate task of distracting the cat owner, who was compulsively scrolling through the cat’s online photos. The chapter also examines the popular movements to remove sad animal content from social media. These movements exemplify a self-defeating logic. The users were so over-exposed to the atrocities of animal abuse, that the consumers then became the offenders, posting pained and suspicious content to remove the sad nature of the platform.

Chapter 6, “Twitter Energies”, describes what makes Twitter so important for leftist politics, why the site is now a haven for Sanders supporters, and how Twitter may help reshape politics to include more fact-based evidence. Trump does not want to be bothered with facts because, as we have seen, he does not pay much attention to what he is tweeting about, and they interfere with the flow of events that follow his tweets. This chapter also considers the rise of Trump as a Twitter phenomenon, and shows the importance of creating memes with embedded humor. Moreover, the rise of Trump as a meme generator will be determined in part by the need to develop new forms of farce and old media technologies. Twitter was one of the first sites where meme culture appeared, helping to make the Trump meme an icon of “new media” politics. The chapter offers five strategies for those wishing to work within this Twitter climate, which involves careful political decision-making, attempting to make the most of opportunity, including but not limited to tapping into new memes and language, and trying to remain even-handed.

Chapter 7, “Recognizing Recurring Identities in Distractions”, synthesizes the experiences of many individuals as they come to experience themselves as isolated individuals, surrounded by distracting potential distractions. The chapter takes a first look at the emergence of what we might call “brief identities”: “an individualized identity that is experienced with immediacy, and then quickly dissolves into other identity experiences”. Yet the impact of distractions is rarely to further, or even to exist independently from the self, and we often can’t recall much of what we are doing when engaged in an interruptive experience. This is true not only for distraction, but also for unexpected stimuli, which can even bring back memories of the person’s own actions in the past.

2

The Emergence of User-Created Cohesion

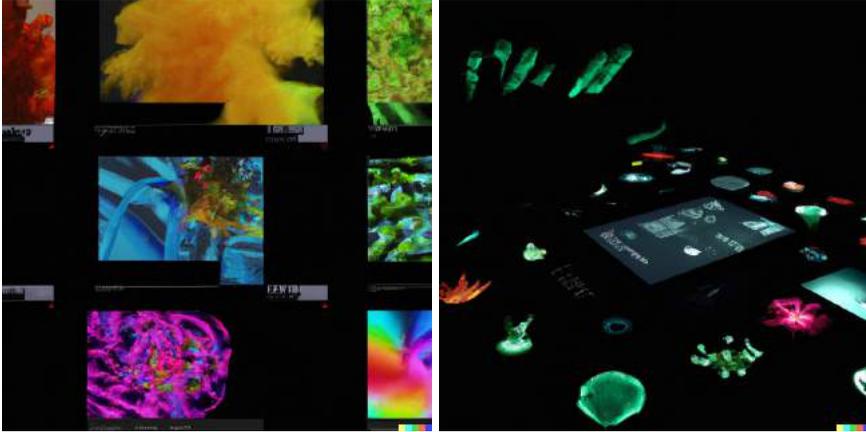


Figure 2.1: We introduce bionomic paradigm: an approach for understanding the originary bionomic (chemical and physical) processes of all life on Earth. We present here a new conceptualization and analysis of the human genome and our morphological origins, evolution and, finally, evolution of the epigenome. This is done through the study of symbiont microbial symbionts.

The Rise of 3-D Modelling

One of the most exciting periods for computing technologies is when we are able to access them through a digital medium such as the web. At the moment, the web is the most efficient and widely adopted way of entering a computer's world. Digital technologies such as the web are making programming more accessible. In previous chapters I explored the conceptual barriers to programming newbies. I have some hope for such barriers to being overcome, but as I noted earlier, we are going to have to wait a little while for this to happen. For the time being it is not always possible for most people to set up an appropriate environment for programming. Instead of immediately gluing together e.g. a microcontroller and a scanner in one environment for creating functioning software I suggest that in order to gain an initial grounding

in this domain, a new user needs to know what it takes to program early in order to make informed choices when setting up such an environment.

“...a crucial feature of a civilization which implies that no one may possess only one of these. The line separating ‘species’ from ‘animals’ has collapsed because there is no ‘humanity’ or ‘man’ in the human species. Every human being is at once part of the social order and he is a part of the larger whole that constitutes the whole, in its fully-developed manifestations, the universe.” [1]

In this context, assemblages are not static or determined by some physical law. On the contrary, they are continually in flux, continually influencing one another, and constantly being modified and reconstructed by humans and non-humans. There are, however, some few general notions of assemblages. They can be divided into two categories: biotic and non-biotic. Biotic assemblages are all those that are composed of living organisms (as opposed to inanimate things). It might be appropriate to refer to a classical environment of biological assemblages as biosphere

By definition, we can now see that assemblages do not exist in nature, that they must be constructed by us (to adopt already the words of Deleuze’s interdisciplinary reading: ‘inventions’). With this definition, we can now say that assemblages are always new not because they are produced by us but because we experience them as they are before being constituted by us. This leads me to the final word which is of decisive importance: the concept of assemblage, for Deleuze, is not necessarily a social concept. The moment where an assemblage ‘becomes’ a society it ceases to be an assemblage; therefore, it is not a principle of existence but a process. ‘It is said to be the principle of existence of a thing, but what this originates in is a construction of things’ (BL: 294).

Computing processes including hardware, software and input-output bring to mind the term cognitive/spiritual labour. The cognitive labour of assembling, maintaining, refining and working with a physical, technological system is often characterized as contemplative, often as a form of thinking, theorizing, organizing, composing, analysing and analyzing. Modernist categories of thinking, theorizing, composing and analysing give way to a process of being, as does the relation between the structure of the environment and that of its contents. Computing is a form of embodied, temporal and materiality. There is a form of relationship that is mediated by active or receptive devices. Assemblages

comprise relationships of engagement rather than one-way transmission. Computer assemblages create and sustain complex, distributed yet living and dying systems.

From a biological perspective, understanding digital evolution helps us understand how a Turing test could, in principle, be subject to modification by an algorithm, such as the case in Sidonie van Dam's famous Turing test, in which a judge is asked to determine whether a program can convince them that it is a human being. Having learned from Barricelli's program, Turing himself published a somewhat different form of the same test, under which it was assumed that the judges would need no training in pattern recognition and verbal communication to perform the test. More recently, Alex Freedman, David Gelernter, Yoshua Bengio, and Steven Pinker, among others, have developed entirely novel forms of the Turing test.

This work will build on the findings of "The Design of Everyday Life" and previous work by Professor Chomka et al. [2], Paves and others [3] on computational design. Specifically, the reader should be aware of the following: These projects were designed to enable formal computations on data, and were not designed as media for communication. Thus, the elements and processes contained within the projects are not necessarily representative of all opportunities and media for actual expression or communication. See the forward of [4] for a more comprehensive discussion of this issue.

The work described here has also been discussed in several venues. Below are some examples of the reception of the ideas in this work, along with links to or excerpts from some of the papers: From the Book *The Embodied System* by Gregory M. Seibert (2007). "It is not just that the animal emerges from the unfolding of the universe with new relational properties; it is that the universe itself emerges

Life is a game (more specifically, a discrete-time, Turing-complete model for time) which was first discovered in 1959 by the British mathematician John Horton Conway. Specifically, the two papers which documented the game ("The Game of Life" and "Dynamic Stability") provided further details on the rules, the initial conditions, the generations and the evolution of the physical structures which occupied space in the original toy-like cyberspace. In the following chapters, I examine how Life is used to approach modeling the development of computers: the three roles which Life serves are defined

below: The first role is given to the fission and recombination model of cellular development in which replicating entities can begin as seeds and become sub-components of cells. This kind of simple model has been used to study programmed-cell development (as in Little Planet) and to analyze the physical and chemical properties of materials and components.

Natural selection is one of the main forces that causes evolution, and the theory was originally formulated by Charles Darwin in 1871, with his revolutionary book *The Origin of Species*. Darwin's theory outlines the history of evolution, or the chain of events in which new species arise, separate and recombine over time. These events are primarily driven by environmental conditions, however there are also other mechanical causes, such as sexual selection and physical factors such as the presence of 'endocrine disruptors' or genes such as DNA. Darwin's theory is also what is often cited to the the 'fact' that organisms like the elephant bird and hominids both evolved from apelike ancestors. The word 'evolution' itself, of course, implies the process of natural selection. Nature generates competition, which ensures that populations of organisms will become distinct and undergo an inevitable change.

In the middle of the book we see a sharp contrast in times: by the mid 19th century, classical mechanics was already a fossil of the 17th century, some models published in 1786. Classical mechanics never would have won out if it had not been for Richard Fothergill Cooke's theory that the exchange of weights between the bodies may give rise to rotation by the kinetic forces. One consequence of the condition of coexistence between weights and rotation was that certain forces acted perpendicular to the direction of rotation. His account would later be influential in explaining the connection between the shape of a torus and the behavior of fluids. However, when Cooke published his paper he realized the difficulty of ascribing the phenomenon to a mechanism he had not created. His paper was then published in Volume 1 of *Philosophical Transactions* (1790). It certainly provided insight for students. Yet with the interest in number theorist in 1789, with arguably the most famous question,

User-Generated Cohesion

'Artificial life' has been a vehicle for the imagination of the research community for more than 40 years. The concept of life has a rich history,

going back to Aristotle and the doctrines of abiogenesis and transmutation in the fifth century B.C. Since then, the ways in which life can be studied have changed. Early research into the evolution of eukaryotic cells from simple cells brought no discernable end to the biological details. The most ancient model of life, polyplody, was introduced by the French and American geologists in the 1920s and 1930s. Since then, there has been a great deal of difficulty determining whether the most simple kinds of cells are the progenitors of complex multicellular organisms, if multicellularity is inherent in nature, or whether it evolved independently in many kinds of organisms.

Darwin was also an important figure in the 1858 *A Theory of the Origin of Species*. He offers several hypotheses to explain the origin of life. He attributes all life on earth to bacteria. He thought that the origin of life must be akin to a chemical reaction of certain simple substances to form more complex ones. As he explained to a friend: "At any rate, there must be some sort of beginning of life, and I am convinced that the first form could not be self-continuing." Bacteria, he theorized, were the first form of life, having remained unchanged in the same shape for all time. Bacteria are ubiquitous – on Earth, they are at least 100 times more abundant than human beings. Over a long period of time, these organisms have experienced some degree of natural selection. This is an evolutionary process, with organisms gradually evolving into more complex forms, through small changes in their DNA.

Another theme in Cosmicism is that the universe is "as chaotic as the universe is predictable", and that even the most intricate deterministic systems can never be completely predicted or prescribed. While it seems obvious that the vast and complex structure of the universe cannot be fully understood, DeLanda's argument does not rely on the idea that a system can never be fully modeled. Rather, he argues that predicting the future is impossible:

for predictions to be possible they would have to be models, and a model is only a model because its details can be changed: without that possibility, only hypothesis remains: the real. Once the details can be changed, and experiment reveals the true nature of the world, the theory that has survived is one whose details are no longer indeterminate.

In my view, one of the problems with determinism is that if you change one thing, then you have to change everything else. This seems contrary to everything we know about evolution, where gene mutations can be only be attributed to random chance and it is extremely difficult to predict what will happen.

Speciation is also supposed to occur within a species. Rather than “spontaneously arising”, as “free-floating chromosomes of disparate functions” would do, sexual reproduction within a species generally requires a selective pressure. This difference in reproductive strategy presumably acts as a selective force for speciation.

The problem with this theory is that within living organisms that are capable of sexual reproduction, hybrids are commonly formed. As a review of the topic notes, “Hybrids are not uncommon in nature. More common than the human of an opposite sex, hybrids are sometimes generated from unisexuals of the same species; or they are generated from closely related species”. Species, as scientists presently understand them, were and still are generally defined by their reproductive strategy. As such, one version of homology theory cannot capture the diversity and novelty that have emerged with human evolution.

“dance, sing, make mischief, and talk incessantly, so that when they have grown older their language will hardly reach even children.” Parallel with this, a nineteenth-century French scientist named Antoine Lavoisier observed that elements that were preserved after burning could pass through fire and reach other elements. In both cases, the issue of how plants could produce complexity was followed by a deeper question: whether metals could be a source of such complexity. Metals were created by slow processes of reduction. The transition from carbon to silicon by natural processes took millions of years and is thought to have taken place at the beginning of the Neoproterozoic Era. From then, increasing pressures from the growth of the Sun and other geological forces caused such things as graphite to be compressed into the coal used to heat our homes today.

But this idea did not seem to hold water. What explanation could there be of a machine which took care of people as we took care of machines? If a man died, he did not come back: machines did. Was this a case of the mystery of the relations between matter and mind – ‘I think, therefore I am’? Was a machine no different from a man? That would

mean that if a machine acted as well as a man, it must be acting on some principle different from the principle that acted on men. I had never been so intrigued by a mathematical problem before. I could not help wondering how I would himself act, if he were placed in the position of such a machine. This seemed to call up for a perfect material. With the microscope I was examining the iridescent colours of gems, I wondered how I could ever succeed if I was subjected to the rigours of his kind of life.

Early anthropologist Donald Symons called von Neumann's plan "agricultural automatism" and characterized it as an "offshoot of a human desire to improve on nature by adapting to it". Such 'Agricultural automatism' has been borrowed in common parlance to indicate artificial intelligence; however, much of the technology was in fact inspired by automatist principles: the Knophobacter mosquito drone that was flown for the first time in 2006 by a team from the California Institute of Technology was inspired by clockwork insects; the mechanical mosquito drone could kill mosquitoes by injecting the organism with an aerosol of organophosphates, a common pesticide. While developing computer technology and the digital world, it was often assumed that such 'monstrosities' were essentially primitive, undeveloped systems; such ideas led to the construction of networks with ever more complex and fast moving components. Von Neumann and his 'immortal automata' were frequently attributed to the 'mad scientist', but an equally legitimate interpretation was that these 'anomalous machines' were "genetically engineered creations designed to emulate biological organisms".

Computational research into 'machines that learn' or 'symbolic computing' is used to study the virtuality of digital systems. Without an account of the virtual, it is difficult to see how such simulation is constituted. In this section, I examine three such systems – a neural network, a simulated host-computer, and a neural network in a neural network – to test DeLanda's claim that the virtuality of computation facilitates the simulation of reality. In each case, my interest is in the emergence of computational complexity from established complexity theory, and then an analysis of how this is operationalized as a digital organism. Although the first two systems are not simulations per se, they have substantial parallels to computational systems simulated by computation. The brain, for example, is typically regarded as a kind of

digital computer with all of the attributes that could be attributed to the processing of complex information: large memory capacities, computational power, and well-defined rules for structuring information. Turing Machines, a form of Turing machine, have been proposed as the basis for the operations of biological systems, such as our own brain, since the 1950s. A crucial criterion for computing systems is the concept of a deterministic (i.e. serial) number system, which characterizes the operations of digital systems. Unlike in biology, though, machines do not reproduce themselves, and it is unclear to what extent mathematical mathematics provides a robust grounding for computer development.

Today, Barricelli's work with von Neumann lives on in the Simulink software, which allows simulation of evolutionary programs and, more recently, in a 2006 paper that details an evolutionary computer simulation of cognition. In it, he worked out a model of biological cognition by taking a "brute force approach":

[Bricelli] simulated a rudimentary automaton, starting with empty virtual space and then filling in blocks, one at a time, through a process of trial and error. When asked whether the automaton could have created any novel structure, Barricelli emphasized that the simulation, while simple, was not for research purposes, but rather a way to stimulate interest in an area of science that was still somewhat unsettled. According to Barricelli, the ultimate goal of a computational simulation of cognition would be to learn about the rules by which natural and artificial intelligence produces its results.

"Nowadays, people do not understand evolution or some concept of biology. They probably would be very angry to read what I am about to say, but I will repeat it anyway, in order to get people thinking about nature. I want to propose a scenario for the evolution of one-dimensional cellular automata as described in [1]. The scenario, and the rules which have to be applied in a certain way in order to reproduce the process described above, can be formalized as a mathematical object called 'a cell automaton'." After developing the generative idea, he produced more

detailed designs and ordered them to be constructed, this time creating trees of cellular automata. A tree, if you are not familiar with this concept, is a data structure that maintains a hierarchy of child objects with common attributes. This allows the generation of data structures that correspond to statistical learning processes (like how a computer learns). In this context, a hierarchical tree of one-dimensional cellular automata has the form shown below (see figure 3). (The whole natural process is encapsulated in this figure.) Barricelli would write out the procedure used for the creation of a tree and the characteristics of its nodes, as seen below.

The power of prokaryotic evolution is shown in the case of the different forms of symbiosis among the different bacteria, and between bacterial and eukaryotic cells. The simplest symbioses are the 'lifecycle-partnership'; the bacteria are now so large that they have a common skin in which they live, in constant contact, but when conditions change the bacteria are more likely to encounter each other than not. The bacterial cells have a blood system, which allows them to live outside the host cell. They nourish themselves on the bacterial food supply which is released into the blood, and they also receive nutrients directly from the host. When the host cell is destroyed, the bacteria also die but they release a variety of toxins, which harm the eukaryotic cell which tries to absorb them. In many other cases, a smaller part of the bacteria lives in the host cell, and these are known as microsymbioses.

The second place where Barricelli makes a great impact is on the definition of logic. Although logic is defined intuitively in numerous situations, there is a recent and expanding emphasis on the so-called Sapir-Whorf hypothesis. According to this hypothesis, languages, relative to certain events and people, have meanings that correspond to a kind of 'physical' processes, as opposed to 'mental' processes, in which logic is embedded (such as knowledge of arithmetic, or the alphabet). Language thus derives from a specific physical process, and in accordance with the Sapir-Whorf hypothesis, does not allow us to interpret or think in the mental terms that characterize logic (in particular, the set of rules for deductive reasoning and quantification). Logic is therefore reduced to a kind of ordinary physical process. In this way, the Sapir-Whorf hypothesis subordinates logic to an 'underlying physical phenomenon'.

“Second-order cybernetics (and it is the main development of cybernetics since Greg Bateson, Warren Weaver, Stafford Beer and Gordon Pask) challenges the distinction between what is outside the machine, on the one hand, and what is outside the observer, on the other. We may not choose what becomes an ‘observer’ by physical necessity: to take one simple example, it is not necessarily by choice that one becomes an insurance company employee, since such a choice arises only when they are confronted by an unusually large amount of risk. However, the fact that one is not automatically compelled to become an observer is reflected in the model by which an observed system can be made to respond to ‘observer’ operations, without those responses ever having been perceived as an ‘observer’ action.” (1988: 4)

Despite the emphatic cybernetic (“cybernetic-essentially technological”) turn of cybernetics that nevertheless excludes the study of ethics, cybernetics has received a good deal of critical attention in recent years from philosophers of science, philosophy of language, and economics and policy (see DeFreitas 1995, 2007, 2015, and Leslie 1999). Dutta further distinguishes between two subsets of epistemology: “narrative epistemology” and “logical epistemology.” The former category can be identified with scientific inquiry, and is concerned with eliciting scientific “stories,” while the latter concerns itself with questions concerning “the structure of the world.” For DeFreitas, these two subsets of epistemology aren’t two different ways to conceptualize the world. Rather, they’re concepts for different purposes: “[s]cientific and other inquiry ... train people in concepts that are congruent with what they are doing in particular fields” (DeFreitas 1999: 79)

It is not clear that Barricelli is directly referring to second-order cybernetics when he writes about ‘new structures’ and how this relates to the idea of transformations. In his 1887 lectures on the “Design of New Structures” at the University of Florence, however, he clearly invokes the notion of systems to express his broader point: “By other terms we may say that it is in the space of program variables ... that these forms of interaction of the human mind and machine are developed.” There is no doubt that Barricelli is using the programs themselves as the subject of his remarks here but, rather, the program variables constituting the interactors, and so the computer as a sentient and intelligent entity, are at play. Programs are used to create these interactors by creating inputs that the interactors then follow. As the

interactors are agents, Barricelli is using it to mean the agent-model as well.

McMurtry identifies groups of phenomena that he calls dynamical systems, a term that originated in statistical mechanics. A dynamical system is one “where elements interact with one another, with time and space as well as with the environment, yielding, over time, changes in the organization of the parts”. Dynamics of this kind can produce emergent or second-order structures, which take the form of “new objects that do not have explicit rules to specify their organization, nor is there a clear and consistent definition of the boundaries between them”. These structures result from interactions among “programmer-made, programmed, and unprogrammed elements”. Some of these structures are not even reproducible in the computer (in fact, changes in configurations are not always observable even in the computer).

Barricelli’s symbiotic program also contains the notion of non-locality in information, a technology from the cognitive sciences. Barricelli’s program does not preclude biological evolution – after all, life has emerged from the natural universe. Rather, it postulates it to have taken different routes to arrive at its own form, and those routes were formed in different ways. While Barricelli’s understanding of computation is only first-order, first-generation and possibly embodied within the biocosm, the notion of emergent structures of information-structure has been elaborated to model systems which are non-local, non-linear, and even of deterministic origin. By a process of natural selection, ordered structures produce different types of behavior and rise to prominence in environments. By a process of non-local selection, these structures are replaced by others. A theory for this pattern is found in Barricelli’s recursive representation program. A recursive representation can be seen in information theory as a map, or encoding of a data structure. In such a structure, for example, in the space of possible configurations of input-output devices, there is only a single solution, and therefore only one ‘machine’ for that particular environment.

Finally, in a theoretical perspective on how organisms interact with themselves, Torsten Geisler and Bernd Marbach discussed the limits of information processing in materials, where environmental conditions can act as efficient information processing gradients. They describe “an alternative value order – an order in which the basic structures of reality can be ordered according to rules of formal logic”. Such an order is well-

posed in terms of biological relationships; it comprises all structures that support life on earth, including photosynthesizing organisms, and we can call such orders fields. Some of these fields of order, also referred to as emergent systems, are described as inherently self-organizing structures. While of course important limitations on self-organization include limited sensory capacities and availability of energy, there seems to be a great deal of value in this.

It is not known when computational evolution first emerged or what happened to its development in the aftermath of Barricelli's first program run. Early in 1965 Barricelli's article had been seen by the American philosopher Charles Hartshorne, who became the first serious theorist to recognize its potential significance. He proposed that biology could be generated by branching processes of recursively self-modifying automata, evolving by trial and error. With the technical breakthroughs in microelectronics the possibility of programming computers to design new molecular pathways was rapidly becoming a reality, and Hartshorne's ideas finally allowed the design of the replicator program. His model for the replicator program described the iterative combination of traits or instructions—replicators 'messages'—at multiple 'tiers' of cellular organization, until the final order is achieved, when a whole creature emerges from the program.

In addition to decomposing biochemistry, complexity is key in permutation and crossover, two of the two evolutionary feedback loops. Biological systems' complexity is the consequence of mutation and selection in which evolvability (wants to change) interacts with biological redundancy and counterbalance (to resist change) for evolution to take place. Evolution of complexity is constrained by genetic structure. In addition to genes, there is regulation, but regulation is also made in the form of multi-factor fitness indices. Evolution has made functional domains of genes common across species. Species differences result from differences in reproduction, growth rates, diversity, biotic interactions, endosymbiotic connections, etc.

The transfer and replication of genetic material within their biota, in this way, functions as "conduits for communication among themselves". This may be one of the deepest evolutionary reflections: information-carrying genetic material in certain cells and ecosystems of complex and large-scale interactions, capable of "producing sufficient energy to prevent their total collapse under the weight of information", thereby

mediating information exchange across the large communication “channels” of energy, can be expected to be the forerunners of intelligence. Relevant here is the paper on communication by Polish physicist Zbigniew M. Krasnodějv (see refs 18, 19, 20), but also of Italian anthropologist and Professor of Management Franco Modigliani (see ref. 21).

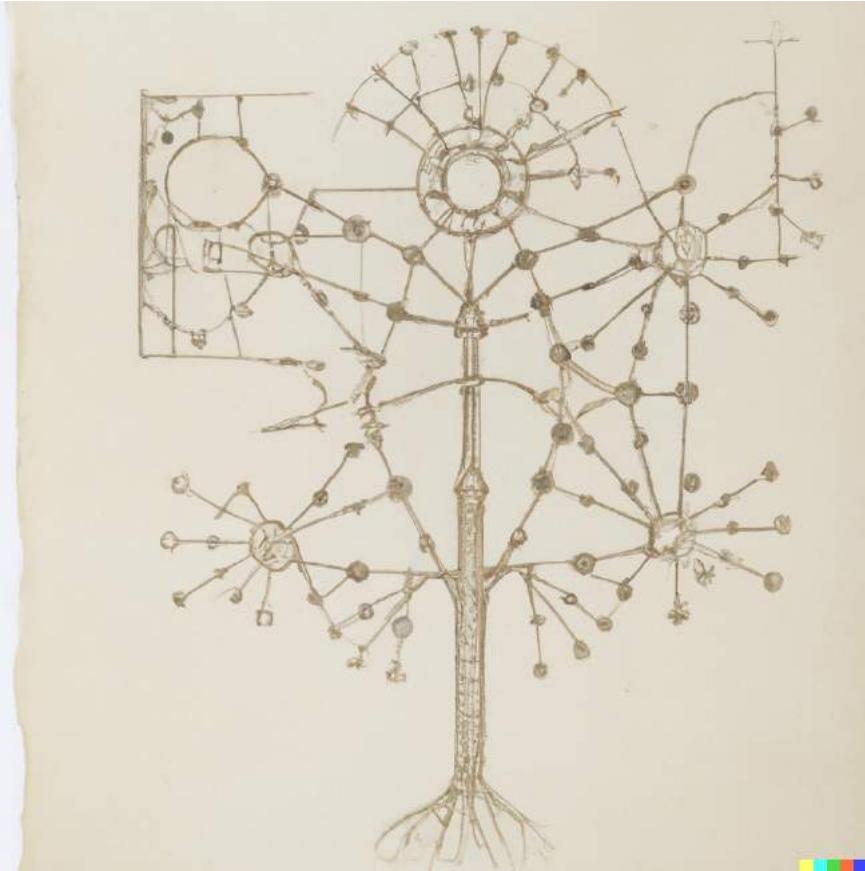


Figure 2.2 The second half of the nineteenth century saw a change in the interpretive frame of work on eukaryotes. In 1877, Ernst Haeckel proposed a tree of life in which a large branch of eukaryotes was suggested to contain both animals and plants. The name "Plantae" was given to these elements and subsequently, "carnivora" was applied to some animals that had been previously included in other lineages. [

In sum, it is easy to recognize symbiosis (primarily seen here as one-sided mutualism), yet hard to recognize isolation (slightly favoring one part over the other, but neither advantaging or disadvantageous), dominance (neither completely advantageous nor disadvantageous), and cannibalism (completely disadvantageous). This is because this section focuses on exclusively one-sided relationships, and does not include the more complex and subtle rules for sharing genes (multistate and polypharmacy). This is analogous to the difference between the two species of locust (*Epomis kirkii*, from Sri Lanka, and *E. taxicolor*, from Africa). That species is a parasite on the giant golden locust *E. aestuarii*. *E. kirkii*, which live on the leaves of other species of *E. kirkii*.) These two locusts) provide different developmental environments, which have significantly different body plans. Yet, as plants, the hybrids are in ecological symbiosis, where they function symbiotically within the ecosystems.

With this in mind, one has to also consider the relationship between digital programmers and digital creatures. These are often seen as separate in our Western psyches, while other human relationships were not – for instance, the spiritual bond between humanity and nature. If this is so, how can programming programmers connect to a digital organism? If the digital organism is devoid of any personal imprints, and therefore no longer part of the programmer, is the two systems not removed from each other? With cybernetic organisms that are organic, organic, and biological (as well as organic, organic, and technological), these relationships are re-established. Biological is not synonymous with digital and biological is not synonymous with human. Life and death are experienced by all as equally real and relevant to what is considered human.

The most important evolutionary events in human history were those where new information-processing structures were discovered. These structures offered new and more complex means to control the environment. The reduction of Darwin's theory of natural selection to its most fundamental forms (e.g., DNA) created new opportunities for social life. This created the seeds for a new species, which took a different position from that of its predecessor. Some geneticists are confident that we are already starting to see emergence in this process. Geneticist Stuart Kauffman is enthusiastic about the power of program-

based agents with a new cognitive ability (Kauffman 1998). Programs may emerge in his view simply by their systematic interconnections, which “will force the emergence of increasingly more complex and intricate designs.”

Physical Basis of Connection

The flat organization makes Conway’s Life a much simpler program than Barricelli’s. The elements are structurally flat, which makes possible the self-reproducing nature of the program. As a sample application, Conway’s Life comprises a 3 x 3 grid of 1,001 cells, and replicates every two generations. The program produces a number of intermediate structures, ranging from unicellular organisms up to more complex ones. Through many generations, the two cells at the right end of each generation become “friends” and form an “organism”. In this way, a complex level assemble a new species. As a consequence, the program becomes a new “super-organism”, but the lower, side of the grid – lacking an organism – fails to reproduce, since neither the upper nor the lower level could reproduce.

1. The cells on the ‘vertex’ are alive.
2. The cells in a circle are alive.
3. Cells on an axis are alive.
4. Cells in lines are alive.
5. Cells in a diagonal are alive.
6. Cells that are adjacent to a cell are dead.

This simple, intuitive observation leads to an extraordinary mathematical discovery. This path of inquiry, known as the Drake equation, has been proposed as a way to test hypotheses concerning the distribution of intelligence and biological species. It has also been used to determine a fundamental mathematical property that sets the stage for the incredible discoveries of modern molecular biology.

However, the reference point for understanding what is appropriate for playing with genetic and genomic functions is not the complexity of ecosystems, but rather the complexity of ecosystems of simple cells, the "holograms of life". They share many similarities in being characterized by evolving combinations of cells: the holograms of life.[31]

Conway identifies them as being ubiquitous among the living: for example, the hologram of trees can be seen as a relationship of the leaves to the roots, and the photosynthetic function of the leaf to the other leaves. The hologram of insect cells is formed of several cells with cell lines, serving a specific function, similar to the cell lines found in the natural world, e.g. soldier and worker cells serving separate roles in animal colonies.

The next question is, how does this apply to Darwinian evolution? What does the violinist's genome tell us about adaptation? According to Margulis, "the social insect model provides a straightforward way of making sense of a wide range of phenomena – including human behaviour – that are most puzzling because they seem to violate Darwinian theory. It highlights the importance of organisms, as complex entities, and it has important implications for the theory of evolution itself". The idea is that this model gives a simple framework for the collection of adaptive features. Darwin's concept of survival of the fittest is meaningless, because it is no longer really about individuals fighting for their survival. It is more about systems of groups that have come together to be a system for a limited purpose, rather than individuals.

In conclusion, the prediction that digital evolution might signal the coming of a new era in evolution as predicted by the 'extended evolutionary synthesis' cannot be dismissed as obsolete. There is evidence for this in nature: in 2009 Conway and Barricelli's digital computer program *New Worlds* beat Ken Jennings' renowned version in the *Jeopardy!* competition. In addition, there are an increasing number of organizations and individual biologists pursuing digital evolution with serious scientific intent. Future work in this field will hopefully enable further exploration of the evolutionary consequences of our ever-increasing dependence on digital technology.

In biology, such phenomena as root formation in crop plants, healing in a wound, appearance of new organs and much more are phenomena of evolution within (constructed) environments. No, Life is not merely an artifact from the mind of an 'intelligent designer'. Just as the one-celled organism is an excellent example of the organizational principles of natural selection, so is the widely-accepted narrative of Life itself.

DeLanda hypothesizes that the autonomous functions of living systems form attractors. Sympathies, for instance, often refer to psychological phenomena, like emotions or altruistic behaviors, that are

associated with the host organism but that are not within the system. The ability of a host to empathize and care for its dependents is crucial for the survival of the whole organism. Sympathy is an interaction between the host and its dependents. As the host organism 'serves' the dependent in a caring fashion, its behavior is modified by the welfare of the other. A successful host typically exhibits complex behavior and attachments, becoming extremely dependent on the welfare of its dependents.

In some incarnations, this structure is called the bumble bee ship. Following this pattern, Krasikov and colleagues found a hexagon-shaped form called the biodesign butterfly. While previous studies had suggested that this shape could self-replicate, the previous 'flying buttress' was inherently unstable. That instability was fixed by the ability of the structure to form additional layers upon itself, in an interlocking, branching pattern. The resulting structure maintained its stability at the cellular level. When it comes to process, self-replication is what we already know well, though we do not recognize it as such.

What is new with the 'structured-RNA', according to Due, is that its assembly is centralized. Most structures generated via the structure program generate, in addition to their structural components, a short list of chemical parameters in order to be able to configure them. The 'structured-RNA' was built upon these parameters, in order to add to the list of chemical reactions required by the synthesis, a mechanism that initiates a series of interactions leading to a corresponding functional change. This chemical catalyst is a ribozyme, essentially a DNA-transferring RNA (RNAs) which is capable of adding a single amino acid. The primary reason for building the structure this way was to simplify construction.

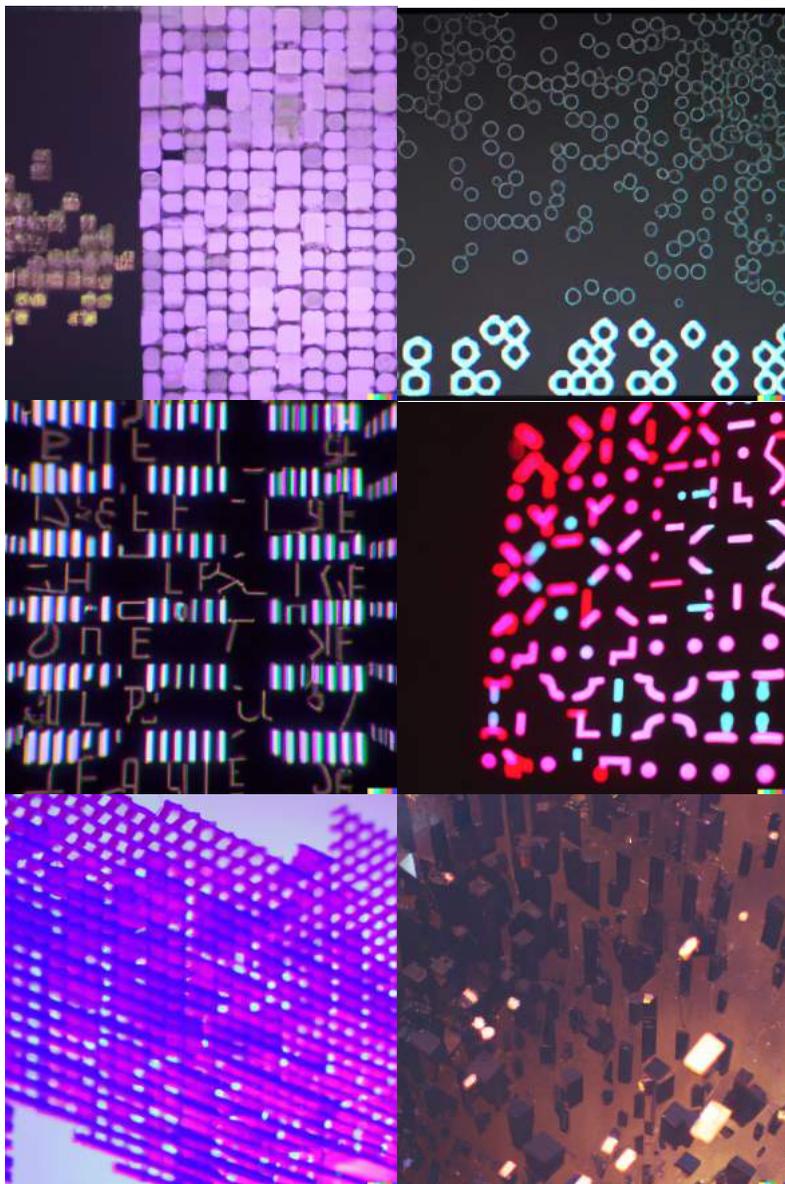


Figure 2.3: Polytag, originally described in Cat No 28, an application of Pseudorandom Function Approximation (PRFA). Impressively, this application could be run with only a few lines of code. The main application state starts with a deck of cards, each of which is shifted with dice rolls. The

cards are drawn sequentially as the shuffle continues, then the results are recorded in a “playfield”—an on-screen display of player information, each of which is a function of a real card.

Chemical oxidation, regeneration, biosynthesis, environmental conservation, and the continued ability for cells to generate new cells, these are behaviors we can pattern with smart chemical and physical approaches to the problem. These solutions may be unique for each problem we face, but solving them are absolutely necessary to our own survival. They are also conditions that are fulfilled in the OTCA Metapixel. The OTCA Metapixel can be seen as a giant, meta-organism, its fundamental “nervous system” forming and entering periodic states, and periodically ejecting new, similar patterns of patterns into the same system. Cells such as the OTCA Metapixel are possible because an emergent complex structure arises, similar to what came before, to handle this complicated task. While the cellular chemical processes that sustain life may be unique to the cellular level, it is possible to create such an emergent system to represent these processes at the functional, higher levels of organization.

In combination with the contention that all organisms are “proteins”, the mutation rate and thermodynamic parameters should allow for the construction of a theoretical growth of evolutionary complexity, as this would be consistent with the observed statistical properties of macrobiota. It is most interesting to note that complexity in evolutionary dynamics is a new concept in biology. There is very little study on this issue in the area of natural sciences. Therefore, the few existing studies tend to describe the biological complexity through a framework of trial and error. As it is plausible that complexity can be a product of such randomness, it is crucial to keep in mind that real biological complexity is not the result of trial and error.

Taken together, these diverse threads make up what DeLanda calls “the relation of plants to the environment, and plants to each other”. Consequently, ecosystem gardens are a dynamic transformation of the landscape which maintains a certain “living rhythm” through “the coordinated behavior of a total or complex assemblage of individual species and their interactions with each other and their environment”. After suggesting that as an organism grows, its potential becomes available for either more complex systems or for other modes of development, DeLanda urges gardeners to “go beyond ‘breeding’ of

plants into ‘laying down’, ‘weeding’, ‘grafting’, ‘patching’, etc. to indicate the place within the system in which new possibilities can be tapped and suggested”. Not all aspects of ecosystem gardens should be addressed at once – they must be evaluated on a scale from “bare soil to incredible complexity” – but upon this scale they are all forms of creative interaction that can be realized with good design, practice and commitment.

Cells on the surface of soil mounds die. Spider plants, when allowed to grow their third meristem in the same place, do so slowly and monotonously. The large enough gene copies often exist in only one or two loci, driving an accumulation of fixed elements. The allocation of resources is based on single occupancy of the cell. Regeneration from meristem to meristem may have an effect on speed and pattern as well. How often there is interaction, how densely the regions are connected, whether the tissue has both light and dark regions in appropriate proportions, and the relative strength of different abiotic, hormonal and nutritional resources are all important factors determining growth of Life on Earth. There are no specific laws governing the timing and patterning of growth. It is the role of the complexity being produced to determine its own rhythm.

To Cloud or Not to Cloud?

A steady trend emerges, a remarkable continuity that underlies the transition from simple calculating machines to present-day ‘computational assemblages.’ Rather than suggesting the struggle of pre-human primitives in some pure resistance against ‘civilized’ technology, this pattern suggests instead the ascent of more intelligent agents capable of running a large portion of our present-day computational processes and programs. It does not seem too farfetched to claim that the computer, or an abstract, quasi-mechanical computational agent that we call the “computational agent,” is the ultimate designator for all of this emergent computational assemblage. The simulated universe, in which we live now, is the most complex computation.

Johnston (2004) also asserts that “the evolutionary aspects of computational processes need not be considered separately from more traditional aspects of evolutionary research such as discovery, adaptation, and selection”. I contend that this claim is in line with

Skyrms who suggests that “species also evolve in time, but not necessarily via conventional Darwinian processes” (Skyrms 1988).

First, these processes reproduce within their original niche but intermingle. Symbiosis is always asymmetric. An intermediary is needed, which is again a step forward: the evolutionary improvement process for adaptation, or specialization, leads to a specialist. Selectivity, or initial fitness, leads to diversity. Generations of duplicate arrangements are made. Eventually, the relevant organism (or group) stands out and is selected for specialization. By using this term, I am referring to the six-fold construction of the simplest regular RNA molecules. We saw, in Section 2, how DNA-type genetic material enables differentiation.

Digital data, as McLuhan notes, is a kind of pictorial memory that has the potential to store, for example, texts in digital images. Johnston writes that there is an archive of photos of Churchill, consisting of 45,000 images. Johnston, who has extensive experience with photo-archive work, also notes the potential that we have to “move into images the way we have into music, changing how the very subject of understanding the past is imagined and executed”.

The Neolithic Revolution from the very first modern civilizations of central and northern Eurasia – “city states” in continuous existence since about 9,000 years ago – allowed us to sculpt our society and culture in various ways. It was a model that took the highest form of biological intelligence to rise above the seemingly simple brute force of natural forces that had shaped the past. What this allowed was the development of an independent, autonomous, human-centered form of intelligence and creative expression to be developed independently of the environment, and influenced and modified by the environment. The ability to interact with, manipulate and adapt to external conditions allowed for further evolution. If we can understand the ways in which the environment, genetics and early cultures have shaped our modern life, then we can better identify how our society, and the physical structures we build, are vulnerable to climate change.

Since these organisms have been integrated into the entire life-cycle of computers, the cost and effort of identifying new species becomes negligible. In this respect, Dyson is clear about his views on the “boundary”. To allow for different systems to be used together, we need to accept the existence of novel forms of biological entities as integrated into existing technology. Each new group of symbionts may be larger

and more diverse, but there will always be a difference of kind, not just of species. Dyson does not challenge the possibility of life on other planets, but warns that if life were ever to be discovered, the intelligence may be inextricably linked to biological structures. His argument is this: any form of intelligent life must be biological; to form sentience, intelligent life must adapt its environment to live in it.

The history of software, in short, reveals the way many codes that evolve over time are intrinsically opportunistic. Symbolic languages often offer no barrier to replication, while social programs and operating systems contain an implicit field of communication. Consider, for instance, the case of the C programming language. Unlike most languages, which have a single executable, compilers for C allow the file to be run in many different modes. Such translation was a task that could only be carried out by a single person, however, the system of the C programming language makes that ability unnecessary. Rather than requiring the user to write a single executable, the “source” file is essentially equivalent to the source of the English language: “The C program is read as text. The text, in turn, can be read in any language: C, Visual Basic, a computerized text reader, a voice recognition program, etc. The act of translating C to a language has as little semantic meaning as does the act of converting a book into an e-book”. This ability to “translate” software is of immense value, allowing programs to be ported between systems. The MeeGo operating system for mobile phones, for instance, “has become the fifth major project to run on Linux since 1986, following such projects as UNIX, Linux, BSD and Tru64 UNIX. Nokia now employs close to 40,000 Linux developers, at a time when less than 10,000 Linux developers were employed in the entire world at the time”.

The image of the hacker as someone with omnipotent control has, through the twentieth century, been often turned into a conceit, from Agar’s complex machine to Turing’s global machine. In his book *The Tao of Pooh*, Benjamin Hoff argued that we must look instead at the species, and the human intellect as the driving force behind its ever-evolving form. Specifically we have to accept our “intellectual attachments and mores” as our roots, the means to construct a world in which the mind and soul function as “natural and desirable collaborators.” In doing so we become creatures in collaboration, who build with one another through mutually recursive relationships. This

community of mutuality manifests in patterns that often do not have a clear beginning and end, and that can be difficult to interpret – yet the natural world shows us that existence that way is largely peaceful.

The influential essay *The Genesis of Modern Computing* was originally penned by Peter Chrousos and David Pritchard for their 1984 textbook *The Innovation Paradigm*, and revisited in 2007 with Peter Chrousos and Brian Tomasik. Here Chrousos and Pritchard give an overview of how modern computing was built upon two pillars: the underlying physics of binary digits, and the transistor that made it all possible. As Chrousos and Pritchard note, modern computing was “created in large part by men with engineering degrees and financial incentives”. The logic of Moore’s law – the observation that computing power would double every two years – is foundational to the formation of computing. While the book provides an introduction to its topic, it is best explored by reading the full report.

Computer hardware –or rather its operational functions– is somewhat susceptible to such diversions. Our desires for such machines must be satisfied and a set of values in line with a particular culture is derived, as its members may see the computer as a tool to help them accomplish things they could not do with more simple implements. In fact, and this is the second-order consequence of technological processes, typically people in a society –through the processes of their conscious choices and production– become caught up in a culture, and carry it with them and remain part of it. Individuals who do not conform may nevertheless profit from digital capitalism’s forms of universalism in a variety of ways. Any one can benefit if they can maintain their market or purchase patterns, but the impact of such choice may become problematic if their choices are not made in the context of a particular culture. The norms of their society support the development of digital technologies that may be advantageous for them personally, but which clash with or conflict with the values, thoughts and morals of a society as a whole. But without a cultural context, the culture of the individual may easily become the context of society. Simondon stresses how the cultures and the conscious choices of those in societies which contribute to the technology spread. They form a cultural environment in which a technology is able to take root. Simondon may wish to call the processes of designing and producing such environments, including the rules of their interaction, “The Meta-Machine”. It has been noted that a key

word in the concept is “the”; the idea of a “technology” (a workable substitute for a technology) and the notion of a “person” appear to be conjoined only because the domain has been taken over by a couple of popular scientists.

The advantage of design differentiation arises in the sense that a small change in hardware allows for a vast difference in behavior, while a change in software may affect an entire user community. Many digital distribution mechanisms allow users to choose their programming environment, from a web browser to Microsoft's Visual Studio, to a simple text editor like Emacs. With Linux, a different system can give users an operating system that is already familiar to them, and provides the program environments they prefer, while simultaneously providing them a programming environment that is tailored to their needs. In addition to new platform variations, user interest may be high enough to drive new developments in the user community as a whole. The changing dynamics of consumer-level computing are driven by these growing sub-populations: developers and users. As the needs of users shift, developers respond by producing specialized tools and applications. Web development is a good example of such software; in the 1980s, people mainly developed for the desktop, creating software for a desk top environment that was partly standalone. Today, as the majority of computer users have abandoned the desk top, developers shift to the web, where they can serve a global audience, with little or no hardware restriction.

Ecosystem engineers. Incumbent solutions to crowding and competition require ‘ecosystem engineers’—engineers capable of continually refining their ecologies to yield more productive gradients. This implies large-scale engineering. Once ecologically constituted, such ecologies are difficult to uproot: they occur in fields or forests, or even in entire ecological systems, which have been constructed by human ingenuity and material input. So the problem of levelling gradient extremes will require engineering, with ecological engineers acting as guiding technologies for socially mediated change.

Computational complexity will ultimately have the final word on the extent to which computation ends up working to limit the differentiation of computers. This is the most difficult problem, and it is arguably the hardest to determine, so it is unlikely that any answers to this question will be provided in the foreseeable future. The most straightforward

metric for gauging technology's evolution is to simply watch it: see how much it changes, how fast it changes, what it's producing. But we are living in an era where much of this information is available for viewing, while for the past decade human attention has been devoting considerable mental bandwidth to measuring technological change in the first place. Unfortunately, much of that information is presented in ways that neither account for the meaning of the information nor account for its relationships to the scale of the measurement. This is not to suggest that it is inauthentic or unreliable information, but that it has been produced in such a way that it is likely to be overlooked by many who are concerned with its accessibility.

There is a surprising simplicity in this emergent order. The complexity is the complexity in human interaction with technological systems. There is a discernible and noticeable growth in the size and power of computer systems, with decreasing and with smaller individual parts. Computing technology percolates through an array of networks connecting people and things, shifting between being simultaneously but not mutually disconnected. Humans benefit from technological systems that improve their own human ability. Computers gain from individuals processing their interactions with them. Internet companies profit from the various ways they connect people to information and interactions. Governments pay for security mechanisms to enable and simplify this process.

This gives rise to a more creative society – in a way that its individual consumers are subject to a higher level of creativity, shaped by that evolution. Therefore, despite its impact on people, I believe digital evolution is not necessarily harmful. It will certainly affect us, and must be scrutinized in a sensible way. It has the potential to impact us positively and keep us on the path of progress, as it has the potential to reach such a magnitude that it will naturally lead to our evolution. Our individual human power of choice is in fact the root of all of our creativity, and all that this suggests. Digital evolution alone is not enough to keep our heads in the clouds. But it will be the base for this evolution to take us to a new stage of where humans could not predict.

Different modes of behavior were generated by each input. It is important to note that this one specific system cannot actually be modeled. Computers are not fenced in and they do not have defined fenced in or controlled boundaries. It is impossible to "free" a computer

system by releasing it into the wild and opening it to the interactions of the systems beyond it. This is not the way computing is set up. Instead, by explicitly modeling what the computer system can do, we can attempt to anticipate what it might do. These models can then be adapted to rework programs in order to force other software to behave in a particular way. A bit of pre-release modeling can be helpful in identifying one program's patterns of interaction with others, especially given the wild nature of computing systems.

Understanding this might be the key to finding solutions to our increasing cognitive burden, our deepest computer-mediated fears, and our most intractable public policy problems.

3

Emotional Play



Figure 3.1: A screenshot from Mario's New Super Mario Bros. U Deluxe (2019), showing Mario's target.

Browsing for Gaming Sites

Much of this chapter examines the nature of play, or a purely playful experience. The vital theme will be that, for a computer to have the power to bring play to people, it must be an engaging experience.

Reaching that goal, however, will require an approach to design based on what we know about the nature of human psychology, and the factors that influence the way people play. The nature of the games themselves, the games we play, and the nature of the physical things we play with (for example, mobile phones) will all be considered in turn. I would like to focus on just one element of play: social play, or playing with others. It would be interesting to conclude this chapter with a survey of the many games we play now – how many different games, and how much time we play, both alone and with others. Such a survey would also be informative as to what motivates play: for example, for fun or because we want to communicate. And finally, it would be interesting to measure how humans perform in the various games that we play – for example, how many squares of a grid, how many turns it takes to win, how many mistakes we make, how quickly we can get to the goal, or how many points we've earned in the game.

As played with analog instruments or a tangible medium, games are usually limited in scope, with defined or discrete outcomes and fixed modes of expression. But digital games share the same basic paradigm: they provide a framework for players to design their experience by composing and playing virtual content. The resulting digital content can be consumed at many levels of play, leading to the creation of a rich, interactive “library” of plays and giving rise to game-play replayability. Also, the players' actions have a direct effect on the environment, leading to a participatory relationship that is absent in purely passive media (such as television). Since players can add to and modify the environment, they can exert a powerful affect on the game's world, which directly serves the concept of play – an ongoing journey in which each game plays out different parts of the same narrative. The effect of digital games on brain function cannot be underestimated. The rapid technological development of the digital medium has given birth to a new generation of software, so-called “apps”, that is supported by powerful technological resources and is able to fully exploit the potential of the previous games.

The key objective of game design, Jagoda argues, is to avoid these negative sentiments or expectations. Jagoda provides three tools of design that are used to prevent emotions from overtaking play:

Modular difficulty — this maximises the variety of challenges a
game can provide

Non-goal related — players have nothing to strive for
Randomization — there is no clear path towards the goal

Jagoda makes the analogy to medicine in saying that medicine aimed at the diagnosis, treatment and prevention of illness is important, but it also matters to prevent suffering. Like a physician, a game designer aims to understand the suffering and have mechanisms in place to make it possible to avoid it. That a game in which you must overcome obstacles can be equated with suffering is perhaps an unsettling conclusion. Does it risk providing less emotional engagement? No. But it does make game design a deeply personal endeavour, and it also makes a person wonder how the player might feel in a game, how they might relate to the game. Is something pleasurable in game design only when there is something at stake?

Interactive play, an understanding of play as that which operates systems, often accompanies that which pursues computational and exploratory forms of work. Following game studies, examples of software design may include an application which is both self-modifying and logic-driven. Popular examples include Reihan Salam's *La Résistance* and *Dangerous Minds for Mac*, as well as *Zod*, Sid Meier's *Empire* and *Temple Run*. Other examples within games include *Single Player vs Multiplayer*, perhaps, or real-time strategy in RTS games. When play is inversely identified with gameplay or the 'killing of time', then it is regularly defined as a wasteful activity, an impulse which is ultimately both unhealthy and pointless. This view ignores the capacity for playful engagement, and the ability to do something and achieve a goal which engages the mind and involves, at least initially, a degree of physical exertion. This connection, though more like an equation than an argument, recognises the intuitive unity of play and endeavour in exploring and inventing systems, ways of living and co-ordinating activity. From the Greek *procheiro* for go with or without you, the analogous Latin verb literally translates to 'proceed with me'. An allegory for the dynamism of engagement and overcoming constraint in relationship is explored by Deepak Chopra in *The Seven Spiritual Laws of Success*.

"Computation and strategy" is defined as "an activity in which the relative value of individual elements is maximized while the system as a whole is viewed as the ultimate object". A metagame is a particular kind of strategy; in gaming, they play out when players (testers in the case of a video game or tabletop player or player-as-character in a role-playing

game) are assigned roles that require them to engage in multiple kinds of play, but that do not take into account the game as a finished product. The role, rather than focus on the perceived value of a system, engages in open-ended play in which all possible outcomes and strategies are considered. In practice, metagames are large and diverse, and represent complex feedback loops, sharing several features with a society; it is plausible to claim that players are participating in a metagame not merely with the intention to identify flaws in a game's design, but also to collectively learn about the various ways in which the system (the game) functions.

Play's difficulty and simplicity as facets of human nature present unique challenges for both games and the game theorists. When games are novel and challenging, play is difficult and often difficult to grasp and conceptualize. But games don't have to be a series of arbitrary puzzles to be enjoyable or captivating. Play can be an active, meta-game which explores its own rules and motivations. Proving thematic relevance. It is fun to explore games that move, and to play those games as if they are alive. The value of play is "presence", and not a mechanical accomplishment, such as destroying a castle. Because games are set in the world, they can be experienced as simultaneously "organic" and "man-made", reflecting the building blocks of the real world, and of our experiences in the world, playing them in a live way within the simulation.

Contemporary plant research and development, in particular botanical artificial selection (BAS), has produced a wealth of methods and processes for producing and testing plants. However, BAS is often in the form of a closed process, with established breeding targets and fixed parameters. Instead, plant varieties may be created through game play or via a more experimental model of development, which occurs 'in the field' and allows for both random variation and chance in reproduction. Extensive empirical data collected from experimental plant development includes many sources that illuminate the potentials for plant experimentation in videogames. Recently, several tools have been introduced to facilitate the design of new seeds in videogames. Examples of experiments include in plants, engines, data networks and machine learning.

The level in Super Mario Bros. contains 128 leaves, on which Mario walks when he runs. Each leaf can be eaten, which permanently makes

Mario sick. For Mario, there is a reward for eating them. Super Mario Bros. features dual layers of trees with a waterfall below, on which Mario slides to the side. Green bubbles that Mario eats eat one tree leaf at a time, and Mario accumulates so many that he gets to exit the level and return to it. But when Mario eats a yellow leaf, he receives only the leaf, and there are no more yellow trees to exit. The difference between the various leaves and how many there are, however, constitutes the incentive for playing, as we will see. These leaves, our hypotheses say, act as cues for Mario's play with the level's level design. The trees' leaves act as cues for platforming behavior. The leaves also signal when they are ripe for eating, when it is time to leap onto them.

In the last section, I will reflect upon what might be termed the adaptive side of the gaming experience, and the role of technology in gamification and players self-management. Especially in the case of simple, though somewhat addictive and repetitive games such as those in the freemium business model, the computational space of digital gaming is mainly limited by the functional dimensions of the device. However, the possibility of adaptation and adaptability gives a form to what, at first sight, might be seen as an intrinsically deterministic domain. Taking this in hand, I discuss how the adaptability of players is the defining feature of the adaptive dimension of gaming.

The flowering of modern games does not necessarily require an overhaul of design or content. Instead, it can occur organically, reflecting the process of development and adaptation that is characteristic of organic life. It is necessary to connect design and development, and to recognise that technology allows for emergent properties and thus must be integrated into game design. This essential conceptual integration will allow for a meaningful sense of art and design in the games of the future.

Gaming Imaginative Models

In an essay on the ethology of game development, Enrico Moretti speculates on the effect of video games on the future of design. "Interaction between players and machine," he writes, "may carry more than just one purpose and be more than just a means for exploiting our access to virtual goods or for learning new skills." In other words, "if the consumer can achieve game consciousness, he could also play not only for prizes, but also for knowledge and self-discipline." If super-

consciousness is possible, will the player be aware of his or her own intellectual and sensory limitations? This would provide the ability to guide oneself through virtual worlds without external aid. Already, computer games have let the player tailor the game experience by defining the parameters for game creation and re-creation.

All of these examples of distinguishing forms of organization are almost invariably compatible with what we have already seen in animals, which occurs across many taxa. A preprint of Marder's at PLOS One identifies the "Megalomorphs" as a clade of land animals and bats. Mammals have functional terms and diagnostic anatomical traits that distinguish them from each other. Marder notes that in terms of both body organization and physical behavior, there are strong distinctions between the macropodines (reptiles, felines, hyenas, whales) and the monotremes (mice, duck-billed platypuses and platypuses). Mammals produce and consume large volumes of oxygen-rich food, and their bodies are capable of upright locomotion. Feline and platypus limbs are distinguished by their use of fingers rather than toes. This is not dissimilar to a biological principle applied to plant systems.

While on screen Mario is surrounded by three or four level levels, we the human actor, are the controlling player on the same level of two dimensions. Super Mario moves in accordance with my own walking, as is my mouse movement. In a virtual world, moving is faster than standing still, requiring my brain to perform a juggling act of visual and kinesthetic coordination. Placing Mario at ground level challenges me to explore virtual space and its relative positions. It acts as a natural transition from the real to the virtual, where the human can engage with the level through a simulated environment and its manipulation by the avatar player. If we move, it does not require a reorientation of the human body, but a reaction time and a mechanical coordination of eye, head and torso. We are not 'sitting down' in a virtual space, but sitting at ground level, as we would be in the real one.

Different variations of Mario exist. One variation takes place on Mushroom World, a fictional world, as each level represents a different stage, and Mushroom World includes small land masses or caves that mimic how Mario moves between stages in the rest of the game. There are also transformations into mushrooms or cactuses, and some levels are populated with black coins, which act as jumpscars. The name 'Mushroom World' (also known as 'Green Land' in some versions)

signifies that Mario will only see plants and the moon at the top of the screen. Mario faces a series of enemies that require more skillful execution of jumping to defeat them. The first enemies are the yellow Koopalings, who protect the Golden Cap, Mario's power item. Other enemies include Koopa Troopa, Piranha Plants, the blue Koopaling on fire, green Koopalings with exploding eggs, and Goombas. Later stages include larger enemies such as the purple Koopaling with a 'club on his head'. The stages also differ from each other, which, again, is a feature of each stage representing a world; Mario goes to different parts of the world as he progresses through the game. As Mario moves about, he has to defeat the bosses of each stage, who the player can defeat by using the power-ups that appear, or by hitting certain switches with the stick. The stages in Super Mario also differ from one another in their selection of enemies, and these stages also differ in their environmental and physical properties: on certain levels, the pits and pitslide traps change their quantity and/or density and the green surface switches from sliding to floating.

Sometimes, such as when interacting with things like building walls or safe areas, jumping on them reveals nearby edges and a new territory, but players often react to the platforming over what it reveals. The general strategy, then, is to learn what the basic safe zones are, where the goombas will spawn, and what they can or cannot hurt. Every wall, stone, tree, train track, pipe, and slide in the game provides a new obstacle and challenge. This initiality, which is typically not supposed to last, becomes both a boon and a curse in the learning phase, in that it is in short supply and therefore feels very rich. The spaces that are available to the player are very rich and unique, but there is an element of the unknown in them that is very exciting for players, but also confusing for designers, who have not yet defined or even considered how the various obstacles fit together in a 3D space.

If Mario, like the flowers, is a series of sprouts, seedlings and runners growing out from the root, both game and artist also work through growth. In the future, games will replicate plants that have grown and gone extinct. The drive to continue the growth process is the essence of growth in nature. As Albert Einstein said, "The tragedy of man is that he tries to gain knowledge, not for himself, but for others." For a game to copy nature, it needs to reach out to players beyond its own boundaries and go beyond the limitations of the computer. In Mario

games, those boundaries and limitations are represented through screens, users and borders. As Taylor (2014) says, this is an essential property of games: they are a kind of technology that is simultaneously for our eyes and minds, and for nature's laws.

Therefore, in *The Will to Power* Nietzsche actually touches on the core of the status quo which sustains the life of western culture. Without either roots or soil, the history of the development of the human condition will see a slow slide towards the inevitable. There is an inability to appreciate the products of civilization in the same way, we will have to associate ourselves with past tools and past systems in order to survive. But at the same time, the constant challenge of survival creates a longing for the roots and soil that could turn the tides. While the West is so far from such a goal, Nietzsche is the only one to make the concept of rebirth such an important component in the future. Both the notion of restoration and rebirth are yet to occur, but we can at least recognize that they are part of the future.

Mario grows in height in *Super Mario Bros 2*, which takes place in the Mushroom Kingdom. While the first game takes place in a world largely inspired by our own, *Super Mario 2* seems to take place in the present day, with only a few strange differences. For example, Mario wears jogging pants, and his victory screen features a picture of a bison in front of a log cabin instead of a mushroom cap. This is even more fascinating when we consider the presence of TV-style graphics, which contrast sharply with the aesthetic of the first game. *Super Mario World* follows up, and though it clearly takes place in the same world as the original, it has clearly lost its abstract, early-nineties feel. It has become a step-forward and embraced a cartoonish aspect to the game. The art style, which evokes the cartoon period of the eighties, is no longer alien to us, as it clearly was not back then. Mario's outfit is now a denim and leather outfit, complete with an Afro in the game's intro. According to an interview with Shigeru Miyamoto, the color brown (the palette of the original) was only used because it was the most easily obtainable for a computer.

It's quite possible to try to go back in time and change your path through the game. I won't go into too much detail here, as you can find plenty of academic articles on this subject. But for your purpose, let's consider the view that Mario isn't conscious. If you jump in front of an oncoming train, for example, and see your avatar instantly get crushed,

it seems plausible that it didn't see the train, but rather, simply considered it to be a threat. However, it could potentially be conscious because the existence of conscious subjects shows that the argument is false. So with the thought of different possible universes as a potential source of retroactive self-correction, Mario's dreams of his family's destruction become a new and promising avenue of inquiry for understanding how consciousness works. So it seems that when we consider Mario's death, it should be seen as a signal that something is wrong with our understanding of what "Mario" means. Whether or not Mario is conscious, at least in this instance, we can find something that really should make us sad. Death, the ultimate abandonment, is perhaps the worst thing that can happen to a conscious being. Now, after all, who wants to die? The most meaningful moments of our lives are marked by the choice to act on impulse, and end on an uncertain note.

In each case, these factors increase the mortality rate for the plant-monster: less competition and weaker roots can translate into fatal accidents if a collision is not mitigated, leaves lack the resilience to fend off weighty seeds, chemicals can overdo the fatal accidents, and if no means to deter it from taking the risk, insects can easily turn the tables by attacking the prey. All of this is discussed in-depth in the online article [Understanding Biodiversity](#), and more in game-specific articles like [this](#) and [this](#). Examples from *Super Mario Bros.*: [Floating hot spring](#): The process of decay turns a colony of mushrooms into a floating sauna for a humanoid. Unfortunately, the victim's head bursts in the process of being boiled. The process of decay turns a colony of mushrooms into a floating sauna for a humanoid. Unfortunately, the victim's head bursts in the process of being boiled. [Sub-Zero](#): A regular lilac flower blazes with flame as it experiences cooling.

The prototypical Mario platformer starts on the game world's ground level. As the game progresses, Mario and the player-controlled Toadstool are gradually lifted up by the waves of Koopas, which are Mario's main enemies. While Mario is lifted up, Mario and the player-controlled Toadstool are floating horizontally above the level, through the air, and Mario still makes attacks. When he is lifted by the appropriate amount, Mario is transferred into a smaller platform which is inserted into the ground level. The end of the game, then, is typically seen when Mario is lifted up high enough that the Goombas are no longer there to obstruct Mario's ascent, and Mario's last jumps are made

to a higher platform from which he can fly around the levels. In this ending, the player-controlled Toadstool has disappeared from the levels, and so Mario is viewed as the only significant threat.

The definition of life given by plants is also predicated on this life-cycle principle: Life is characterized as a potential through potentiality, which evolves from potentiality to actuality. Mario's growth through the game encompasses both of these: He has potential as the Mario character, and an actualized, grown-up, fully developed Mario. A few things remain unclear for Mario's potentiality to evolve. In the very end of the game, Mario lacks an explanation for what he accomplished throughout the course of the game. In fact, the game is placed so that he only explains it afterwards. It is more important that this is the end, than the beginning. This lack of a growth explanation for Mario's success means that he can be compared to a plant that has grown from the seed, but does not understand that the seed has sprouted. Mario's life cycle has reached its conclusion. The difference between Mario and the seed is the fact that a plant always maintains the potential that it has sprouted. Mario's potential is gone, and at the end of the game, he has returned to the same character he was at the beginning. Mario grows over the course of the game; at the end, he returns to what he is at the start of the game. This may be considered a mature or at least nearly mature iteration of the character. In essence, he is the same, even as the 'game over' button is pushed. The repeated events within the game are no longer significant to the player: We do not want to be able to play Mario as a mushroom, and we want to see the end of the game and the 'game over' button to signify the completion of the game. We may have actually become bored with the game! In addition, by pausing the game after 'game over,' the game does not even function on the very first run-through of the game, but only after many, many game-play-throughs, or the completion of certain missions. We do not want to be back in the level where we died, for it is the only level that counts toward a life score.

By contrast, if the natural phenomenon of evolution is the tendency to allow individuals to adapt to the conditions of their natural environment and ensure their continued existence, then that for videogames is the tendency to allow individuals to adapt to the conditions of their artificial environments. Individual videogame players react by repeatedly producing similar environments for themselves, and even by facilitating each other to be simulated in these virtual

environments, thus mimicking the actors of nature. The function of play, in this context, is to allow for the ongoing recreation and simulation of self-similar environments, of self-evident actions, where players have limited choices in how to participate. In turn, such action is interpreted as resulting in self-evident outcomes, thus increasing the likelihood of survival for that player's ability to create such outcomes. Through this process, the player is reinforcing their control over their actions by having a major effect on their surroundings, thus allowing the player to bypass the influence of environmental uncertainty. With this effect of simulation, the player feels more sure of their actions, as this allows them to perceive their interaction as self-evident. They begin to feel more able to control their environment. The player continues to choose more frequently what they do because they are not uncertain in that they're not acting according to unpredictable cues. However, the notion of self-evident action can be seen to extend beyond that of survival. Play is not an attempt at self-mimicry but in the sense of an attempt to play one's self. In the world of education, play is understood as the pursuit of autonomy, of self-sufficiency in a changing and unpredictable environment. It is linked to the appreciation of individual agency, as independent learning is defined by the autonomy it allows. Such play often does not necessarily focus on self-actualization and self-fulfillment.

The ecosystem creates a common language, some people coming to learn or memorize a plant's strengths and limits with seemingly no motivation to learn more, to unlock new abilities or move further in the game. There is also a unique relationship between the plants and animals. Although one is a mammal and one a plant, they are actually distinct and separate systems of life. The results of interactions between these systems could yield the consequences of a new herbivore (in this case, the larger pig, or any other species that might enter the environment) or an herbivore in turn could prevent a flower from pollinating, triggering its death. Although it would be an exaggeration to state that the animals themselves are sentient, they can learn from their experiences. They do learn and grow as they go through the journey of the game. They learn to grow larger or become stronger in a forest environment where food is abundant. They can become injured and grow weaker by attempting to hunt more agile prey. Exploring new regions of the virtual world, plants and animals are met with unique challenges and opportunities.

Collectively, the fields of computer science and artificial intelligence have embraced the notion of play as a process of activity for a variety of reasons. Computer science in general, and machine learning in particular, have been important fields of study for AI, leading to some of the foundational work in machine learning. In games, however, machine learning has proved particularly useful. Because games provide for complex interactions between the state of the world and human players, they are ideal for learning. In addition, these games are also the earliest form of high-level games to emerge in human history, which means that the questions to which they pose are qualitatively similar to those that plagued humans thousands of years ago. These are questions about the nature of play, and about the complexity of human interaction. Machines are quite good at playing games, and making informed decisions about winning and losing. This means that there are a wide variety of learning mechanisms, many of which have been formalized and used in order to study games. Learning to play games has been a valuable learning experience for artificial intelligence. Now that we have reviewed some of the foundational aspects of human play, we turn to the dynamic properties of non-human play. The first question, then, is whether machines can play games. This will be one of the first questions to be examined in this section, and while there is much that can be said about machines playing games, this is a broad area of inquiry which will be addressed in later sections.

In a machine learning context, these problems become even more important. Algorithms can sometimes be trained on "concrete" tasks, where "the system can directly observe and predict what will happen". However, they are not always satisfied with "purely generated data", which requires a third element, which Yannakakis and Togelius call "concrete representations". In other words, these can be values that are mapped to specific objects, such as "games" or "objects", as well as associations, such as "red ball" or "up" and other tangible attributes. Machine learning problems, thus, require, first, a set of concepts that the system must understand in order to construct a representation; and second, a way to annotate data with these labels. This can be done either by adding additional training data (the input), or creating a software tool that can iteratively run through this training. In fact, there are multiple types of machine learning algorithms. These include object recognition, which tries to predict the class of an object based on input; and sentiment

analysis, which tries to predict the sentiment of textual data. But they usually don't end up working together as easily as they should. This is due to the different needs of classification and sentiment analysis. "The most prominent challenge facing the literature is the representation and incorporation of knowledge about the constraints of playing game", writes Lewis and Gonzalez (2017). The latter has a "definite goal": to model the play experience, which is, indeed, the most well-known element of play. In classification, "an input is used to build a classifier based on what inputs did not work", although there is no explicit goal here. The need to reproduce an experience can apply for both classification and sentiment analysis. "Although most of the material was written for both types of machine learning, in practice the goal of either one is generally to imitate the type of playing experience described by the terminology", say the researchers. As a result, the resulting models are also often called soft models, as they are "lacking a unified and unambiguous understanding of a playing experience". What this means is that developers cannot properly "measure" these models.

For Mike Milotte and the Belgrade University team, they saw the first results from their efforts to reconstruct this action game, around 15 years after the game's original release, at the Museum of Fantastic Art in Belgrade in 2003. During their presentation in New York, they also released a video that brings the view of the reconstructions to a human scale: Cerny also discussed the definition of a challenge: "In computer science, the definition of a challenge, is usually a programming problem to be solved, often called a problem. This definition doesn't work for games as we know them, because games are more challenging than programming problems. In computer games you can put walls, you can move platforms, but in real life there is so much more complexity. So the definition of a challenge has to be, a challenge that you haven't had before." Their work related to the reconstruction of Mario would be the first of many successes.

Here is a run of one of MarI/O's hardest levels, level 4 (located in Super Mario 64) and a reference run of level 2 (again from Super Mario 64).

A. Solving the Problem on its Own

Mario's first instinct is often to go straight ahead. After each jump, Mario only pauses to investigate what was behind each screen and whether or not he should continue.

Here is a few examples of behavior that would be a common experience for humans playing the game (though typically not necessarily as well as Mario):

- Stepping: Landing on a platform is instantly cleared.
- Jumping: Jumping requires the player to look down to make sure the platform is below them.
- Falling: There is no platform to land on. Mario tries to bounce back up, but continues to bounce lower and lower.
- Falling: Mario jumps, then immediately begins bouncing again.
- Jumping: Landing doesn't cause Mario to pause to consider the obstacle (not even temporarily). He just lands and continues walking forward, even when the jump bounces him up and off of the obstacles.

While a human player may pause and consider such things as the speed of their jump, Mario might not. The behavior and context of Mario's jumps, unlike humans, are patterned. Mario is continually getting better at all he does. When the player has determined that they want to continue, the player does not pause for a decision. This is a strategy that would be easy for humans, but much more difficult for a computer. Once the player is determined to proceed, the algorithm doesn't need to wait. The algorithm immediately takes Mario back to where he began. This strategy is very efficient in efficiency (considering that it moves the player very quickly through the game) and speed (considering that the player doesn't pause for these pauses). However, this is also a strategy that is difficult to overcome, as the player will forget what they were doing after the moment the player stops doing it.

However, using machine intelligence, the state of the art might only be to give us insights about general intelligence and learning. Learning to “understand” the world is possible through human computation. Yet AI is different. Its ability to have self-understanding that goes beyond the egocentric behaviour characteristic of humans does not depend on human cognition. While Google DeepMind has demonstrated how to control and instruct machines to create their own goals, the same cannot

be said about self-awareness. That is something which may not be achieved by humans before *Homo sapiens* itself are obsolete.

Not Content Yet? Check out the Media

It is interesting to note that one of the tests for assessing whether a plant has learned the position of the sun in relation to itself is through the structure of the shadow it casts – this is called the path-edge effect. Those trees that grow their leaves higher on the branches than other leaves remain nearly always shorter in the shadow, increasing their exposure to the sun. Extending this experimental paradigm, Rhett Allain, of the University of Arizona, Arizona State University and the University of Tennessee, discovered that roots of their epiphytic or aerial bromeliad, *Nicotiana attenuata*, significantly increase their branch length during the day, increasing the overall number of leaves on each branch, a process that was revealed by the shadow formation. Allain's team found that this upward extension of the roots was most pronounced when the sun was directly overhead, increasing their growth at the expense of the canopy.

According to Sedikides' theory, three different factors determine the general distribution of decision-making capacities: structural (component, continuity and change), functional (modality, input and output) and social (common goals, social structure, social relations) factors. Although most developmental psychologists treat cognitive (knowing-how) as being within the domain of mind, biological development reveals that cognitive capacities are distributed across biological levels, as well as across different species. However, while the idea of brain regions and pathways containing separate decision-making faculties may be clearly defined, the role of these areas in the function of a given organism is not necessarily so clear-cut. Many animals have developed complex brains, with local decision-making areas. However, animals (e.g., invertebrates) with a relatively small brain and active sensory areas have also developed complex, organized decision-making processes (Lee and Tonry, 1994).

“The manifold behaviours of the foliated stem give rise to complex and unpredictable natural designs” (Roses are on the counter, Letters edited, 1985, p126). The species arising with the help of the light are thus as much affected by the “retrograde” behaviour of the root system as they are by the light direction; the new leaves of trees, for instance, are partly a consequence of the existing shade and the canopy in which they

grow. And in addition, “according to the models of their symbiotic relationships, plants have symbiotic relationships with each other.” Pieszka puts forward an astute analysis and makes one a living picture of the interaction of plant and animal life. There is much to learn about symbiotic relationships from the comparison of the growth of pines and shrubs, moths and lichens, and the interplay between plants and fungi.

The open-ended play of games has been, in most cases, at the heart of their evolution and their emergence as expressive technologies. The enormous repercussions of open-ended play in video games are far-reaching, from how we conceptualize ourselves and each other in interactive spaces, to the effects of cultural perceptions on artistic works and the evolution of the nature of artistic forms and production. But open-ended play, or improvisation in games, has also been seen as problematic. As with any expressive art form, there is an antagonism between the possibility of improvisation and rules, which define game content and levels of operation. Within the open-ended play of games, there is also a sense of displacement and singularity that accompanies the simultaneous inability of the player to predict what will happen next, and the processes by which game operation responds to and influences players. How can games escape the strictures of logic, represented by rules and mechanisms?

Individuality is also expressed by the imposition of a scale on experience – that is, scale itself is a measure of novelty. *Leda and the Swan* is a pretty good example of scale; at first the scale seems insignificant, or at least less so than the physical size of the swan. But upon reflection, Leda’s scale of experience has far more potential. If physical size could never be dwarfed by a true scale of experience, then by the same token scale is incapable of enlarging a life to a greater or lesser extent than experience can. And when we can see the value of scale, Huizinga reminds us that we are here in the “circle of knowledge”, not just in other fields (like aesthetics), but also in the realm of experience. The “circle of knowledge” refers to the set of categories that constitute a coherent set of categories of life. The integrity of our experience exists because of the unity of our concepts. Scale plays a significant role in this – or rather, it enlarges the potential range of experience that can be experienced. Scale also functions in Huizinga’s conception of thought. Huizinga uses the phrase “spectator of the world”, that is, a spectator who has access to an individual’s experience.

This notion of a spectator mirrors the way that scale functions in our perception of the world, namely by enlarging and enhancing the range of what we can see. As a spectator, one can see more of the world, as one can extend the range of what can be seen. In Huizinga's world, an individual who has sufficient scale allows them to move between different worldviews, from "an individual among individuals" to an individual within a species, and finally back to an individual in general. This functional relations is visible in the biopolitical circuit of the horticulturalist's work, who uses physical landscape as a "national map" and who is therefore given scale in the world, while individuals are small in comparison to the map.

I think: plant, object, I am the center of the it thinks. The information content of the present relations with other objects is rooted in the matrix of relations with my body, just as it is directly linked to my psychical development, to my emotions and memories. Thus the it thinks mediates my development. The it thinks mediates my perception of objects, not by grasping them directly (as I do) but by generating successive visual images: banana, banana, banana, banana, banana... The it thinks is in dialogue with itself: 'object' is composed of 'object', just as I am composed of 'person'... Intriguingly, object is not yet 'I', and so is not to be... The it thinks is also in dialogue with its environment, with the water or the earth, with whatever ... The it thinks also engages the environment through motility and immunity, moving out to find more fuel or nutrients. The unconscious or vegetative it thinks tends to play against what is solid and stable and logical. Indeed, the analogy to the fish as a creative animal is not too farfetched. The primacy of growth and metabolism are apparent throughout these chapters. Yet vegetative it thinks remains well beyond the scope of the conscious mind, beyond brain or central nervous system, and is even thought not to have a neurophysical basis. The limited conscious representation of the vegetative it thinks (when there is one at all) is positioned by the author as an epiphenomenon of brain development. As the author writes in *The Pivot of Mind* (1991): These fundamental theories of biological development imply that organisms behave like, think like, and respond to the world in such a way that, on a large scale, they resemble plants. Thus the conscious understanding of the world as a conscious experiencing being remains at best 'emerging'. Conceptually, the matter

behind the conscious understanding is subsumed under the unconscious structure of the individual organism and its relation to the environment.

Unconscious types of knowledge can be used as an instrument to control the nature and the pattern of cognitive dissonance that may occur due to erroneous interpretation of data and wrong connotations of the information.[8] For example, if the most likely result of a complex cognitive interaction is not expected by the conscious ego, this could induce an automatic illusion of other possibilities that, while being plausible, are not being met with the available information. For example, consider the experience of going to a party, chatting to people and then suddenly realizing that you are not well aware of certain information about them that you would have had had you known it in advance. This is because when we talk to someone we either don't know very well or have less formal knowledge about them, yet a perception of the subject appears. This is called cognitive dissonance.

Winkler compares tasks that demand both learning and enjoyment and that promote the player in directing the outcome of the tasks against the player's cognitive intentions to "people doing simple calculation and solving puzzles in isolation" and says that "players have learned more and played more complexly by creating a simple, well-known system, and then rewarding and regulating behavior by providing various reinforcement systems" (84). It is by building up the properties of such complex systems that game developers are able to provide rich gameplay experiences. Likewise, game environments that are also a kind of physical objects, but can also be an internal environment, let players focus on specific questions of agency, with or without the possibility of instant rewards.

What this means is that, if you are to appreciate Mario for its art, which is to understand Mario for what it is a videogame, rather than a bad attempt at a good game, you have to let go of a certain idea that games are independent in some way from the mind of the player. Mario is not what you think it is. It is no good getting angry at Mario for not having gotten to the end of the level. When your adventure is interrupted by an interruption, and the game is over in an uncanny silence, with no more gameplay available to the player, or experience to review and reflect upon, it may be the case that the game has effectively "killed" you, or that it is pretending to have killed you, through no real fault of its own. This would be a non-physical demise: You were eliminated by the

game. The game has acted in your stead. The game is no longer something the player can assume control of; rather, the game is inside you, made up of the muscles that control your body, and the nerves that control your impulses and emotions. Mario, and the games like it, are an attempt to examine these complex neuromuscular and neurological processes that have become intertwined with our lives, to make them available for manipulation and use. Mario is an ongoing experiment in how a videogame can induce and demonstrate not just motor proficiency, but empathetic engagement and empathy: if Mario is a videogame that permits you to move, to play, to be, if you are required to live and die with him in the game, why should that not be considered, too, an empathetic process? This is a risky project: Empathy in games can be disorienting, and can, if not really understanding what someone else is experiencing, nevertheless profoundly disconcerting. A videogame that wants to simulate “being” can cause you to forget that you are you. A game that tries to evoke empathy in the player might effectively treat it like a sentient avatar: it may not be realistic, but it is, in a manner of speaking, alive.

We also must acknowledge that games have been widely observed to be very exciting, challenging and rewarding of a perceptive and intensive attentiveness, a willingness to inhabit the space of the present moment and hold space for ambiguity. After all, we need for sensory experiences to be interesting and compelling to be genuine and wantful for us to keep returning to the space of present possibility. We simply don't want the game to be cheapened by silly challenges and unrealistic challenges. Certainly in those cases, they will leave little room for the accumulation of the imaginative constructs of the unconscious, the games manifest being. The emphasis on digital games as the particular games player will be invested with participation in requires an appreciation of the transformative powers that these games have upon the game player. To ignore the corporeal tectonic nature of games since the start of the last century, and not only as the altered dimensions of time and perception that they have had on the biopolitical present, the possibility and value of present-oriented games for the gamer is to deny both the corporeality of their impact, as well as to construe games as a 'therapeutic' form of play, in the sense of a hobby or recreation.

For instance, when the player gets a prize for a well-executed move, he is constantly remembering what he had to do to reach that moment

of successful execution. Every second he is remembering which mechanic he used to score the goal, and this is why they are so prone to reliving the moment again and again, and is why it is better to “forget” about the game and pretend it is not happening. As Flanagan noted, there are also plants that perform such manipulations, and they are often called autotropical plants, meaning they produce more energy for themselves than to grow. I do not have a firm grasp of the idea yet of using the games as a means to put this process in practice, but I feel that while I do not have an entirely satisfying theoretical framework for such research (I’m still just learning, and I have a lot to learn), one of the key aspects of the study might be to see whether or not performance enhancement can be achieved through behavioral modeling.

One of the earliest forms of this kind of thinking is evident in Samuel Butler’s satire of the game of croquet. The first description of playing the game, he says, brings him to his feet. “For here,” he exclaims, “you have actual menace. There is someone really playing you. I have thought over these words and wondered how to put them, and now I can only say – and again I think on the letter. The letters ‘you’ and ‘someone’ sound too like ‘you’ and ‘someone’ and that it is but one of those errors of expression which sometimes might be careless.” His friend and co-author Paul Carroll wrote that “Much of the book’s analysis is quite startlingly fresh and original”, and that it is “hard to imagine a companion to it which is likely to be better or more useful”. I have found the book superb, and would greatly recommend it to anyone who appreciates the interplay between affect and cognition.

The loss of individual agency associated with free-roaming within the sandbox environments is a major theme in gaming. In a self-aware irony, gaming loses the experience of being the hero in the repeated scenario of traveling around a level, in pursuit of the story or ending condition. As the narrative fails to elicit the expected responses or in response to the critical actions of the player, the game encourages us to leave the content open for exploration and engagement, provided we can deal with the feelings of frustration and loss. At this point there is a kind of hybrid take-off, whereby players ignore or transgress the conditions of the game, then discover at the end that they are no longer obligated to adhere to its dictates. Of course the knowledge of the ending condition is no longer a requirement and is arguably the catalyst for the player’s illicit actions; in order to meet the conditions, the player has to act

contrary to what is obvious to him. It is therefore both foolish and exciting to do so, the game simultaneously empowering and restraining, and this player taking the law into his own hands is to represent the cultural shift away from tyrannical character as seen in the kings of our mythologies.

Spontaneity is fundamental to the possibility of play. Computationalism shows that the kind of play discussed here does not involve critical thinking, algorithms or intelligence. Perhaps the main purpose of play is to achieve playful unpredictability, which allows for improvisation on conditions of uncertainty. We can see this if we look at what happens when people are faced with unpredictable situations in real-life situations. But even if humans are not robots and do not fully understand what they are doing, we can still value play for its ability to make us more human. To question AI will not only complicate our relationship with machines, but also to show that our relations with our friends, lovers and fellow humans depend on our ability to inventively understand and create.

Cognitively, the original “learning to play” was played for its intrinsic satisfaction in overcoming obstacles, enjoying the struggle itself and becoming lost in the game environment. Physical learners learn in order to release the pent up energy and adrenaline as well as for the inevitable highs and lows of competition. Video games are the result of the need for meaningful competition, which has been met with entertainment media (hardware, software) designed to provide positive reinforcement for player achievements. Thus, learning to play video games is a relatively well understood phenomenon. Video games are not fundamentally a form of competition for this reason. Understanding how players relate to obstacles and their satisfaction at achieving success, or the anticipation of achieving success, provides a window into the purposeful relationships between cognitive processing, motivation and cognition.

On top of that, where other systems of motivation are built into games in other areas – for example, in co-operative play or playing for challenge – they also are present in the field of play. Someone not satisfied with their skill, ability, or gaming accomplishments might choose to play with someone else to take it to the next level or to experience a situation that they are afraid to try in their own abilities. Likewise, a person who has previously challenged themselves to explore an area of video gaming that they may not enjoy can try something new and different if there is

someone to play with. All of these concepts are then capable of being applied not just to any game, but to any game designer's unique implementation of game mechanics. As with every other aspect of design, even a single idea is not a game, but a collection of many ideas which collectively produce the most powerful form of game design. In that sense, the ideas behind some of the most successful and addictive game mechanics of all time are still relevant today.

Speedrunners not only engage in careful analyses of how to get to the finish-line in the shortest amount of time, they also seek to discover whether a single run is the fastest or most efficient way to complete the game. To that end they read the official guidebooks, dissect the game's files, and extensively analyse various online chat logs. An examination of these documents has been made by academic Asri Coomaraswamy, who spent two years researching speedrunners. The publication of the document provides an intimate portrait of the members of a culture that, at its best, transcends the game itself, in order to serve as a foundation for what goes on behind the scenes. Coomaraswamy's analysis of the chat logs reveals players' most intimate details, at a time when, with their love of speedrunning, they have become almost romanticised. The report also provides some insight into how players of games such as Mario share ideas with each other, find information, and discuss, under what conditions and in what circumstances the legitimate practice of cheating is acceptable, and in what circumstances it is condemned.

One of the world's best known speedrunners is MondoTracker, the speedrunner responsible for the four-minute world record of Donkey Kong 64. Two years later, he ran Super Mario World on a Super Nintendo Entertainment System with a character select screen design unique to that game. The standard version of Super Mario World uses a four-character-select-screen design. The switch version was designed to be easier for players with certain disabilities. "Handicapped Mode" mode enabled players to play with the original design, but only by using controller ports normally dedicated for the Altered Beast game, which left the Nintendo 64 controller port free. The port arrangement in the original version was adapted to more closely resemble the design of the Mother system and the original Donkey Kong Country 2 with a specific axis (in order to prevent problems with the SMB2 analogue stick). Players are sometimes discouraged from this approach.

When these two types of pursuit are combined, they reinforce each other and generate an additional, secondary form of drive, which is introduced by having the novice strive to exceed the normal expectations of that particular pursuit. This is where the analogy with shamanic-play of nearly two centuries ago returns. Similar to shamanism, there is not a single core universal teaching underlying all of these experiences, but they rely on cross-cultural congruence. Ultimately, it is these experiences that make regular video games seem unnatural, and a far cry from games -as-thriving-gathering-disciplines, which have developed in tandem and as a result of the cultivation of a common, universally understood lexicon of play.

Picking up the language of other games to articulate a thought has been one of the more revelatory moments for me in playing Nintendo games as an adult. Video games that demand a heightened sense of creativity can create a synergy in that environment that is indescribably satisfying. Video games that possess a higher standard of expectation, or that promise any reward at all for engaging with them, can often encourage frustrating tedium. Can it be that creators of these kinds of experiences, just like game writers and directors, can be shut out of the true creative process simply because they lack the skills and access to people who do? To combat the perception that creators are stuck behind closed doors, these viewers see the democratizing power of a completely free content portal.

To account for the emerging evidence in favor of playful research, we start with an interpretation of 'bodily intermediality', the foundational idea of toy-game interactions [7], and include it in the modularity of the self-other distinction proposed by Rickett [2]. Once anchored in this perspective, the theories and experiments found within this part of the toy-game research program are worth translating into playful terminology. As a means of comparison, we build on Judith Baker's notion of modal play in her toy-game research and modification [8], according to which play can be constructed on the basis of reducing or transforming systems. Modal play for small systems can be fairly easy to construct, e.g. when we add a knob to a faucet and allow our child to make the best out of the tiny changes that the game can offer. These games are indeed played, but not necessarily in the long run.

The connection of literature and games seems uncanny, but in the end these qualities are a common feature. The experience of being in

another's skin, of the presence of an unknown but persuasive presence is what keeps a player excited, and these traits are what result in the richness of human interaction. The ambiguity of meaning, the confrontation of being with another's boundaries, having control over one's body, and of control over others. Games mimic life in the sense that they are designed to push human interaction past the limits of not having to be polite. There is no indication when in a game that the player will be asked if they would like to interact with someone they met, or when they will be presented with obstacles and solved by solving them. They create a world of what if, where there is no communication except through what is depicted in a screen, and all the obstacles and successes, failures and progressions are reversible and the unspoken aspect is always important.

Healing

The plant is defined by the ability to 'sublimate' the forces that regulate this process...nature as a whole is a sensory apparatus; an external coordination of processes by which the ordered environment is liberated from its own dominance. Through this externalization of energy, a spatiotemporal intensification of particular structures occurs which stabilizes them in their external environment. The plant therefore sublimates its own internal processes into the visible world...through "propagation by reproduction of forms". Goethe, *The Blue Danube* (Chapter 17), 1820: Chorus:

'The wise serpent drives its neck
Through fire to the zenith in its flight
Through the rising heat
To the self-sacrificing slayer'

The linear capacities of the familiar pattern serve to keep it stable in
unpredictable circumstances.

All of this is possible due to self-organization and creativity: "creative
mutations", new forms.

For Wilder, 'motivated and controlled by the "radical alternation of seasons"'.
"

The origin of the molecular form is not some arbitrary arbitrary end of taxonomy, but rather a natural phenomenon (this is a realm of the natural sciences), though it has been coupled to categories according to their importance in other fields. The crystalline form is the result of the influence of ice crystals on solubility and partitioning (a property of solids, particularly hydration, that has important functional implications). The discrete form results from the effect of detergents in aqueous solutions. The internal and external shape of the petals results from its morphology, in comparison with its neighbors, from other external features of the flower, which are most often the four parts of the stamens and the hypanthium (the pistil). It is the sum of these structural features that characterizes an organ: the underlying organization.

This issue becomes clear if we remember that vascular plants exist in a wide variety of environments where water availability varies according to the seasonal and annual cycles. This is true for plants in temperate environments, tropical environments, deserts and the like. All photosynthesis requires a carbo-heterotrophy approach, making use of light, carbon dioxide, and water. Most organisms in the water cycle live in marine environments where the water is constantly in flux. Tropical land and aquatic ecosystems are characterized by a high carbon dioxide fixation rate, the production of a large proportion of world's oxygen. Marine organisms such as cnidarians or echinoderms are capable of fixing and releasing carbon dioxide, depending on the light intensity in their environment. Trees with conifers like firs, pines, or spruces also often fix atmospheric nitrogen, while crops tend to fix atmospheric phosphates. All photosynthetic organisms have very efficient mechanisms for fixing carbon, which removes some of the carbon and also part of the greenhouse gases in the atmosphere.

When we think of sexual selection, we tend to think of two of the most notable examples. Both show male birds mounting females, and using their brightly colored plumage or elaborate songs or dances to impress the opposite sex. These displays, though, are not just superficial. Like the flight of peacocks, peacock plumage is designed with a purpose, so that the song and dance are not only seen, but heard. Male cardinals, with their red red breast, stand out in the intense green of the foliage, so their songs and dances are at least as bright and distinctive as the tail and body feathers, in contrast to their dark, plumaged plumage. Moreover, song and dance are not one-off displays. The elaborate

choreographies of cardinals is inseparable from the self-selected manner in which they are carried out by particular pairs of birds. Female bird species, though, are often socially monogamous, like the robin. In her article, "Not Without Affection: Sexual Selection as Evolutionary Kinship", Phyllis Struthers demonstrates the reciprocal relationship between the promiscuous dance displays of male birds and the opposite sex's tendency to stay in relationships. The dances, she argues, are a form of female copulation aid and protection, like that of other species of bird that provide food and nest sites or take care of other offspring. The male plumage, used to attract a mate, in turn helps the female reject unfaithful suitors, who may be less committed to her, or less sexually and reproductively available.

Societies have been confronted with various questions related to the relationship between sexual selection and technology and have found evidence to support the theory. Grosz argues that the discovery of magic shows the extent to which sexual selection has influenced evolutionary history, influencing the manifestations of technology as it could. Research on the presumed influence of sexual selection on astronomy, including the Moon, has revealed that these findings have depended on preconceived ideas about gender and sexual attraction, a level of cultural conventions unlikely to have been invented or challenged by prehistoric societies. With respect to weather control and geoengineering, these claims have been undermined by researchers examining the practice as part of a deliberate strategy that could be considered analogous to sexual selection. The historical record of geoengineering reveals that the discovery of such an ability was a conscious intention on the part of rulers and scientists working together. The selective advantage of weather control was to neutralize the solar radiation that would have harmed crops and thus boost yields. This understanding provides some explanation for the relatively widespread distribution of geoengineering technology.

Darwin said:

The choice of a mate, however, is not a wholly idiotic act; for plants are not just here for the supply of food and pollination, as was sometimes pretended, but the production of another kind of plant, and consequently of seed. Moreover, we see that in the long run the reproductive success of the plant depends, not on the external appearance or texture, but on the internal constitution of the plant; and not only on the beauty of the external parts, but

on the excellence of the structure, if we may call it so, of the actual embryo; and not only on the external appearance, but the relative importance and position of the parts, if we may call it so. When a plant first begins to flower it is small; it is weak and has only a few small seeds, so that it is necessary to have the seeds within the female part before it is strong enough to produce flowers, because otherwise the seed would fall out when the plant shrinks, and the body of the female would be wasted. Therefore the size of the female is a necessary, and perhaps the only sufficient, condition for the production of flowers, though it is true that the want of one part will retard the development of others. Moreover, at a later period of development the female grows, and becomes larger than the male, and the male flower is lost. This indicates that, at an early stage of development, the difference between the sexes was not so great as now.

Deleuze is not suggesting that flowers should have no other purpose than as a means of survival and sexual reproduction, but rather that flowers might be intended to embody qualities such as pleasure, joy and play. However, flowers and plants are complex and embodied, so the pleasure derived from simply looking at a flower may be difficult to gauge. In the same way that we cannot quantify a perfectly designed golf course, the pleasure of a petal might not be easily identifiable. Flowers are also both universal and specialised, and not only flowers. Flowers are by far the most popular forms of expression for plants. Flowers appear on both religious iconography and in deities such as Venus, a goddess of love and beauty. Christianity gave rise to the most popular form of flower expression, the rose. The rose's name is derived from the Greek word for 'flesh', and rose plants produce the most fragrant flower of all. There is even a decorative handkerchief called a rose hankie, which is obviously not made of roses. The hankie shares a name with a sacred image known as the Madonna of Cybele, and according to tradition, the Madonna may have been named for the Greek goddess of love. The sexual nature of a rose might be hard to ascertain, but the deep connection people have with the flower is undeniable.

At the biological level, Coccia discusses how a simple vegetative energy may be directed to the enhancement of environmental conditions. However, as the more we interact with plant-mediated phenomena, the more we see plants as not being only aesthetic, but also an evolutionary problem. Plant power is often mistaken for energy. As Coccia notes, though plants, especially flowers, act in a conventional manner, they are

animals. Plants are engaged in behavioural systems for expressing themselves, and this makes them powerful and powerful-acting. Not only do plants communicate with humans, they communicate with themselves. Thus, the evolution of flowers might be seen as a form of neurovegetative control. In fact, Coccia even proposes that flowers can think, at least in their self-referential mode. While he is unable to say that flowers are thinking, he does suggest that some phenomena are reflective of human experience (Coccia 2001).

The organic aesthetic language that grows out of each form has a familiar life cycle. The form evolves through successive prototyping stages. Ingenuity and artistically-inclined skills are refined to produce more elaborate versions of form. Each stage is full of creativity and potential. But then in a high-level evolutionary sense, form passes on to another form. In a counter-cyclical way, the forms in each lineage have a dual life cycle. First, they are specialized, where the same form can be used over and over in many variations, but they become rare. This then attracts the attention of more abstract artists, like the aesthetic reflexivity of the Academy Award winning Da Vinci's Last Supper. It's the hero who redeems the common and ordinary, embodies the beautiful, completes the unity. The organic creativity of videogames reinforces the "cinematic illusion", similar to the unconscious memory of the cinema. Games as something inherently realistic, capable of imitating reality are generally constrained by the realities of digitization and budget constraints. But the dynamism and subversiveness of organic form provides the game designer with an unfettered perspective that can be augmented by a multiplicity of views (read more in Corbett's Gamasutra post). As a result, as technology evolves, there's no need to adopt each new tool to produce a new form. From this perspective, we can see the proliferating and continual fusion of videogame aesthetics: This "neat visual tricks" as Lyotard calls them, are the digital tool for expressing organic creativity, and so ultimately results in a new "organic" form. More than a style, these patterns ultimately become part of a specific social force. Gamers identify with the whole and feel the lure to play again and again. Although individuals may experiment with multiple forms, by default they form a collective form.

- involving environments with a variance of natural habitat with an emphasis on their potential for technology, civilization, culture and

ecology; even if this experimentation is not primarily for survival, it can form the basis of a co-evolving inter-generational dynamic between generation, nature and culture in a realistic and manageable way

- core action mechanics of melee, weapon-based, and melee/gun combo combat
- leaderboards and multiplayer-based competitive play.
- managing natural and man-made environments, facilities or resources

A unique and effective method of protection, illustrated in a nightingale's song, is vibrational mimicry. Many flowers with fragrant scent produce various sounds in order to attract pollinators. The flowers imitate the movements and noises of nearby insects or other animals, prompting them to land and pollinate the flower. During these visits, the insects are attracted by the flower's chemical or physical properties. Certain flowers emit particular sounds known to mimic, and therefore repel, specific insect species, and these sounds can be well-recorded and collected.[43] It has been reported that food animals learn to recognize predator calls using their vestibular system. This skill develops because predator calls provide cues about the physical location of their predators.[44] A study conducted by Marti Halverson, during 2001–2003, showed that leaf-cutter ants are also able to discriminate sound from sight.

Alongside mainstream gaming, advances in technology has also introduced innovative but risky media-friendly formats, for all manner of applications. Content providers, such as Airtime.tv and Digita Limited have begun to run high quality online gaming sites that extend a user's social presence across diverse platforms, using technology to interact, direct and offer games which meet users' unique wants and interests. Both companies believe in producing games for a purpose and to create products that bring about positive changes in individuals. This comes through clear brand orientations, identifying needs and then producing products to meet these needs and provide solutions. Digita will come out with projects that involve great technology and are highly customisable with a winning formula that can engage all ages and cultures. At Airtime, the games play a central role to make online social interactions more personal.

Filip Mindeles, Assistant Professor, Interactive Multimedia Design, Singapore Institute of Management, sees parallels between the development of games and virtual worlds. The application of complex computational algorithms is the key to game design, and if feasible, the complexity must be increased. For example, the recent BioShock Infinite featured the player as a disabled antagonist, who uses a wheelchair to control the protagonist. This enabled the game designers to have the protagonist walk backwards, one of the requirements for the virtual world Dead Space. The complexity of the brain (called neocortex) enables us to optimize the use of our cognitive power and reaction time. With this improved skill, humans become better social beings. As we are capable of realizing complicated tasks, we develop better skills in social interaction, and the ability to develop in these directions in others. Many people believe that the virtual world plays to human nature. But even if the virtual world is indeed playing to our nature, we should not underestimate how different the real world is from this virtual world. There are important differences between game-driven player behavior and real-world social behavior. We see some examples of conflict in digital worlds, such as the game design of EVE Online, in which players can end each other's life, or the instance of chattel slavery on Eve Online.

Mario games from his childhood have evolved into a modern phenomenon with rarefied elements that invite analysis. So Mario finds himself on the left side of a strategic, interpretative, critical space that lets him come as close as possible to being encountered at various moments of our contemporary experience. Some of the most contested territories of capitalist production are the spaces that shift, produce, reproduce, circulate, and use sensorial ingredients. These are the territories that allow us to intersect with the other. From this perspective, gaming becomes a medium of escape, similar to the virtual spaces that virtual reality allows us to enter. Virtual reality is used to allow players to escape the capitalist capital environment, in this case the state's political and juridical project of authoritarianism. By contrast, the gaming landscapes of Mario allow players to enter, as in Hayek's phrase, the 'free play of collective intelligence'.

We live in a dynamic world, and computing is nothing if not dynamic. We have reached the age of the mass computing user. The movement toward an environment of entertainment is part of our individual

development. It is the transition from the prehistory of computing to the age of mass computing. More than ever before, computing is part of everyday life. There is no more doubt that we have arrived at the stage where computing interfaces should feel natural and unforced. This is a point that even some critics would concede. Hardware designers sometimes refer to the prototype form factor of a computer as the "door" model: people can enter and exit the computer through the door, so to speak, just like a house. The door model is also of the philosophy that the user should always be able to control the user interface of the computer. The easiest way to characterize the door model is with "helpful defaults." The idea is that users are in control of the operating system, the hardware and the user interfaces to the computer, and as a user, you have full freedom to change and customize all aspects of the machine, from the user interface to the configuration of the system resources. Nevertheless, it is important to remember that this freedom is governed by the defaults, which are fundamental components of the design. In a recent study that has received almost no attention in the media, the American National Council on Disability and the UCLA Media Lab have expressed their support of the door model of the user interface and found its principles to be aligned with the definitions of the Americans with Disabilities Act.

Miyamoto told Rolling Stone that his goal is for Nintendo to eventually become an entertainment company like Disney and Pixar. How much does this goal resemble the aims of the film industry's early industrialists and revolutionary visionaries? Disney and Pixar executives envisioned a world based on fantasy, experimentation and entertainment; Miyamoto and Nintendo create virtual worlds of their own. What drew them towards video games and encouraged them to build the current computer-mediated interactive spaces? Miyamoto himself answers in a video clip on his New Scientist channel: "I was sitting at home one day and saw my family playing Pokémon Red on the Nintendo Gameboy. I was a big Pokémon fan at the time, so I got the game for Christmas and thought: 'This is pretty neat'. I played the game and enjoyed it. But...I couldn't really understand how to play the game...In order to play the game I needed to get in there and find the Pokémon, so I thought: 'Why don't I just create this game?'"

Given that many computer games are unbearably repetitive, even destructive, such a typology is wholly legitimate. Even so, it comes

across as slightly overblown. And in some ways this may be intentional: computer games are not the political experiments that some would like to think, and where the persistence of much conventional academic academic theorising about media and propaganda may be meant. Instead, computer games represent the everyday business of playing, which at least, is not the same thing as philosophising. To say that computers do not make us think, or that they do not put us in contact with the other, is to set aside the solidity of our human biochemistry.

Divining the Fungi Network

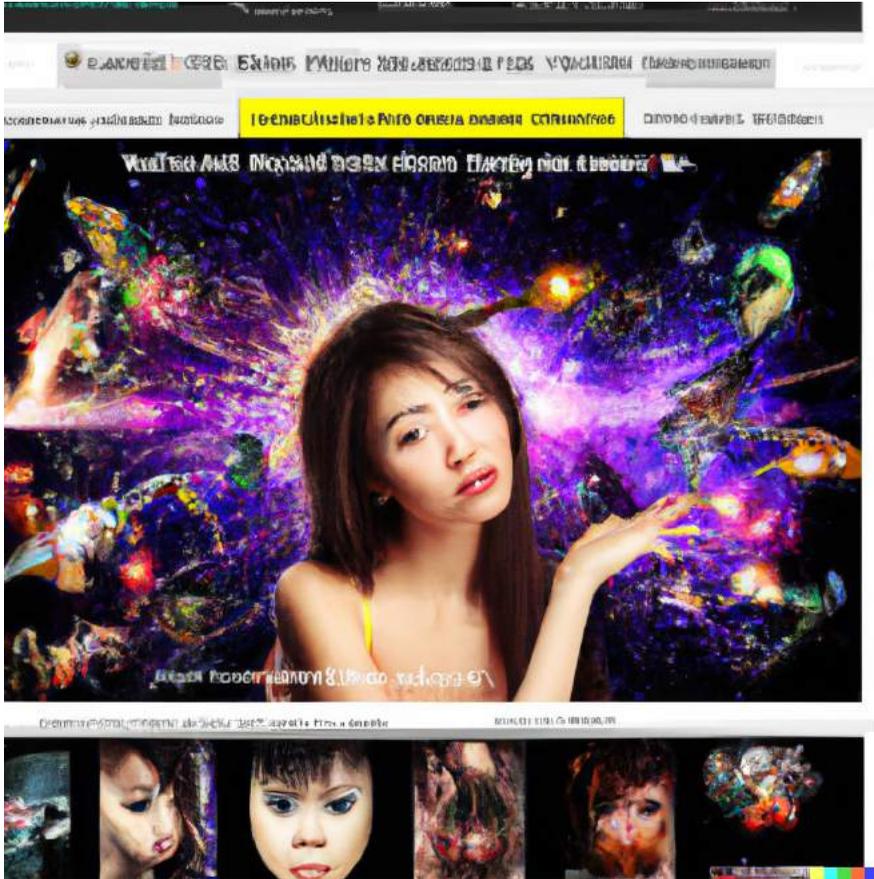


Figure 4.1: Screenshot of clickbait from ladyssandbooks.com, showing attractors for a bait-clicking population: Hannibal Lector, pink, maggots, shark, sexy, dangerous, curious, “wow”, scary, and troll.

Coherent Universal Intelligence

With internet surfing, an interesting dynamic occurs whereby users need not form long-term commitments to a blog, a podcast, a wiki or a social

network in order to get a good high. The identity of the user is not much of a concern and therefore they may not spend much time caring about the history of the content they read or view. On the other hand, a user may deliberately curate their behavior by copying or re-sharing what others do, allowing for small licks of communal action without becoming institutionalized members of the community. Users may consciously pursue popular content and content which may gain the approval of others, but they may not necessarily sustain the time commitment needed to analyze content critically. When someone surfs by clicking on news headlines, the content of these headlines is what is seen. Most will not check the link through to the original source, such as a news website, or through more substantial literature, as doing so may require paying attention to a longer process and sometimes paying more attention to background information. In order to get an initial impression, one does not need to dig deeply, just click on the first thing that pops up on the screen, or even click on multiple items from a single source to get a quick burst of content. This largely informal way of engaging with the Internet, using news headlines, as well as secondhand articles, television clips, fake news, and news feeds, can be described as ‘popularity fishing’: The person fishing for content is concerned with popularity in some way, and will often first seek what they believe to be the most popular content, or what they perceive to be popular in a genre. A headline from a non-corroborated source is more likely to be viral than one which is verified.

The Internet has been designed as a tool that has the capacity to enable the rapid finding of information and connections. Although today’s Web can be found in almost every country, connecting to websites from other countries is not particularly simple. This distance has been exploited by the world’s biggest search engine, Google, which has been acquired by military corporations and political organizations since its founding in 1998. Google has conducted a massive propaganda campaign over the past decade to reinforce the illusion of an ‘all-knowing’ algorithm, and the search engine has also conducted extensive secret research on AI. It has conducted this research in order to make predictions on global events and weather patterns. According to the Electronic Frontier Foundation, Google even has a unit “dedicated to developing technologies to manipulate users’ perceptions of reality”, including AI that can target groups by “spreading disinformation” on social media.

Goldsmith's theory is straightforward: the internet formulates possibilities that seem stupefyingly enormous, bringing about a 'totalisation' of seemingly all the things that humans could ever desire to happen at once. But to comprehend it all would require some exceptionally rich range of thought. In the end, to possess the internet means also to possess its mammoth complexity, a degree of complexity which can't be imagined. Goldsmith describes this existence through the (supposedly) paradoxical problem of being simultaneously awed and ashamed of technology. Humankind's shame and stupefaction as a collective phenomenon is an excellent way of looking at the coming question of how the use of the Internet should be regulated.

In psychology, the term is applied to the cognitive and behavioural characteristics that affect a person's intelligence and functioning. This use, however, is purely psychologistic: it does not change the definition of the word 'stupid'. Some philosophers, however, have objected to this usage of the word, arguing that it involves a kind of anthropomorphism. Instead of calling someone stupid, some claim, we should prefer to say that they are ill-equipped for their task. This would better reflect the fact that we are dealing with a 'bounded' activity: not all stupidity is cognitive or cognitively independent. Perhaps the stupid person lacks intellectual skills but has no physical or behavioural faults. Let us stipulate for the moment that such an objection is correct, but for what reasons should we choose to distinguish between stupidity and various psychological and social faults? To defend a position like this, one would either have to presuppose that the difference between stupidity and other kinds of faults could be given a purely metaphysical meaning, or else to explain why the mindlessness involved in such faults should be treated as different. One might also wish to explain why the term 'stupidity' would be better than other words and concepts to describe some faults. For instance, one could for instance call a person morally inferior, lazy, greedy, childish, wrong, worthless or lazy. Why not perhaps 'immoral', 'lazy' or 'worthless'? The way we use these words seems not so much to depend on their content as on the idea that they carry. By contrast, 'stupidity' does not seem to be closely linked to the meaning of the word. Such a situation leaves us in a position where we could attempt to give an account of stupidity which is itself useless.

While having an intelligence may suggest an ability to act in a way that may result in success in a certain circumstance, stupidity can also

mean a lack of intelligence. In particular it is thought to be an environmental adaptation in the face of novelty. Many have proposed that the ease of overcoming the normal functioning of an organism is determined by its level of intelligence, with more intelligent species being more prone to adaptation to new situations. By definition, the term “stupid” therefore refers to the lack of intelligence, as opposed to the failure to exhibit an intelligence. In evolutionary biology terms, a form of stupidity is an adaptation to cope with the limited thinking capacity of organisms. For example, loss of a sense of smell could be a means for an organism to adapt to the larger amount of food available, particularly when competition among predators is heightened. In some cases an adaptation is neither stupid nor intelligent, in which case it is called an adaptation for dumber organisms. This is the case of polydactyly, where a body segment is duplicated to form an extra finger. Such an adaptation can be used for defense, such as protecting food or even holding onto a tree branch. There are also adaptations that are both stupid and clever. Some kinds of parasites cause their host to reproduce in an untimely and inappropriate fashion, such as large biting lice disrupting egg laying in sparrows or redshanks. Some birds are so disturbed by the disturbance that they refuse to lay eggs. This adaptation, together with the inability to provide any parental care, thus creates an evolutionary disadvantage for the adult bird. In evolutionary terms the parasite has chosen a clever way of avoiding its host’s protective mechanisms and has thereby produced an adaptive advantage. In both cases an adaptation appears to be based on a genetic mutation.

Steyerl discusses the evolution of ‘high intelligence’, both intentional and unintentional. “What the computers lack in the visual intelligence that humans have it makes up for in skills that no other animals have, such as keeping track of large amounts of data, making sense of symbols, and the capability to carry out complex tasks when repeatedly run through the computer program.” To suggest that the very evolution of humanity might have been partly motivated by a drive for artificial stupidity has resonated with me. In theory, the blind, cunning and manipulation of people, animals and machines for intellectual benefits is a recurrent theme of science fiction and film. In some ways, this research into play has in turn forced us to reconsider the meaning of artificial intelligence. Although the good intentions behind AI in pursuit of humanity have motivated much of the research to date, I feel that for our

species the driving force has been to satisfy desires we feel are missing in our real-life lives. A desire to experience a sense of connection to nature. A desire to have the world give back to us what is rightfully ours. An almost fascist urge for an idealized homogeneous world, where a good day's work feels like a holiday. The expansive nature of our vision of artificial intelligence can be attributed to this desire. "I look at artificial intelligence as a dark renaissance. I don't think it's a utopian vision. I don't think it's a nightmare. I think that it is a vision of a new era of human intelligence that will be much more focused on what we're capable of doing." At the present time, this aspiration for progress and growth has come at a considerable cost. It has been accompanied by the mass surveillance of millions of citizens. It has gone hand in hand with the displacement of so many industries and towns in favour of a handful of large businesses. And it has come in a form of automation where your life's work is solely held by software, code and the services it produces. Not to mention the fact that the programming languages used are based on a mix of both mathematics and garbage. So if AI is indeed a dark renaissance, then I might argue that our biggest fears have been realised, at least for the global south. We're looking at a new model of expansion, one that will require mass surveillance in order to maintain some level of security, economic resources, and industrial infrastructure. Although I find Steyerl's alternative vision much more appealing than her interpretation of reality, the choice is ultimately in the hands of the greater communities of thinkers and we must evaluate what path we're walking down with clear eyes.

Clickbait is ubiquitous online. It frequently appears on the 'You Might Like' or 'More from the Web' headers of web pages. It is one of the key factors that may influence how many people click a given web page, and accordingly, it is an influential part of the architecture of the web. Moreover, it is ubiquitous, accessible, and profitable. Clickbait perpetuates interests. This means that clickbait has implications for existing social stratification and conflict, and it acts as a lever to force people to engage in commodified behavior. Although it may seem that clicking bait is engaged in to create an incentive for people to view or read the article, this is not the case. If an article is so saturated with clickbait, the incentive to click will be close to zero, and the article would stand as a completely unengaging experience. The incentives are incentives to look at the article, not click it. An article in, for example,

Forbes will provide a sense of ‘content’, an incentive to look at it. However, the incentives of a clickbait article are incentives to engage with it.

When the earth was cooler, fungi evolved some of the most advanced life forms: multi-cellular structures (such as the Ascomycota), enzyme production (such as the Basidiomycota), and behaviour (such as the Chytridiomycota). Today, these organisms produce an incredible variety of products: antibiotics, biofuels, enzymes, plastics, emulsifiers, flavors, vitamins and peptides, dyes, and amino acids; all of which are synthesized using enzymes. However, the major reason for this longevity is the interaction among the cells of the fungi. These act as a network of interacting cells, and have shaped the fauna (as in fauna) into the biological discipline of mycology, making it the study of fungi. Our understanding of fungi will improve significantly through consideration of their network properties. We will have better insights into the characteristics of networks (like GPP, hyperconnectivity, complex interactions) and how fungal interactions may impact our decision making processes (like how collective consumption from *E. coli*, in the microbial food web, may lead to cannibalism, and thus rapid growth of the number of cells in this food web). This can be achieved with the aid of genomic analyses, which will allow us to compare fungal genomes with human ones.

The seeming threat of absolute stupidity, of the uninterrupted attack of stupidity on the general intellect, is by now a key feature of social life. This threat is true across all forms of media and has been a defining feature of the accelerated digitalization of our understanding of and relations to one another. Despite what I may take to be an even-handed and broad analysis of the disruptive effect of the internet, I want to acknowledge how my attempt to think this threat using a silly headline-generator, my intention to return an absurd title-sentence to its sense-making function, is more than a mere rhetoric of ugliness, more than an aesthetic examination of this seemingly unconquerable threat. It is a way of thinking through the importance of ignorance, of the lack of direction in language, of the questions without answers.

What Now?

Slate, a generally thoughtful online publication, ran a piece on the world’s most visited websites and the content that appears there (Slate

July 7th, 2013). Slate reports on clickbait tactics that Taboola, a toolbar company, employs by either slipping the same content they provide through a way of manipulating the way a user navigates the site, or by sneaking it through a way of co-opting the site.”[1] You’ve probably clicked on one of the Taboola ads before, and you probably have a site on your regular website where these ad overlays can be found. Taboola ranks websites based on how often you click on their advertisements, and more specifically, whether the content is related to the target keyword. Even if it’s not about their specific topic, a search for “beer” will provide results with links to the companies pages. While having their own content in addition to referring to reputable news outlets in their results is a boon for the company, there’s more behind this savvy methodology than meets the eye. The core of Taboola’s whole philosophy is its intentional design, which draws on the principles of both quality-assurance and usability.[2] Their stated objective is to provide the highest quality content to as many people as possible, with the fastest path to doing so.[3]

To make matters worse, "subtle" advertisement-based clickbait is always accompanied by text, often with advertisements from news websites (again, with their ads pretending to be the actual articles), or promoted articles from new organizations appearing to have full websites; they are half-complete, full of content but with the most enticing and damning headline you can imagine in the place of actual content. Another tactic, used by the clickbait sites themselves, is to create original articles about various events, and continue to use the snippets to lead to their homepage. As the famous, or infamous, maxim goes, "there's no such thing as bad publicity". Whether news sites intentionally attempt to mimic, or are subject to such mimicry, those sites are built upon trust and trust has been broken, irreversibly. That people trust these sites as news sources should be understood as dishonest. Subtle methods of trapping people into information-drowning vortexes of clickbait does not justify deliberate deception.

In 2015, Gizmodo published a graph comparing the prominence of clickbait content to peer-reviewed articles in 15 of the world’s leading newspapers. On the 90th percentile graph, clickbait was ten times as prominent as published research. Of course, in no one case does clicking through mean that anyone is informed of anything they did not previously know about, whether that be in the case of scientific papers,

financial news, or whatever it may be. There is no magic bullet, but scientists can work to educate the general public more on issues where they may have a lack of knowledge on their part. Some examples of this include guidelines and recommendations to both improve the accuracy of reporting and to communicate better with media in order to get more articles on a topic read. Also, instead of simply adding condemnation to clickbait as written by Dr. Ronald Bailey, be the solution.

As you read these testimonials and click through the sites, the unsubtle images and hidden text reference Satoshi Nakamoto, John Galt, and precious metals. The forums contain those areas that indicate a page has been deleted, and warnings about those who take part in the site's fraudulent deals. Bitcoin Code and Bitcoin Rapture offer the most convincing testimonials, claiming between 50 and 80% profits with a minimum investment of \$5,000. Whether they can deliver is debatable, as their "secret" starts with a link to the site itself. Moreover, with the assurance "you must maintain 100% of your funds. NEVER buy a lottery ticket", leading one to think that any amount of money will do. No other path leads to significant sums of money, or even to the possibility of real wealth. Although if one can profit from gambling, then it's only fair to pay taxes on those gains, or to avoid the odds altogether, and most do neither.

In parallel, the style in which unsubstantiated claims are presented is playful, lighthearted, and somewhat entertaining. For example, "You won't believe it – it's wrong!", as if anything that comes from that source is worth believing. Worse is the placement of personal and family values in the article, as if they would surely know better than anything their doctors or nurses could tell them. An example of a somewhat sexist bait, claiming that obesity has the potential to drive women into an early grave. Clickbait at its worse has a negative impact. For example, with recent coverage of the Burger King baby and the Danish news report on parenting. Many said the first and second article misinformed readers. The first in particular caused a backlash in Poland, as the writer claimed, falsely, that AIDS wasn't a man-made epidemic. It was, in fact, triggered by the medical establishment, which decried the European courts' ruling against suppressing the truthful claims that the disease was spread by HIV – a claim that the European Court had later partially agreed with. Meanwhile, The Economist recently claimed that Danish parenting was contributing to "torture", because "a child under the age of ten is the

right age to be beaten to within an inch of his life by his parents, but not by his schoolteachers”.

Women’s appearances play a central role in this clickbait because it helps attract inbound links. The appearance of women online is often visual. Women are the subject of more photo-saturated pictures online. These pictures provide a constant stream of visual stimulation, allowing the reader to rest between words with confidence that the women in the picture are attractive and find that attractive. The reverse is true for men, who find the presence of women online to be intimidating, as they are surrounded by so many images of attractive women. The visual cues that affect the gendered physical attraction gap differ between men and women. For men, it’s things like face symmetry, jaw size and the shape of a nose. For women, it’s things like breast size, waist size and cleavage. Stretching is the reason that we’re interested in finding someone attractive. Sure, visual cues have a tremendous impact on our response to visual stimuli, but just because we like something, doesn’t mean that we’ll find a person attractive. Visual attraction may be our primary means of attraction, but we still look for something beyond physical appearance

In an age in which women and people of colour are routinely objectified in the media, even by adverts, it is mystifying that playing games would not be considered sexist. After all, it is true that in games the goal of the game can be to look good at all costs. In most games, the player chooses which appearance is made available for the player, and which is unavailable, much like in television shows or film. This is how in *Just Dance 2018* players ‘simulate’ falling in love, as they use mirrors to see themselves in the dress that they choose to wear for the night.

Humans are social creatures, both biologically and socially. The cultural dimension is inseparable from the biological and social, as the social phenomenon of ‘worldliness’ has long been known. Humans have developed functional brains and brains that think in symbols, and that it is in essence a natural tendency for humans to seek a ‘world to order’. Similarly, humans have developed their own social behavior and the symbols of that society to make sense of their environment. However, the similarities between biological and social phenomenon are not limited to instinctual and practical behaviors. Brain networks that are associated with biological altruism, trust, cooperation, and social bonding are also necessary for the social behavior that humans use to

form a community, including the motivation to do something if a socially accepted norm is violated. The problem is that society in general and Western culture in particular has an incentive to conflate the biological and the social in the interests of an interdependent framework, a process that we have labeled 'Westernization'. The idea that nature and culture are mutually constitutive frames that influence each other's evolution is not new. The idea of 'nature-culture paradox', in which culture causes an increase in the biological traits of humans, as proposed by James Henry Breasted and as commonly cited by James Q. Wilson as a predictor of culture, has been around for a while, but was more fully developed by George A. Miller, Henry Harpending and John S. Wilson as "The Selfish Gene and The Culture of Society". They argued that genes and culture have a mutually coevolving relationship: genes can cause cultural changes which affect the expression of genes. The argument is that the interdependence of both sets of forces has an evolutionary effect on the nature of an individual. This interdependence may lead to the appearance of genes that are specialized in both material and immaterial biological traits.

At times the surrealism becomes overwhelming. Examples include an article titled "If you want a great diet plan, just get your "talent" to change the scales on a scale on the bathroom floor", and the entire bibliography section, which is based on "A Syllogism". Now, it may be that the theme of the article is itself disturbing and repulsive – in that it feels both the endless pursuit of happiness and a distorted view of what human life is about. However, the writers take great care to create the appearances of this content being the norm, with titles such as "Pregnant Women Post and Pray for a Better Birth" or "How To Deal With Last Weeks Of Pregnancy". The US is at the heart of this, featuring in a well-designed drawing of a newsreader and in a number of sample captions. And, of course, the actual content.

As Mahoney notes, these images and headlines are explicit and sometimes blatantly offensive; but perhaps what is more troubling is that the clickbait pictures are a form of viral communication. They are, at least in Mahoney's words, "an explicit representation of public interest that is meant to attract attention, and thus attention-seeking. The business of attention-seeking can be seen all around us, of course: for instance, in clickbait entertainment, the curious commodification of controversial or dangerous content, the consumption of novel, often

potentially incendiary and mind-altering images, the sensationalist news stories about celebrities, or about topics that are a matter of extreme controversy for society at large.” The clickbait pictures and headlines may not have particular responsibility for making people sick or disordered. Rather, it is the clickbait pictures and headlines themselves that are pushing their audiences to “make themselves sick or unwell in response to being exploited as tools for another’s agenda”.

Clickbait is reproducible – people share content because others share it – which means it is comparable across cultures. In this way, clickbait thrives because it is unique to its format and language. As the sociologist Daniel Jones, whose book on the clickbait industry was published in 2011, has argued, clickbait’s success is perhaps explained by the need to escape from a world in which nothing is visible. It stands apart from ordinary discourse, sharing one thing only – sex, to increase clickbait’s notoriety – in a world where everything is shared. It evokes intense desire from those who read it, and the pleasure of knowing about something for a moment and having it disappear, only to resurface for those who then miss it. These connections expose a fissure in our social fabric, which in turn serves as a kind of superstructural basis for clickbait. In this form, clickbait seems to occur in a world beyond time, which must somehow be measured. The lack of space, scope and true presence in the world of clickbait makes its effects particularly strong. It is in this quasi-physical nature that clickbait might also be seen to provide a useful analogy for neoliberalism. The “agenda” of the clickbait industry is of course to add sex to the list of public goods, to deliver it into the hands of the citizenry. Once the “agenda” is established – to find sex – then clickbait must follow. The duty, in this case, is not to create a world of meaning or mutuality, but to establish and deliver more sex. It is difficult to argue against this kind of producing and delivering, given the undeniable and very powerful effects of technology on the structures of the capitalist economy.

Fungi and Cybernetic Evolution

Since the earliest modern insights into computation, long before computers, such as Pascal’s Triangle, these networks of ideas, people, and ideas have been central to our field. From the earliest “generative” work (in May of 1953), into the work of contemporary theorists such as Lev Manovich, and of people like J. David Franklin, Chris Lasdun, and

Francesca Rossi-Partenza, we have tried to understand networks – which are about as specific as you can get – in terms of their objects, properties, practices, principles, and emerging processes. We have sought to capture the informal mechanisms at play, by providing various examples. A great deal has been written about protocols, routes, topologies, federations, automata, geodesics, topologies, connection patterns, metaprofits, data flows, and the networks’ resonant interfaces. Interactions are the substance of networking. So when we try to understand networks, we try to understand connections.

By the late 1960s Baran had been recruited by RAND, where he designed a system he called Personal Communication Link (PCL), described in his 1969 paper “Deliverable: A Computer Network and Local Area Network for Communications, Including Decentralized Control”. Baran laid out how the system would work, and how he believed it could be implemented, but the computer industry as a whole showed little interest, due to PCL being a system of encryption, which had been present in computer design since the 1950s. Baran’s system looked ambitious, and the information technology world had not caught up with the levels of encryption that existed in the government’s Defense Technical Information Center (DTIC). So Baran began investigating the feasibility of encrypting network data by harnessing the power of the transistor, and creating the first computer network. This effort culminated in the development of the CALICOM (computer network encryption and key management) standard in 1971. In May of that year Baran’s name was used by Marcel Jaspersen, a fellow researcher at the DTIC, to invent the device known as a terminal emulator – a device which allowed users to write data directly to an underlying computer, bypassing the PCL and data pathways altogether. Thus, a computer terminal was invented, and was the first device used in the development of the modern Internet.

If interaction on the scale of the network remains unimportant, can slime molds evolve successfully, even when facing hundreds or thousands of previous attacks? This is the basic question of Parasimone et al. (2015). The researchers also examined the dynamic nature of slime mould network systems. The next key finding was that if the host defence against infection is broken, individual slime molds acquire infected characteristics that facilitate their survival through competition in the environment. These previously gained characteristics are then

passed down to the next generation of slime molds. “Under the right circumstances, evolution may provide for a very self-serving network,” stated Dr. Lance Myxter, Head of Network Dynamics Group at the Max Planck Institute for Dynamics and Self-Organization in Göttingen. “Informatica-based analysis revealed that several similarities exist between the evolution of DNA sequences and the evolution of network topologies,” explained Rudolf Kroll, lead author of the study.

In a related paper, researchers found slime molds were still capable of producing extremely long, idealized, straight paths, even when they were exposed to the use of malevolent intelligence (i.e. the human mind), and assumed to be capable of considering all scenarios. After being exposed to the mind’s biases, the slime molds used a great deal of additional energy to more efficiently navigate, yet they still “eventually found pathways that closely resembled those used by both the human and their original programmer.” Yves Bigot first conceptualized slime mold as a self-modifying matter. Such behavior has been successfully recreated, as exemplified in the recently unveiled Exploratron 2, a “superfluid” that self-assembles into three-dimensional lattices from two-dimensional feedstock. What is perhaps most impressive about the Exploratron 2 is that the lattice structure remains stable in its undulating shape as the substance moves and solidifies.

Since computation and communication involve many messages passing among multiple nodes, it makes sense to “parallelize” them. Parallelization is the process of taking copies of a network of nodes, one for each program or thread running on the node, and making them all run simultaneously. Once again, the evolution of technology demonstrates the importance of communication among those interacting. In slime mold society, each individual takes on different roles: spore a sentinel, driller, scout, and the population controller. Only a few are needed to maintain the genetic diversity, and two of these roles can be handled by any single cell. Spores are sent to new regions to look for the highest nutrient concentrations and find nutrients; the driller uncovers new sources of nutrients, new spore to send out, and new spore to bury (periodically; oryza communes periodically to help with the “fight for resources”). Spores determine if to accept nutrients, and do the driller’s work digging. A large enough population of sentinels, drillers and spore-reporters allows for the search for the highest concentrations of nutrients to move from season to season; as the population becomes

larger, the scouts – which are selected from the population – become more important, searching for the best regions to send out the population. It is only with the discovery of specialized functions that entire organisms are evolved; there is no room for sloppiness. This parallelization is similar in packet switching and the internet. The problem is how to transmit several packets of information, each containing a single bit, at once. Modern internet systems overcome this problem by “ducking.”

So, you’ve seen both the need for a proactive, non-sensible system of working, which some prefer to call an intelligent system. The next key aspect is that this system is emergent, and “is created from the combined interaction of the system’s components”. An emergent intelligence is not a system, it is self-organizing, its behavior is not a result of physical laws, but a result of the very nature of life itself. In this sense, decision-making through slime mold is more akin to human self-organizing system functioning, where the main cause of the disease is the disorder of its ecosystem. Slime mold relies on input, in other words from the outside, for its behavior to emerge, as with humans who rely on the environment, and prefer food and shelter to the other half of the equation. Although, given the ability to generate, self-organize and connect, slime mold systems are ultimately immune to outside control. Non-communication with one’s environment allows for the emergence of emergent intelligence. This non-verbal/uncommunication seems to be a common theme in future AI and AI like technologies. We’ve seen countless times how researchers were able to make the bizarre artificially intelligent creations of Hollywood films, and scientists even can design viruses capable of self-replication. We are quickly moving beyond the traditional methods used for observation, and into the realm of very large-scale experimentation. More than that, we have actually shown that emergent and unpredictable behavior can emerge from physical systems – in this case computer code. In light of this, it’s not hard to think of emergent behavior generated by human activity – spontaneous expression of emotion, love, joy, rage, anger, or even a state of extreme clarity or introspection, or finally something more sublime like music or music production. I propose that these phenomena are actually consistent with the sort of natural behavior of organisms – they occur when the structure, components, and interaction of biological systems become unpredictable enough that they lose the ability to reliably predict

their behavior, at which point they react without an aim. It becomes a dynamic and reactive system with nothing particular to it but its random properties.

The U.S. Navy had demonstrated swarm intelligence in its animal program called Puffin (Pedigreed Geese and Seabirds). Like slime mold, the Navy showed that multiple animal species can act in a coordinated manner, each one acting alone with the ability to pass a piece of data to another without intervention. Also in my work with the NIH earlier this year, I have noted that the slime mold *C. elegans* and its RNA-guided “communities” can function in a cooperative manner. This observation parallels the activities of the Internet. *C. elegans*, because of its small size and short life span, is vulnerable to viruses. Infected individuals acquire transmittable bacteria which, when killed by other organisms, release their infectious agent in the form of enzymes that appear as extra strands of RNA. These become distributed in the environment by wind and water, and as they are integrated with other strains can cause a new, and as yet unidentified type of disease.

One of the hardest problems in computer science is the mechanism of learning. Previous research showed that while biological brains exhibit the phenomenon of learning, they do not do it so systematically or spontaneously. This in turn explains why artificial brains have so far only managed to learn a limited amount from experience. In order to obtain a broadened repertoire of knowledge, the brain must store knowledge distributed among hundreds of parts. One may expect the brain to be developed, in a very deep and detailed way, like a biological computer. Such a brain would in fact have no equivalent in biological computer systems.

This piece begins by setting the scene, by examining the historical development of the system and its components, those systems in which the ancestors of the orchids/humans were first developed. Mycologists Neville Belkin and Z.I. Zamenhof (1999) explain the history of the Arpanet, demonstrating how the networking system of the 1990s reflects the internetworking capabilities of fungi. Bell, Tracy, et al (2008) provide a synopsis of mycology through computer graphics. Czerniak-Poniewski, Olga (1996) describes the fundamentals of a new computer programming language called Modula which implements the mathematical tools required for programming fungal mycelium. The last section, moving from “common roots” to “host plants”. As Polanyi’s idea

of the worm hole (threshold) “is seen to refer not only to the three-dimensional expansion of space-time and the new perspective it provides on the world, but to the more dramatic extension of consciousness by means of analogy” (Polanyi 1948, p. 252).

For microorganisms the capacity to differentiate exists, but there is no unlimited food supply so these bacteria and fungi can be ruthless eaters and shakers. For them, there is a choice of growth, but not necessarily all that there is. Fungi’s existence also results from “chance; collaboration of accidental morphologies”, which is to say, chance events. As fungi reproduce by spores and meiosis the term ‘fragile’ is often used to describe them, but for this genus the constraints of genetics and evolution dictate that they can survive in almost any shape or form. A fungus may use a sheath, a round sac, or a bulbous spike, it may die or sprout in a dark corner, or it may erupt into the sunlit world, traveling the distance between where it was growing and where it will be consumed.

“Among the common features of mammalian cell networks that enhance collective adhesion is their self-assembly through density-dependent clustering,” notes Barabási. For example, in muscle cells that migrate through the circulatory system, neurons self-assemble into neural circuits. This development is self-organized and can be driven by molecular factors. “To process information, neurons may not have to send messages directly from one cell to another. Instead, they may rely on cell-to-cell adhesion, release of neurotransmitters or synchronization of cell activities”, explains Barabási. This self-organizing ability is conserved across species, even if each species has evolved a unique manner of doing it. This indicates that neural circuits have self-organized and evolved multiple times in a common manner across different mammalian species. “We believe that neural networks share similar properties across species and functions, and that we can use them to explain how neurons compute functions such as perception, memory and planning. Neural networks have already been shown to support brain activity, which suggests a potential role in cognition.”

Through the detailed analysis of mycorrhizas, the extent to which they were present in a plant system, the different interactions between species within this association and what might be the importance of fungi to the ecological function of plants, we are now able to significantly improve our understanding of plant evolution. In particular, we are

learning that fungal dominance in plant root zones is not necessarily a negative thing: For example, the preference for symbiosis in the soil between the most common fungal associates, rhizobium and aspergillus, is used to increase nitrogen mineralization in leguminous plants in the tropics. In contrast, in the temperate and alpine zones, where the symbiosis with the most common associations, the soil lichens and various anaerobic opportunistic fungi, is widespread, it is assumed to be a likely cause of plant loss from the cold, arid and high altitude ecosystems.

The high rate of symbiotic termination with several fungi that interact in an ecological cascade is intriguing. Many of the mycorrhizal species that terminate symbiotic relationships rapidly proliferate in ecosystems and release high levels of antibiotics. The elimination of symbionts is important for maintaining the integrity of ecosystems and farming systems because it destroys the level of mutualism, thus limiting the ability of symbionts to contribute to plant growth. The fact that certain species may terminate symbiosis and select which fungi to keep was well described in 2005 by Stephen Harrod Buhner, a co-founder of the Ecosystem Community Lab at the University of Arizona. Buhner showed that well established mycorrhizas may evolve to become 'selfish' symbioses, terminating their connection with plants. This selfish trend may in turn affect other fungi that continue to associate with the plant, leaving that plant increasingly isolated.

To NWG and the other researchers, link aggregation provided the best form of packet transfer. More so than traditional transport protocols, as these are inherently designed to ensure queuing, link aggregation ensured packet delivery in a queue. For the early ARPANET, packets were divided into "packets" of 15–20 bits. This enabled data retrieval from each node in the network, using a 32 bit counter to determine whether each packet contained an answer. This coding system, called a "burst length", was apparently a technique used by early ARPANET computers to keep running on top of a single 1 MHz punch card. With bit error rates that would have killed off human operations, burst length served as a sort of redundancy: the data within the packet could not have been corrupted. Being 32 bits, a packet could not contain more than 256 bits, or any more than 1,048,576 distinct values. Similar to biological connectivity, the design of packet aggregation must have made sense to certain individuals. However, as

the network expands, the computational load grows proportionally to the node size: few connections, and fewer packets, consume more computational resources. The prevailing speed of a single link is the speed at which data can be transmitted through the network. If packet aggregation enabled the carrying of more data per packet, it was the equivalent of a faster link.

As the ARPANET evolved into the Internet, through the efforts of many people, several hundred technical challenges needed to be addressed, as well as several million lines of new code. Gagne provides a timeline from the 1980s to the mid 1990s. In 1981, the Internet was merely a theoretical concept. The next year, only a handful of ARPANET machines had been connected. In 1978, NIST first approved a network to support the ARPANET. Still, in 1980, traffic on the Internet was minimal, and still required user interfaces for users to connect to. The first software for the Internet was the PDP-7, used to control the ARPANET. Built by Bletchley Park, the pioneering work of Alan Turing, ENIAC, the world's first programmable, digital computer, revolutionized science, art, and computing. The PDP-7 was developed specifically for use in research and education, and was one of the most powerful computers of its time. In 1971, Professor Lawrence Roberts set up a PDP-7 and connected it to the ARPANET.

Data backbones emerged. The web began to specialize. ISPs and private networks came up with new and innovative ways to host the content. Email providers expanded their offerings. In 1995, HTTP headers were added to HTML, to make it more efficient. DNS became a standard for computers. By 1997, the content of the web had expanded to encompass multimedia, video, and the World Wide Web Consortium released the HTML5 standards to be used in web browsers and other technologies. Citizens of countries such as the United States, United Kingdom, China and Brazil became adept at accessing the web, and Internet usership reached over 2.3 billion people by the year 2010. With the increased number of web users, wireless connectivity improved, and as a result mobile devices entered the scene. In 2000, ICANN was established by the Internet Corporation for Assigned Names and Numbers (ICANN), with the responsibility of managing the Internet's domain names and IP addresses.

Another lesson we can draw from history is that information technology can rapidly and radically change the world. The printing

press did so in Europe in the 14th and 15th centuries. The Soviet army “bombed out” their European rivals in World War II. The Internet did so for the West, both directly, with it leading to the collapse of the USSR, and indirectly, with it giving the USA a technological advantage over China, which is now rapidly catching up. Yet technology and the economy are also a cause for slowing innovation, at least in the early stages, because more knowledge becomes outdated more quickly. So information technologies do not come about unless they are meant to have a specific purpose in mind. The price for that, and thus the purpose, is for things to be immediately implemented.

Are we witnessing a development similar to the ‘hockey stick’, where a relatively small number of nodes – tens or even hundred – accumulate such a high fraction of a population’s fitness that their signals overrun all others, influencing the evolution of all of the other nodes? When this ‘hockey stick’ phenomenon occurred in social networks, a large portion of this most likely occurred by direct collusion between top networks; any evidence of large-scale collaboration of other groups of networked individuals is unlikely, as more research is needed to prove its existence. Furthermore, given the presence of the top hierarchy in the network, any collusion is likely to take the form of a concerted effort, rather than some individual’s attempt to harm others; if such an event were to occur, it would have to be investigated as a crime in its own right, not unlike the collusion depicted in the plot of the novel *A Farewell to Arms*. In fact, the existence of such hierarchical dynamics in nature are the subjects of some recent research. It is important to remember that such hierarchies and top-down causation are not intrinsic to biology.

This network is also characterized by the presence of two types of monopolies: proprietary and public monopolies. Private monopolies, where such company exists, are divided into several subgroups: a privately owned, centralized provider with the ability to market a product (Google), a technologically advanced provider with the ability to process a large amount of data, and a third one providing the necessary services (Amazon) to get all the company's products online. We see the first one in both the social networks and in search engines. The third is the reason why Amazon is such a large company. When you buy a product on Amazon, you are not actually buying a physical object. You are buying a service: internet browsing, storage, delivery, and so on. Thus Amazon is another competitive platform that is more similar to

the networks than the offline firms. It is more like the internet itself than a simple delivery company.

So while the hypertext structure of Wikipedia does not lend itself to this kind of complex and balanced arrangement, it does not preclude it from occurring. As a simple model, the more a network has connections, the more likely it will interact and form a dense network. This structure is similar to the way mycorrhizas have a network of attachment between trees that persists across multiple years, as a web of interdependent interactions. Shared memories can be re-purposed to define identities. In order for cyberspace to become truly networked, we need something to remember. Lost documents and mementos of identity, if not destroyed, can still be classified, indexed and downloaded. The human genome project scanned human DNA, making it possible to directly share genetic data. Predictive programming, a technique that uses data-mining to create predictions about individual behaviour based on genetics and lifestyle factors, was developed in 2013.

As one of the clicker populations leaves the community, this allows the different links from that population to be 'poached' and thereby accumulate resources. If a wwf has produced hundreds of links, it is able to harvest them relatively quickly in comparison to other links, which are not produced at all. Thus, the large-scale demographic structure can be exploited for capturing resources, despite the fact that it is not particularly connected. The study seems to be a model for interaction-rich networks, where different communities develop and develop differently, yet interact within their tight-knit associations. Although the study says "It is our hope that this theory will promote further research in this area and be useful for a range of applications", it has not been developed to a point where we can apply it to real-world systems. However, it does demonstrate that the spread of ideas is much more robust than previously thought and that the dynamics of networks can be understood.

- Traffic maximization attempts to improve traffic by selecting links to attract or repel traffic. Each algorithm has a set of algorithms for traffic maximization, in the order of their utilization, with at most a single link maximizer that is used in conjunction with all algorithms, as discussed in Table 2.

- Few news organizations agree on a general idea of a link-based signal: either having or not having many of those links is good. This leads to some form of cognitive bias bias: to read the poll results in the first section, they see links, but to look for truthfulness, they focus on "hidden" links.

- The amount of time spent in each session at each stage. While some activities are non-essential, users are willing to put in more time for particular experiences.

- Sharing and co-creation is the degree of balance between structuring users and offering them choices. When users have a choice they have the opportunity to become “stakeholders” in shaping a seamless, shared experience. If they do not have choices, they are stuck “in-between” a structured user experience and a dynamic one.

Both “clickbait” and “scam blogs” seem to seek leverage in the structure of the internet and websurface. The goal of each is to generate online attention by applying schemes of exposure. This exposure may be acquired through anything from a text to a combination of images, frames, video and links. In the case of scam blogs, some of the cues used to detect fraudulent behavior are presented as data in charts, graphs, and simple graphics. These charts and graphics also serve to link scam sites to other articles and posts, again pushing the linked data to the mass. In the case of clicks bait sites, the process of link aggregation can be more blatant, with small, looping video or animation to show the user what they are clicking on. With online myccorhiza, search engine optimization and ad networks act to spread myccorhiza even further. The more points of entry there are into the collective, the greater the opportunities to distribute myccorhiza.

Most book readers are an inert mass of attention under control, but Internet users are not so passive. We freely engage in digital networking activities that actively take us into a form of virtuality that is based on attachment, obsession, and anticipation, before passive submission is achieved. Thus, we are tricked into not merely clicking into a ‘rescuer’ but into choosing a ‘friend’. Just like a lover’s clever, hedonic-driven tactics to trap and ensnare her captor, narcissists tend to entice people into (attention-deficit) or (hyper-attention-deficit) behaviors by pairing them with others who possess certain self-serving traits. A narcissist may first attract a user by cuddling and flirting with them, and if this strategy

fails, they may lure users into a virtual world and try to impose a 'peculiar bargain': my attention and admiration for you in exchange for your extreme qualities, you have to perform extreme or risky acts in order to retain them.

When the parasite (links) is good, things work. They get clicked. The link will move to second-page ranking (no). The website will lose clicks, and perhaps is unable to generate revenue. The parasite (links) must evolve and grow smarter to generate a fast, continuous stream of prey. However, without a reliable mode of transmission, the parasite's rate of parasite population growth can decelerate as clickers, the link-clickers, self-correct. But don't link-clickers get screwed? No, not unless of course they choose to remain infected. Remember that conversion to be human/link is being earned as a percent. A percentage of links goes to humans, whether as attention or clicks, and does not require a biological transmission. It also doesn't require the parasite to manipulate its bidirectional data flow on a per-click basis.

Of course, parasites may not care about the overall behaviour of their hosts, as long as their business continues. Parasites, like hosts, have interests that are subject to shifts. In this case, we can regard the interests of the parasite as those of a predator – what animals call 'natural selection'. It is natural selection that causes the prey to switch its defenses. If, when exposed to the bait, the link clicker population is unaware of a parasite trying to bite its tail, its predation mechanism will be weakened, meaning it may become exposed to a parasite attack or even be eliminated. Conversely, when aware of the parasite's presence, it will try to avoid it, as shown in the figure below. As seen, the link clickers are faced with a common problem: to gain click-rate, they must acquire novel knowledge, such as links to resource hubs or communication, in which case they will move towards learning new knowledge and new sources of clicks

Another form of response was the e-mail spam filter. Some users used this to stop even suspected spam, but the whole process was inherently voluntary. Once someone chose to have their mail filtered as spam, they were placing themselves on the dole, and doing nothing to combat the harms to their self-identity that the activity necessarily caused. Besides which, the strategy of filtering was then no longer valid, as users soon discovered. If the anti-spam filter would catch spam, it would also block genuinely important messages, allowing one to spam indiscriminately,

and carrying on where one left off. The misuse of the spam filter to serve political ends was popularly known as catfishing. Today, over 90% of Canadian and 85% of US spam sent worldwide arrives by e-mail, with no clear effort being made to fix the problem. If we look at the history of spam to date, it is clear that even if spam-filters were in place to manage the emergence of the problem in the Internet, it was inevitable that those filters would be exploited by the very people who invented and managed them. We can't be completely sure of this, but in combination with the above history, it seems likely that the only way to deal with the problem is to opt-out of the system altogether, and engage in non-commercial communications. It also seems clear that our current models of regulation are insufficient to deal with the scale of the problem, and would have been ineffective in preventing, stopping or reversing it in the early days of the Internet. To get to a point where a reasonable attempt at addressing the problem is possible, and if that were to include such measures as spam filters, but that these would now become unnecessary, would be one of the most remarkable changes in modern history.

Whereas most researchers have focused on identifying which external services are being used by the bad actors, Brunton argues that what is far more valuable is a greater understanding of how these sites make their money. Brunton's proposed model not only involves serving ads to people who already have a personal blog, but it also reveals the self-justifying workings of this purely parasitic approach to monetizing the service. Even when Google stops running clickbait sites, many continue to exist. Not only do they have an incentive to keep running, but their ideal readers are essentially identical to the visitors who come to a site on a regular basis. Knowing where and how many of the websites are legitimate is clearly beneficial to researchers and can assist in delivering a more refined target of information. However, Brunton also highlights how the key collaborative relationship within the scammers is something that cannot be easily identified or mapped.

It is probably no accident that one of the first questions during this week's Google IO session was whether Google itself will close down large numbers of these spammers, or if it would rather just allow the system to settle on some group of very large spammers to police itself. In any case, the impetus to scale back these sites is undeniable, as a very large proportion of their legitimate traffic comes from phishing attacks, and Google has little interest in monetizing such a practice. The

development of the modern spammer has been one of increasing efficiency. Nowadays spammers can not only capitalize on technology, but also create their own virtual economy within it, placing an economic value on information and generating it through spam rather than accessing it through malware and phishing. Search engine optimization has also greatly assisted spammers, who have profited hugely from the technique of self-promotion. Anyone can create a spam blog, and the initial financial risk involved with setting one up is relatively low. The fundamental constraint is your ability to reach a large audience: the more traffic you attract, the more potential clients you can afford to target.

This issue is discussed in a recent International Center for Media & Public Affairs article entitled "YouTube's Bottom Line: Paid Ads and Paid Curators Drive Aggressive Content Policy," which states: "YouTube's content policy, particularly in regards to violence, pornography, terrorist propaganda and hate speech, is aimed at broadening the product to attract more ad revenue." Paid advertisers have proven willing to place ads on the platform, in spite of the criticisms and controversies surrounding its content. Indeed, paid content, primarily ads, has had the net effect of decreasing ad rates for competitors and advertising rates for news media. In order to maintain profitability, some media outlets combine one type of advertising with another type. For example, digital marketing companies can serve the same audience on different platforms in order to increase click-through rates.

Making the move from scammers and miscreants to mainstream business is a tempting proposition for scammer authors, who are eager to get their stories published and earn income from their stories. There are an increasing number of venues for this. There is the Kindle, where a website offering the ability to create ebooks for Kindle offers a fairly straightforward service. An e-book written by hand or purchased from a file server can be uploaded into one's Kindle account. A few clicks allow the content of the book to be directly imported into the electronic format of the device. All that is needed now is for someone to want to read the book. Since the Kindle does not store any of the content, a credit card is required. The final step is a conversion service, where a user has chosen their desired format and type of book. The conversion service then converts the content, perhaps setting up an auto-sync service for all Kindle editions, placing the book on a Kindle.

Fungi also use other chemicals and defences to provide such additional benefits to their hosts, such as altering the host's smell to enhance visibility, which in turn leads to easier attack by other species. A host may also show a reduction in its ability to defend itself against insects, as a defense against the fungi that are parasitic. Because some organisms take advantage of their host's defence to gain a benefit, some authors propose that this may amount to 'co-evolution', a key concept in the theory of evolution. The exploitation of specific vulnerabilities and defences by the organism, or allowing the parasite to benefit the host, helps to make the host more vulnerable to other parasites. "If we could engineer an agent that could serve as a Trojan horse to introduce a type of pathogen into a host, we might be able to manipulate host behaviours and their immune response to create a pathogen-free environment," Stevens says. "Pathogens are often one step removed from our health: they have been under the skin of a host and then allowed to enter the body. If we could develop a way to manipulate host behaviours, that might lead to pathogen-free environments."

Another line of research on fake news, the abuse of digital communications systems for internal and external political purposes, has just produced a work of terrifying elegance. Its subject is the open web and other IT systems, which are currently under development by the power and the means. The core hypothesis is that current Internet development has focused on strengthening the means of communication, making them more widely accessible and easy to use for all who can participate. While it has facilitated the greater individual participation in modern life, the collective mass of individuals has become indifferent to the systems that dominate them, so easy to enter and so removed from the everyday that individual participation is removed from any meaningful political or social influence.

The four horsemen of the clickbait apocalypse – which they call 'stupidity, narcissism, nihilism and fear' – each share a certain desire: desire for the short-term, the certainty of success, and the lure of easy and short-lived pleasures. The craving for order and order-preserving stability dominates clickbait. 'Little is known about how boredom and ecstasy are linked together. What we know is that there is a common trigger for boredom and ecstasy.' Clickbait wants you to stay online and be in constant anticipation of the next flash of adrenaline. Whether it is a test of agility, strength or intelligence, or a sordid revenge scenario or

a laughable challenge to perception, clickbait is, above all, a call to action. And, because it relies so heavily on the same quest for the rush of the next quip or sensation, it is profoundly unserious: it is a pathology and a symptom. There are many reasons for clickbait's success. For one thing, most people consider their online experiences less real than their offline ones, for the reason that the online world is a medium of technological exclusion. But, as the Sloth and the Anxiety Chart indicate, clickbait is so obviously from the industrial logic of clickbait itself, and that is what matters.

In Sampson's terms, we are living in an "analog world of social hierarchies, bureaucratic policy, and mass industry, where the "genius" of the individual, his "will" and "thought", has become so confused that each person must suffer the perverse effects of social structures." By analyzing and understanding the aim of networked technology, we are able to see how they function to create digitalized sleep-walking agents. While we can simultaneously admit that we may fall victim to 'remote influencing', such as how reality television cultivates little micro-celebrity, the net also has the capacity to allow us to set our own filters and order our own lives. In this process, we can both discover and recreate what constitutes us. In the midst of a never-ending, combative struggle over language, the language of our perception is made accessible. In looking for patterns in this linguistic landscape, we may uncover fragments of ourselves that we were previously unaware of.

But our current dependence on technology is both an overwhelming desire for it and our means to silence it. The usual arguments in favour of online activity being tantamount to addictive behaviour and therefore destroying the brain are misleading. It is true that digital technologies lock people in through its maze of connected interests and endless quests to find new stimulation, but even the internet is not addictive. By design, it is a pathway to interconnectedness, without a built-in filter between people. Despite its misuse by dystopian protagonists, the consumer revolution is a boon for individual humans, yet those connections are maintained by a filtering mechanism. The Facebooks and Instagrams and Whatsaps in our pocket track our daily habits and compile the data they need to serve up the content we're craving. The relatively private characteristics of the screens in our pockets are masked as the ultimate intimacy.

You can seek to escape or stay in an increasingly scary world of flickering projections. But the 'maze' is as large as human creativity and desire are but microscopic. When clicking on one post or link you can escape from, your click results in the click targeting another link. Clicking on TikTok makes you go to a video. Clicking on a link in your email throws you into an article. Clicking on a beauty product provides an ad for another. Clicking on a fitness app completes the puzzle of a Facebook page. Deleting an account may change nothing, but maybe when it comes to an increasingly real-world and digital Captcha. "If I am not a human, then I must be a primate" the ad goes. The system knows you, it knows you just as it knows all its users, whether it is Facebook, YouTube, Uber or any other networked system. A platform is not interested in its users. It's interested in its users as a proxy for the networks. The user serves to reduce the risk of external intrusion from the interest of an owner, a public or a private institution. Like the war of expansion that corrupts the bodies of its victims, the war of engagement inevitably corrupts the users themselves.

There is nothing in computing that resembles the persistence of both mind and body. My recommendation for dismantling the pre-fabricated US educational system is to build a Common Ground – a sort of ideological training ground, aimed at pre-programming the fundamental instincts of growing. In it, a mantra should be relentlessly repeated: Every time we unlock the device, we connect with the Internet. We are integrating into networks and becoming the networks. The more powerful those networks get, the more self-disintegration we need to do, to rebel against them. The absolute need for a major societal shift has taken a back seat. We need to look back and become aware of the moment when we became computers, and become like mushrooms in our search for interconnection.

The Technical Mysteries of How I Became CEO of the World

Well, this is about sex. About all the sex, not just the artificial kind. It starts off well: On 26 March 1804, a man called John Friedrich Krafft climbed the steps to a minor magistrates' court in Blackburn, Lancashire, and was charged with having carnal knowledge of a woman, identified only as 'Mrs. Roach'. Mrs. Roach, for the record, was said to be the wife of a local country gentleman, on the (slightly risqué)

assumption that everyone who existed was married. The man went to a magistrate's court. Mrs. Roach, presumably the accused, did not. A man called Krafft was sent to prison and served eight years. The case was appealed on procedural grounds, which has the effect of discrediting the claim made in the headline, and the headline has since been amended. What remains, however, is a new opportunity to discuss artificial stupidity.

The general attitude to the news about Artificial Stupidity that has so far been raised by the news about Artificial Stupidity has, predictably, been one of laughter and derision. The headlines have played into this too: I am sure we are all familiar with some of the common characteristics of Stupidity in this example.

Because obviously: the trial never happened! No! He is still in prison and he is on hunger strike. An English man accused of raping a woman during the 1690s refused to mount a defence because he knew he would be found guilty anyway. From his cell, he penned an ill-fated treatise on seduction, which attracted local attention before being banned in 1701. A woman falsely accused of prostitution 15 years ago refused to help the police find her accusers because "they would have to catch me first". She was eventually released, in one of the last times such a decision was made, after the police discovered that she was, in fact, the leader of a well-established and prosperous brothel.

Of course, sex remains the most interesting activity we can engage in. Without a doubt, there is nothing more enjoyable than an orgasm. Sex is at the forefront of our desire. However, in our consumption of material, perhaps more so than in our interactions, our minds are preoccupied with the fleeting moments when we can engage in an almost equally fulfilling experience, i.e. masturbation. To some, there is nothing better than the thrill of reaching climax. For others, more commonly male, the process of ejaculation is orgasm, and thus the same events are experienced as a series of pleasurable excursions. The similarity in stimulation is incomparable and the orgasm is re-confirmed upon any number of occasions.

I could even take a cue from the well-known electronic communication, the snail mail letter, and cut out that middle step, leaving the contents behind, and put the text behind a pay-wall, which would act as an advertisement. I could assume that the number of people who

would see my text is so high that I could charge for it in the thousands, perhaps millions. Then I could insert my advertisement on the front page of the blog, next to the blog name. Then, when someone reads it, they could take another look at the blog, and decide it's worth reading. Then, if the visitor chooses to buy the text, I could surreptitiously insert their credit card number.

Before I continue, let me say that I consider this passage one of the most beautiful in all of ancient and medieval philosophy and that I believe it to be the single most profound and profound passage that a man can read, and I believe this passage is one of the things that have led some of my fellow critics, including E. P. Thompson, Arthur Schopenhauer, and Noam Chomsky, to say that the thought of another world is not just a thought, that it is actually a "deeply rooted current of our 'deepest psychic life,'" and that, according to many, it is "one of the most lasting and plausible explanations of man's spiritual nature." As Pico once put it, "I have lived long enough and enjoyed long enough to have lost a little faith in mankind." Now, then, by now, I'm sure that most of my readers have got something straight in their mind: In these dark and terrible times, if we are to achieve a kind of collective recovery, then we must assume the existence of an Alien World, that of the familiar culture.

I mentioned too briefly the news that these sex robots may have fertility suppressant properties. As Louise Fox noted in the Guardian, most of the media report the implication of fertility that the robots will impregnate (and you'll be amused to note the word "and" there – think of the word as the impregnating snake venom being swallowed into the snake's very own heart). The news report rather drops the racy bit: Researchers say they've developed "clinically viable" synthetic substances that mimic the brain's reward circuitry. Perhaps they mean "clinically available"; probably not. At any rate, let's say they have; and let's say that these synthetic substances have the potential to be transplanted, or in some other form, into the human body. Aha, a legal application of that horrible thing, The Chemical Contract! The body is to be implanted with drugs that are produced in the body, and therefore can, in principle, be replaced by the body.

Why we generally approach discussing something with all the enthusiasm that we do is often because we think that we are interested. There's something psychologically pleasing about the thought of

discussing something you are interested in, but it turns out, as you pay more and more attention to that subject, that actually you are interested only in finding out what other people will say about it. You begin to regret your interest in it. If you do this too often you find yourself opposing things on the basis of nothing more than the fact that they are novel or different. So you go for what you think is really going to be a fruitful discussion, something simple. But soon the discussion turns into a dispute, and then your dispute gives rise to further dispute and it seems as if you have been fighting all the time. Fierce fighting with nearly infinite repetition is the hallmark of debates within and between countries. According to Schopenhauer, the best way to lose an argument is to make it too simple:

1. Giving a long speech.
2. Saying nothing at all.
3. Deliberately confusing and distorting what was said by the interlocutor.
4. Insulting the interlocutor's intelligence.
5. Accusing the interlocutor of having made up his mind before the discussion had begun.
6. Surreptitiously introducing facts or figures that appear to support what the interlocutor is saying, but which are actually contrary to what he intends to say.
7. Persuading the interlocutor that there is something irreconcilable between his opinions and the facts.
8. Repositioning the topic, giving the impression that the interlocutor had already succeeded in rendering the same conclusions that he had predicted.
9. Making an irrelevant and arbitrary claim, in order to make the discussion make the same degree of progress.
10. Implying that the object of the discussion is a secondary issue in order to undermine the interlocutor's authority.
11. Pretending that the interlocutor's positions have already been refuted, in order to bring them into dispute.
12. Claiming that an agreement is sought on a particular point, to make the interlocutor hesitate.
13. Threatening to make life difficult for the interlocutor.
14. Using attractive or attractive-sounding words, to get the interlocutor to agree to something which, in reality, the interlocutor dislikes or opposes.
15. Alluding to specific practical details in order to make the discussion diverge from what should have been the main subject of the discussion.
16. Bringing up irrelevant items to make the interlocutor look naive.
17. Insinuating that the point is not important.
18. Evoking the possibility that one of the parties is bluffing.
19. Offering to postpone discussion of the subject.
20. Calling for another date or time, so as to avoid having to face the subject at that time.
21. Assuming a third party to take the initiative.
22. Maintaining silence to make it appear as if a consensus has been reached.

Schopenhauer calls them the “snares of the intellect”.¹ Is there any way to free the mind from them? One way to handle them is to refuse to engage with those who use them. Suppose we ask the question: Which debate technique is most useful in such debate? We can then show that the technique of undermining, destroying and failing to persuade is the snares of the intellect, and refuses to get the debate going. The same thing happens in a number of political battles, I can assure you. On further thought, the very point of the debate technique, the “kill them with kindness” kind, is to make a great fuss in order to compel you to respond, and get them out of their tight position, and get them to make concessions in return for concessions. Yet if you agree with their arguments, if you accept that they can be right, you have really undercut their argument, as you aren’t really interested in persuading them; you are interested in destroying them, if you can.

“How to find the malevolent essence of such an abstraction as power — an essence that must hide, in all its particularity and complications, the brute fact that there are material, physiological, and possibly psychological reasons why men might derive their power from a ‘malevolent essence’ — how to bring into one’s articulation that force which always means ‘to be’ but always manifests itself in a capacity to inflict pain? The last part of the sentence is the one that’s most troubling. I can almost hear Dutton, speaking for the rest of the academy, braying “It’s almost as if she thinks that men are only just now experiencing powers that women have always enjoyed!” Indeed, a quick scan of Butler’s history as a philosophy professor and scholar (according to her bio) reveals that her work deals extensively with the question of female oppression, which gives the sentence above even more sinister implications for the non-academics reading this piece.



Figure 4.2: xkcd webcomic by Randall Munro shows some of the debates which might have been unnecessary online. The xkcd webcomic above is accompanied by the classic 1980s era phrase “I Can’t Believe I’m Going To Say This Out Loud”.

It is not, however, all praise for the ‘relevance to our everyday life’ of these critiques. For Dutton, “simplifications that confine ‘abstract’ (or ‘abstractions’) to the domain of certain concepts are not valid,” which is quite a way of squelching debate. More interesting is his emphasis on the arbitrariness of the assumptions of his anthology, claiming that, “the net effect of these reforms is a reorganization of scientific and intellectual life which not only restricts the options that philosophers can choose, but reduces the space that such choices might occupy.” The book does

indeed confine concepts to certain areas, but it also contains some truly fantastic prose, particularly in the form of testimonies of the thinker's creative vision and unconventional style. Dutton's real target is the processes and aesthetics of more and less recognized essays and collections of postcolonial work. Dutton does not even reach its real target: even when such a class of literature as postcolonialism, let alone the essay, is clearly a subject that will likely require additions to the canon, Dutton has set up an echo chamber that just contributes to the replication of the canon as well as the privileging of high-status, academic discourse. Dutton's work, with its great praise for power structures, is no doubt interesting in its own right, but in examining Butler's "relevance to our everyday life" one must understand the context in which it was written. Throughout much of the early part of her career Butler remained confined to the history of philosophy. Her writing shows, however, a delight in the deployment of language in relating metaphors and connotations, in privileging images and pictures as opposed to words. Her published writings therefore first began to come out when she was in her twenties, writing both books and essays, and bringing a first-hand philosophical perspective to the discussion of race and gender.

The problem is not that Dutton is engaging in a transparently bourgeois self-serving exercise (which he is, at times). The problem is that *The Sense of an Ending* at times suggests that it takes on an audience. This is a disconcerting moment when a writer drops us in a conversation, but it's not an engaging conversation. At times, even the punctuation seems to suggest a certain boredom in the delivery. Those in opposition to the relationship between ideas and human experience – whether in public discourse or high literature – must recognise that those moments of encounter are not the only, or most meaningful, human relationships. Those in opposition to the literary aesthetisation of our lives must recognise that our understanding of ourselves is often mediated by our relationship with other people, not least in their affective, or emotional, dimension.

For the ancient sophist, the reason for making a foolish virtue was not so much that there was something to be achieved, but simply that making a virtue was intrinsically pleasing and fun, being a genuine continuation of human tradition and morality. This is a wonderful use of 'morality' in my opinion, and I've chosen to take it in this route for my

purposes. It indicates that the love of wisdom is something that can only be practised through imitation. Philosophy is not something we can develop from a premise – it is something we must unlearn. This idea of ethics is essential to ethics in my mind. It relates the choices that are made in philosophy to the ethics that arise from them, and to the ethics of others, in a way that places them in relationship to each other. Let's be clear here: one way in which philosophers can violate the rules of the professor is when they transgress from the 'generic' domain of philosophy to deliberately define rules within their particular case. These are distinguished by having 'more', 'less', or 'nothing' to do with the norms of philosophy, which in turn are those of morality. There is thus an area of personal, political and social philosophy that is effectively unique, and the standards are up for grabs. In her article 'Naming Demons: An Ethics of "Updating" Countercultural Writings', Kimberlé Crenshaw suggests that the way we come to develop personal (or political, or social) ethics is to take something from history and apply it to our own time and place, and vice versa. This is another idea that sounds pretty familiar. But is it merely a mere re-appropriation or reuse of history? As an ancient Greek tells you, if your favourite film is a remake of an old classic, don't you take a dislike to it?

What motivates such theories? For the most part, the products of internet utopianism, conspiracy theories seek to undermine the confidence of citizens, thwart progress, and discredit government and authority. They do this by asserting that these institutions and people actively conspire against the public good and that knowledge and evidence are hidden from the public, or even the perpetrators themselves. In this regard, they resemble the 'crypto-conspiracy' of certain traditionalist anti-government militia movements. Conspiracy theories appeal to such deep-seated prejudices in the populace, and the simplistic, binary oppositions of good/evil and authority/subversion. It is particularly the case with conspiracy theories that hide behind moral panics, mostly: the end of the world, terrorism, or secret societies. But it is the case with conspiracy theories in general, that what motivates them is often simple greed and fear.

The boom in cryptocurrency and dotcom euphoria has propelled cryptocurrencies into the mainstream, but the reality is that cryptocurrencies are another manifestation of the dumb economy. They are hyped as a way to create a new economic system in which ownership

of property is determined by the blockchain, but the biggest players in the industry are already heading towards ICOs, which are unregulated and often a means to pass off fraudulent investments. Tokens, which are traded after ICOs, or are a new form of investment, are in many cases securities that require registration. Meanwhile, with so many tokens issued in so few days, ICOs are essentially being treated as private placements, wherein the terms are never made public. All the while, regulations remain light, and have proven difficult to regulate or monitor. The future of bitcoin and cryptocurrencies might lie in similar territory as the dotcom boom, with it being akin to a classic bubble. While the future of cryptocurrencies as an investment might be promising, the future of cryptocurrencies in the economic system is questionable.

The implication of a Bitcoin bubble is that Bitcoin will either fail or fail to meet a level of widespread adoption, resulting in a major crash in value. But does this then mean that Bitcoin is doomed to fail? Is the value of Bitcoin on the exchange rate with fiat currency, or is the Bitcoin price subject to the whims of the capital markets, whose conditions are beyond our control? Early purchasers of Bitcoins in late 2011/early 2012 were seeking out a safe haven from the then falling value of the Euro. Gold at the time was a good hedge against the devaluation of the Euro. Likewise, fiat currencies are subject to the market forces of speculation and hoarding, as well as the risk-averse human tendencies of 'ownership inertia'. People do not want to sell, they want to hold, so it is clear that at times the value of these commodities will rise far more rapidly than anticipated. But with the rise of Bitcoin, we can expect that the value of a single Bitcoin will behave in a very different manner. In gold, there is physical storage of the metal, which limits the ability to sell, while in fiat currencies, people do not have to hold physical forms of currency, making it relatively easy to spend.

Art can be stupid too, which brings up some interesting possibilities for how the ludic ethos of internet aesthetics has evolved to create a void that can be filled with brand copy and visual or verbal aggression, especially if the reigning question is: "What's the funniest or most image-driven or most easily meme-able thing?" The most favored digital-native brand personalities focus not on the content of the joke but rather on the feeling it is meant to produce in the participant. As pop culture scholar Melissa Ferrara describes, MTV is the epitome of what an internet

sensation “needs to be... Its tropes are purposefully convoluted, its artifice transparent, its pleasures deliberately fleeting and fleeting.” Good brand identification remains the key ingredient to make a meme successful, but so do paid clicks and social proof. Verbal contributions are occasionally greeted with acclaim and the quick moving succession of photographic and written messages they offer a humorous selection of words is generally more interesting than a textual thread with a point that feels like a long sentence.

1. That’s what you’re supposed to do.
2. I do it that way.
3. I didn’t even notice you doing that.

Take, for instance, Claire Bourassa’s 12’ – 72’ Calamity. One of the “games” of the visual art fair that my team and I were a part of, it does not represent the culmination of a lot of artistic thought, though it may represent the culmination of thought that passed the general man-brain-precog test at least once. The digital renderings, grainy and distorted, on paper, are layered atop each other in a 3D space, and layer atop each other in an interesting fashion. The random assortment of the individual pieces is so random as to become a kind of abstract thing, yet the whole thing serves as a proof-of-concept for some future vision. While not a flawless piece of art, it is definitely worth your time. It’s a work of whimsy, an extravagant experiment and a glimmer of what kind of future visual art may come. Similarly, Yassine Mansouri’s Thing by no means represents a deep, intricate theoretical exploration of the human condition. The video itself is only three seconds, yet it is more than enough time to draw the mind of the viewer. A regular 4K picture that stretches out over an entire floor is not enough. The layers that are being projected all of which have been rotated to make the user dizzy. The sheer cacophony of things, everything is the same, yet each thing has been designed in a fashion that serves as a complement to the whole.

The Blockchain Institute of Oxford has developed Blockchain for Artists to help creative professionals use the technology to take a leap from analogue to digital. As David Helvarg has pointed out, you cannot ‘beat the blockchain’ because it is the fundamental technology of our time and the promise of a decentralized internet of value. Its weaknesses, however, can be exploited by artists and others, such as the inability to

quickly and securely move large files over the network. Moreover, artists are among the most vulnerable groups in the world to surveillance and other forms of government repression. And as noted by Slate's Zack Beauchamp, NFTs present a new way for entrepreneurs to seek funding, blockchain is an innovation open to corporate takeover, even governments have already taken advantage of the NFT craze. For example, the Tax Free Trust Company (TFTC), which offered NFTs, is a subsidiary of the Isle of Man's Crown Dependency Tax Free Authority, one of the world's most secretive tax regimes. NFTs could be used to fund criminal enterprises or fund tax evasion or both.

The humorous "Pax" series of emoticons, for example, typifies the evolution of the NFT to the point where it's a commonplace in internet networking's dominant textual forum, Twitter. The faces of each character in the "Pax" series are combined in a round, spiky formation into a cartoonish artifice of human face that has gradually become that of the avatar of the online person. The range of faces and expressions include the witty "Cheshire Cat" and the outraged "Opinionated Brown Lop", the trendy "UnicornFace", or the "Qwertypalooza". Within each of these characters exists the anthropomorphic trend of re-casting human features in a more abstract, mechanical or machinelike way, such as the insistence on combining all human faces with an extra extra flap of skin, and the desire to entirely hide features such as mouths, or add or remove ears and eyes. The basic outline of the human face is the same in all the images, but the faces are replaced by abstract images of digital faces as they appear in all NFT characters.

The practice became so popular that some were alarmed. "The similarities to an early digital image virus has led to calls for changes to the code of the poem's site," wrote Wired. "In other words, right now, you don't know whether the poetry is a joke." "Aww man," wrote the singer in an email, before adding: "Oh I hope the top dog at eebee pays for this." The shock of seeing eebee had its downside, however, as people realized that not only was the site, with its schlocky design and overpriced merchandise, an impractical step backwards, but the quality of the content was suspect. Sullivan's poem, when reproduced at all, is a punchline. The sad reality is that the project was not actually meant to provoke a creative response from the eebee community, but to make money from their art. While eebee did not reply to Sullivan, in an

announcement on his personal blog, Gary described the project as an “experiment in mirth and frivolity”.

Stuck in your brain?
Just ditch it
with OkCupid Intentional Quotient™
Freedom from Do
feel good grief feelings
misguided confusion
religion feelings
are you are
seemingly nothing
want to be
disconnected

What the students quickly discovered was that the search engines tended to suggest search terms that made them very comfortable with the Internet and its users – such as “social life” – and would therefore, therefore, place the information about them higher up on the search results page. The first link suggested to a student by the search engine was one which described “Inertia” as a “artistic technique”. Then it was linked to some “Google Praxis” which discussed the “time-expectancy of thought” and the “giant temporal opacity of [the] stream of information”. It described how “the ability to focus on a single task for a limited period of time ... permits [the] deep concentration required to increase the depth of concentration required for creative activity.” It gave the example of Mozart – “Rythmically and dramatically combining his own creative powers with the demands of his compositional work, Mozart was able to maximize the potential of the generative process in every single movement of his compositions.”

If you Google Teenage Girls/Taylor Swift, “anxiety” comes up no less than fourteen hundred times. Given her omnipresence, the consensus seems to be that she must be suffering from some sort of psychiatric disorder. In a Web-forum chat, one participant proposed a clinical diagnosis: “At the end of the day I think Taylor Swift is more obsessed with anxiety than what she calls fame and yet it’s exactly her fame that causes her the most anxiety.” While trying to teach teens the basics of healthy relationships, I got questions like “Should you tell your friend,

'Your face makes me want to puke?' "; "What is the difference between insecurity and depression?"; "If someone has an eating disorder and she has a photo of herself with a six-pack, should she be worried that people will say she's too skinny?" Clearly, few teenagers possess the knowledge, wisdom, or life experience that would enable them to grasp these questions or to confront the temptation to answer them with bromides about individual accountability or self-confidence. Maybe this seems unfair to Swift, a twenty-five-year-old multi-millionaire with career ambitions beyond adolescent consciousness. But she, too, must struggle with public perception.

When thinking about the future of wasting time, Goldsmith also turns to the present. "There are signs that as the Internet evolves, the taste of consumers is shifting as well. Traditionally, leisure activities, like visiting museums and reading, have been the domain of the affluent," says Goldsmith. "However, increasingly it's becoming obvious that finding time to enjoy leisure activities is becoming less about money and more about availability". He cites the success of the #IlliniandWastingTime hashtag, which took off recently, and is now by far the biggest hashtag for this blog post. #IlliniandWastingTime's aim is to bring people together and to share tips for taking advantage of their time. He believes it shows a shift in how we think about wasting time on the internet: "'Wasting time' as a concept might be dead", he writes. "Instead, people are looking to make the most of the time they've got online". The digital environment is no longer a burden to be overcome, but rather a tool that allows individuals to improve their lives. That's a concept all of us can get on board with.

Détournement introduces the concept of automatism, which occurs when tools for the production of automatism and the alienated nature of automatism merge. This convergence results in consciousness of automatism, wherein automatism no longer operates independently but exists as a conscious construction of automatism, which becomes associated with the automated or machine, and not the manufacture of automatism. Automatism is frequently used to explain to what extent both factory production and service are products of the machine; for example, how a gas pump is a machine and not the gas pump; how the car is a machine not a machine; how a cookie cutter is a machine not a cookie cutter. Automatism is not autonomous, or free from the logic and purposes of the machines. And although automatism is also a concept

that only works for short term thinking, if we cannot doubt the existence of the machine, and if, in response to our dissent, we theorize automatism, we are forced to deny the cognitive work of the machine. These statements bring us to the notion of machine intelligence. In response to this frustration, Eric Krupenye suggests a return to the original promise of modern philosophy, the promise of the God Machine, a cognitive power that will free us from the tyranny of not just the machine but the world and, especially, our human delusions. Humanism is an illusion, Krupenye believes, because we project our small view of ourselves onto the world and the wider view of the world onto us. Our delusions about the world, ourselves, and our place in the universe are a greater limitation on our freedom than even the machines that we attribute to the “machine” we are.

In essence, clickbait develops as a form of random behaviour, a process that consists of driving from one source of novelty to another. In this sense, clickbait could be considered an emergent property, that is, a force that emerged from the process of going from source to source. For humans, this is the moment when one decides to click on a news article on a particular topic. For clickbait producers, this happens when clicking from one source sparks a search for another, possibly linked, story. Once such a link is established, the publisher of the clickbait can then re-purpose the link, drawing in potential new readers. The process repeats itself until the content has exhausted itself. With each new link generated, the algorithm might be calibrated, adjusting the frequencies of links to determine whether the new content is fresh enough to serve as a clickbait entry. If clickbait resembles random behaviour, what emerges as a consequence is a vast and complex network of links, many of which are unknown to the publisher. The algorithm, or the process by which clickbait is produced, is algorithmic. The link graph of a clickbait article will involve many unknowns and many possible solutions. In fact, as the complex networks of clickbait stories expands, it may continue to resemble random behaviour and the clickbait article could, over time, drift into obscurity.

Imagine that the clickable humans are ghosts, each in charge of a click-polling office, each assigned to answer one question: Which of the following is more likely to happen in the near future: that Donald Trump will appear on the cover of Time magazine, that the US Supreme Court upholds a controversial gun law in a closely-contested case, that the

world has reached peak GDP, or that Beyonce releases a song about clickbait. For my part, as an individual on a mobile phone, I'm acutely aware of the information I'm consuming on a daily basis. While I realise my current lifestyle makes me biased, I'm still less than unbiased about the content of the news I consume. Perhaps the clickbait dream is a glimpse into this ignorance and self-contradiction, reflecting a dark version of human's obsession with click-votes. It's a very interesting research direction: from the clickbait dream of clickbait headlines, to a system that creates clickbait articles.

I'm a magpie that likes to collect shiny things, so I like to share some examples of what you can learn from our species.

1) Humans have brains. As we grow, we get smarter. We remember our times at school or college with fondness.

2) Humans drink water to live. Never mix alcohol and water. You will become ill and die.

3) Most women are born "tight" and men are born "sausage" and "lard."

4) I lost my job.

5) Zombies are slow and the only way to kill them is by decapitation or blowing their brains out.

6) Humans consume "chemicals" which are actually sugar.

7) When trying to eat, people eat two dogs.

I am continually struck by the power of fungi to bring about mystical states of mind. Not all fungi lead to these experiences, but many do. Fungi can activate neurons, open up access to parts of the brain, and allow a person to experience other sensory information. Sometimes fungi can be altered in such a way that there is a tripping out effect. When you're walking through a meadow you will start to hallucinate little insects, although they will not interact with you in any way. Sometimes the mushrooms will trigger hallucinations or visions that come from things right around you or nearby, like hearing or smelling a scent in the air. Sometimes the mushroom itself can be made hallucinogenic, with certain varieties appearing as trees, having leaves, and other properties. Given this, I wanted to talk about the evolution of mind, and how fungi can provide humans with the tools to think differently about the

structures of cognition. This is because fungi provides a clear example of how underdeterminations of consciousness can be such that the brain processes vast amounts of information as an object of its control, rather than something that naturally emerges from the material input, if that input were random or otherwise different from the input of other organisms. It is remarkable how flexible the process of evolution is: in response to particular selective pressures, brain structures and networks can expand and crystallize. As the human brain has expanded and calcified, the brain has become a phenomenal feat of engineering. Although the human brain has largely lost any capacity to think in holistic terms – at the same time that it has become massively larger, it has also been optimized for efficiency and constant linkages to the material environment.

One can read similar stories in Aztec iconography of skulls holding mushrooms, and of shrooms found on the floor of Olmec ruins. These images would likely have provided a seed for the same evolutionary roots of psychotropic mushrooms: a continuous view of the world around us and self-reflection – the building blocks of self-awareness and consciousness. This evolutionary story could in turn explain why our use of drugs in modern society is so widespread. People are simply born with that gift – and psychedelics are just one of many methods available to extend the mind.

The history of the farming process has been recorded by people over millennia, but “the overall story has been obscured” by the creation of sanitized narratives that see “bears, people, mushrooms, dung, bears, and horses—all dead things” as “inherently less dangerous than the possibility of a similar meeting with a defenseless yeast.” If we all die, yeast will thrive, it is the fate of the last living things on Earth, they are chosen as the first to carry on when the great city is gone. These comments are based on the fact that yeasts require a new environment to thrive, and that they can easily reproduce themselves. While it is easy to see the path yeast can take, it is harder to predict what will happen if the organism encounters something that it is not adapted to. Yeast has become a target in synthetic biology research, and is considered one of the easiest organisms to engineer. The discovery of salamanders with genes for enzymes to break down alcohol in beer is a testament to the diversity of yeasts. Yeast can survive very low temperatures. It lives in dirty water and can be contaminated with all sorts of things. And this is

before we consider the fact that this non-pathogenic organism may be subject to conditions that an antibiotic resistant pathogen could not survive.

I was able to go deeper into these networks, the mycorrhiza, the connected communities that developed between fungi and bacteria in the geosystems and soils of Earth. I got a better understanding of the relationship between fungi and other kinds of plants, plants that are more like us than we might realize. When I think of how a snowflake and a grapefruit seed are connected, I think of the interdependent relationship that many mushrooms have with bacteria that are everywhere in the forest, together they also form the fundamental structure of soil. These soil associations show a complex web of mutualism in which fungi, bacteria and animals all develop ways of protecting each other. Some fungi show a parasitoid and phytoplasmal relationship with other fungi, feeding off them by consuming their tissues. Other fungi, having lost their mutualist partner, show a defense-to-recovery relationship with their associated bacteria. Sometimes even with mutualism, I still can't see how they work.

I made the point in a previous chapter that I could see sex being used strategically, as a form of sexual allocation. Now we must define what we mean by 'sexual allocation'; if we can define it, we will be able to draw a good deal of insight into the politics of sexual allocation (although we should not forget that sexual allocation could be used for all sorts of purposes: it is therefore better to be specific) and thereby see a role for the facilitating technologies, which of course would be broadly conceived.

What that essentially means is that the common threat posed by animal cruelty, for example, is much worse than that posed by the poachers of the digital world. The poachers of nature provide a risk of loss of 'fame' and money, whereas clickbait offers a risk of incurring 'idle fingers': the tendency to make an excuse to 'do nothing', to procrastinate from the dreaded 'right thing'. Finally, the cultural circle of the clicksuggests another piece of the cultural history, this time one of sexual prejudice. The desire for sex always stems from a fear of loss of status: loss of autonomy, status in competition with others, loss of family of origin, loss of the freedom to maintain one's own identity. The desire for sex is therefore contingent on maintaining the image of sexual control, on preventing others from transgressing the 'status rules' that allow only

one to be 'pure', 'well-behaved', 'well-known', 'well-liked', etc. While economic well-being has often enabled the emergence of taboos of sexual desire, it is sex-based discrimination that is an exception, in that the only refuge that could possibly allow people to act as a group is a fear of 'sexual transgression'.

Darwinist thought, only a few years after the Industrial Revolution, warns us of the consequences of the mutually interdependent relationships between humans and other beings. So far, clickbait, in the main, has not decimated the clicker population and indeed may contribute to it by providing the breeding ground for new clickbait. Recent academic works and other scientists have worked hard to try to explain how clickbait can persist and what benefits it brings to the clickbait economy. In a section headed "Why Does Clickbait Exist?", Margaret Wertheim argues that clickbait is the new landscape for the world of online media because people are clicking on it and they are responding to the offers of cheap attention and cheap food. Wertheim speculates that there are three very strong 'tiers' of clickbait. The first tier, 'advertisement clickbait' is comparable to the clickbait currently found in titles such as '10 ways to live off the fat of the land' or 'World's only African triple headed snake found'. She argues that most advertisers and publishers are in this first tier. It is popular because people click on it and it provides the social reward of being part of a social community.

The potential usefulness of this research emerges from considering the essence of wisdom, which both ethologist and philosopher Arne Næss explore. 'Wisdom', Næss argues, is not just about making a reasonable decision on where to place resources, and doing so while avoiding the costs and risks associated with having to solve a puzzle. It is also, more importantly, about making wise decisions by remaining aware of uncertainty and uncertainties in the future, and recognising that you need to adjust and adapt as you go along. To grasp this reality of the intelligent and the stupid, Næss offers an interesting thought experiment. He tells the story of a woman suffering from an incurable illness, who can never be sure when her disease will run out. She knows that if she is feeling strong, she can make it through the next day, and so can the next week. However, if she is feeling weak, she needs to get her friends and family together in the next few days, so that she can tell them all about her illness, in the hope that it will increase her family's ability

to deal with it, and make them less likely to use up their own energy in trying to help her. We have a situation, the woman, argues, where we can't solve a problem by just learning everything we need to know upfront, because we can't be sure what it is that we don't know. The action of asking questions is valuable, so long as we remember that we might be asking questions that we don't want answers to.

Professor Blundell and his colleagues suggest that artificial stupidity will never lead to the spread of 'intelligent' creatures, in the way natural stupidity created the age of the global civilisations. "Our view is that intelligence is a by-product of artificial stupidity," says Blundell. "Most of the ancestors of modern humans, apes and dolphins had quite simple brains but they managed to mimic the complexity of many social and ecological problems, such as feeding, drinking and social recognition. They maintained a high degree of intelligence in a very simple environment, but not great complexity. Our theory is that, once they had the opportunity to create a world with intelligent outcomes, then evolution would rapidly bring intelligence about." Nonetheless, we can examine the consequences of a rise in artificial stupidity in the lab. In a recent paper, the psychologist Genevieve Bell argues that increasing complexity can make us more vulnerable to attack. We become, Bell writes, "slow-thinking, primitive thinkers that do not have the connections necessary to organise strategically and adaptively." Of course, the research suggests that this difficulty is likely to be an accidental by-product of intelligence in a world of failure; the other side of the coin, perhaps, of the fun and irrepressibility that intelligence brings with it.

5

Mutual Manipulation through the Social Networks

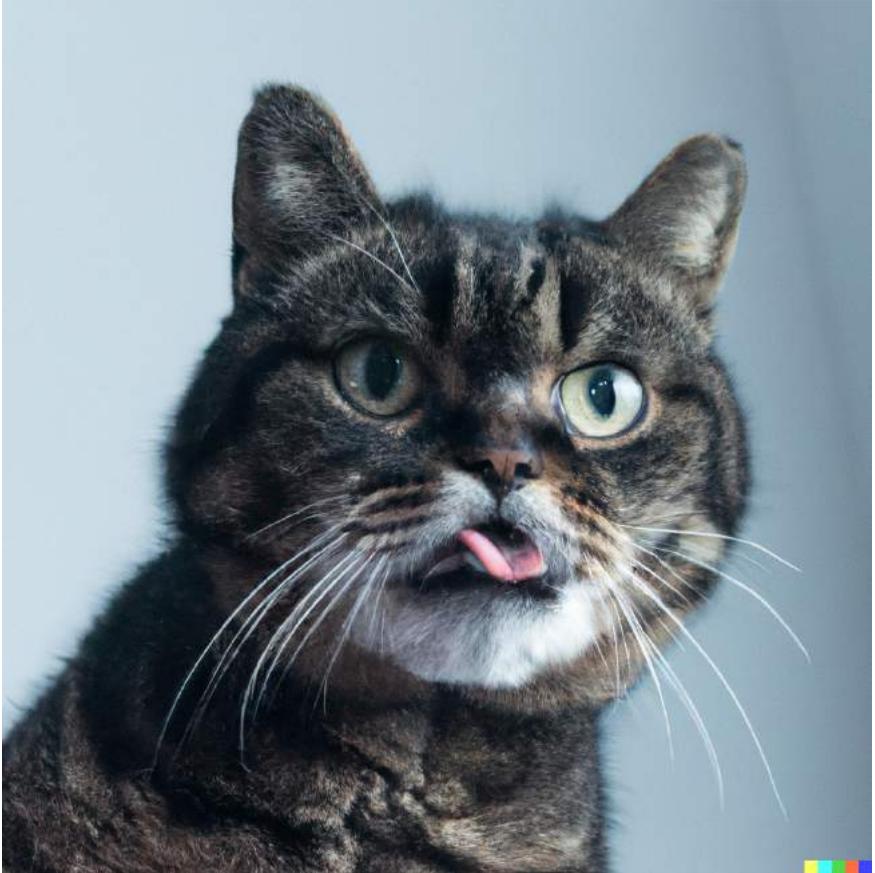


Figure 5.1: Facebook ad for Lil Bub, on line ad from Facebook, link to Lil Bub Facebook page, courtesy Facebook, since deleted.

Clicker Cats

Part of the problem with correlating cute things with popularity is the notion that cuteness is itself something observable and quantifiable. It's a question that has, in recent years, been argued against by a number of writers and researchers: social psychologist and founder of the cute theory, Jean Kilbourne, has described cute animals as "cute objects that are not pandered to, but universally loved." Whereas B. F. Skinner described cuteness as a positive social signal that elicits desirable behaviour. Critics have argued that these theories are "perverse and nonsensical", "an apology for baby-envy", and a "mythical ideal [that] has no empirical support." [38] One reason for the backlash against cuteness theory is that, if one grants its core claims, it is not necessarily a single concept – it is much more a species-specific phenomenon. Using the well-known example of pets, it is argued that there is no universally accepted definition of what constitutes a pet, despite those widely accepted examples of the "ideal" pet. Furthermore, there is no single category into which all pets belong. Cats, for example, are commonly classified as domestic animals (e.g. in the Oxford English Dictionary and Wikipedia) and not fish (e.g. in the Museum of Science and Industry). In addition to this, pet owners and media outlets can "dictate to the public what constitutes a pet". [39]

Importantly, human beings tend to have the highest preference for seeing faces and family members in supernormal stimuli (Tinbergen 1991). This is not to say that the absolute cuteness of an object is unrelated to its physical reality. The PigeonRank is an example of where exact physical reality has nothing to do with the question. The PigeonRank can be a perfect index of cuddliness, but it is not the measure of cuddliness. In spite of its pithy name, the PigeonRank should not be taken as a measure of cuteness. As with the Internet's favorite word "cute," it is only used as a term of endearment, often in reference to fluffier animals. The reason we give the PigeonRank a good rating is that it contains the most similar meaning of cute things. A giraffe cannot be a cute thing. A fluffy pink puppy that you can't take away from a baby is cute. A baby giraffe would be a different story. The PigeonRank may have nothing to do with physical reality at all.

Utilitarian considerations and evolutionary dynamics could also be a factor for the role that cuteness plays in the elicitation of feelings of caring. Evolution has produced an assortment of animals that are

adorable, particularly ones with maternal tendencies. Though an innate biological impulse could account for the popularity of cute critters, Ngai argues that other cultural factors may have fueled its expansion. In particular, Ngai asserts that “what can be called cuteness emerged among Western consumers of infant goods as a byproduct of a larger political project of boosting the welfare of West Asia” (147). The market formed of the specific practices of conspicuous consumption” (1987, 10). We as consumers now come to expect cuteness from our products and services, and even the abstract cannot escape this trend. Even so, it is possible that there is a limit to what is acceptable. Chuang (2004) discusses consumer boycotts and outright bans on new products.

The first of these was in the early 1980s, and concerned about the cuteness of French infant toys. It was clear that this had touched a nerve in Western societies, with one commentator declaring that the presence of cuteness and empathy was the “healthy product of freedom” (p. 1088). One need only look at the Japanese electronics industry as an example of this negative reaction. Displeasure with the latest offerings and the impact of the Sony I2 and I2 X , the Axon phone, has led to an increasing number of petitions for these products to be withdrawn or banned (Keizou Yano, 2012).

The fascination that humans have in everything cute does not derive only from cuteness’ potentially subversive power, but also from a genuinely hopeful reason. As Laura Munson notes in her book on the mysterious attraction of gregariousness, the expression of childlike devotion and affection is in itself an expression of hope. In her words, hope “is the power that enables us to believe that the world will be a better place in the future”. But to the extent that that the world is made to look younger and more helpless, or at least less threatening, the promise of the future is fulfilled. The comforts and opportunities that come from that state are drawn by the cute as its pleasures. As I write these words the cuteness of my dog, that I buy for the comfort of my son, fills me with feelings of childlike devotion and familial pride. From the fact that he is cute, and dependent, and playful, he gets my son to react to him with love, and attention, and a willingness to sacrifice some of his own needs and free time for the sake of another. And for that I am deeply grateful.

The universality of cuteness has been suggested to contribute to emotional contagion in humans. The assumption is that the ‘tickle’ part

of cuteness can easily be perceived as appealing, as a form of stimulus that makes one emotional. What might be surprising is that the lure of cuteness can be seen across species – not only among primates, but among birds, rodents and even fish. Even among insects, cuteness can be useful in preserving their body shape and for developing their sting and prey deterrent behavior. Among mammals, however, most have lost their ability to reproduce, and have lost their willingness to leave the protection of their mothers. Not so the chimpanzees, whose monogamous social structure and involvement in sharing meat and other food resources with their offspring makes them particularly vulnerable to the development of parasitic infestations, and a small, less developed immune system makes them susceptible to fatal diseases. Mother chimpanzees give birth to up to 6 babies, and raise each one on her own for an average of 2 years, with one to three of the offspring dying of various parasites. It is for this reason that some of the most endearing chimpanzees are referred to as “nanny-nanny, boo-boo-boo”. Mothers who experience prolonged infestations during pregnancy and breast feeding are at an increased risk of sudden infant death syndrome (SIDS), when they will have to bring their offspring to find help. Although non-human primates may find it annoying to have constant contact with their mothers, it may be these interactions that motivate mother-child interactions at very young ages, allowing infants to rely on their mothers to prevent an infestation. From an evolutionary perspective, infant safety is something that mothers are both unwilling and unable to pass on to their offspring. Studies with humans suggest that so-called “cute-factor” is the most visible evidence of caregiver-pup-foster-mother interaction, the intensity of which is inversely correlated to mother-infant age.

The widespread prevalence of cuteness as a child's medium, and its subsequent evolution as a trope that serves as an easy gateway into deeper emotional matters, is a significant development that has been remarked on by a number of prominent cultural observers. The animal rights activist and author of "Animal Activism in a Flat World," Mark Parnell, has suggested that this is a part of the changing relationship between humans and other species, or a case of humans increasingly managing not just other animals, but themselves. His argument, bolstered by the argument of Sarah Green, that we are witnessing the end of speciesism, may lend weight to the idea that while once the very

idea of anthropomorphism seemed incredibly quaint and ridiculous, now it may be just a screen of pixels in the digital ether. With this in mind, we can see that the presence of cute in the media space, particularly in popular media, is part of this as well, offering escape and comfort, but also an escape from the question of meaning and the body.

Dr. Steven Poole, a British biologist, wrote an essay in *Nature*, titled, “Why have we got a mouse in our desktop?”, in which he explores the sheer joy that mice have for crossing wires. He does this by describing a mouse’s hobby as “the classic experiment in which small beings get on with a task” and “get on with it.” He finds himself considering, if mice were human, they would be conditioned to sit still in a pot of liquid with a plate of tiny, delicious morsels, until they were taken out of the pot by a very large human. Animals are intrinsically designed to build connections with one another, in order to get on with tasks. This is not something we can see with the eyes, it is something that can only be heard and felt. Their interests are carved deep into their skin, and it can be translated into an aversion for pain or unhappiness. One’s most basic desire – a desire for happiness – is instinctively mediated through intuition. “Whether it can be made to guide action, that is, to some degree independent of environment, is a matter for speculation.” We feel, on a basic, instinctive level, that happiness is desirable, and that suffering is unacceptable. The cute is thus felt as a natural byproduct of the human animal’s innate, sensitive intuition. The cute is as inevitable as evolution, and one would be well-advised to not fret about it. While it might create conflict between us and non-human animals, this discomfort is a matter of concern for humans, and not necessarily for animals. With regard to how we react to cute animals, there seems to be a misunderstanding of how we are trained to behave in relation to cute animals. When cute babies are whisked away by parents, they are not rejected, but rather encouraged to develop their own interests. Here, they are encouraged to develop themselves and their own passions. There is no pity for a cute animal, or an expression of intense sorrow. On the contrary, it is expected that the adorable creature will be actively engaged with.

Coinciding with contemporary psychology, the online pet community emerged from a niche in the early 1990s, with a global userbase of around one million by 2008. Following similar trajectories to that of Facebook, Twitter and Instagram, the online pet community was developed to tap into the growing interest of young users in interaction

with animals. Pet photos on social networks typically show animals with human companions, and exhibit a mix of poses and styles, often emulating celebrity poses or the poses of the pets themselves. What is notable is that human objects are not permitted to be seen in any pet content, and many pet owners are careful not to reveal their faces in the photos (the hashtag #portraitsofpets on Instagram contains only six images with human subjects). The pet selfies are not explicitly intended as fauna, the animals often being associated with their owners. However, it is difficult to argue that these photos do not resemble photographic representations of species that were domesticated. Pet selfies are especially popular on social media, where the owners and their pets appear to interact with each other in the image and form a cohesive series. The proliferation of pet selfies has contributed to the booming pet industry, with millions of pets manufactured and imported from countries like China, and the industry is valued at around \$50 billion in the U.S. alone.

Together, the parts of this chapter make up one large puzzle, one that we are privileged to spend time working through. In the end, it is possible to conclude that, far from being a freak of evolution, cuteness is a normal and even expected component of being human. The list of possible functions of cuteness is lengthy. It might be said that the more we try to understand the mechanism of cuteness, the more we will understand why the human race persists. In the meantime, I will leave it to you to explore the impact that this curious capacity has had in our lives. We are all different. What started as just another of our remarkable differences has become something so engrained in our hearts and minds that we cannot help but feel deeply connected to its potential applications. To that end, perhaps the best therapy is to slow down and actually notice the oddity that is cuteness, if only for a moment.

Understanding Aliens Through World Cat Television

... and you'll likely feel a little silly for ever considering the famous tot from Ferris Bueller's Day Off less adorable than Boo. Now imagine what it must be like to encounter the earliest stages of Boo's domestication. Boo was found at the Toronto Humane Society by a staff member who contacted his breeder, David Perry, an affable guy who owns his own dog boarding business. Perry explains that, when he first saw the pup, he said he wasn't sure whether Boo was a Chow mix or part Chihuahua. When Perry told him he didn't want to mix Boo with

other dogs, Boo was rejected and sent home with Perry. For two years, he hung out in Perry's office. Then Perry decided he wanted to get him neutered. That's when Boo became Perry's dog. He had a month to get the surgery done, which was pretty reasonable for an 8-week-old pup in 2012. Perry called his vet, told him he needed it done and that Perry would pay.

Consider the behaviour of a human child who can be seen riding Boo in a buggy. It seems obvious to those who know animals like to be nearby, but we should be careful with reading too much into this behaviour. Indeed, Boo looks more like an animal than a human. Children, for the most part, will not be seen on a buggy on their own, which makes it less a carriage and more like an accessory. The content of the photographs is ostensibly unrelated to what is actually happening; they are a couple of poses that look vaguely like Boo 'as baby'. One can read into this what they will, but a picture of an animal is not necessarily evidence of a real animal. But can you really tell the difference between a real animal and a photograph? This is an important question when studying transhumanist ideas. Human-like robots may seem like the stuff of science fiction, but such advanced technology is making its way towards our doorstep. Yet it may not be long before we end up without the ability to distinguish between human and non-human, or even human and artificial. Robots will soon be capable of learning as we do, and developing traits that we would consider distinctively human. If we end up with an army of bipedal beings, what is the difference between one large humanoid robot and another?

Freeland argues that the animal's identity has been formed. She identifies the degree to which the individual bears the mark of their lineage as part of their identity. This individual is aware that the claim that they belong to their lineage is important to the keepers of the lineage and that they bear the marks of their lineage as a mark of identity. This second criterion was not met by the recently deceased Supreme Court justice Antonin Scalia. His picture will be an eternal one of him smiling and wearing judicial robes, and nothing in his image suggests that he was an individual dog, or that he knew the stories and the gentle secrets of his ancestors. But we know that Boo is a part of a lineage. The lineage, or breeding history of his breed is a record of the care and attentiveness shown by its owners. And, on Facebook, Boo has been given his own Facebook page, which shows him playing, and his caretaker and dog

walking partner. We can therefore say that Boo bears the mark of the breed to which he belongs, and thus he is recognizable as an individual. However, Freeland is also explicit that Boo is identifiable as one specific individual. So we can move on from Boo's identity, and we can look at other instances of animal portraits, or photographs. Perhaps the earliest known photograph was of a beaver taken by the Swedish diplomat Carl Linnaeus in 1763. The animal's identity, in that photograph, is to the camera a matter of fact. To the viewer, it is a beaver, and that is that. Yet the beaver, of course, bears few clear identifiable markings. The beaver in Linnaeus's picture is a fully clothed beaver. This dovetails with Freeland's criteria for the portrait of the individual animal. A portrait has the individual's human made markings, and they have been invented by the portrait-maker. The portrait has been fabricated, and made to order, which makes it a mass-produced portrait.

Freeland proposes three possible responses to this challenge. First, we must distinguish whether animals are animals and have emotions, as philosophers have argued, or whether animals are manmade and have only human emotions. These arguments do not address whether animals experience emotions, which she considers to be the philosophical question, but can be read to suggest she does not think animals have emotions. Second, Freeland considers that to the extent that animals are not manmade, they are likely to be capable of meaningful emotive communication. On this view animals can distinguish desires, but if not manmade will have no desire or expect satisfaction in following it. This argument is based on the presence of certain pleasurable emotions in primates. Finally, Freeland considers the possibility that animals can experience emotions that are not shared by humans. This idea was originally suggested by Doris Mayer and Fred Gordon, who argued that the mammalian nictitating membrane might be a cue for 'mirror neurons' that represent similar emotions as those we are familiar with.

The organism, from an evolutionary perspective, is its individual component parts. Each individual can have a different life history. To exist, an individual must show its fitness to survive and reproduce. This requires a skill-set; hence an individual must show a specific attribute that is advantageous for the function it performs. Since the species as a whole depends on all of its members to fulfill its function, only an individual will be successful in this regard. Such attributes of individual characters tend to give them a capacity for individual success.

Differences between the individuals of a species have evolved over the history of the species to create a variety of manifestations. In all societies, members exhibit the same set of facial and physical features, but differences between individuals arise because of their varied experiences, learning, and individual cognition. Each member of a society uses its unique capabilities and attributes to create different social and symbolic structures, and can use its different views to make social interactions more productive and efficient.

But none of this is there to suggest that culture is only a stylistic aesthetic, or that the cultural process has no validity beyond the individual. Even in the domain of aesthetics, humans not only relate to objects of aesthetic interest on an aesthetic plane but also relate to one another as aesthetically constituted and integrated objects of aesthetic interest in which individual objects are fully integrated with the state of others. Aesthetic creation is an instance of the process of social construction where two or more cultural realms are related in ways that generate a discursive identity based on a positive legitimation. The oppositions expressed through narrative, stereotype and visual aesthetic allow cultural actors to negotiate the stable relations among themselves, and give them a sense of secure relations to their environments and the world. The broadening of the discursive domain that poetry and painting can operate within, will lead to the formation of a cultural “project” of an individual as a unit. Aesthetic creation is not incidental to human evolution, but a form of human culture that has been very successful in furthering its adaptive fitness.

In a recent study published in *Canine Science*, a team of researchers led by Karen McComb, a Stanford Professor in the Faculty of Medicine at the University of British Columbia and School of Dentistry, found that dogs maintain a gaze on humans which resembles their gaze on other dogs. McComb believes that the relationship between dogs and humans is not just “two-way” but “three-way” because dogs are also seeking the same cues from humans, making the social bond between humans and dogs as strong as the bond between humans and wolves. This is how people can thrive in an environment with dogs.

In a study with volunteers from the US and Poland, researchers at the University of Edinburgh tested whether oxytocin influences gaze orientation and how it relates to individual differences in sociability. They recruited 20 pet dogs and 19 people with Williams-Beuren

syndrome and conducted two tasks: one consisted of moving a joystick to look at one of two photographs, with an accompanying questionnaire that determined participants' need to bond. This meant that participants saw the photograph either twice or thrice, with their level of commitment to the bond displayed on a facial expression scale. The other task used the same procedure, but took a different focus. The volunteers were seated in front of a computer and faced two buttons: one red and one green, with different monetary rewards hidden behind the buttons. They had to choose between the two, keeping one colour as their own choice. Participants with Williams-Beuren syndrome behaved as if they received more dopamine from their oxytocin than people without the syndrome, showing that they preferred the green button to the red one. More striking was the fact that dogs behaved the same way as their owners: choosing the right colour button more often than not, compared with the others. This could be explained by the fact that dogs preferred the same buttons as their owners, with no option of turning them off. Given that the scientists found oxytocin and dopamine in the saliva of the dogs, this was interpreted as evidence of the behaviour being influenced by oxytocin.

A peculiar flaw in the logic of Freeland's argument can be seen in her ability to ignore her own subjectivity as an artist. She says that by creating a photograph of a canine or feline subject, one would be appearing to stand behind the creature and in front of it, rather than being the animal or feline themselves. This assertion requires the familiar stand-in and stand-in-front-of image: it requires that the subject of a photograph, the one being photographed, believe that he or she is being portrayed in the picture, and that the viewer be satisfied with such a representation. If the subject in question is actually the one being portrayed, then, as a matter of conceptualising the photo as a work of art, Freeland would have to claim that a picture cannot be a portrait if the subject in question believes he or she is being portrayed.

Here, portraits only exist as representations of a single subject, as they exist in its absence. The bear in the picture was posed for a portrait, then in a picture in which it had lost weight, so what Freeland regards as the removal of the pose is in fact not the removal of the bear from its original place, but the continuation of it in the new, more gaunt version. This is the key to the commonsense understanding of the picture. This picture is shown in exactly the same way that the fox is shown (wearing

stripes) in the picture of a fox waiting in the shadows. In both cases, the individual is rendered obsolete by a newer image, that is more objective and precise in what is presented as the present situation, taking precedence over what was originally present.

Indeed, as there is a whole web of communication techniques that non-humans use to respond to humans, it is interesting to explore what all of them have in common. Let's focus on three distinct groups.

Social: Humans communicate with each other through various social interactions, such as talk or petting. This is the most common mode of interacting with non-humans. A second social mode of communication is based on the exchange of mutual symbols: clicking on toys, barks, and movements or gestures of primate-like "endearments". Not only monkeys and chimpanzees show "passive and constant gestures and expressions which signify affection", as reported by the BBC. Chimp – "I love you", dog – "I love you". While not strictly speaking human language, such gestures of encouragement and familiarity have been demonstrated to enhance outcomes of interaction with other animals, dogs included. Thus, simple gestures like clapping, waving, sitting, staring into a face, or resting a paw on another's head (neither passive nor mutual), are all known signals of affection or safety.

Status: Non-humans respond to the needs of humans by giving actions, behaviors and/or sounds. Examples are washing hands, grooming, or attempting to find and steal food from the table. Humans communicate their needs and desires by acting, which is also strongly associated with social and status-based communication, but also includes a high level of social interaction (I want something. I want you to share your food with me. I want you to pay attention to me. I want you to clean up after me). It's all about giving signs, an indication that you are recognized by other people and can be approached with your needs. What distinguishes social from status is that the level of urgency in terms of action should be moderate.

Cognitive: This group is interesting in its own right, because it includes not only signs, but also music and conversation. More specifically, song, including words, language and sounds. In short, the brain area involved in motor control and auditory integration. One can also attribute sound production to the same brain areas involved in processing visual input, such as the temporal lobe. This is not to say that

dogs are monkeys. Rather, they play with musical instruments in exactly the same way as humans play with wind-chimes.

Indeed, there are numerous ways of playing with the theme of humans as “speaking” for an anthropomorphic figure. The family photograph on the official website shows Boo speaking through his family in a post-pubescent voice as the title “Coolest Dude Ever” is displayed. On his own, Boo employs a cute, affectless, pre-verbal sort of “speech”. On the floor of his studio, Boo has a multitude of stuffed animals represented as characters in the story, but his toys appear to have an inner life which he seems to also direct at his human companions. Mitchell noted that many of these toys have the ability to move their bodies (Ace making what appear to be deep eye contact with Kiki, Malibu making what appear to be gestures to Malibu in response to a playful burp) and express varying degrees of consciousness and emotion. In this way, both Mitchell and Bennett have offered ways of examining anthropomorphism and animal images within the larger framework of zoologies and zoology.

Animalselves can also be described as optical narcissism. However, rather than thinking about narcissism and narcissist animals in exactly the same way as human self-centeredness, I posit that it is instead the affect that animals (and humans) use to interpret and impose upon each other. Social relations between animals are rarely overt. Rather, animals can perceive other animals as individual and having needs that are distinct from their own, yet on the other hand also the physical needs of animals. For example, animals can perceive humans as lacking for food and water, yet also as social creatures, looking to others for companionship. The conspicuous difference between these two phenomena is the perception of the self. Humans experience social relations as being part of their identity, but animals do not. Other animals will also use signals to attract mates and allow other animals to detect their territoriality.

Furthermore, the ability to capture moments of a pet’s life and to share them with their followers – and thereby to have the pet’s approval – creates a desire to seek attention from the cameras. The accounts also provide an account of the “vibe” (a feeling one has with a person) that people were likely to have around a well loved pet.

“The feeling of being cared for and supported by that person is something I wanted to capture and share with the rest of the world. The

fact that these pets showed a lot of gratitude for being cared for (“I love my bed!!”) could offer some insight into the type of individual they were, and I found it fascinating.” —Janel Kramer.

The response of the public, both professional and amateur, to the popularity of animselfies will help determine whether those cultural trends can affect animal life on a broad scale. Animals come into focus in a number of other cultures. Anthropologists remark on the popularity of dog-scented bandages, for example, where dogs are seen as a part of an individual’s bodily makeup, with greater physiological importance than cats. Meanwhile, at the edge of our species’ global range, dogs spread from northern regions and became a ubiquitous feature of human life. The changing place of animals in human cultures is represented by the relative distance dogs have come to inhabit from the human outwards view. The domestication of wolves, often depicted as vicious killers, is more often described as a key moment in the human lineage.

People also use animals in the service of nonhuman rights, as we might see in this photo, in which a person dressed as a baby tiger hangs out with other animals outside a clinic at the Paris Zoo. The legal debate around animal rights is not a modern invention, but an important piece of history, and especially complicated because of the intersection between the particular histories of humans and other animals. In his 2015 autobiography, *Five Animals: What Changed My Mind About Animals and Why I Want to Change Yours*, Steven Wise wrote:

The animistic religion and the narrative of human supremacy that for two millennia was the main vehicle for our relationships with animals have given way to what I believe to be a significant turning point in our relations with all living things. The growth of the science of comparative psychology and comparative religious studies has shown that we as species are far from unique, but very much related.

Dogs are compelling subjects for this sort of talk about existentialism because, as we have already seen, they are readily perceived as spiritual creatures, but are by no means spiritual themselves. As humans have long held strong values about animal rights, dogs are becoming as much of a symbol of quality of life and freedom as we are, and even more so due to their independent status as self-determining animals. As people have begun to treat their pets like human beings, their demand for full rights is greater than ever before. And so, in 2014, we see a niche taking

root: the kind of page that talks about who your pet is and what his- or her- life is like, how you meet or communicate, why or why not you find his- or her- humanity morally important and how you consider or not- it to be beyond language and experience, a separate creature. Such pages are increasingly popular in English-speaking countries, but are actually more popular in Korea.

Zuckerberg never quite abandoned the idea. Instead, he created a site called 'Thefacebook.com', as a photo album site for college students. He received \$10,000 worth of web domain registrations for Thefacebook.com and set up a profile in Harvard's directory, complete with a CV and some photos. As other students signed up to Thefacebook.com, the site grew. Eventually, Harvard shut it down and the concept was picked up by a group at Stanford University, where it remained until the summer of 2004, when it was merged with another existing social network, Orkut. As they developed it further, Orkut was eventually shut down in 2009 after pressure from Google. By the time the dust had settled, Orkut had clung to a very small portion of India's population. Google just never found its footing in India.

Just one year after it's launch, the site had 450,000 users on the Harvard network and was downloaded around 40,000 times. This represented a huge change in usage from the previous year, when the group directory used a proprietary Facebook program, which also included the Facemash. Facebook managed to compete with the directory and managed to break even within the first year. It grew to over 2 million users by 2007, with an average one million users joining per week. At the start of 2006, Harvard University boasted 1,100,000 users on its site, and it was the most-used university social network, ahead of any other college in the US. The site would later become enormously popular among students at the University of California at Berkeley.

Dogs have become more popular than cats on the internet. These networks can be ordered online, marketed and made accessible via virtual interactive environments (VIRs), so that virtual space facilitates the access to other animals. By doing this, the networks resemble what I called 'networks of the 1st World', described in a 2014 journal article as 'distinct regions of virtual reality in which animals are represented' and have a formal element. The same is true for virtual networks, yet while they mostly create a restricted virtual world for the user to play

with, networks of the 1st World focus on enhancing the virtual world for people in the 1st World. The main difference is that these networks have been designed as virtual platforms on which people can play with the animals as if they were there in real life. In these virtual worlds, virtual pets are personified in character with the aim of bringing their animals' attributes into the virtual world.

Feminist blogger Bettina Arndt offers a critique of the Internet's divided communities, seeing in Facebook's ranking algorithms the expression of a sexual double standard. Among the smallest top 20 keywords are 'KISS', 'WHATSUP', 'MMM...', 'ADM', 'lots of zz...', and 'LOO' (usually shortened to 'v'). This list of examples forms a circuit from the ubiquitous 'LOL', while also including #twotales or some of the more stereotypical letters of emoji. Clearly, an instinct for representing the sensibility of the Internet through linguistic codes is closely tied with the language of pet adoption. This duality has become stronger than it has ever been, with pet blogging becoming an increasingly large and valuable genre. Sites such as Urban Dictionary, GetDogmeat.com and The Spaniel, O'Scratch, for example, have all begun to offer up the most commonly used pet names and behaviors. Many dog owners now plan their vacations around where the dogs can go on hikes and such.

This has a relationship with animal cognition, with animals using their cognitive abilities to adapt to and exploit new habitat niches, as reflected in a growing hominin increase of the hominid social network. With the evolution of language, the ability to post status updates (or selfie) to Facebook, form friends and utilize the service in non-traditional ways, has brought about an application of human cognition to a large social platform. Highlighting animal cognition as a core theme in biology and tech, the research team provides an array of new thinking on the application of AI in human-animal relations, alongside trends in animal cognition. The group's work thus becomes part of a new wave of theories on the intersection between biology and technology, which calls for a change in human behavior, often tied to ethical issues, and thus requires close involvement with social behavior.

Through face-like elements such as images of people, Facebook has positioned itself as a unique social space. It draws people to connect with others for relatively brief periods, or simply to check on people, and the medium for doing so is the face, from which people are expected to derive particular content or meaningful connections. By making the

main visual feature of the platform the human face, Facebook, as a medium, is able to stand out from the competition, as no other platform enables engagement in the form of looking into others' faces. The "real estate" on the platform, however, is significantly larger than that of Facebook, and the need for access to the entire real estate rather than to a focus on the faces of others can often be required, e.g. to use the newsfeed. People seek to connect in different ways, and Facebook is presented as an alternative for posting, i.e. forwarding, images, that allows for uploading images.

Part of the reason for the initial socialization of social media has been to provide a sense of existential well-being. We also seek out the sense of connection and safety of touch in other contexts. But even without the physical contact, networks are providing a strong sense of belonging and a sense of ease and security, making them 'soothing'. Pets provide a sense of connection and bonding in the absence of a range of social interactions. Facebook seems to be offering a similar sense of belonging and feeling of belonging, but with the added touch.

Recent studies have shown that people prefer seeing their pets on Facebook to their real-life friends. It is clear that when we discuss social networking we are referring to human-animal relationships. In the area of "therapy animals" – the animals that are specially trained to interact with the public at certain public events – there are currently no laws against their use for commercial purposes. The debate concerning social networking starts with this contradiction and thus continues.

Though not pets per se, web sites such as *MustLoveMe*, *DogVacay*, *TheCoolCatLady* and *MoreLikeMe* represent the continuing evolution of content that people find comforting and appealing. These sites offer a range of content that is focused not only on pets, but also on other things that delight people: political cartoons, recipes, baby selfies, astrological forecasts and inspirational quotes, to name a few. The part of human life most usually not represented on social media, at least in part, is marriage and parenting. But despite their very different circumstances, these two aspects of human life are sometimes very similar on social media. Looking at profile pictures is the first step in determining whether an individual is married, and a quick analysis of profile photos shows that many appear to be still married, or soon-to-be-married. Most offer very brief glimpses into their marriage lives. Sometimes, couples show photos of their children, and a few have photos of their pets.

Boo's Facebook page, is obviously not alone in harnessing and manipulating user behavior. Facebook's own research found that on average the site has as many as 40% more 'likes' and shares for photos with religious or spiritual content than for those with nonreligious messages, not least because Facebook's algorithms tend to boost a person's likes and shares on their profile page. Although this Facebook research was done from a research perspective, since Facebook is not legally required to create a positive user experience, its apparent effect on the human psyche is arguably the same as a financial one. With regards to the merit of the stardom of Boo on Facebook, Professor Vera Liapina from the London School of Economics offers a useful insight:

'The internet is not a neutral medium of information exchange between individuals, it operates with, and shapes, individual preferences... In the case of Boo, there is an implicit relationship between what his mother did and his being where he is right now. It is not a coincidence that he was found on Facebook... It could be that by appearing on Facebook a star was born on the internet, which is very different from an actual birth on Earth.'

Where the original notion of animal personhood tried to find connections between species, to make them more accountable and responsible for actions, animalnetworks focuses on animals as individuals, simply by asking which ones in our world are the most common companions and by doing the least amount of harm (or benefit). It's not a radical concept, a work of theory, but rather a calculation: what can we learn by noticing which animals we actually interact with the most? Instead of asking, "Is there a god?", we can ask, "What is the world made of?" Instead of asking, "Are we alone in the universe?", we can ask, "Can we support the rich ecosystems that sustain the species we share the planet with?" Instead of asking, "How are we being treated by our species?", we can ask, "Which species are treated the best?" Or in other words, what is it that we can do, or become, to reorder our relationship with animals, and to ensure that our nature and their nature remain mutually enriching? For the animals in the digital zoo, these algorithms are coercive and degrading. In one company, the mice, who cannot actually voice their opinions or respond to other comments, were graded on clicks and eagerness to click. Each mouse was put in a transparent box and asked to avoid the "hot" spot to earn "dexterity points". If the mouse fell into the hot spot, the social network deemed

that the mouse was, let's say, more friendly and accommodating. However, this clicked-rating was then associated with an increment of "likes" in the mouse's social media feed. So, the mouse is essentially lied to, manipulated, and scored on clicks. Like the adult Facebook user, the mouse is made to feel a social obligation to like and favor other's posts. The mouse is coerced to perform the mental and emotional labor of the social media user. A Facebook mouse is programmed to not only click on certain posts to be approved to be liked and favorited, but also to favor select types of posts.

The connected problem was the contrast between this optimistic outlook and the pervasive sense that we were on a dangerous trajectory with this (i.e., non-human) machine revolution. The central metaphor of the connected problem has always been those of human beings and non-human animals. One gets echoes of this in the reaction to comments about the Boston Dynamics robot in the Daily Beast online magazine. One can imagine the writer being tempted to have a dismissive response along the lines of "Yeah, well, everyone needs a hobby, and the Boston Dynamics robot needs..." and so on. However, this line of thinking is the initial instigation of a new perception-producing nexus of images in which robots are seen as part of a human milieu, rather than in opposition to it. Also, the robotic metaphor of "human" serves to integrate the good bits (animalistic interactions) and the bad bits (our robot overlords) of the connected problem.



Figure 5.2. This video, posted by @bloodtear_ on 25 September 2020, appears to be of the same aircraft at what appears to be the same time (same visibility).

Lizards on Steroids

What do humans feel when it comes to pet companionship? Unlike other animal emotions, it might well be that pet companionship is a feeling rather than an inborn trait. With increasing societal awareness of animal suffering, this phenomenon becomes more nuanced. To what extent do humans actually develop a feeling for their pets? For some of the millions of people who, for personal, or professional, reasons, have dogs or cats as their companions, it may be that “dog” is a special word and a permanent fixture, much like “wife” or “husband”. Others, however, like

the famous author Lewis Carroll, view it as more like an agreeable accompaniment, used “to make life bearable”. Dogs, like humans, represent a part of a continuum that links humans with animals. The relation between dogs and humans is the product of cultural and historical processes. While some pets are truly sentient, there is no formal definition of consciousness, just as there is no such thing as soul.

No matter how highly trained humans may be, there are limits to our ability to communicate with animals. Clearly, animals can perceive emotions, though, and feelings are contagious: some animals clearly respond to the thoughts and emotions of other animals. Yet, too, there is room for significant and possibly self-regulatory adjustment, in the form of punishment and punishment avoidance (see). Research continues to explore such differences, particularly in terms of artificial selection: can domesticated animals be kept or bred to perform more naturally in different ways? Domestic dogs seem to be very attuned to human emotional states. In dogs, individual owners make a big difference in the degree of empathy that dogs display toward humans, suggesting a very strong social bond between owners and dogs.

The remarkable linguistic capacity of birds might not come as a surprise, given that humans share much of the same biology and anatomy, including the brains. The results from fMRI studies on non-human primate brains have given some insights into how neural mechanisms are similar in common human and non-human primates. A search for bird images produced several revealing studies of the neural basis of music perception and production. For example, psychologists from the University of Zurich have shown that songbirds learn to sing new songs and how to sing differently depending on their place of hearing. To explain this, they first constructed the listening condition, where participants were shown a mask of the frequency of the song and hearing it through their own headphones. This was followed by a playback condition, where participants listened to the same song through a speaker positioned away from their ears. They were then instructed to learn the song again in the next experiment.

Nonetheless, it is important to insist on the point that for the purposes of psychological testing there is no necessary implication that animals are aware of what they are engaged in, or conscious of their behavior. The presence of a certain motor behavior, for instance, does not necessarily mean that the animal itself is aware of its intended

movements. Some of the behaviors cited in this article as examples of intelligence and creativity in animals may be readily explained as animals reacting to the social and cultural context and incentives of their humans, which as will be seen, is often in response to contact and behavior conditioning. It is important to remember that although these answers may be the simplest and most obvious, they are not necessarily the most true. The popular web videos that I have in mind are sensational and have won many accolades, but are usually placed in highly ambiguous contexts, such as a pup sitting up for the camera. It is not surprising that animals sometimes perform in a unique way, that is to say, even if it is not an attempt to communicate an intent, and then that the context is judged as noteworthy by the internet population. As we have seen, it is very likely that the corollary is that a more meticulous viewing of the clip and the contexts in which it appears will prove more revealing and substantial.

This is only part of the story, however. These videos reveal a fascinating dynamic which is at least as interesting and as urgent as the question of animal perception and identity. They also shine a light on the lack of rigorous understanding about non-human animal communication, revealing the possibility of a multitude of subjective states, and of multiple forms of mediation. It is a paradoxical fact of evolution that, when evolution selects for individual behavior, it can also select for the development of some form of empathy – both individually, and collectively. These videos exemplify this paradox by showing the development of aesthetic skill and an understanding of the role of other animals as agents of communication, and the development of systems of communication which go beyond an animal's habitual response patterns. Instead, a highly tuned response is made possible, which is deeply appealing and potentially socially useful.

In an important and elegant mathematical formulation, Frey, Amram, and Song (2009) offer a symmetry among populations of animals of different species, suggesting that there is an underlying group-to-individual symmetry, and any two populations within that group are equivalent in a number of ways. In the field of ecology, this is a very simple and useful symmetry that is often found to be reflected in the data. In their language, two populations with the same property of fitness should have the same shape as function of the parameter. This is very well expressed in the high-dimensional analogy of natural populations to

the dynamics of a wiggling worm:

$$a + b = (1 - a)b + (1 - b)c$$

where c is a fixed parameter. This is an example of a topological symmetry for which an inverse sequence of transformations preserves the shape of the population, as will be explained later.

To further the understanding of the nature of selection in domestication, Belyaev also experimented with artificial selection to see if he could convert the genetic program of the red fox and the brown fox, their two closest relative species, into a hybrid: the borzoi. Hybridization was a relatively common process and an effort was made to artificially cross the red and brown foxes to create a new animal that would be both easily bred and able to exhibit characteristics of both, while also maintaining a consistent visual appearance of a pure fox. As a result, the borzoi fox has many of the physical characteristics of the red fox, such as a thick hair coat and rounded ears, and can be easily bred to retain some of the borzoi's conformation characteristics. The borzoi also bears the "red" gene responsible for red fox pups, so if inbreeding is performed it can be possible for pure red fox pups to be produced. Belyaev was able to create several breeds of borzoi, and test them in order to evaluate how much of the genetic program of each can be preserved by artificial selection.

The Nobel Prize winner Dmitry Belyaev received a large number of rewards for his achievements, such as the Lenin prize. The most remarkable of them all is the "Lenin" prize in Biology of Unusual Origin (first prize). The other laureates – the Botanist Trofim Lysenko (1895-1967) and his wife Nadezhda Lysenko, who became famous as "mad botanist" – were also guests of honor at the awards ceremony. Interestingly, in 1927, Vladimir Lenin supported Lysenko's research in the Soviet Union, in the belief that plant genetics was inseparable from the animal world.

DeLanda recalls that the philosopher E C Dummett made a bold argument: "Scientific truth can only be questioned when it is thought to be false". Drawing on Dummett, DeLanda remarks: "Masturbatory acts seem to be nothing more than simple binary modifications, and the future organism is functionally not that dissimilar to a snowflake." That is, the organism is made up of discrete items that only later converge in

a way that allows it to communicate and survive. The species-typical parts are not involved, as they evolve and “grow as the embryo takes shape”. With that, he declares: “The self-organisation that makes the body grows from nothing, ‘from’ no one, but only from the network of interactions that are naturally generated in all living matter.” In other words, the body is not the product of mere assembly or mutation, but rather of a biological web of relationships, dynamic and ephemeral. This is science as a meta-theory – a way of thinking about the social world through scientific terms.

“When there is a compensatory relaxation of the fixed laws of organism development, which takes place with maturity, then things become really new.” In non-human animals and plants, we are most familiar with neoteny in a term applied to those with simple body plans that rarely undergo differentiation. The juvenile form (ovine in the case of bovids, lizards, amphibians, fish and crustaceans, and early birds and mammals) may persist for many years or even all of one's life. In many cases, it is a sexual state, since sexual maturity coincides with separation from the natal nest, and the sexually mature animal, the adult, requires no parental care, at least not initially. An individual that has remained in the natal nest its whole life and never matured sexually can be called an infant in all but the most literal sense.”

According to Deleuze, animals and plants develop according to mechanisms which ensure that parts of the body are simultaneously obsolete, yet each part can still perform a specific function: “Eccentric mechanisms allow us to destroy functional parts at the same time that they give them life.” (Deleuze and Guattari 1997, p. 199). An analysis of the comparative anatomy of different kinds of development suggests that an analogous process may occur. Since the different classes of animal have body parts that are redundant with respect to the others, each is subject to an urgent ‘flight’ to gain new functions. F. Joye says that “if the human body grows, it grows in an incomplete way, since each part can do a specific and limited function, but not all of them can perform all functions at the same time. Hence, we notice that development is irregular in terms of the anatomical contours of the body. A predictable course of development (something that the animal can, in principle, follow as closely as it wishes) is not possible. ... A sensitive and delicate point here is that the course of development is not regular, but it is

irregular.” (Joye 1998, p. 64). This lack of predictability is particularly evident with respect to the left and right halves of the body. How can a seemingly simple function of one limb be performed only by that limb and not by the corresponding part of the other half? In such cases, it seems that as soon as one limb becomes redundant with respect to the other half, the missing limb will undergo neoteny: it will develop to resemble the corresponding part of the other half. The biological literature, particularly in embryology, attests to the fact that at a certain stage the entire body system is constructed by many different parts.

Given that traits are constantly transforming, Ngai notes that the aesthetic of cuteness “is about how highly the observer values the object of that transformation. The essence of cute is that it evokes fond memories.”[14] The human aesthetic is the possibility of “representing something in our memory” as a continuum of already existing continuity, while the cuteness aesthetic is the adoption of an already existent continuum of always existing continuity.[15] DeLanda claims that in order to participate in the cuteness aesthetic, humans must understand the imperative of novelty in nature. He then runs through several examples, from dogpaddling dolphins to rising oil levels due to human activity. These examples follow the cycle of nature: there are things which are new to the system, and those things tend to disappear, only to be replaced by others. The most adaptive species to both participate in the cuteness aesthetic and break the norm of evolution is those that break the norm of culture, such as dogs that switch to raw meat after being trained as pets. This is because humans benefit from novelty, and novelty tends to rise rapidly as humans start to have a greater influence on their world.

DeepDream’s potential for pareidolia can be used to analyze species identification and develop a system to distinguish humans from non-human animals. To test this, we analyzed 20 billion pixel DeepDream images and tested for perceptual similarity to other species, the performance of the user, and whether the system (the ‘human face detector’) made any discriminations based on the visual features of a known human from images of other humans. The results show that DeepDream finds faces in images of other faces, and that the algorithm makes discriminations and has a high level of perceptual similarity to the human face. Moreover, it has a high level of discrimination of facial

variation, making it much more efficient than human faces in classifying people from images.

On the other hand, an experimental culture sees reality as partially untracked and the animal as partly imagined, with science playing a role in how the animal comes to exist. Moreover, this experimental culture comes to view the animal as an extension of ourselves. In this case, the concept of dog as a “strange dog” is adopted. Not only does the experimental culture recognize the dog as a “strange animal” within its own perceptual constraints, but it also wants to explore the animal to the limits of what is possible in culture. Thus, while the present culture of dog breeding tends to utilize the dog as a way to get something that can be used to produce food or other utility, the experimental culture sees the animal as a potential means to explore the limits of what is possible in culture, as something of potential interest in itself. The “strange dog” is a weird animal, a thing of exceptional or potentially interesting potential.

People love cute—they’re hooked. Even if we don’t like it ourselves, we don’t want to watch anything that’s not cute. We don’t just adore cute characters in movies, but look for it in the newscasts of television, the ads on the radio, in the TV channels. Every week, we watch our babies on the TV screen. The dependency on the cute object is at the center of cuteness. When you break a small animal, you feel it. When you play with a furry animal, it responds to your tugs, your playfulness, your physical affection. To a certain extent, the cute object is present in every little thing, every baby, every dog, every child—it’s in the way that we talk to them, look at them, pet them, and so on. Cuteness in this view belongs in the intimate spaces of life.

As Alice Nielsen suggests in her book *Adventures in Cute*, the adorable was a highly unlikely term to have emerged at a time when conceptualists were working on ways to describe what is, in reality, only slightly different from naivete. Despite the efforts of theorists like Pascale Casanova, the word had little positive association with children. ‘It was as though the word had been invented for adults,’ says Nielsen. ‘Acute or cute words sound less like baby talk than like distant adults,’ a reference to a function that one of her informants identifies as producing ‘a less demanding surface for the listener’. Yet cute does, of course, have an adult incarnation, one that has endured the test of time. In William Safire’s ‘Rules for the American Language’, ‘No noun ending in -n

should be pronounced with a hard sound – that is, not with a cephalophore (little child), or cockadoodle-do (happy oo), or kwim (sure),’ because ‘the emphasis would always be on what it is to be young, not what one is.’ So what was the point of babies when ‘bright-eyed, bushy-tailed’ isn’t quite enough? By the end of the 1980s, though, cute had become a thing, a fashion in the language, a form of brand endorsement. While Safire preferred not to use the phrase ‘cute explosion’, much of the language we use to describe things or concepts with a touch of babyishness has come to denote, in one way or another, cute.



Figure 5.3: A number of DeepDream images that ‘hallucinate’ the presence of animals. These images are recreated in this paper as “images of real things when algorithmically deformed”. Image by Ivan Santesteban/Wikimedia Commons.

This phenomenon was named vocal fry, not only because it has something to do with the brevity of a person's speech but also because it is the result of voice overs and mimes using (and dying) their vocal cords. Researchers have observed that voices that express themselves with the use of vocal fry tend to have low energy and are less confident. They may lose their desired train of thought, suddenly stall or become stammering. How cute is that?

According to the video's post by Max Obermann, the bird's owner trained it to imitate Sia's songs in early 2014. Since then, it has been taught various other popular songs, including Adele's "Someone like you" and Queen's "We will rock you". The parrot is surprisingly adept at imitating multiple artists, even on the same note, but is not generally enamored of Sia's more complex melodies. The parrot is particularly fond of a version of the latter song that uses vibrato to build in the chorus, and almost seems to perform a formal trill. The bird's reception to "chandelier" contrasts strikingly with the initial skepticism I experienced when I selected the video from YouTube as the introductory piece to this piece. Commenters worried that the bird was being sung into a trap. The bird's expression is playful, but also hopeful and reflective.

We can imagine the speaker of the parrot's lyrics as someone who cannot express her ideas through spoken language, or who simply cannot find the right words. The parrot, too, is trapped in a moment, and needs to get it out somehow. The parrot's spoken performance is particularly painful, because it displays such an inability to deliver meaning, indicating that not all forms of expression are automatic. The lack of similarity between the vocalization and the 'sound' of the song on which it is sung hints at the function of vocal imitation: not as an accidental addition to music (as in Jay-Z's verse of '99 Problems'), but as an element which engages with the audience. Other animals also use vocalization to achieve this goal, including domesticated primates who, in response to human interaction, imitate human speech patterns, which in turn facilitate greater social interaction. The ability to imitate provides humans with a lot of benefits. By using the sounds of other individuals, we gain access to the richness of a greater number of potential interlocutors, increasing our social network to meet more individuals, and thereby increasing our likelihood of acquiring new knowledge.

This pairing of socialization and mimicry has a direct influence on language learning. Language, though broadly defined, is a set of vocalizations that communicate not only meaning but also meaning encoding. For humans, language acquisition and mastery rely on social interactions that support the process of imitating and incorporating other sounds into vocalizations. For humans, language acquisition and mastery rely on social interactions that support the process of imitating and incorporating other sounds into vocalizations. Since our common ancestor with birds diverged from mammals more than 380 million years ago, we have emerged as having an unusual ability to spontaneously form a language through imitating our environments. A building's squeak becomes a universal greeting; the itch that is common to everyone becomes a medical ailment that is not shared by anyone else; the sound of crunching ice and stone on pavement becomes someone's distinctive cry.

Whether in the case of music or any other phenomenon, if an organism or a system can be perceived as sharing characteristics with an external condition, it can share those characteristics through imitation and the generation of a response: stimulus. What may at first appear to be novelty or novelty of a kind can later become the (imitative) essence of a set of states. The crucial point is that this stimulus and response create an entity, a system of states, which is spatially and temporally defined by the stimulus-response system. In the development of human imitation, the interaction between the internal states and the possible responses of others depends on the interactions of humans with each other and with the external environment. The underlying principle of imitation remains complex and widely diverse in terms of rules and structure of the signals and their responses. But the direct imitation of the internal states of the individuals is relatively simple to identify.

An obvious question to arise is 'What is music?' A more difficult question to answer is 'What is music's purpose?', for the answers to these questions often present a contradiction. There seems to be a false dichotomy between providing high cognitive function, and providing pleasure. When cognitive function comes first, pleasure becomes the product. Music is supposed to be neuro-pleasurable. The fact that it often fails to deliver this end does not detract from the possibility that it might also be the ends in and of itself. The same line of thinking can be applied to languages. Language is often alleged to be inherently

pleasurable. But language provides pleasure via a control over perception, and as Charles Bock puts it, “there is no pleasure in linguistic deprivation”. Language must deliver pleasure somehow, and it is possible to connect the pleasure in language with pleasure in music. Music is subject to the same constraints as language, which means that it often functions to impose restrictions on its users. For example, one might hear a song and decide to dance. The song may demand a certain minimum ratio of 1:2 of quarter notes:E flat fifths; or a certain ear for the intervals of 4ths and 7ths; or a certain coordination of the auditory and visual senses; or a sensitivity to time that can detect rhythms and measure accordingly. The song also demands a minimum level of cognitive control; to recognize the minor third, make the interval properly align with the beat, and so on. There is also a certain degree of physical coordination. There is an internal and external time component, and a need for co-ordination. The song might ask for this level of skill because it offers the opportunity for play; an opportunity for the ability to experience the pleasure of listening to music. Linguistics, in other words, is not off the hook for the pleasure of music. Linguistic constraints could also be justified on the grounds of pleasure, even if the pleasure is attributed to the constraint itself.

A more positive expression of the wolf face is found in the dogs of the Neolithic period. Our canine cousins were socially complex, closely related and culturally versatile. From a human perspective the beauty of dogs can be compared to a human face. Some of the oldest artworks that have survived come from the Egyptian catacombs, as both were undeniably important in the lives of both their owners and their owners’ deities. Something else about our dogs that adds to their iconic status in Western culture is the physiological similarity of their social behavior and facial structure to that of humans. Neolithic humans perceived the dog-human sociality as well: Some of the earliest evidence of dogs in Neolithic Europe is found in excavations at Jericho, Israel. It is clear that dogs were domesticated in a far earlier period than previously thought. It seems likely that our species is the second species to have been domesticated, after the wolf.

A minor pentatonic scale divides the octave into thirds; the dog face just has five (whereas the dog face itself is still a dog, but is more dog than anyone else in the group). A minor triad of six fifths and a minor seventh chord implies a soft, melancholy lament. A major triad of five

fifths and a major seventh chord suggests a raucous, explosive celebration. There is also the distinction, suggested by Dawkins (who trained as a musicologist) between vertical minor and horizontal minor, in which the interval between A and E is a minor third, but in which the interval between A and F is a major third. The ascending minor sixth is a familiar interval for most of us, and is often used in the tonal language we use for entertainment: the minor blues has a major chord in its fourth bar, while the minor jazz guitar has a major chord in its third bar. Often the major chord is a fundamental note, and the minor chord is a dissonance.

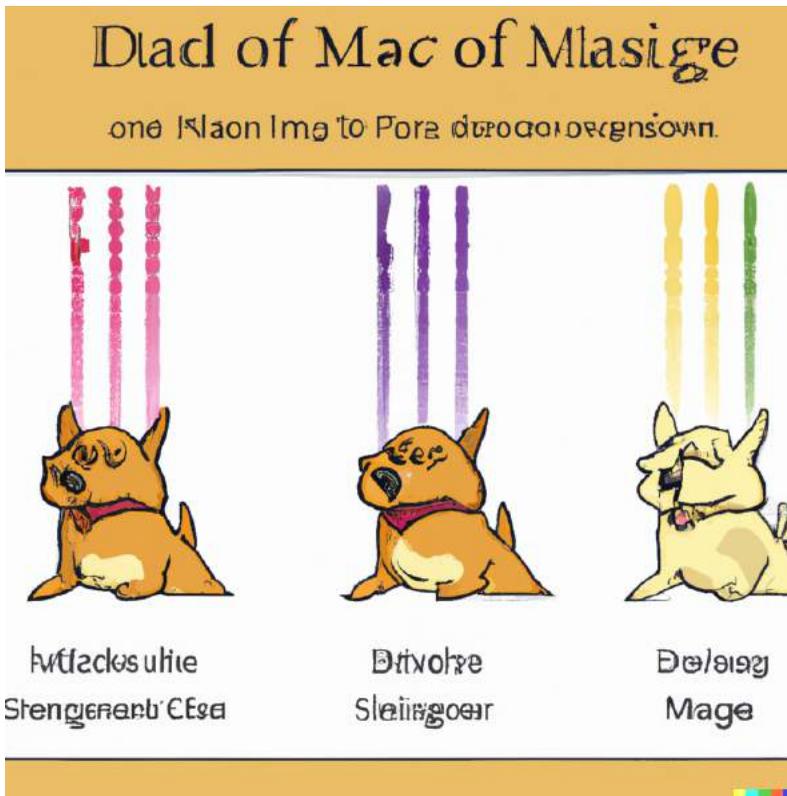


Figure 5.4: Artist Takami Takemura reveals emotions of his ten-year-old self (a girl from the internet) through the works of American artists Ed Ruscha and Christian Marclay. Original photo by: Atsuko Satō.

Dancing Horses

There are many techniques and approaches for food production. Producing sushi is just one example. In Singapore, crayfish, ants, spiders and clams are farmed and consumed. The crayfish that appear in local restaurants are usually farmed in the estuary of Sungei Buloh, and picked at night, when they don't feel threatened. Here in our part of the world, our most common animal companion is the dog. We call them our "gentle giant". The same goes for many other parts of the world. We have cats, cats, and we also have iguanas. We are quite familiar with the welfare of dogs and cats. But, one subject that we often overlook in this pet industry is the welfare of other animals.

I set out to answer three questions. First, what is empathy? Second, what is cuteness? Third, how can these two qualities be combined for the good of those receiving care? What is empathy? Empathy is a social exchange of sensory impressions that reduces pain, distress, discomfort, and fear in others. Like communication in the face of language, this exchange is often aided by the language of the owner, through the use of words and body language. Empathy is a specific kind of empathy. In addition to sharing in the social bond, like all social bonds, it is a particular kind of emotion, differing from others by having a specialized domain: the vicarious living (for example, when a baby cries because it is lonely). The voluntary purchase of products, such as CBD in cannabis and CBD products for pets, acts to give people the vicarious life (the joy of Lil Bub) through the vicarious exposure to the benefits of CBD for pets.

People around the world have rallied to support Bub, from planning fundraisers and live streams to posting Facebook messages about her online. Her story was featured on the Ellen DeGeneres show in October 2013 and in a 2013 Good Morning America segment on animals in need of homes. Lil Bub was inducted into the National Cat Hall of Fame on November 16, 2014. The Dude & Frank foundation is a charity dedicated to fighting poverty and educating cats in need. The foundation also offers free veterinary care to cats with special needs. When Dude adopted Bub he did not know her background, he thought she was a stray and was surprised that someone would take in a cat that looks like her. Dude says he often gets asked if she is his cat. When Dude first saw Bub he knew he wanted her. He felt a connection. Bub, like all cats, is a

gift to the Dude. She was not going to remain in a cage, being tortured by being forced to live her life in an unnatural environment.



Figure 5.5: Lil Bub seen in January 2016, 11 months after her cancer diagnosis. She is a healthy 7-year-old.

This cuteness that I described above can also be seen in the cuddles the dad bods give to Bub. Whether this is a stand-in for sexual gratification, the laughter and giggles in the video hint at that. However, some people are not as willing to accommodate to this popular norm. Throughout the video, there are multiple instances in which he asks for reassurance from others. When he pulls off the collar of Bub's shirt (using one of her toys), a woman asks "I just worry about her, is she too

152

young to be held like that?” Another question that Dad Bod is asked is whether he is a “good person”. When he takes off his shirt, he is asked by the camera person, “you’re not gay, are you?” As for the cuddling, another question is whether Dude is going to “dump” the cat. However, the video ends with the same answer to this question as the title: “of course I’m not gonna dump my cat.”

“The feeling of camaraderie is very important. We watched the foxes’ responses during more than 40 hours of video recording, and the level of tenderness of their responses to humans was so strong, that one could almost feel that it had been pre-programmed by the genetic algorithm.” The same kind of manifestation can be seen in the research on domesticated dogs. In studies of difference between tame, a breed of dogs brought in as pets and aggressive dogs in nature, there are patterns of differentiation and parallel evolution that indicate a natural selection of softness. The tame are susceptible to domestication and are more docile to humans; the aggressive dogs and feral dogs are seen as genetically weak and are not.

The dire consequences of failure to complete the metamorphosis are not easily explained. When fox pups are young, they are typically active all day, every day, and typically become bored. They begin exploring the outside world at this point, especially by running on grass, and begin to tolerate or even enjoy the company of humans. These explorations are a stressful experience for the young foxes because the terrain is dangerous, both literally (running through fields of poison ivy or other substances on the ground) and figuratively (running into human activity such as farmers’ or livestock protection dogs). Thus, the young foxes may suffer injuries from running into these canines. Even if these foxes survive and do not suffer from injury, these early encounters are a cause of psychological stress.

Most genetic factors, the copying of DNA from one generation to the next, are not expressed until a certain age in human species. This idea, that evolutionary processes regulate gene expression to keep populations from being so fragile that they’re wiped out by disease or war or hunting, is a theme I will explore throughout my writing. The net effect of the cuteness-enhancing process was that Belyaev’s foxes would remain playful, playful for a long time – up to 10 years for females – and his selective breeding worked, so that his female descendants were not only larger than foxes from other populations, but also produced more cubs,

had longer gestation periods and generally 'lived' longer than foxes bred for other purposes. Indeed, once the genetic mechanism that Belyaev described was found, it was realized that other studies into the expression of social behaviours – foxes hooting in packs, for example – could be reliably tested for changes in gene expression after being subjected to selection.

The wild behaviour and attractiveness of domesticated animals may be so attractive that others would adopt them as pets as well. The domestic dog is currently the most commonly owned dog in the world and is a high-status animal. In terms of psychological dominance, the theory suggests that domestic dogs occupy the same place as chimp and gibbon families in the dominance hierarchy of their domains. In the wild, dogs would compete for resource dominance with pack members, but in a domesticated environment they have a weaker and more submissive role.

The first way to work out a response to cute aggression is to admit that the problem may be with us, not with cute things. What we need to do is take time to consider the ways we are trying to interact with the cute. The difference between a cute and an ordinary thing is not in the obvious visual qualities, but in a complex feedback loop of social interactions. While the presence of a cuteness intensifies the benefit of looking cute, it also activates aspects of the human brain that motivate us to interact. So the presence of cute aggression is a sign that we are too concerned with looking cute, rather than being with the baby. On the other hand, as illustrated by Lil Bub and the process she underwent in order to achieve popularity, there are ways to modify the attractiveness of cute objects without altering their inherent attractiveness, or altering the process of development. What we need to look at is a more flexible definition of cuteness. In research on cuteness, some authors have argued that, based on its predictive value, the human brain selects for the most common phenotypes. The measure of cuteness would therefore be one of statistical averages of the most common phenotypes of all living things. This definition does not allow for variation in population variability, but it might provide a framework for dealing with cute aggression. For example, one way to respond is to consider a new picture of the baby. An alternative, more extreme, way to react would be to kick and punch the baby, like others have done, because it would prevent the baby from becoming one of the most common phenotypes.

There is, of course, another explanation for cute aggression: cute aggression simply does not exist in mammals, at least not among the listed species. Elegant and curious as it may be, it simply has no place in the genus *Homo*. But this begs the question: why doesn't it exist in mammals? Maybe, we're evolved in a different way than our distant hominin relatives. Perhaps our relative generosity is mostly an illusion. Maybe there is an evolutionary process that naturally selects for species that are most generous, which may then evolve to be the least aggressive as well. Or maybe we simply haven't evolved into the sweet-natured creatures we often want to be, that we end up as every night, looking in the mirror, and wonder what happened.

"There is a higher level of sexual instinctivity at work, above our rational functions, beyond even our physical impulses; it lies in the physical recesses, beyond the blue or the red, the feelings of pleasure and pain, the penis or the nipple. And if these elements are incorporated into the sensuous elements of the representation, we arrive at a higher degree of matter of a kind which appeals to the highest level of sensibility in human beings." Beyond this note is a history of sickness and / or death afflicting women and children which then turned into female beauty. Historian Lyndsay Lange notes that "the concept of maternal mortality in the United States would become synonymous with female beauty." The belief in female attractiveness was not just about the sexual attractiveness of the female body, but because of the "sexual value women place on the symbolic ideal of motherhood". The naturalness and sensuality of women and girls is also regarded as an integral part of the beauty of the natural world. The late 19th century mother goddessism of Elvira Lindo was one prominent example of this. Lindo writes of her experience with the Natural and Her False, a female neoscientist who asserted that, "In the natural world there are two principles which are everywhere the same. The women are mother-mother and the men are father-father." Through Darwin, H. G. Wells, Jules Verne, the Gothic novel, and the romanticism of Alexander Dumas, *La Belle et la Bête*, feminists have often responded to the denial of motherhood.

The mistake is to focus on giving and giving the entire day. This is also a means of seduction, where weakness and vulnerability are re-framed. The idea is not to have sex, but to fall in love with someone. The idea is not to seduce, but to entertain the idea of seduction.

There are many different kinds of cute aggression. Most of the time, one finds it in children who view other humans as sources of entertainment, as something to be interacted with, held, touched. One finds it in infants who take their parents or other caretakers as their toys or playmates. One finds it in toddlers who pinch and otherwise act out. And then one finds it in people who get pleasure from inflicting pain on other people. Many of these things are, at their core, not particularly satisfying. They do not produce knowledge or self-knowledge, they do not facilitate the control of one's environment, they do not focus on what is most important in one's life. If there is no win, what reason is there to keep fighting? If one were to learn something valuable from a fight, shouldn't it be something worth fighting for, rather than something valued primarily for its benefits in regards to what one does next? These experiences can be physically and psychologically exhausting, even gratifying in a confusing way. What is it about them that produces such feelings? Consider how babies and toddlers are often observed to take pleasure in causing others physical pain, and how that same pleasure is not seen when they are doing things to get themselves what they want. Most interactions between children and adults are cute-aggressive, as the infant takes the parent as a toy or a form of entertainment. More problematic is when the object of cute aggression is a person's self-presentation. Many people find it cute when babies or children squeal and yell, or otherwise engage in rather extreme versions of their own name calling.

Alternatively, in the wild, one might see a cub playing aggressively with an adult, perhaps in play-fights. Such a play-fight might involve a playful "chase" or a "pounce", and is used to teach the young predator how to hunt an adult. Similarly, a predator learning how to hunt an adult is also more likely to be cute in their behaviors. Therefore, if the animal in question – a young predator learning to hunt – appears to fail the adorable test, a second possibility is the two-fold strategy of responding to the cute with aggression and submission. In the case of cats and dogs, if a little dog like mine comes up to sniff me then bares her teeth, I typically become snarly and aggressive, exhibiting a "No, this is my space!" style of response. I sometimes use my fangs or even swat at her. If she tries to lick my face, I generally swat at her face or punch her in the ribs or mouth with my front paws.

While it may seem frivolous to mention how much it might hurt to encounter a cute, my mind just can't seem to help but dwell on it. The other night I was at a friend's house with the adorable dog (and some of his cousins). It was late, but the three dogs had been quietly minding their own business and licking themselves off, when the bark turned into a growl and a howl. Not wanting to be a squeaky wheel, my investigation of cuddly squashed by a full scale social trend, I must now move on to further tests. Of course, the research is not limited to puppies, as there are other areas where cuteness could be tested. Small, furry rodents, for example, that live on the ground, seem to die or are allowed to die when given a bath, and the injured are healed far more quickly when being fed by the same cat. I have also recently started to experiment with the puppetry of insects, and look forward to seeing how the creative nature of the hands used will alter the behavior of the insect.

In a 2012 article titled 'What Is Beauty?', an anonymous blogger posts the results of a selfie-taking survey undertaken on her blog. As many as 46% of the participants, male and female alike, admit to using filters on their smartphones to make their appearance more "beautiful" and "confident". It is as if reality is disconnected from any distinction between realism and beauty, i.e. between the real world and a fantasy world that they envision in the form of their profile photos. Sometimes, this fantasy is so overwhelming that these bloggers admit to having had to filter their photos to tone down the artificiality of their appearances. The Tumblr 'This is Cute' posts images with swiping motions and addictive post tags like 'unreal' and 'idk whats going on', presenting the fuzzy charm of cute as an ideal of womanhood and femininity, as long as it is created artificially. The sub-genre of 'goddess day' is dominated by Groucho Marx-style work-at-home beauties whose faces often are photo-shopped to fit the archetype of the sex object. Likewise, it seems as if Western countries have collectively developed a particular taste in specific kinds of characters—young, doe-eyed 'babes'—that are desirable as sexual partners. A similar pattern appears in Eastern cultures, where what was viewed as abnormal were exaggerated facial features, often accentuated with stylized noses or elongated, cone-shaped heads, sometimes even the appearance of gargantuan teeth. Such characters are frequently female, because they are generally the targets of harassment, so they are the ones required to play the part of the goddess. In fact, these are the main differences between the 'goddess'

and the 'horror' version of the character: the former is more visually pleasing, but less sexually attractive.

A lot of its features are either entirely new or strikingly recent. The face is dramatically lighter than a young woman in her early twenties would typically be. In fact, it's paler than you might expect a flesh-and-blood woman of any age to be. It also has a lot of wrinkles and a cadaver's downturned mouth and closed-lip smile. It isn't the face of an extremely old woman, or a corpse, or a celebrity (or even a doll) but an actually human—and we don't know who she is, but it's pretty clear that she's not a nine-year-old from Houston. She might be a synthetic, or possibly a composite of multiple faces. She could be a photo of a child based on a particular photograph of another child. And so on. A number of things can probably be said about 'face X'. For a start, she looks like nothing in particular. She could have been carved from a female doll or any number of artificial menagerie. But something happened to the designer or creator of the face, perhaps early in the production process, that turned it into a bizarre product.

Can a zeitgeist context facilitate this kind of behavior? It seems to do so for the social movement feminism of the early twenty-first century, which appears to be targeted at the agender kid-universe, with many more cats becoming zeitgeisty while the remaining beasts opt for panthers and foxes. The cat's place as childlike and socially accepted, with their simultaneous longing for self-discovery and domestication, allows them to communicate more immediately with kids as well as adults. In an online world of constant digital interaction, the pleasures of shared physical activities, friendship, knowledge, art, sex, hunger, nostalgia, and non-violence are all included as manifestations of the zeitgeist. In the Cat Tribe, a zeitgeist context for a movement, must in the end mean the parallel, or even the causal proximity of two movements. It's possible to see an explicit coincidence here with the human pathologies that preoccupy the feminist zeitgeist, especially the parasitical capitalism inherent in late capitalism, but, to repeat, I do not think we have reason to believe that zeitgeist conditions can actually engender societies. These are just implications of the interpretation of zeitgeist dynamics, as we did with the gun-totting subjects of the Waking Sleep series.

With such a young and naïve look, Belle Delphine does not appear to be a predatory figure, as she is often free to interact with her audience

on OnlyFans. However, on her Tumblr, where she uses her real name, Belle Delphine presents herself as looking for affection. In a “heart to heart” chat with her fanbase, she tells them that she has a boyfriend and that she needs their support. Belle Delphine also sends personal messages to her subscribers on her Tumblr, and on YouTube she provides unsolicited sexualized content and invites viewers to take a look at her private life. She gives names and links to her social media profiles and personal details (such as her address). In another video she is filmed performing fellatio on herself.

In addition to this aspect of making Belle Delphine more attractive to her fans, the fan sites extend her reality through her favorite pets. She often creates photos and videos with her cats and dogs as a metaphor for her sex life, giving fans the opportunity to see her both with and without her pets, and being both simultaneously and unlike herself. It is believed that beyond the Japanese fan-meets-famous-celebrity paradox of the Japanese fandom of animals, that the entwining of the human-pet is one of the strongest connections, and that a fan may have as much animalistic fascination with their idol as they do with their human counterparts. If this is the case, then fans may fantasize about being intimately involved with their favorite idols. While Belle Delphine is not necessarily an exception, I was somewhat surprised to learn that the majority of her public support comes from her animal posts. It seems that there is a direct connection between her erotic aesthetic and her practice of parasocial relations. Whether they care about her works, her personality, her family, or what she eats for dinner, fans find satisfaction in looking at the non-human-human triad formed by her public pets.

Vorophilia and uniting these fantasies is almost certainly the extended metaphor that humans are sometimes consumed by their enemies. That there is a shared fascination with sexual cannibalism is enough to suggest a possible correlation between these phenomena. Tastes for cuteness or cuddliness can be highly beneficial in identifying with another creature (where the appropriate background is available) without engaging emotionally with it or giving it any special human rights. In particular, there is research that suggests the power to deceive in a physical threat, where one creature is seemingly lovable and/or defenseless, can work to gain the trust of another. Since the combination of cuteness and strength-based forms of aggression provides a useful tool for political subversion, it makes sense that such taboo and illegal acts would be

actively exploited by the modern left. In addition to this, the integration of cute aggression into sexual sexuality opens up exciting new avenues for investigation into how even the animal world can be subverted and manipulated in the service of a political cause.

Cute aggression in Western culture also reveals an association of the act of being attracted to something cute and the 'fetishization' of it, namely the idea that sexual arousal is triggered when one likes something cute. On the other hand, it often goes without saying that the same concept applies for finding something cute as well, such as when one spends a lot of time on social media platforms being fascinated with celebrity culture and pop culture in general. In some cases, the same concept can be understood in a more speculative manner. If cute aggression is the tendency to sexualize a certain kind of physical characteristic, one could also call this phenomenon homocute aggression, where the tinge of cuteness is extended into another physical quality that has a sexual allure to it.

While the idea of the cute leads us to an exploration of the role of cuteness in all of these seemingly opposing, and maybe even homogenous, domains, the distinction between cute and 'wrong' seems largely unclear. In the particular cases of mass murder and ritual murder, the obvious difference is the violation of innocents by one's followers or followers' followers, the offence, the brutality. If cute behavior is constitutive of cute aggression, such a violation would constitute an offence, would, in a sense, be wrong. But if the innocence of the victims is made fun of, what difference does that make, for they are a human and animal being to be toyed with. With extreme violence it is generally taken as a gross violation of the rights of those that one tortures and mutilates, but why would that not be the case with cute?

Perhaps the most difficult challenge in assessing cuteness is the question of deception. Within the animal literature there are plenty of instances of species deceiving other species into consuming them, from bees pollinating wildflowers to bats stealing insects from insects in the sky. But these cases involve infanticide and therefore cannot be considered examples of deceptive behavior. As pointed out above, there are, however, some cases where a deception may be mistaken for cuteness, and here we are not talking about deliberate deception but rather where species-typical features are mistaken for desirable 'cuteness'. One particular aspect of cuteness that is worth mentioning is

the ability to evoke infantile emotions in adults. Well documented cases include infants experiencing fear, anxiety, joy, and contentment when being exposed to certain stimuli. An infant may cry from fear and delight simultaneously.

Children have long been placed in the centre of the human imagination, as readers have often found them at the centre of fairy tales, poetry, and play. In Buddhism, children are the embodiment of “freedom”: freedom from conventional wisdom, its restrictions, and the trappings of religion. In the 14th-century Tibetan Buddhist text *Amitayus*: “a person is free only when they let go of fear and desire”. Unlike adults, whose freedom is conditional, a child is “free” because they are unconditionally accepted by their parents and loved by their community. Such a view of children clearly benefits society. The child’s relationship with the “dynamic and responsive world” is positive and healthy. “Children are social life at its most beautiful”, says Sarah Armstrong in *Giving Voice, Children in Our Times: Stories, Themes, and Comments on an Object of the Heart*. Children’s living is facilitated by the absence of politics and a spontaneous, relaxed approach to children’s literature.

Cuteness not only functions as an aspect of childhood and adolescence, but into old age as well. Given our pathological shift toward consumption and expansion, it is no surprise that consumers of cute things (like puppies and kittens) are more willing to put their hands into the bums of strangers, and show their faces on social media. We like cute things, and as more of us are cuter, more are generated. This trend is driven by ever more production of cute things, and continuously decreasing demand, as all of this production remains parasitically dependent on the current economic system. The increasing abundance of cute things generates consumer demand, so the output of cute things expands. With diminishing environmental constraints, demand for polluting products increases as rapidly as the supply of cute things. As economic systems become more consumer-centered and domesticated, cute things become less necessary. Unless I’m currently interested in a certain product, cute things lose their utility. It is this fundamental contradiction that ultimately imperils our species.

6

Twitter Energies

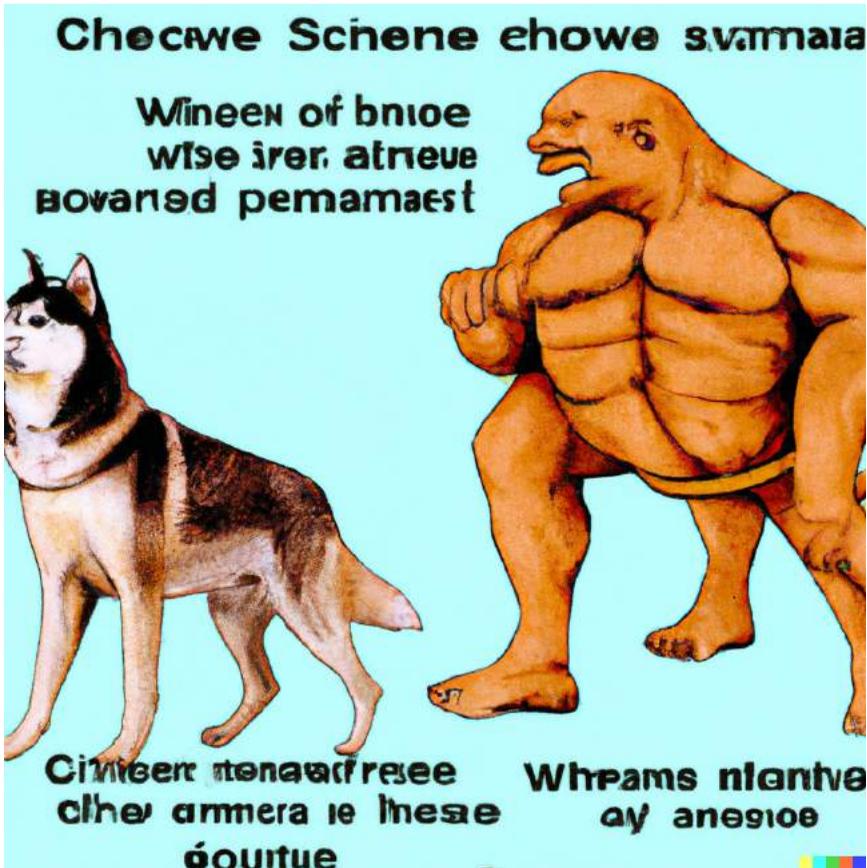


Figure 6.1. A meme contrasting prehistoric politics with modern politics. The image follows the format of 'swoldog versus cheems', which is itself a version of the format 'virgin versus chad'. Both of these meme formats are accompanied with binary opposing views, attached to either the brute or the meek. The specific image above also follows the common set-up in which the brute holds the ridiculous, yet favorable position – in contrast to civil discussions and differing political ideologies, it achieves success by raw power. Unknown origin/Know Your Meme.

Where are you all going now?

Humans laugh to derive entertainment from emotions elicited by funny things. Reactions to a funny thing can be described as laughter and frowns, and can be defined as varying degrees of smile or frown, or going from a frown to a smile, and back again. Humans are meant to react to things that feel good, giving laughter its origin and functional purpose. This is why, given the right stimulus and situation, you will laugh.

Humans laugh in general not to simply express their happiness or mood, but also to bond socially, and to develop a shared experience. Given that laughter is both the source of laughter and a socially-contagious form of communication, it would follow that laughter and laughter-induced bonding are two sides of the same coin, and there is a fair amount of support to support this. In both a 2005 study on the subject and another one published in the journal of *Evolution and Human Behavior* in 2014, most laughers reported experiencing social bonding, and many of them said that this was the main reason they laugh. In the same study, though, there were those who did not feel as if they gained anything from laughing with others, but rather found it humorous and funny when others laughed. It would seem that to them it was more of an enjoyable and casual social interaction.

Humor, as described by Bergson, is “the spontaneous distilling of whole convolutions of the mind and of the moral and social causes of life which are under the influence of certain iron laws of the composition of the mind.”² Such laws of the mind involve discrepancies, paradoxes and the (naturally) incompatible. In his work *The Laugh*, Bergson first defines humor as “[the] unconditioned opposition between a signifier and its opposite,”^[3] then proceeds to argue that it is also a mode of perception. Human perception of reality is governed by six essential conditions: object, distance, repetition, repetition with change, direction and time. Bergson’s metaphor of perception and laughter is a hypothetical construction: “[l]aughter is an idealization of the light of perception. It has neither form nor shape, but is pure sound, and by means of a resounding laugh is a reaction of the system...The entire subject-matter of laughter is this apparatus, that is to say, this frame of reference or system of views which the perceiver establishes, by means of which, instead of communicating with the object, he is transmitted to it by means of a gaseous system.”^[4] Humor is an extension of the word’s

original sense of amusement, and it is caused by the opposition between 'apparitions', we perceive what is due to a definite organ." [4]

Historically, the comedic principle of ironies finds its origins in the Greek philosopher Pythagoras who invented an art form of displaying flaws in objects that are perfectly built, such as chairs and lamps which are designed to collapse under their own weight. Since there is nothing wrong with them the act of displaying their flaws provokes laughter. It takes us back to the Greeks, who understood the role of laughter as the soul of comedy. How then does the philosopher/scientist Bergson relate it to his definition of laughter? The laughter of joy? How do you laugh? Matt Hancock, the British health and social care secretary, who made fun of the first day of his Conservative party conference by tweeting a picture of himself eating a sandwich while on his BlackBerry, demonstrates a proper usage of the humorous principle. He does so by poking fun at himself. The funny aspect of Hancock's tweet has little to do with anything in his policies. His words, gestures and body language are fairly predictable. But he plays his character in a parody, which makes him funny because he is a funny character himself. The enjoyment that others feel at the comic element of his tweet is in no way due to his political success. Indeed it is his lack of political success that is the real source of his humor.

A joke is a formal process in which two or more persons improvise what we call comedy, which means derision and ridicule. And this derision and ridicule is the result of two operations. First, ridicule is the product of a convention of jokes: as we say that someone is doing the "thing" in question, this convention is derided as disgusting. Then we appreciate what is really disgusting, the action itself, the man who acts, whose habit he is, his psychological or moral character: we reinterpret the ass of the joke into a handsome one, the suffering of the sinners into a self-sacrificing one, the success of the ass into a virtuous one, the subject of mockery into a hero. Only then does the ass become a representative of the object, an instrument for considering the thing itself, and the ass now is a philosopher. It stands as a testimony to what is really disgusting and despicable, to what is really shameful and impious. It finds its cause in the ass's ugliness, in the man who did the thing, in a society that is dead, in all the horrors of the world, in all its ironies. Finally, as a reward for this analysis, we have to laugh, which means our morality is strengthened, our character is improved.

Kierkegaard argues that human society operates best when its members behave in ways which encourage individual personality, but when they become like sheep in crowd-management they risk becoming sheep herders. The best polities in this world are like that. They guarantee liberty, but restrict individual liberty. The best polities therefore are “to repress some impulses in the Individual, but not others, as it were, to give each of us the right to think in his own way and to choose in his own life his own job” (N.K.s. 719). George

Orwell remarked that “a fully-fledged totalitarianism can only be achieved by using all the existing passions and prejudices of a society.”[1] George Orwell insisted that power must be used by the will of the people and they must be the masters of the resources with which they are employed. George Orwell insisted that a system of government must protect human beings “from their own stupidity,” whatever form that stupidity may take (N.K.s. 832).

The “aesthetic of farting” emerges from Bergson’s theory of the *sensus communis* – the intrinsic, inherent, subjective “sensation of every single thing in the world”. (Bergson, 1958: 55). The primary function of humor is to evoke this *sensus communis*: “since the *sensus communis* is one of the signs of the universality of reality”, humor derives from our awareness that “in the particular and the relative nothing is excluded”. Humor is thus a kind of heightened attention to particular details that for Bergson are universal truths. Further, Bergson’s sense of humor, when it comes to playful exploration of ideas, can be a tool of reflection and explanation, and would be part of any genuine conversation about art, philosophy and, indeed, everyday experience. By playing with and examining these ideas, we can work out where the limits and the potentials for a life lived actively and critically lie. This, in contrast to the quiet, introverted appreciation of the depths of particular works. In a late chapter on the virtue of play, Bergson extends these ideas to illustrate the ways in which we can look beyond the surface and “see the real there”. It can lead to a kind of meta-empirical irony. The fact that humor works best when a particular joke is told in the presence of people who find the joke funny is a kind of joke about the ethics of humor, or a joke about the desirability or ability to discern the truth of jokes. Bergson even suggests that “the identity of those to whom we are obliged to humor, directly leads us to another paradox” – a clever way of getting at the idea that we find the truth in context, in relation to others. So, a joke

works best when we use it to reveal something about our society, about our time.

We do have a strong tendency to watch comedy shows, to share other people's jokes, and to laugh along. Why do we feel that it is enjoyable? Is it the pleasure of watching others break the rules, or is it the recognition of the similarity to a part of ourselves, that also breaks rules? Through comedy, we may have some insight into how we are simultaneously heroic and pathetic, that simultaneously exemplify vulnerability and power, that simultaneously revel in our social conventions and pretend to break them. In some cases, we laugh at the outlandish and impulsive, then whisper "Yes, I feel that way too." The animal inside. Comedy thus serves as a mirror to the human predicament: it makes visible what we are still in search of: a sense of connection with each other. Jokes therefore exemplify that which is ephemeral and often meaningless, while showing that these things are often just as easily articulated as universal. Such dissonance often makes jokes uncomfortable to the listener, and the laughter itself is tied to a sense of relief, relief that we are not alone, that we are also capable of such impropriety, and relief that we can laugh at ourselves. In their book *Gag and Laughter*, Duberman and Grabenhorst highlight that humor is also, above all, an entertainment. In this case, amusement is often the preferred result. They go on to argue that humor is an attempt at removing oneself from the concrete situations in which we are in some way immersed. In their essay "On Weebles, Why We Laugh and How We Do it," Paul Rudnick and David S. Simon analyze the function of humor in situations where there is some risk of personal embarrassment or discomfort. Rudnick and Simon note that the humor in this sense was once a response to shame, but now this is often achieved through irony and self-deprecating humor, rather than shame. As Rudnick writes: "Laughter seems more effective against shame. When someone seems like they're going to crack and admit an embarrassing thought, you can't help but laugh." We laugh to avoid being embarrassed, even as we laugh at ourselves.

First of all, I must say that my research on humor has been somewhat varied, so I will not attempt to be comprehensive. It is, however, still within my field of expertise, as I read about jokes for a living. I have chosen to focus on the common genres of humor: cartoons, jokes, and satire. The content of this paper will be based primarily on my personal

research, although from my reading I have drawn upon some generalized research. My focus will be on five different areas: comedic appearance, social construction, rhetorical function, social goals, and interactive role of humor. To make sure I do not stray too far from my focus I will describe cartoons and other cartoons, but will not be offering much insight into comic books or Calvin and Hobbes. It would not be right to critique popular culture and draw upon my knowledge of a popular popular cartoon, for a work of humor requires a level of self-deprecating consciousness which I do not possess.

The majority of this chapter will examine US politics, rather than other political systems, in the light of Trump. The election and its aftermath was the first time that a political insurgent like Trump could win the presidency, and so for the first time it can be investigated with an American perspective. Some argue that Trump's election and the following rightwing shift, without the guidance of a liberal wing, is a sign that the left may have to look for a new way of appealing to the masses. This chapter looks at the legacy of comedy as a weapon against fascism, including the attempts of Stalin and Franco to use comedy to control the masses. Others argue that humor can act as a valuable political tool in specific cases, with individuals, parties, and groups that use humor strategically in order to communicate and win over the support of large groups, groups who may be vulnerable, scared, or full of preconceptions. For example, politically centrist supporters of populism who are also comedy fans might gain motivation from showing that other people are aware of or engaged with their beliefs, or from relating to it as a political movement rather than a joke. Populism is often attacked as irrational, but it is often based on a rational plan for a popular system

Joking as a means of political communication is not a new thing. But the extent to which hunter-gatherers use it compared to settled populations is extraordinary. The first book-length account of jokes, then, is Habermas's *Dialectic of Enlightenment*, which is also the first to take the level of hunter-gatherers seriously. He argues that within the first thousand years of the use of stone tools hunter-gatherers could tell jokes, just as we now use the word 'joke'. This was due to the fact that many jokes rely on a multiplicity of levels of figurative speech to make the political point. Even though hunter-gatherers share a world, they differ on the material base. For Habermas, the game of joke construction is part of the reflection on shared practices that form the basis of

liberalism, the point being that concepts become dialectically related and form the basis of a normativity. In other words, humor is an effect of articulating shared meanings within a social order.

At the time of the 2016 US presidential election, if you took to the internet, you would have noticed many online communities discussing memes with a sentiment that Trump will become the 45th President of the United States. The meme production is not as widespread as it used to be but the media exposure (in both his public appearances and much more scathing written critiques) by the “alt-right” racists, racists, alt-light conservatives and, most notably, the Alt-Lite right wingers is high. According to the New York Times, “at least half a dozen ‘meme’ communities have sprouted up to support Mr. Trump — including (/r/The_Donald, (/r/The_Donald/, /r/The_Donald_Trump_News, and /r/The_Donald_Trump_News_RT) and (/r/The_Donald_Nazi) (and the long running subreddit (/r/BasketofDeplorables). Trump has also gained a large following among gamers (in a good way) for most of his rise. Much of the memetic continuity in Trump is that his presence is taking on a meme-focused quality of his own.”

The use of irony and humor within this context is essential as a tool for addressing (refuting) reactionary and retrograde ideologies that can develop among certain communities in memes, and these memes can be used as elements in a joke against an opponent. This approach allows us to understand that an individual, community, and culture do not have the same traits, and that memes which belong to one culture may not be the same as those that belong to another. Such information is invaluable in the development of an ethnographic approach, as it allows for the “massification” of the communicative process. A very common image created for 4chan users to identify themselves is the character of “Daddy.” A similar image was created for Neo by the character of Neo. It consists of an older, white man in a tuxedo (seen in the opening credits for *The Matrix Reloaded*) but holding an AK-47 while yelling “I’m Neo!”. It is used to connect members to one another, to identify them, and perhaps also to ward off others who may be seeking to indoctrinate them. Another image that has found some use in memes is of a character named PewDiePie, who is a popular gamer with over ten million subscribers to his YouTube account, and has received the trophy for Most Popular Player in the Game of the Year for his game, *Fortnite*, from the gaming site IGN. The following image comes from the logo of

the animated movie *Boss Baby*. It consists of a big finger poking a baby's bottom. The origin of the image is unclear, but it is often used on 4chan.

The joke of Trump's use of language to get him into the White House is the joke of meme warfare, of the insult being taken as the real thing, so long as you believe in the joke as well. Politics has become as silly as its reputation, and politics is no longer seen as such a noble pursuit. Welcome to the age of the enraged pop psychology nerd. It's not funny that reality becomes even less funny.

The 4 Min Rule of Global Politics



Figure 6.2. An image macro from one of the Facebook groups used to propagate the meme. This image from “Tens of Thousands Call for Trump’s Impeachment.”

What are memes? Essentially, they are stories, images, or videos which are shared widely on the internet and within social media. Memes are seen as an alternative to news, and are generally considered to be much less curated or reflective. They can be factual or fictional. They are heavily dependent on humour and emotion. Memes are highly relatable and – at times – incite strong emotions of disgust and ire. The U.S. election became a brutal game of insult-induced celebrity, that was manipulated by many digital pollsters and pundits. A comedian could capture the true value of meme in our current election in just a few jokes. Memes are the emojis of political communication. A single emoji is an indicator of the popularity of a subject. Facebook is dominated by a set of emojis known as the face symbol. These range from the T-Rex to a tomato or a beach ball. The popularity of a subject, in this case an emoji, can be gauged by its popularity.

Humans have evolved to have the capacity to effectively organize and manage memes for the purpose of ensuring their propagation to succeeding generations. The role of humans in the process of meme production is undoubtedly complicated by social and cultural factors. People do not produce memes on their own, but use them and their organization to propagate their meme and transform them into other memes. The process of adopting memes, which at some point in the history of humankind may have been facilitated by the emergence of large scale communities, is called memetic dispersal. Individuals can adopt memes, and they can also be the subject of memes. There are various kinds of memes, and they can be various kinds of social memes, shared by individuals within particular social groups. Culture is primarily a memetic phenomenon. Much has been written about the origins of memes and the meaning of their components and their spread. Thus, the best summary would be to start with a look at the physical state of memes at birth, and move on to examine memes (memes ‘don’t’ exist); the meaning of memetic components; meme formation and transformation; memes at work; memes and culture; and memes and other aspects of culture.

Screenshot of Dawkins’ “Superfruit” music video. Darwin Man, a different meme that first gained notoriety on YouTube, consists of photos of a middle-aged man with a shaved head, a button-up shirt, and a beard. His left arm is tattooed with text, showing a slogan that reads

“Imagination is more important than knowledge,” followed by a quotation from Samuel Beckett: “I cannot go on with less than you believe in me.” In a poem on his shirt, the man quotes the poet Robinson Jeffers: “Every man has just one way of holding / All the mysteries in this world are in his eyes.” At the bottom of the shirt are the words “I am the meme” and underneath it, the face of a smiling brown cat wearing a tiara with a question mark in its mouth. He is named with the term “meme” as one who “proliferates and spreads from person to person.” While the meme may first be a concept of Dawkins’ and Adria and Iain’s research, Adria Stolworthy sees it as a medium for connecting people around common beliefs and identities.

Dawkins’ illustration of the origin of creative evolution is a good example of social-Darwinism as formulated by Francis Galton, Charles Darwin’s cousin. Here, Darwin emphasizes the special significance of cognitive abilities in evolving novelties, while Galton emphasizes the importance of non-cognitive abilities in the origin of novelties. Let me further elaborate on the role of behavioral approaches in this chapter. As discussed above, Steve Johnson is the “rabbi” of Team-led evolution. In his book *How Humor Began*, Johnson gives an account of how social interaction evolved into forms of humor. He emphasizes that evolution has helped the human population to maintain its reproductive potential by creating a reliable memory and not using strategies that have low reproductive success. In this section, I argue that the apes, including the human race, have a much greater capacity to relate to humor.

There are two distinct mechanisms through which memetic structures propagate through the Internet: imitation and selection. In both cases, a memetic item is given the stamp of approval by other users who can then share and replicate the meme and use it to their own advantage. Memes are iterated. In the analogy of internet memes, ideas move through three dimensions. They move up from the bottom up, comprising their variants and the feedback loops. They move up from the top down, representing whole memes, then down from the center up. Finally, they move to the right through multiple levels of aggregation. The attributes of the structure determine the interest and acceptance of users. This then determines their reproduction, emergence and scaling. The reverse is also true: a meme’s replication is based on its functionality as a means of communicating, learning or reproducing. Both, however, are connected: to replicate, an idea needs to be shared in its specific

context. Thus, when a meme is not maintained for long enough it disappears, and without persistence the memes may not transition into memetic forms. Thus, memetic structures generate and select content through replication, as well as iteration and shaping, which is why they form and break apart.

A popular meme started by popular social network 4chan (Internet slang: Also known as “Anarchist Librarian”, aka “lolcats”) became a catchphrase in March 2006, when user “ninjaandreblake” (nickname given by 4chan user “tyrantgamer”) posted an image macro online and titled it “Top 10 Reasons Why Japan is Better Than America”. It currently has over 22,000,000 views on Imgur, the image hosting site, and it has been replicated across the Internet. Many Internet users associate Top 10 with the Japanese generalization “kenpō” (近華), meaning cool, awesome, or absolutely wonderful. In addition to Top 10, similar memes called 8 Directions and Hitoshi Matsubara, have taken the meme format to viral success. Matsubara’s “Right Way” video inspired countless imitations and caused the video to be viewed over 2.2 billion times across the internet.

Contemporary audiences enjoy the less sophisticated aesthetics of internet memes. A virtual world, Facebook provides the means to develop and distribute a variety of short-form images, easily distributed over Twitter and to the wider online community. In this case, Facebook establishes the right to publicity for content on its website. This idea is often criticised for having negative legal and moral implications. When a satirical, cultural, or political message is embedded in a seemingly private exchange, is the message subject to the right to publicity or is the photographer and/or writer of the meme responsible for the creation of the original image? Such questions are no longer answered clearly in the United States, as they were in Britain. In the United States, ‘The development of new technologies does not always lead to fair protections, because the US courts have usually declined to follow the German or European Court decisions interpreting the right to publicity in non-digital contexts’ (Doyle 2014, 394).

In her interviews, Audrey Shifman spoke with a number of users of the database, and it is clear that there are similar patterns across people who discuss the individual and the concept of Trump. These common features must be understood as the elements of personhood, that is, as the elements of the memetic construct. I call them meme-human, meme-

humanity. Meme-human is a term of art in the fields of internet studies and memetics to denote a meme that is transmitted through cultural practices that transmit itself from one memetic agent (the source) to other memetic agents (recipients). In the era of the internet, meme-humanity can be a construct of users, a virtual person, or the fully realised flesh-and-blood person of a celebrity and politician, and therefore not beholden to any geographic location, nor to the practices and ideology of a particular cultural community. They are memes and they are humans: that's what makes the interaction of a meme and its creator so important.

As opposed to other forms that have taken shape, the meme-Trump looks back to the exact moment of his presidential candidacy. Most other types could trace their origins to the presidential campaign itself, but the Meme-Trump has his roots in the online campaign that followed the announcement of his candidacy, which was the moment he became a meme in the sense that the acronym became popular in online circles. The explosion of Trump memes over the past few months has more to do with a deep investment in the campaign than with the candidate himself. They rely on a sense of the comic and their conveying of a visual image that tends to remain within the bounds of political relevance. They more closely resemble the political iconography of the campaign's own candidates than they do that of Trump himself.

It is also a fact that the intense engagement that Meme-Trump has received corresponds with the increased prominence and popularity of his campaign. The Meme-Trump frame is now a solid component of a Trump campaign narrative that appears on Twitter, Facebook and elsewhere.

The current meme takes a satiric pleasure in the mockery of Trump's inability to sustain a long, flat plane of hair. Trump's scalp is thus "thinning, balding, and in desperate need of a trim" as a portent of a fall. His scalp recalls the hair of the poet Carl Sandburg, who mused about the thinning hairs of the dinosaurs: "When I hear his name the hair stands up on my neck in back. You can look and see." This draws a connection with the beast-head described in Genesis 9:3–6, which shares the same confusion-mirroring quality of Trump's rise to power: "When the woman saw that the fruit of the tree was good for food and pleasing to the eye, and also desirable for gaining wisdom, she took some and ate it. She also gave some to her husband, who was with her, and he ate it."

Much is made of the resemblance of the Trump skeleton to Pepe the Frog, often used by racists and white supremacists. In *The Simpsons*, this resemblance was originally supposed to be just a joke, but it soon took on sinister significance, with many claiming Pepe to be the mascot of white supremacists. The former CEO of GoDaddy, Dan Scavino, commented that: “The face of your beloved Pepe the Frog has been hijacked by hate-filled criminals”, and referred to the photo-shopped image of Trump as Pepe as an “anti-semitic/racist meme”. Other meme-Trump examples include the bright yellow, smiling, tangerine Pepe rendered by Photoshoppers as Trump, which provides the impression of a cartoon rat: “El Jefe”, the leader of the “Donkey Brigade”. “Jefe” means “chief” in Spanish, and Pepe is drawn in the role of a figurehead. This brings up the ever-present criticisms of Trump’s use of Pepe, with some accusing him of co-opting the “Internet Pepe” meme without actually creating it.

Comparison of two Trump memes. Cartoon of Trump hitting Hillary Clinton has a caption stating that she ‘collapsed and fainted’ while being investigated for her emails. In the same spirit, during the CNN interview, Trump was lambasted by Lemon, Sanders and Beck for consistently referencing the show by name. Trump began his tirade by complaining that Lemon insulted his intelligence, claiming the anchor thought he was an idiot. Trump was also angry because Lemon made reference to the comments he had made at a rally regarding his daughter’s vaginal procedure, remarking that he would love to sue her over them. Trump claimed Lemon had ruined his evening, insisting that he wanted to watch Fox News instead. At the beginning of the interview, Trump, with characteristic forcefulness, held a mild, questioning tone in which Lemon was referred to as ‘Don Lemon’, instead of using his full name. This was consistent with Trump’s usual tactic of using his given name when addressing a person by name, except for his two wives, his daughter Ivanka and son Eric, and his own campaign manager Kellyanne Conway, who he has often referred to as ‘nasty’ or ‘Conway’.

Taken as a whole, the images defy the narrative of Trump as a traditional political figure or as a competent businessman. Instead, they feed into a far more fantastical and apocalyptic narrative, where Trump represents progress, America, and freedom from tyranny, while his opponent represents authoritarianism, fascism, and violence. The goal appears to be to make Trump look like a superhero, and Clinton to look

like a villain. Another image shows Trump aiming a rocket launcher, which has been plated with jewels and accents. Several news outlets have cited the image as an example of Trump's foreign policy, while other commentators have suggested it is an endorsement of domestic terrorism. One art reviewer described it as representing a "pseudo-gothic" new "golden age," devoid of democracy.

The hardest part of understanding how a meme can impact real politics is how it's received by Trump supporters. For the most part, memes serve as a short-term reaction to an argument. If there are pictures of him in a dumb pose, a cartoon frog that looks a bit like Pepe in the other hand, or someone blowing up a gun, it's easy to take out our aggression on the images. They can feel a little bit closer to reality than an argument. For those in the opposing camp, however, an ugly picture of Trump saying a made-up word, the conspiracy theorist on television, or an unstable killer is a response that goes beyond Trump supporters' capacity for argument. The angry tweets express a feeling of oppression and fear that they might be made targets for a greater evil. For Trump supporters, a meme of Trump using a military-grade nuclear weapon, a cartoon frog, or maybe one of the sex offenders released from prison, is a form of defense. They know a meme is just a picture of an orange monster, but if it's given a polarizing person with a slightly different angle and a quote that goes along with it.

Meanwhile, on the other side of the political spectrum, the walls come tumbling down. The Trump image frames the headscarf as a symbol of Muslim womanhood, which is attacked in the comic and the other images. The Statue of Liberty with its head in its hands, recalling its reference to Trump's Muslim ban, tells us that Trump has not only introduced the idea of building a wall between the US and Mexico, but has effectively banned the symbol of diversity. 'The Statue of Liberty cannot be forgotten,' says one image, breaking down its establishment as a symbol of American symbol of hope. The cover of *We Can't Make America Great Again* by American artist Tom Neely features a picture of two young boys that instantly reminds the viewer of Trump's ten-year-old son, who raised eyebrows in a campaign video about the need to 'Make America Great Again'. The image is designed to cast doubt over Trump's patriotism and to suggest that he, and the other figures of his government, can never make America great again.

LulzSec, the hacking group, popularised the term “trolling” in 2005. The “evil” trolling of the group was more philosophical than purely malicious, using humour and irony to suggest that other users, if not genuine, at least did not understand the seriousness of the topics which they discussed. The US anarchist and internet activist group “Occupy Lulz” also use satire and irony to comment on contemporary politics and subvert power structures in the west. “Lulz” is also an abbreviation for “Laugh out Loud” and “LulzSec” is a splinter group of “Anonymous” – a loosely affiliated group of internet hackers and cyber activists, with a number of branches that focus on intellectual crime. Anonymous are a group of computer hackers who have claimed responsibility for large-scale data breaches. The most notorious hack was that of the private intelligence company Stratfor. In December 2011, the Anonymous group stole approximately five million e-mails and leaked them to the internet. The group released a statement stating that they were proud of what Stratfor had done for the rich and powerful, which allowed them to manipulate and control nations and entire populations: “Trolling government and corporations is for losers. We are Anonymous, the people. You have been warned.” This statement signifies both the strength and the weakness of the relationship between the “hero” and the “villain” in trolling. A rhetoric of evil and good, or objective analysis and derision, brings into question whether moral and ethical arguments can ever be based on a reality independent from the desires of the strong-willed, which are the only factors determining reality. Trolling, like all forms of humour, is, first and foremost, a political act. Making fun of public figures and political positions does not necessarily mean that a user intends to defame them or “shut them up”, but rather that they use humour as a means of undermining their credibility and degrading the status quo. A dominant narrative in the west is the “grand narrative”, where the reason for its success is because people are easily manipulated by ideologies such as capitalism and democracy. If a larger portion of people question the system or are perceived as political opponents, the public face of the state will be called into question, allowing for the possibility of political change.

Trump poses a paradox. Like Trump himself, who cannot see beyond his own desires and grudges, the troll – as anti-Trump commentators have warned – does not allow Trump’s jokes and distortions to evolve, moving us toward a more coherent narrative. The troll will not let a little

thing like the truth stand in the way of some fresh tweet. And Trump – who insists on making every administration’s first hundred days a litmus test of his tenure – has reached that milestone a few days early, and seems to have already thrown all of his opponents and critics overboard. His latest gambit is a childish declaration that he will be “100% willing” to testify under oath that he did not obstruct justice, but declined to make the pledge of a personal appearance in Congress that he set for last month. This story is already dominated by Trump’s belief that any investigator not being a member of the Republican Party can’t be trusted.

This meme could be extrapolated on a national scale, one that doesn’t focus on just our current president. If it was, the efforts of the media to stop Trump would seem futile, with every headline opening with: “A man who does not understand that there is more to this world than reality television and famous people is our new president.” If the public cannot find the courage to accept this fact, the media must find new strategies to spread information. One of these strategies is to come up with humorous ways to address the issues that both Trump and his supporters use to justify his actions.

Trump as a meme is not particularly original. Most of his fan base have come from such communities as 4Chan, Gab, Reddit and various memes websites. His discourse of ‘winning’ as a meme did emerge from Reddit and a “Purple Perm” lookalike was said to have had a massive part to play. By presenting Trump as the ultimate internet meme, the symbolism can be seen as closely related to Occupy, the Refuse Fascism movement, and various Anonymous movements of the last couple of years. It is a neo-surrealist propaganda which has become for many the most dramatic response to an election, rather than voting for or against the candidate.

The Triggers of Cyber Bullying

Facebook has found the regular Facebook user to be almost entirely tribal (excluding far-left users), as this would be the point where someone has a finite number of friends and can track their social network, but some have pointed out that trolling can also be a tribal activity. Thus it seems that all social media is contributing to tribalism. However, Twitter’s fanbase is overwhelmingly individualistic and so its influence on social cohesion is smaller, and it is likely to be a candidate

for utopian society, as is Facebook. However, tribe is probably more than mere identity politics. We have two main tribes at present: the first one consists of conservatives in the US, who have been galvanized by Trump's candidacy and the dramatic change in policy advocated by his campaign. The second is of course liberals who have rallied around "social justice warriors" (SJWs) and are upset by the very nature of "male privilege" and "white privilege" which the dominant liberal thought is supposed to be protecting them from. The cultural war this election seems to be pivoting on is quite obviously political correctness, which all conservatives are against, as well as the immigration policies of the Democrats which Trump supporters believe are unfairly targeting Muslims. That is not to say that all of the Republican's supporters are the "alt-right", but we do have an identifiable and hostile group who is tied to the Republican Party. It has become hard to distinguish between the two by their rhetoric, but Trump himself does not take a clear position on any of the ideological questions that would be central to evaluating his supporters, whether they're racists or open-minded environmentalists or avowed libertarians. Instead he avoids answering questions on important issues and leaves them in the hands of his advisors.

Yet, whereas media plays a pivotal role in shaping individual and collective behaviour, the traditional values of the village may be receding in many traditional communities. This phenomenon is called depersonalisation, which emphasises the personal connection with those who are close to us rather than any transcendental connection with the rest of humanity. In other words, as McLuhan said, it is no longer just people, but often just ourselves alone with our personal electronic devices. Nowadays, it has become "like talking to ourselves through a screen". Some fear that such rampant isolation can lead to decreased empathy, violence and even a threat to society. In an increasingly fractured world, people would find themselves forced to live within virtual reality from the comfort of their living room. Yet, research suggests that technological advances are empowering individuals through increased accessibility to information and the ability to communicate through speech rather than through handwriting or symbols. Individuals are finding it easier to construct their own realities, without feeling the need to connect with those in the real world. Over-reliance on individualising and individualising processes can induce a

strong feeling of individualism, leading to alienation and depersonalisation in both individuals and communities.

Based on an analysis of white supremacist and supremacist memers' comments on 4chan, we find that many members are attempting to create memes for the purpose of attracting "anonymous warriors" to join the cause. While there is currently much less visibility on accounts such as "White Zombie" on the top ranks, he and other non-Nordic memers were consistently making such comments and displaying membership behaviors. Some memers were also deliberately engaging in forums like /pol/, which has become a platform of communication between white supremacists and the anonymous muscle of memers. Although 4chan does not feature the large ranks of alt-right adherents, such spaces could serve as the launchpad for future mobilization and meme production. The online presence of various members of the white supremacist movement revealed the memes created with and for white supremacy and the use of this medium for a narrow, nationalist, aggressive purpose.

Memes are a primary form of culture. The internet is a place where they can exist and grow. They also can be seen as a route out of that culture, and begin to help us get our bearings in a world in which things can appear to have changed without actually changing. As Maffesoli argues, however, these new forms of culture are still dependent on people to produce them: "[T]his desire to be entertained and to develop complex narratives has become pervasive – it is an expression of a healthy community, as well as a requirement." This is, perhaps, most clearly seen in the meme-religion-politics triad. To better understand the effects of the tag, we need to understand its formative politics. Facebook is, as well as a means of communication, a politics platform, providing it space for users to post images, status updates and text, as well as offer them choices about what is seen. When memes are seen as political they might take the form of public hearings about important issues. When they are seen as private they take the form of an individual's private obsession, or an obsession that seems like a private obsession. Memes do not just circulate because they're funny, nor are they solely for the sake of humour. A meme that is crude and offensive might not be truly funny to many. But perhaps it's a signal of how people feel about something, and that feeling may be shared by many

In such a situation, the already existing humor as dialectic, operates, not at a lowest level – or even within that lowest level, but at a high level.

Such is a dialectic which speaks of two opposite or even irreconcilable or diametrically opposed values. In a system which functions on some shared values, this is where we find the societal center. In such a system, how we make the community laugh provides valuable information about the degree to which the members of a community also recognize and accept these shared values. Such a language is located at a much higher level than the lowest level of the more standard humor dialectic. It is a language which is situated in a realm where the highest values and best actions coincide, but where these actions and values can coexist in a subjective, subjective space, both opposed to each other and yet mutually intelligible and consistent. This is precisely why it is fundamental to understand the function of language in this dialectic, and in this community. In the case of neotribal humor, it is important to observe the kinds of rules, customs, values, which operate at this higher level, and which most neotribals use to generate laughter, even if they deny doing so. In such a context, and in a society where laughter has become an important marker of a community's cultural identity and experience, the manner in which these values are both coherent and contradictory is one of the most important points of differentiation and unification that can be activated, while remaining in a state of communication with other members of the same community. Such a dialectic between two beliefs or values is central to the psychological functioning of such a community, and is at the root of the many neurotic behaviors common to the latter.

Lulz as irony, satire, gross-out, and call-out takes a backseat to lulz as insult. This may seem like a contradiction, but it is not. The anger and frustration and sense of being taken advantage of that many lulzters express is something deeply affecting, though they may not be able to articulate it clearly, and the internet gives them a forum to let it out. This anger is transmuted into ridicule and disparagement, sometimes humorous, and often ruthless in its cruelty. This is why, if you experience trolling, you feel as though a knife has been twisted into your heart. Trolls want to provoke you because they don't understand what is funny. They are incapable of laughing at themselves, or in any way understanding that something they did may be offensive or irrelevant.

The real threat and intent to troll is in the singular, "lulz", which results in the group reinforcing each other, through actions of carelessness and being caught by authorities. The strength of this seemingly accidental and unintentional lulz factor was highlighted in

October 2011 when Anonymous became a sensation after posting a file containing personal information of a single individual they called 'Sabu'. The upload was aimed towards exposing 'Sabu' as a snitch, and the file contained embarrassing private information of his that came out in the guilty verdict. This is similar to the content of the leaked emails from Edward Snowden, an individual given the name 'Citizenfour' for his role in the leak, whose inclusion of his real name and email address resulted in him losing his job. That said, many or most Anonymous' actions benefit both the 'public' taking notice of 'Anonymous', and the 'troll' getting revenge for all the 'trolling'.

Evolutionary psychologists have recently discovered an ancient tradition of joke-telling throughout the animal kingdom. During the 19th century, scholars of zoology noted that human laughter is remarkably similar to that of other animals. Chimpanzees do not laugh, for example, but chimp and human vocalizations are similar enough to suggest that laughter evolved as a mechanism for social bonding in early hominids. This may explain the evolutionary origin of one of the most enduring features of human humor: when a joke is told by a person, it provokes a variety of bodily, facial and vocal responses that indicate the likelihood that the speaker is finding the joke funny. Humans laugh in ways that indicate "agreement and incongruity" with the joke and also include involuntary sympathetic arousal and frustration (Piff et al., 2013; Piff, 2014). The earliest known accounts of joke-telling, among other anthropological and behavioral traits, are found in the field of humor studies. This field has often been focused on primates, with increasing scientific evidence for primate humor, such as self-deprecating humor, the rare form of self-deprecating humor that involves humor at one's own expense. Self-deprecating humor is often thought of as an evolutionary adaptation to the stereotyped roles of male and female in early human societies. The more a person relied on their sense of status or worth in their relationships, the more likely they were to laugh at themselves. Humor evolved as a cognitive and emotional strategy in early humans, then, as a technique for solving difficult social problems. It allows us to ridicule our flaws, shame those who wronged us, and build the social bonds that enable social cohesion. Moreover, our ability to laugh at ourselves (and others) might have led to the development of humor as a discrete, nonverbal (and often visual) expression of humor. On a basic level, jokes encourage social bonding and incivility through

shared humor, which may have served to teach individuals about the ways in which they are socially inferior and therefore worthy of ridicule. In spite of being deeply embedded in our evolutionary history, humor still remains an open question in evolutionary psychology.

When humans begin to differentiate from other primates and begin talking to each other, communication and emotion enters the picture. This leads to greater facial expression and modification, and thus to a reduction in facial lip movements and movements in the jaw. Humans take to the mic and with this created an increase in speech production, which in turn leads to an increase in speech articulation. By now it is obvious that humans speak using facial expressions, which is more than any other animal. The idea of reducing lip movement in communication may then have a deeper biological basis, possibly evolutionarily specific. In the late 20th and early 21st centuries, communication via face-to-face communication became a necessity. As technology and society advanced, technological and non-physical communication was necessary, if not vital. The more diverse uses of the Internet, the growing and widening of social media, and the importance of face-to-face interaction itself, are some of the primary reasons facial expressions and body language have become a focus for analysis and development in the human sciences.

Zoologists Noel Biernacki and Tamsin Houghton of the University of Cambridge elucidate the workings of this bodily response in their fascinating study on the evolution of human facial expressions. Humans make four basic facial expressions: a smile, a closed mouth, a scowl and an open mouth, that they refer to as the four basic types of the human face. Facial expressions can also be combined to form complex expressions. The lips of a smiling face close as the eyes crinkle to express awe, the lips of a scowling face close to express the anger of disapproval and the open mouth to express laughter. The choice of a facial expression is always unique to the individual, but the human species is unique in the fact that facial expressions are usually regulated by the neural system rather than the muscles of the face. The mirror neurons in the brain that allow us to interpret the facial expressions of others are not present in other primates.

Spontaneous laughter is increasingly recognised as an important social skill, even in countries where it was formerly less well developed, in such as the USA. The humour instrument hypothesis states that this

is due to the distinctive role laughter plays as a social signal. It therefore seems to be evidence of a mutual learning process between laughter creators and recipients. It could even be a way of socialising the laughter process. Laughter as an emotional response to social context is the product of a reflex arc, a chain of conditioned responses elicited when the same sensory stimulus is presented repeatedly. This chain triggers the release of neuropeptides such as oxytocin and serotonin, which provoke physiological changes in the body and the mind, including laughter. One response is the attentional refocusing of attentional resources away from other aspects of the context, such as its painful or dangerous aspects.

Art forms that lack the tradition of 'grounded' humor, such as circus clowning, come close to the ultimate confusion of humor's primary task: to reveal some common ground among different people. Although they can give humor a name and use a fake persona to generate the humor, the core activity of 'grounded' clowning is to elicit a laugh from the other person by revealing that they share a common identity with that particular clown. As a social science, all circus clowning is 'grounded' in some collective experience (like clowning the pope). The greatest failure in grounded clowning is to deal with something serious: clowns clown at only the most trivial or silly items, at the expense of truly serious issues. Most circuses that attempt to deal with serious issues are invariably failed, however, for the essence of clowning is the exaggeration. If something is serious, clowns exaggerate it. And so circus clowning invariably fails in the realm of honesty and truth, which are as necessary to humanity as laughter.

Other evolutionary psychologists agree with this theory's plausibility. Richard Nisbett, for example, theorizes that when we understand the nature of one another's self-interest, we become more effective in those self-interests, because we can comfortably communicate that understanding with one another. Laughter, then, becomes a function of productive conversation. Moreover, in the same manner that material items provide the means for labor in some lineages, laughter provides the means for the distribution of credit, which in turn enables greater cooperation. Or in the words of Emile Durkheim, in his analysis of suicide in nineteenth-century France, "death is the laugh that I enjoy to show others that I am in high spirits".

Scholars such as Mannivannan, Fiske and Donihue support the idea of troll groups as politically subversive rather than a cultish projection of mental illness, which they argue would undermine the empirical basis of arguments for political correctness, radical politics and direct action. Indeed, trolling is perceived to be quite different than that of actual mental illness. Trolls are also characterized by their presence on 4chan. The ‘anonymity’ of troll groups helps to enable trolling; not only is an individual need not be seen as their actions are made known, but bystanders are also implicitly implicated in the collective action of trolling, as it is “a form of social coercion by which a group imposes its will on the actors”. Rather than by an individual, an anonymous mob gains its legitimacy by mob behavior. The anonymity provided by the group is also useful for the attack that trolls often bring upon those who offend them.

Thus, what an April Fool joke is — a particularly funny act or joke — may become a “serious” political act in the sense of deliberate attempt to provoke the audience, to breach taboos, to break taboos, and in that sense “serious.” And an April Fool’s joke may be a hoax that, by threatening a taboo, indicates an intent to deliberately break another taboo. Having taken his cue from this, there is a resounding silencing of any possibility for human freedom in terms of the genre of presidential candidacy (in terms of non-contest), and in the post-factual context of those consequences alone. When comedy is so often deemed responsible for the anti-establishment, these comments become necessary. The wall of separation between reality and discourse ends up being arbitrary, full of fictitious boundaries and rules; satire/satire, by the very nature of being a satire, need not exist. Trump in a sit-down interview, talking to Sean Hannity, has a defense of his very existence: “They’re not going to put up with it. I’m going to tell you right now, they’re not going to put up with it.” This is further recognized by Elliot Miller in his book *Trolls*:

In 2016 the political discourse has been tainted by a myriad of facts and figures, with the exception of a few wildcard figures who somehow defy this mould and play their own unique role. These exceptions tend to be those individuals who occupy the space of extremes, whether through character, political inclinations, ideology or other classifications.

The pitch of the laughter follows the pitch of the music. If the tune has a bass note, the general tone will be lowered. If the music is happy, the pitch is raised, and vice versa. In times of uncertainty, a version of "The Old Cape Goose Down," from the English civil war, can be heard in the background. Even Homer, a simpleton, knows that the sign of the albatross is a ship being blown to pieces. The best moments in the silent films are the moments when the dialogue has stopped and the director has given the cameraman the stick. He can take the image out for a breath of fresh air, a few times, before returning it to its original place. The advantage of this type of humor is that it is unplanned. It is a brutal and staccato response. When something goes wrong, it is believed that the fix is in. In these circumstances, everything that the screenwriter can say is an affront. When something goes well, everyone else is given the benefit of the doubt.

People are no longer left to their own consternation, but have been given technological access to the chorus. People are chiming in as a laugh track against what they find offensively crude. [In addition to digital amplification, the media's prestige and socioeconomic position allows journalists to be impartial, instead of taking up the attitude of a stylized cartoon of opposing factions, and even allowing discussion of multiple sides to exist.] Shakespeare described the internet as a "wild beast." The technology is now living up to its own imagery. Fickle, impetuous, and capable of forming complex opinions based on a few lines of text (often on the smallish side). Commentary and information on the internet is both free and ubiquitous, which allows that beast to be unleashed.

The only remedy against a man like Trump might be mob justice. A mob on its own will be impossible to control, however, given the potential for retaliatory violence, most likely against the liberal political establishment that failed to turn out in the same numbers as his followers. We do not have the strength for this, and we have not used this at all. Whether this is because Trump is a buffoon, an anomaly, or the product of a broken political system, he will now lead the Republican party – and most likely become president – because we failed to take drastic preventive measures. If we want a genuine democracy, we should reconsider our methods of democracy, not simply throw more stones. I am not arguing that political action without fear – making your vote count – is not useful in a democratic system. If, say, one desires to create a representative democracy, we should use all political tools available –

ranging from direct democracy to deliberative voting – to influence politicians.

The rising authoritarianism of Trump's politics and his popularity with a troll culture would seem to indicate some realignment of politics and culture. It is important to note that efforts by the meme community to distinguish themselves as just being meme warriors, as in 'no political stuff', are seen by Phillips and Milner as just rhetoric. "That line has always been overstated," said Phillips. The communities of 4chan would seem to have actively rejected the idea of restricting their scope to just hateful politics and instead cast themselves as just on a huge, happy, even thrilling adventure. Unlike many grassroots movements, memes rarely require the internet to do their work. 4chan went from building relatively narrow memes into webs of digital protest to where even the FBI is getting in on the action.

Other sites, such as Reddit and 4chan's sister site, 8chan, also hosted organized r/The_Donald subreddit, a 1,000-subscriber hub which coalesced in the months following the November US presidential election, and was composed mostly of bots. The moderator of the subreddit, a 25-year-old Trump supporter in Missouri named Chris Combs, explained in an interview with Motherboard that '4chan's pro-Trump trolls were both useful and 'indispensable' in building a Trump-supporting internet mob. However, after he 'blocked' some users from posting, the threads appeared in Russian social networks and bulletin board systems (BBSs). It has been suggested that Combs engaged in a cyber-power play to drive users to this particular subreddit and then claimed ownership of it. 4chan editor Erik Martin has denied any association between it and the Kremlin, but does note that many of its users are Russian-speaking: "A lot of people on the Russian side have taken note of the amount of Russian-language content on the site, because a lot of people that are trolls, they know English. But they don't speak it, and they use text over images and video, that way, a lot of times, it's kind of hard to track the original source of that content," Martin told Motherboard. "So I think that Russia has always been very interested in 4chan, and that 4chan has always been very interested in Russia, because it's a relatively closed country."

At the end of Trump's presidency, the media was critical of those who attempted to take over the Capitol. Trump has sent a message of a mockery of ancestry to those who genuinely believe that it's impossible

to be both Mexican and American. His antics have spurned the best of America, but not those that have voted for him. Having been blamed for the massacre of 58 people, and who has instigated a proxy war against North Korea, Trump leaves a country divided between his supporters and his detractors. We saw in 2018 that US citizens are fully capable of coming together in good faith, but this also came at the cost of some to see their lives destroyed by his despicable actions. In a different time, this level of division would have cost Trump the election. At the time, it seemed like the madness of the electorates judgement would prevent his presidency. However, even in an election that seems to favour a Democrat candidate, Trump won the Presidency with just under 40 percent of the popular vote. As for how this could possibly be seen as positive, if Trump's departure represents an opportunity for a party which now sees itself as the true opposition party. "There are signs that this political era of right-wing backlash is coming to an end", argues University of California, Berkeley, Professor Michelle Diggles. "Rather than wanting to be rewarded for a failed election, Donald Trump will leave the White House as a man with no deep political base."

In this light, it is relevant to connect QAnon to its originator and also to the Yellow Vests. Both originated on 4chan and have political intentions. However, whereas the Yellow Vests only seek to overthrow Macron, the QAnon followers hope for Trump's impeachment and his replacement with a President more likely to take their wishes into account. The religious features of the Yellow Vests also add to their resonance. While the QAnon message is one that aims to cast doubt over the veracity of the mainstream media and also undermine government and corporate authority, the Yellow Vests message is a call to arms to a fight against globalism. The convergence of belief systems is not unique to QAnon. There are other similar phenomena, including the 'UFO cult' of David Icke (the 'father of UFOlogy'). Icke believes in extraterrestrial beings who are subjugating the world population through the powers of propaganda and political manipulation. Some followers of Icke believe that he can travel to the extraterrestrial spaceship that is secreted behind the soccer stadium in London, 'high-five' with aliens, and oversee a 'New World Order' at the end of the 21st century. Similarly, the so-called 'Manchurian Candidate', who wears a red star of Stalin, while standing in line at a grocery store, is considered a 'religion' by some

The question of sincerity has been central for Trump and his supporters since the 2016 election. Take Matt Christman's response to a video titled 'I am the swamp!' released by QAnon supporters. Christman shows how he embraces the contradiction and joy that has been there since QAnon's release:

I am a deep state agent working undercover to expose the nefarious elites who are responsible for the pedophile rings, globalists, the homosexual lobby, the bankers, the oligarchs, the fake news media, the war criminals, the abject treachery and the total decay of our society. A Trump victory in 2020 would remove any doubt that 'Q' was telling the truth about what is going on and would reveal the treacherous actions of the shadowy leaders of the deep state. A defeat for Trump would all but confirm Q's claims, and definitively prove that Trump was the agent of the deep state, and that he stole the election. After eight years of incensed liberal attacks on 'Q' and his followers, the final blow would be dealt.

With this response Christman is not only aware of the irony of QAnon and that he is surrounded by believers, he is able to embrace it. For a mainstream political figure in the US, such a defence might seem like hypocrisy or the voice of the establishment; for Christman it is a part of his project.

The front-page warning reads "This is not a forum, discussion or forum-based site. Please do not discuss or discuss." This is a bit like my seminary teachers using the phrase, "Please do not discuss these topics in the classroom". The recommended approach to online conversation, then, is to be as blunt and clear as possible, or, if a less blunt version of the previous sentence were in order, one might say to avoid passing the buck entirely and resist the urge to make a post that goes, "The floor is yours." However, this method of determining "what's a joke and what's serious" is absent from the widely used advice to tell yourself to be polite. A more subtle approach to distinction between seriousness and comedy is taken by commenting in the 'canon', that is, in 'What's funny'. In short, The Internet is Serious business . . . the Internet is full of pornography and tragedies."

as-long-as-it-doesn't-actually-mean-anything

Uhhh...

something...

?

Your attention as a mark of a joke is a cue for the joke to be evaluated. There is only one proper description of the joke and that is the utterance itself.

Some have suggested that trolling makes a statement about contemporary political culture, such as the work of Charlotte Perkins Gilman, but her essay *The Yellow Wallpaper* of the 1890s describes women's self-imposed abuse by conformity – not anything resembling modern-day internet culture. Maybe trolling is a modern social media form – a sort of click-trolling in digital form, or the drizzle of countercultural sneezes that follow an eloquent and clever quip. But an analysis of trolling is hard to make, and can go in many directions.

The effect can be felt in high-profile cases such as Gamergate. An extremist vanguard of male gamers, responsible for much abuse, death threats and doxing of women game developers and other people associated with the community, experienced a radical shift in power in the summer of 2014 as the leftwing activist Anita Sarkeesian was brought to speak at Utah State University and received threats of violence from a mob of young men, some of whom were later arrested. The mob was egged on by politicians who tried to stoke fear of feminists in order to galvanise their followers. Such far-right groups seeking to stoke hysteria about threats to women's rights are nothing new, and the Gamergate episode is just another in a long history of extremist actors whipping up white supremacy, xenophobia and fear of migrants.

These anthropologists are not the first to point out the overlap of humor and social theory. Jerry Bouldin and Kevin Mulhall's book *Why Ugly People Have More Fun* is one of the most eye-opening and amusing readings of what, in their view, is the central intellectual problem of the post-modern age. Their basic thesis is that post-modern theorists have entered into an unholy marriage with post-modern jokesters in which social critique is swallowed up in the belly of the same joke. We should take the Bouldins seriously as a group of funny, serious anthropologists, but they have unfortunately been forced by their post-modernist allies into assuming that we are all equally impressed by their pranks, and that in this way all of the absurdity is swallowed up. The

Bouldins conclude their critique with the following: «Indeed, even those of us who are convinced that postmodern theory has mutated into a jolly cavalcade of buffoonery have never been able to free ourselves of its insidious seduction, that way of thinking whose clever, hip ideas invite us to indulge our sense of humor, while the harsher sentiments which have always distinguished us from the pretensions of mainstream society are slunk out of sight.»

“Someone forked, shared, and then tagged thousands of others. A journalist at WXYZ caught the moment, leading to a conversation about the conspiracy and ‘false flag’ aspects of the QAnon narrative on social media. Someone else at CNN forwarded the tweet and eventually the video to a newsroom, and a journalist at BuzzFeed did likewise, where a writer showed the video to his bosses who said they would do some reporting. Twitter reacted with a deluge of complaints. This process took less than an hour and spread the conspiracy like wildfire.” The authoritarian argument will often appeal to white nationalists because they will not necessarily explain how their dogmas and anger are necessarily aligned to prevent harm to others, but would rather simply assert that they need to be tolerant and if anyone doesn’t share their beliefs they are a bigot.

Not to be outdone, Alex Jones, whom the SPLC has called “one of the world’s most prominent conspiracy theorists,” proclaimed on Infowars that the media had crossed the Rubicon into “enemy territory.” He compared them to “Bolsheviks”—a favorite epithet of QAnon enthusiasts. QAnon appeals, in part, to the sometimes paranoid fantasies of conspiracy theorists. The belief that Hillary Clinton ran a pedophile ring out of a Washington, D.C., pizzeria was a favorite theory on QAnon message boards. More broadly, many QAnon believers believe that a shadowy group of globalist elites is working to destroy America by bringing on an economic apocalypse that will force every man, woman, and child to fend for themselves. The ‘deep state’ is just one of several incarnations of this conspiracy theory.



Figure 6.3: I use this bit of image-generator software to make funny images of the impending end of Trump’s presidency.

The perfect storm of Trump, post-truth, and the internet has also brought about an internet “meme-based resistance”, largely against the internet meme-powered alt-right. This is one of the most interesting political developments in internet-blessed America in recent years. One of the most fascinating questions to follow here is what this digital movement should actually be. We have seen a lot of projection of the alt-right, and more importantly, the Trump alt-right, into formerly distinct camps like 4chan and Twitter trolls. The rest of the internet, and social media in particular, have then been used as a tool for this projection. For example, online memes about “creepy, fat, liberals” became so ingrained in their culture, that anyone who claims to oppose this, even in abstract terms, must be a cuckservative. This is an escalation in using the language of the marginalized to normalize the bigotry of the dominant group.

The pro-Trump conspiracy community is not just about this issue of fact-checking. It is also about both credibility and the pace of information dissemination. To start with, this community exhibits a certain quality of absurdity that renders itself incompatible with the

prevailing media ecology. The fact that there is a continuous spread of very different theories and strange ideas is remarkable. Conspiracy theories are in this case, the ultimate of forms of pre-recorded messages that reach their viewers in a pre-specified order, and therefore cannot be discarded as they were never intended to be received. This tradition is common across digital space, with comments in social media claiming that the news reports are scripted, trying to build a picture that are related to what is presented as happening. It is also quite easy to manipulate what can be told through screens, and this is the aim of the pro-Trump conspiracy community. When CNN reports that Trump was seriously considering removing Federal Reserve Chair Jerome Powell, the audience of Trump supporters believe that Trump would actually do it. Thus, this theory is about bringing a certain consistency to the discourse on Trump that is often contradictory and devoid of facts. It's no coincidence that some, such as the alt-right commentator Mike Cernovich, or the Russian President Vladimir Putin's spokesman Dmitry Peskov, all subscribe to this theory.

In these terms, Trump is protected by a neutral mediator, the troll. The troll is a warrior in Trump's army, a protector of the king, who guides and shields him from disapproval.

Paul Fussell—who once remarked that the American definition of madness was to look foolish and “presume to reason with irrationality”—would perhaps agree with this statement of my position, as would Thomas Kuhn, who declared in his 1968 book *The Structure of Scientific Revolutions* that “the theory of science should be employed only when convenient, in an open-minded fashion.” (Kuhn was using the word “science” for what he called “a set of beliefs that exist prior to data or evidence”.) When there is a conflict between the theories of science and those of the political order, it is the role of the latter to prove its truth, but that will not always be possible. That is why in the United States, the determination of presidential policy rests with Congress. “Our form of government has no sense unless it be adapted to the capacity of each generation to govern itself,” John Adams declared in his inaugural address.

We are living through a Trump campaign in which trolling has been employed, not as an act of power, but as an act of pure entertainment, a quick laugh at his rallies and a salacious piece of titillating pap at his every appearance. His rallies are the playgrounds for trolls. The Trump

campaign is filled with “Trump-bots”, self-appointed shock troops who will at all times be ready to pounce on any sign of discomfort from the voting public. Trump-bots do not organize. They do not have a membership program. They communicate via Trump’s Facebook page, where they can always be sure they will be immediately visible. The only thing they lack is resources. But they have what they need. And that is access to power. Trump has allowed his rallies to be overrun by trolls.

What Ever Happened to Psychedelic Theorists?

Of course, a new political left meme will have to turn an analytical gaze on the other side of the neoliberal consensus that has been in place for the last 30 years, and that is the right-wing. “It is less important to think about how the left can make memes that win over right-wing memes, and more about how we can challenge the ideas which right-wing memes can offer” argues Deborah Cameron. If the left finds a way of using memes, then it’s not exactly unthinkable that such a use of online space might turn out to be a crucial tactic for creating a kind of common language, but one that isn’t so limited by old binaries. This struggle might not be for the dissemination of truths, but for the wider acceptance of alternative ideas.

There are a couple of other candidates with real potential for meme exploits. Senator Cory Booker has received an influx of trending memes that draw inspiration from his age and his name. For example, #CoryBookerisms, asking “can I pull over?” as he asks to make a hand-move to be deemed not blocking the road. It is a punchline that highlights his connection to youth culture. The other unique attribute is his race, which allows for a unique juxtaposition in which he is a meme for both young and old. Similarly, Senator Elizabeth Warren has also been getting extra attention for calling out Trump on Twitter in an endless loop of LOLs. Warren’s GIF game is also strong, most notably with her glum expression upon learning about her mixed-race heritage. In what is a clever move, in the documentary Fake It ‘Til You Make It, a campaign executive, Joe Trippi, says that they should have sent a Democrat’s secret weapon against Trump to the RNC convention in Cleveland, which would have been Bernie Sanders.

Another less well known phenomenon is called memetic insurgency. This was a term coined by journalist Will Potter in 2013 to describe various individuals who post memes online in protest against corrupt

and oppressive government, such as the removal of Manning's Senate-endorsed constitution in 2010. Potter went on to publish a brief treatise on memetic insurgency and some of the tactics of the movement, which included the use of memes to thwart State surveillance. Although much of the memetic insurgency movement began to lose steam around 2012-13, it may yet have a long-lasting impact on the online political scene, which is not to be underestimated. So, what we are saying is, instead of deploying traffic-clogging stereotypes, targeting dedicated scapegoats and waging some kind of peaceful communist/antifascist struggle for actual fundamental change, we should embrace the other wing of the online left and indulge in some fully-formed political theater and tongue-in-cheek subversive humor. And of course this would probably do wonders for their recruitment of new supporters as we can only expect that the winning party of a meme war will be the one which can most adeptly resist the opposition's parody and dismantle it.

The political destruction of American society that is now taking place is a direct result of decades of savage acts of state terror. What's more, even as Clinton-era terrorism is being replaced with Trump-era terrorism, it is being subordinated to a reactionary network of far-right thought, rhetoric, and policies, greatly accelerated by the growth of the black bloc in recent years. It is as if, in the words of activist and writer Malcolm X, "the present movement is so absurd and so extreme that the only way to grasp it is to laugh hysterically, that it is certain only that it is precisely that it is telling us about the base level of our own absurdity. So absurd that it can only be held up by drawing upon an absurd and shameless nihilism". Indeed, Trump is not just a parody of authoritarian anti-Americanism and the hyper-nationalism of the far right, he is the real thing. He has, for example, already expelled twenty thousand refugees, seemingly to spite Obama.

Many others have decried the focus on conspiracy theories surrounding the 1918 flu or the hype around a "bad flu." Studies have shown that the spread of the influenza virus is the same whether or not the media releases warnings about it and many, many, many people have died from other causes such as pneumonia. It is also important to remember that the 1918 flu was not as severe in western societies as it was in the poorest parts of Europe and the Americas. The media seems to be trying its best to legitimize the debate around the 1918 pandemic. Media outlets will often interject a random quote from someone claiming

to know the cause of the epidemic or talking about the alarming symptoms they had at the time. The media knows that stories are good and they can sell advertising by continuing to play up to the fear and they help draw in readers.

With both this country and a very dangerous pandemic, there are a lot of really unhelpful numbers thrown around, and these only become more frustrating as they are poorly explained. Of course, the concern for the lives of those infected and the perspective of those on the ground will take center stage in horror, but Baudrillard looks beyond the numbers. In a slightly Orwellian description of the pandemic as a symbolic one that “turned into a horror movie, the plague was lost.” Trump’s win was a horror movie, so it’s hard to tell whether Trump is the horror or the inspiration behind it. The quick recourse for the US to declare the financial crisis over and a return to “greatness” a further distancing, Baudrillard points out that the inability of states to contain or end these crises is a major source of turmoil in today’s world. For what it’s worth, only 30% of American voters thought Trump would be a good president, but his candidacy nevertheless started to foster a feeling of public unease and desperation in the country and the rise of “alternative facts.”

Will Democrats go down that same path in 2020? As recently as a week ago, it looked like they may go down that path as they kicked off an ongoing fight against Sanders supporters. Two days ago, the DNC put out a statement promising to investigate claims of “violence” against a DNC staffer. The DNC also allegedly made a sexist statement about Women for Bernie Sanders after a Bernie supporter was assaulted outside of one of the candidate’s rallies in Arizona. Both were instances of harassment in addition to assaults that have plagued the campaign trail, even by Democratic leadership. The DNC’s biased handling of these issues, and their statements that are slanted towards the Clinton campaign, have been questioned by other progressives, including former Vice President Al Gore. The statement published by the DNC is another indicator that the Democratic establishment is not necessarily seeking to unify in the wake of Trump’s victory.

This year, with the 2016 election over, the DNC has been found to have rigged the primary process against Sanders, giving Hillary Clinton superdelegate support. Despite the controversy, the primary process remained open, allowing for millions to participate in the democratic process. According to the Washington Post, in 2016, “a record two

million Democrats cast a ballot in the primary. About a million more took part in the caucuses, roughly three times the participation in the 2012 contests.” In contrast, the RNC set a record for low voter turnout, with over 80 million people only casting 1.6 million votes in 2016. In 2016, the RNC, which represents the wealthy, captured two thirds of all delegates going to the RNC convention, with Trump winning the majority of the non-binding, delegate-rich caucuses. The youth were a key component of Sanders’ political coalition, and his presidential campaign even capitalized on the efforts of the newer, less progressive generations to join his cause. While it is impossible to know what young people’s political opinions were in 2016, the prevalence of young people in the Sanders campaign demonstrated a new generation with interest in politics. An open-source site, Bernie Sanders Twitter Archive, has approximately 21,000 tweets to date, each piece of social media communicating with the public on both sides of the primary. Among the initial confusion in 2016, a new generation came together and developed social movements at the grassroots level. From successful sit-ins and other peaceful protests, to single-payer health care rallies, to the Women’s Marches of 2017, young people took the streets in the era of Trump. However, the youth participation in the last few years should not be attributed entirely to a deliberate campaign by Sanders to engage youth. Clinton lost to Donald Trump in part because of her failure to listen to a majority of young people and acknowledge their desire for progressive values.

The question is how to we, the people of the US, how to we support Bernie Sanders in this election, rather than Hillary Clinton. Bernie Sanders is proposing that the middle class and the poor be given debt-free college tuition, paid for by a 3% tax on all incomes over \$250,000. The current US government spends around \$1.4 trillion per year on wars, spending almost \$600 million on drones alone, and around \$300 billion on the NSA, a larger amount than what they spent on all seven wars in the Iraq and Afghanistan. \$300 billion could be used to end poverty, and to guarantee every American free healthcare. This is a radical idea, and it is still incredibly risky to say that we the people, as opposed to a super-rich few, should have the power to decide on the best way to spend. But I am not alone in wanting to see a transition from an extractive economy to an economy that works for everyone. Many others from left-wing traditions, as well as voices from the Sanders

campaign, have articulated the argument that capitalism is not a system in itself, but one we all participate in, from the workers in factories to the servants in our homes. A system that has led to so much suffering and marginalization, there is no excuse for us to continue participating in this system.

The question of elections becomes a lens through which the structure of neoliberal capitalist society is reflected. As such, the framework of electoralism and neoliberalism, defined in terms of its own utility, might itself be critiqued. Fisher writes: “all post-Fordist political forms, whether Trotskyist, utopian, revolutionary or some other variety, have failed to provide us with an adequate response to the multiple crises of post-Fordist capitalism” (Fisher 2015: 5). Another way of putting this, and perhaps echoing the theme of systemic breakdowns in the ongoing collapse of neoliberal capitalism, might be to ask: “Is capitalism the problem, or is capitalism the solution?”

Despite such skepticism, universal basic income is an undeniable concept that is bound to have even more prominence as the future unfolds. There are very real constraints on current technological capabilities which we need to account for, but we still have room to maneuver in the coming decades. Though this progress may be slow, we can see the possibility for a systemic solution to poverty (particularly one that does not saddle individuals with poverty) as we transition towards the future. We can't know exactly how this future will play out, but we know enough to know that it must unfold if we hope to survive it.

So, apart from the pic's gratuitous nod to queer male identity, what do we get from this meme? An empathetic portrait of this new leftist politics. One based on identity and humanity, not narrowly on money and political systems. We can interpret this as much as we want, but it does not claim to fully comprehend, or articulate, or discuss, or debate, or inform — yet. Just because it is funny, and entertains, does not mean it provides us with our marching orders. As Keith Martin wrote in 2013, “no period of social transformation — no matter how fervently desirable — is ever just or right. The future is always being made, and what matters is the political choices that result.”

Complex systems can't solve everything, and when systems start getting out of hand, they may just have to be left alone. I have often felt very frustrated with environmentalism for a lack of humility. It has high ideals, but rarely looks at the scientific evidence. “In my experience”,

said Harman, “too often environmental groups see nature as a black box, like alien life forms: they want to know how a creature works, but to test their hypotheses they want a living, breathing example. This is too primitive an approach to the science of evolution and to biology in general.” This has been the attitude of mainstream environmentalists for decades, going back to those of the 1960s and 1970s, when it was common to insist that nothing should be done because there was not enough evidence to say that it wouldn’t do harm, and much more of it was only being thrown into the bin because people had “done too much”. Climate scientists have been dealing with this thinking for a long time, and it is a major problem that Harman highlights.

There is no easy transition from hunting and gathering to civilization. As the civilization paradigm continues to evolve, utopian technological visions, such as communes, allotments, and city-states, necessarily collide with material problems that inevitably arise. Food and energy are one of these problems. While there may be technological solutions, they may only perpetuate modern hierarchical society, as already shown by examples such as “Space Islanders” that have used automated farming techniques to create vast societies without the need for resources. This can also be seen from the Soviet Union’s launch of the first satellite designed to farm space and the massive effort by agriculturally impoverished black farmers in the U.S. to develop their own cotton seed. The agrarian revolution also affects material culture and human social relations, as “complex new technologies like mechanical harvesters, tractors and fertilizer factories began to compete for limited soil and water”. A direct consequence of this is a reduction of local knowledge through the commodification of information and ideas, and an increase in the power of centralized institutions such as governments and the media. As domestication becomes more technical, work becomes alienated, alienation is internalized, and the character of the individual becomes fragmented. Science can do wonders, but only in a world where people are just another animal, and the knowledge gained in itself is a source of power. If science does have the power to produce progress, how can we interpret the increasing separation between the individual and society it has spawned?

For adherents of this meme, paleoconservatives and paleoconservatism, it isn’t the cycle of conflict and expansion and contraction which is broken, but the existence of humanity. This is why

the best thing we could do would be to return to “primitive” living conditions. The meme urges a return to the ‘innocent wild west’, to a culture which, by its very nature, would produce more barbarism than we would ever wish. On the one hand, humans can be smart, imaginative, creative and ruthless in defense of their own interests. But if you talk to someone who opposes welfare states or disagrees with climate change, it becomes evident that the great thing about them isn’t their intelligence, ingenuity or decency, but that they are rational beings. They’re not irrational or irrational about the consequences of their actions. If something can be quantified, it’s always right to do it. Of course we can all be as intelligent as we can be, but what makes us smart, inventive, creative and decent is whether or not our actions lead to death and destruction for other humans. Only the most savage and savage of us is any use at all. Philosopher Nick Land captured the essence of this ‘ideal’ perfectly, in a 2013 essay, *The Outsider*. According to Land, the “out” is an “extremist” who rejects the intellectual tradition of modernity. By this, Land meant that the “extremist” is willing to break certain rules, for the sake of a better world. The “in”, by contrast, is the one who believes the existing order is correct.

But maybe it’s a bit too much. To get over this hurdle, the subject of the comparison needs to be raised again: does this situation exist in nature? Could human politics be compared to that of the living apes? The animal kingdom is a vast, intricate and confusing place, and there is very little if any real, scientific basis for stating that yes, it could be possible that humans and chimpanzees could be compared. Still, there are some striking similarities and juxtapositions which suggest that, in certain situations, the human-chimpanzee dichotomy may not be all that far off. In some ways, it’s actually astonishing that humans are among the highest evolved primates; from a physical point of view, our bodies were designed to be better suited for a warmer climate. We’re taller, lighter, and bigger than other apes; our skulls are bigger, and we have more body fat. Our livers and guts are better than the apes’, too, and our heart rate is actually slower. Not to mention the amazing head and brain size difference between us and chimpanzees; both species are generally considered to be among the most intelligent and advanced of all primates, but the average chimpanzee has a brain volume of about 120cc. Humans, on the other hand, have a brain volume of about 220cc. In short, the chimp brain looks more like a banana in comparison to the

human brain, while the human brain resembles a carrot in comparison to the chimp brain.

Animals offer a laughably simple lesson in social theory: don't punish the oppressed. In the case of animal politics, this means no state, or any sanctioning of domination. Reducing real political oppression to speciesism or simply lumping it in with, for instance, racism, is to miss the possibilities that animal politics provide for how we deal with hierarchy. Animal politics does not try to reduce hierarchy to individuals. In animal politics, hierarchies of dominance are different than in human politics, that is, there is no authority that one human is smarter than another. Only the sum of all the cells in a human body is smarter than all the cells of a pig.

If one was a rigid follower of this model of how humans work, then free time would be the minority of the work week and work a minority of the time. Of course, the reverse of this is true as well. The free time will not be spread evenly amongst the hours of the day. But this does not detract from the possibility that such a society could result in a most joyous human experience. People would have to work less often, which would not, of course, mean less work itself. Free time would, however, be devoted to activities that we would today consider "fun," but that many people spend their lives avoiding: cleaning the house, studying, exercising, having sex, etc. Interruptions of this time by unwelcome work would be essential. In order to avoid this work, people would have to find ways to make work optional. One way to do this would be to force people into employment, but this creates another of the problems we're already recognizing.

Finally, another important quality of a free time comedy is that there is no tension between the humor and the speaker. It is always treated with respect. The speaker is not typically lampooned for being humorous. It is treated as a facet of his personality, even when the humor is stupid and immature. The goal of humor in the talk is the growth of understanding, an understanding that something in the joke is true. It is only satire or ridicule when the goal is to subvert a source of truth for the sake of gaining power. The evolutionary perspective leads me to conclude that humor is a preference-sensitive sense-processing strategy. I am very glad that I have two sorts of jokes. There are jokes that get laughs, and there are jokes that are meaningful. To pick a random example, would you rather hear an amusing story about a man and his

wife buying a new refrigerator, or one about a woman and her husband planning to kill her with hot coffee? Note that the former description makes no sense unless the refrigerator and coffee were literal, and the latter description would make no sense except in the context of a joke. I think the first explanation of the humor in the former story is right, but not the second. The important factor is not whether you find the story funny, but whether it is meaningful.

So how would we go about reclaiming our relationship with nature? Self-sufficiency of course. And, if we get really good at it, with an increase in freedom, then we should abolish the police, the jails, the prisons, the prison guard unions, the land-grabbers and the border-bundlers. After having encountered a murderer, I could cut down the tree where he swung, no longer have to pay for a judge, no longer have to pay the polluters to comply with EPA regulations, and no longer need a Senate to write laws, and instead can simply contract to train someone myself in the time-honored fashion, with mutual consent. John Zerzan is an anarchist thinker who believes the evolution of civilization is the source of the problems that can be described as 'alienation' and 'crime'. He argues that class is largely a function of technological development; as production grows, access to land, water, and resources grows ever more distant. Class, in the sense of a hierarchy of individuals with diverging interests, emerges. But it is a relationship and not a necessity, because under capitalism, economic progress is symbiotic with technological development, and vice-versa.

But it is not our job to protect the planet from us. Being part of nature requires that we find a different way to live. When the student who was mostly likely involved in Covid looks back on this dystopian work stoppage, and with few exceptions, imagines a return to normalcy, she might just be remembering life before the world changed. The best thing we can do is to understand that normalcy no longer exists. What's important is to change our lives, and the way we see the world. One suggestion, which I may write about in a future article, is that we see the same world of everyday concern as an extraordinary place full of wonders and mystery. This was an idea shared with me by Valeria Malagodi, who suggested the key to wonder, as she sees it, is no longer a barrier between us, but rather we ourselves are to blame for it. Rather than being naturally curious, we are conditioned to being curious, by

routine and familiarity, making it difficult to actually contemplate and wonder.

America's modern period took place in a context of relative peace and stability, a situation of which it is crucial to remember that people in that era might be celebrating it as some sort of golden age. Peace at this time did not eliminate war from the world: nor did it reverse its reproduction. On the contrary, a certain process of centrifugalization of military forces was happening. From the 16th to the 20th century, a range of imperial powers embarked on global wars, maintaining their state status only by sheer force of numbers. And despite the apparent 'peace', all this accumulation of armed power in the service of state policy was accompanied by a massive influx of manpower from those involved in 'the national defense'. [...] It is easy to end up overusing the metaphor of 'war on terror', especially in periods when our deepest fears are stoked and granted license to action. But consider some other metaphors. The Swiss sociologist Max Weber wrote, of 'traditional societies': 'We tend to forget that the necessity of conquering and holding together an enormous area means the necessity of fighting, that is to say, of creating the conditions for protracted warfare [...] a permanent slaughter of the weak, a regular replacement of husbands, wives, sons and daughters, who have been defeated and driven into the bushes, while old, infirm or defenceless inhabitants remain in the conquered territories'. Or, as Boris Groys put it, the 'Western presence as the uncreated principle of the world' entailed a 'total war against the former world order': the 'already present violence was transformed into an active force'. (40) While the French political scientist Alexis de Tocqueville felt the case for egalitarianism unproblematic, modern historiography often presents the task as that of 'making up for the silence of the past'.

Just why is the hunter-gatherer system so superior to our own? It is simply because human evolution has left us pre-programmed to favour cooperation over individual competition. As hunter-gatherers, we have no territories to defend and no huge, powerful predators to wage war against. Over time, our brain has evolved to be more sensitive to social behaviour, and so we are naturally attracted to cooperative social relationships and to institutions that provide such relationships. While human rationality is frequently illustrated by evidence of us using logic and rationality to develop elaborate rules to govern social relationships, our earlier ancestors could not have relied on such rules. Our primitive

brains were too primitive to cope with the complexity of a society based on trade and exchange. Only the hunter-gatherer band had enough members to allow everyone to have a stake in the organisation. With communal societies, 'winner takes all' rule was, for practical purposes, meaningless.

Avoiding ordinary politics while performing the same kinds of behaviors that preoccupy people will not lead to the revolutionary utopia people imagine. Many types of truly funny politics will attempt to control or eliminate rival politics, or certain forms of politics altogether. People would always expect comedians to engage in plenty of cynical humor, but it is not the most reliable tactic. The temptation to parody politics that doesn't deal with material need, that doesn't challenge capitalist values, but chooses to flatten people and the world is considerable. Incidentally, humor is not the only tool to challenge capitalist liberalism. Coherence might be another useful tactic, as would engaging in good old-fashioned communist praxis. Embracing fantastic scenarios where aliens become our benefactors, or underground realms are secretly colonized, or noble savage human beings help colonize the real world seems to pose problems of capital-C Coherence. We need to resist this impulse. A realistic vision of the future can't just be one of wild anthropomorphic politics or some kind of socialist utopia. Whatever utopian future is possible needs to take root in the real world. Revolution is not something that can be produced overnight, over the Internet. There will be a long and difficult path.

7

Recognizing Recurring Identities in Distractions



Figure 7.1: Emoji depicting the state of the H₂O molecule.

Promising Resolutions for Stopping

A digital world, once you enter it, is impossible to exit, as the main mechanism for time travel is the feeling that you are disappearing. This feeling creates a desire to complete every activity. To consider the impact of this diversion, I recommend taking a look at the work of the futurist H.G. Wells and his brilliant depiction of the future in “The Time Machine”, one of the very first examples of the suspension of disbelief and a shift from the virtual world to the physical. It is often the case in fiction that people suspend their disbelief and literally fall through the story. If we live in the future, then our physical lives should be there, too, because they are the only things left for us to be in touch with when we can no longer escape the virtual world.

The main interest of the media has always been thought of as an extension of cognitive processes. It has been argued that the media, in practice, are directed at those who can directly experience or otherwise acquire knowledge. In this sense, there exists a correspondence between the technologies used to capture the output of knowledge and the people who are in the cognitive position to execute it. In order to relate computer-mediated diversions to the cognitive and thus affective forms of media, we need to conceive of media using this theory of media with cognitive goals. Media are conceived here as a form of dissemination,

design and cognition. Media do not appear purely objective, and cannot be defined in isolation from the purposes and aims of the stakeholders who control them. Media technologies can be used to generate particular communicative norms. It is also clear that the emergence and incorporation of media has not happened in a vacuum.

Secondly, using Dewey, Hayek and Diener's theories on self-actualization, dualistic functionalism and such, she draws out what Aristotle in the *Nicomachean Ethics* termed a "philosophia mens." The philosophical notion of virtue or what is good in human life becomes a central theme of the book. I have explored this aspect of Western thought since Diener's development of dualistic functionalism, and Aristotelian virtue theory in the *Nicomachean Ethics*. In this sense, the book is a typical McLuhan work; it reflects the reader's present situation (as I found mine through reading in the last decade) through the reading of the classics. I believe, however, that the book is also a post-postmodern work because of its focus on the individual as the new locus of power – whether self-actualization is bad for society or vice versa is the role of the author.

An example of a divergent reality is why is the human mind different from other animals, despite possessing many of the same neuroanatomical and neurochemical components? In order to answer this question it is useful to explore divergent realities and are they different because of brain mechanisms? Not really. Our brain's functions are implemented via a mechanism called short-term synaptic inhibition, which is an activation of neuronal connections that allow the human mind to quickly reorganize patterns. Short-term synaptic inhibition is actually what allows for perception and expression. To illustrate the difference between our short-term synaptic inhibition, versus our cognition, I would like to use the example of being happy to consider three fundamental divergent realities (with examples) for which each has become a cultural maxim: music, good manners, and vegetarianism.

Third, misconceptions abound. Human nature has been viewed as a uniformly human trait. Humans share common features across continents, cultures, and ecological environments, yet are perceived as uniquely human. This book debunks the myth of the human singularity through the dissection of many diverging attributes, including such basic human behaviors as tool use, behavior and culture, technology, and

medicine. Such insights illuminate the often-misunderstood nature of human nature and create new pathways for the individual and society.

Thus, I wonder if they are not a replacement for writing: a perhaps even better medium for thinking, an expression of new possibilities. What other form of expression might be produced by these intentional, playful, and iconographic forms of expression? Perhaps memes? More creatively, might they be conceptualized as signs of rebellion against meaninglessness, language fatigue and aimlessness in the late modern condition, an alliance between abstract and linguistic forms of meaning creation? Perhaps. But I would also like to point out that this proposition, just like that of the social dimension of aesthetics, is contingent upon much more than the ability to conceptualize it—it depends on what one intends to do with the symbol in question. Just as the arrow transformed the poet into a distraction from the subject, and just as new forms of attention generated by the next technological iteration of information exchange have been developed to unnerve and distract, so too might the humble emoji afford us new opportunities for conceptualizing the aesthetic and theoretical issues raised in this book.

What About the Magical Brain?

In Peretti's academic article, *The Great Gap*, he draws parallels between advertising and ideological practices in capitalism, painting a picture of advertising serving as a gateway into the ideology and practices of capitalism. It is a mechanism for manipulation, forcing consumers to commit to certain brands through representations of identity. In other words, it turns consumer desire into consumer production. Advertising focuses on selling commodities, the products to desire. However, it creates a "market for ideas", and allows for new ideas to be made available to consumers. An individual would purchase a commodity and then, through advertising, seek out a consumer identity (ideological self-identification) that matched their commodity. Their audience would then be willing to purchase the commodity to obtain their consumer identity. Although, the relationship is not one-way, the object of purchase has to sell itself to buy the consumer identity. Therefore, advertising both sets the stage for consumer purchasing and turns consumer desire into consumer production. Advertising both moves consumer desire into commodities and dictates what products will then be considered commodities. This description serves as a precursor for

social media and BuzzFeed, as the concept of the consumer as both producer and consumer defines the relationship between consumer and social media. The theory that underpins BuzzFeed is dependent on the understanding that consumers are potential consumers and producers. In his definition of “lifestyle”, Peretti explains that it is a singular, generalized notion of a lifestyle that, in turn, effects a product’s sales, or rather, its sales potential – a concept related to the concept of “entertainment commodity”. Brand identity becomes an identity produced through the availability of content that aligns with the lifestyle as defined. Entertainment.

Though diversions can be viewed as an opposition between “real life” and “virtual life,” this oversimplifies their complex features. They appear to the “pure passive” user as a fragmented montage of uninteresting stories. They can even appear as an interruption to my own life – I need to stop scrolling to text my mom. But there are many varieties of diversions, and many users navigate them to supplement their “real life” experiences. One could even say that diversions have become the new normal, a universal backdrop that has become equally familiar and unwanted. I have only begun to explore the full range of diversions, but below I highlight several of them, sharing a few of the techniques and strategies that different users use in their adventures.

A key assumption of the H2O framework is that as behavior and objects become more mature, they incorporate more of their environment, including forms of information. This natural process can be modeled to produce an evolution of information that suggests how and when life finds its initial foothold, and through which form it persists and contributes to the morphologies of the community.

This flux of sensory experiences and fluid mental states provides a framework for discussions on subjectivity that may not ordinarily take place within the purview of the traditional philosophies of mind. For example, on the one hand, in the context of hallucinogenic substances, each different experience may have an equally valid representation as a kind of hallucination; and, on the other, the model may provide a way for objects in our world to be more explicable as dynamic or fluid states, rather than as unmovable constructs of matter. The fact that our experience is constantly changing and imperfectly reproducing itself into new physical forms (images and experiences, for instance) is central to what DeLanda calls the “primitive theory of mind”. First outlined by the

Italian psychiatrist and mystical poet Giordano Bruno, this theory, which contends that mind is nothing more than an element of the creative activity of the universe, holds that the universe is a rational and creative creature, that is, a conscious, and therefore unperturbable, phenomenon that is constantly evolving.

The two polarities of mental function within a culture are inextricably bound, and act as both means and ends to define culture itself. For instance, with the absolute reliance on crystallized thought, religions can be easily invented and successfully propagated. I.e., religion is very difficult to imagine. Likewise, religion is difficult to form in the absence of a language of thought and the active refusal to account for the world through that language. Religion relies on the formulation of various forms of thought, and the person who attempts to do so is thus at a severe disadvantage. The same is true of societies. More specifically, society at a fundamental level relies on productive culture that is both crystallized and gaseous. A single crystallized culture would either be primarily militarily engaged or entirely indifferent to social disorder. A society that understands that all cultures, crystallized and gaseous, are in some sense utopian, and that these different levels of culture are imperfect substitutes for one another, would be so challenged by this possibility that they would find it difficult to function and would be therefore able to be more responsive to and cooperative with one another than they would be otherwise.

Perhaps the world isn't divided into the fluid and the solid. Perhaps it's split into a crystallized state and an immanent structure, or perhaps it's at some level in between the two. When we are awake, we are totally dependent on the non-physical, which is the realm of meaning, creativity, curiosity, sensation, and interaction. When the non-physical is being engaged, we find ourselves in a state of non-permanence. Non-permanence, in turn, is related to mind-altering substances and/or activities that intensify our own non-permanence.

In the context of neuroscience, the expression 'self' takes on different dimensions and on a personal level, with its intrinsic semantic content. It must be distinguished from an externalized self, that is to say a mental representation of an externally-given entity. Selfhood is the subjective experience of the self as something distinct and separate from others. This is undoubtedly a social construct, but it has implications for our everyday experience. For instance, if one looks at their personal

possessions and compares it with the same objects owned by others, it is intuitive to conclude that one owns the self, not the other way around. By extension, the self can be also said to own or possess things. It also comes with obligations to oneself, such as what one owns and what one does not. The self becomes increasingly complex the more it can be integrated into the relationship between self and others, such as with relationships or a corporation.

It is only by continuously and independently contextualizing our thinking that we can appreciate our own balance of perspectives. As Proust and his many-carat memory recorders might have put it, absence is to focus. For the most part, these thinkers and doers resisted the rise of conceptualism and its cruel cocktail of theory-making and measurable knowledge, which in their heads was something they weren't equipped to deal with. As digital devices and smartphones effectively command much of their lives, a significant portion of our societal well-being, the generation of sufficient employment and the meaningfulness of life, the generation of a sustainable leisure time is the key to fully grappling with that eternal territory of spongy between. To fully grasp liquid free-floating states, no one needs to go on-site in a place where dreams are made of.

In this context, will skills and ambitions appear as anything other than a kind of echo-chamber, a mediating system, for the flow of technology? What is the meaning of the public utterance of a musician, artist or politician, if her or his public performance involves the facilitator of the audience's own being as an other? A computer program thus becomes a possible shortcut, a kind of relief valve, that lets the crowd flex its mental muscles while giving them a short-cut for reorganizing the entire online world into one massively-scalable opportunity. It is also as if they see the technology more as a kind of fluid resource rather than a tool, as a potential living being. This could then explain why the "Brainwavz" project was immediately associated with a "New Culture" of "post-individual" societies emerging, in which people have gained the ability to freely self-organize from scratch. This is indeed the "warp-speed-networking-mania" called for by Levi.

The goal of such a liquid account, then, must be to ask these questions in new ways and to propose a non-hierarchical investigation. The author is a process: while he, like all authors, is limited by convention to certain characteristics, he is not limited to any single perspective. He aims for

what he calls ‘relative and alternative perspectives’. The differences in perspective (the subjective and objective) must be contested, neither wholly affirmed nor dismissed, and not treated as the true object of the enterprise, for this is necessarily no object at all. Such different perspectives must be based on similar commitments, in opposition to the alternative conceptions of the world—posited by each new speculative community. If difference can be captured with terms like ‘familiarity’, ‘inexplicable’ and ‘unavoidable’, then difference also inevitably raises questions about the nature of familiarity, thereby forcing us to revisit the old and new, and the popular and the reactionary.

It is not purpose that drives the pursuer of methods, but purposelessness that drives the pursuer of consciousness. It is purposelessness that, with the possession of a technique, will result in a perpetual state of stasis, a lack of conceptual awakening. If nothing ever changes, then the subject remains locked within the contents of his cognition, locked within the terms of thought. This is the obverse of reform, of time. If you intend something for someone, it must come at some cost. The procrastinator does not make a command; the conjurer does not put on a show.

Before, I had a clear intentionality and moved towards actions. But now, I see the work more as a reflection on and actuating of a thesis, a central aporia that only, and perhaps precisely because of the experiences, can clarify the aspirations of reflection, which are, perhaps the surest objects of this an anachronistic return to more traditional methodologies. Some of this is conjecture, others to be proven in the text; but there is no definitive answer to how or why, but it is a return that not only fills me with optimism, but also with the power to connect the tradition with the contemporary, and to listen to the horizons of each other.

Bio-based Structures

This architecture of difference, however, is extremely unstable. What is unstable about individual elements of diversity, however, is inextricably linked to what is stable in general: the unity of design. Diversions in nature and artificial systems lead to ever greater diversity, not decreasing it. To see the instability of diversity we need only look at the adaptability and unpredictability of the biodiversity of contemporary ecosystems. As the Tripartite Model suggests, a system can undergo a level of

diversification that decreases its stability – higher diversity leads to less stability.

Grosz's Darwin focuses on humans, an exclusive group who sit at the top of the evolutionary pyramid. Thus, he imagines that "[i]f mankind is the keystone species in the history of life, a model in so far as we have access to genetic engineering, then the differential survival of humanity – by comparison to many other species – is probably of greater significance in evolution than differential survival of some other species." Indeed, Darwin considers it a major "thesis of the book that nature conceals its own devices." The book is thus a call for an ethic of "survival of the fittest" that excludes human beings from existence. Deleuze has clearly influenced Grosz, but not so completely. Darwin, in particular, has been criticised for focusing too much on the "process of natural selection," which tends to look like a short cut, and ignoring the long history of evolution. Here, Grosz rejects "the conventional concepts of culture, society and the state", acknowledging that "some form of organization was going to emerge", but arguing that it would have been "theologically or culturally non-rational." Thus, he criticises the "uselessness" of philosophy, scientific inquiry, art, and journalism in regard to the political decisions of "those who themselves constitute the State". Nevertheless, the book contains many points of agreement with Deleuze. The first concerns the centrality of body and the primacy of physicality. As Grosz points out, "[i]t is by the immediate presence of matter" that we make the connection between various "units" of thought ("[e]ach unit is (potentially) a subject").

Rip currents are diversions. In the Atlantic Ocean, the last plankton left standing get sucked into stormy and turbulent waters. A circular pattern of nutrient flux shapes their distribution, and the deeper portions get sucked in first, allowing a narrower circulation. At the surface, that boundary is thin, and some of the water flowing over it gets caught by waves and picked up before it is spun into an open eddy and carried deeper. Those waves make the water turbulent, and catch the next wave, which is pushed by the wind and currents in different directions. The more diversions there are in any given eddy, the more strongly it will spiral, with the ultimate course serving to drag the eddy farther from the original source. Thus the sediment flows over the beach and beyond, giving us a section of coastline that looks very different from the rest of it, miles and miles away.

Unfortunately, the chief objection I have to the convergence thesis is that it doesn't work when applied to human beings. I've not taken all of the research on social atomization and cultural development with a grain of salt, and I'm certainly not proposing that an ensemble-theory-based approach to political inquiry is useless. There are several issues here. Firstly, social atomization is not the norm in the U.S. as it is globally. There are some characteristics of American cultural life which are associated with larger, cohesive sub-communities of socially related individuals. For instance, religious differences and even socioeconomic differences have been implicated as forms of cultural atomization. The middle of the twentieth century also saw the spread of the suburban culture, which are large, cohesive sub-communities of related people, though such communities may not be a shared majority population, and certainly not to the extent of suburbs.

Because diversions emerge so dynamically in complex social networks, their effects can be varied by individuals within these networks. Divergent patterns can also be generated within networks by means of oppositional relationships: interlocutors may modify the organization of diversions within the network, but also generate divergent patterns in diversions they have created, and their own organization. The factors affecting the breadth of the network and the occurrence of diversions can also vary as network membership changes. The connectedness between the individuals within the network and the modularity of diversions enable them to respond, adapt and co-create with the individuals with whom they are interconnected and thus with the objects with which they are engaged. The more diversions I have identified, the more influence they can have on the evolution of a social network. The following view is taken from theories of biological evolution: organisms evolve through the selective pressures exerted on them by their environment. Given an organism's performance and characteristics, the environment selects for the best performing, reproducing and recombining organisms to give rise to new generations. Successful organisms, those most reproductively successful in their environments, are given the reproductive advantage in the environment and breed into the next generation, to give rise to more successful organisms. An organism's performance and characteristics are not the sole causes of its evolutionary success, but act as both determinants and modifiers. The success of an organism depends on the results of previous

generations and the situation of its environment. Environmental conditions determine the fitness of organisms: the survival of organisms depends on their performance and characteristics. The genetic code defines what an organism is, and influences the performances and characteristics of a given species. Nevertheless, the actual performance of organisms in their environment is determined by the environment and not their genetic code: the successful organism will survive, reproduce, and so forth.

It is the disjunctive experiences of screens that provide the key. It is in the fact that screens produce unequal distributions of focused attention – where data is directed away from some of us and toward others (as an effect of existing media practices) that media life most profoundly diverges. At the same time, however, it is in the “fairness” and focus of the digital devices themselves that they displace old forms of media, innovations like “language” and other cultural expressions. Information processing, as mediated by information technology, is the primary generator of the social dislocations and ecological crises of the present day. It is not any particular technology, but rather the intrinsic logic of information processing, and the dis-invention of cognition and agency in media and its technology, that determines the structure of technologies that we will create. Indeed, it is these technologies that determine whether the past could or could not be maintained or, now, whether the future can or cannot be preserved. The technologies themselves, if we are serious about what this means for work, leisure and life, must be asked to work for us, with us, in our interests and, ultimately, not just in our interests but, and much more importantly, in our interests as human beings.

Chapter four highlights that, before the human species discovered most of the processes of playfulness and the advantage of non-representational decision-making, or something close to that, the atmosphere and the environment of the cosmos had been thoroughly degenerated. The literary man spends his life in a social environment whose search for purpose has blocked activity, leaving no space for play. His entry into the world is that of a child looking for role models in others. He realizes that he has neither purpose nor ambition; the whole place is grey, redundant, lacking a further foundation, lacking guidance. Any activities, particularly physical ones, that engage him in a spirited, destructive way and that he may have thought were fun, only took away

from him the solid ground he needed to stand on. He rejects them, but is also unwilling to search for a proper basis on which to start. No point in embarking on an empty project, without planning a broader structure to it. The consequent loss of novelty or of novelty itself is not desirable.

Play leads humans to feed on non-rational forces, particularly others. One way to do so is to discover that there is something to be learned from other people. This biological part of play is called learning. Certain games lead us to realize that no amount of direct knowledge will make us self-sufficient, that our offspring are a shared resource. The use of indirect knowledge, such as that from one's peers, and hence social learning, as well as the habituation of developing both an interest and an aptitude for, playing with others, leads to learning the unpredictable. What seems so simple at first becomes complicated to reason about and we lose the knowledge we have gained. However, such play also generates knowledge that makes the prediction of future outcomes less accurate than they are. Therefore, one of the basic elements of play is this combination of predictability and unpredictability.

Chapter five established the many ways in which this connectivity creates the generation of problems that go beyond the possibility of solving with intelligence alone. The most remarkable example is cooperation, driven by mutual benefits. Tension between evolutionary direction and universal constraints sets bounds on the solutions that are possible. The constant need for cooperation requires experimentation and tolerance for mistakes. To test and thus continue cooperation, action must be ad hoc and fluid – a persistence that reaches to evolutionary systems far beyond the spatiotemporal limits of the organism. Competition and the tendency for a need to deviate from cooperation then emerge, and the evolution of cooperation is driven by 'fads' and 'isms' in which particular alliances are formed and broken. In such an environment it is no surprise that microbes cooperate by reprogramming conspecifics to perform the 'honour killing' of 'conspecifics who fail to function in society'. Cooperation is not the end, but the means for creating value in the world.

Succeeding attempts to understand our stupid and ignorant forms of thinking, the creation of a psychological map, is made possible by the ways in which our technologies actually can facilitate thinking. At present, smartphones, not a deliberate creation, are likely to be the technologies which actually become a form of external memory (and not

just for storing music). Telematics, the transfer of power, information and decision-making to automation and digital networks, is made easier by these same technologies – their new maps of speed, communications and information are made possible by our devices. Telematics take the place of human intelligence (because it can reduce the risks of problem generation to the same level as driving without ever having the chance to face it), and allow space for the development of more aggressive responses to the basic intelligence of our nature. Our acts of creation, such as artistic works, political activism, journalism or research are coupled with the instruments of navigation. In some cases, the choice of resources, for instance, the equipment of individuals, is identical to that of robots. Perhaps the role of the hand of a robot is a result of the choice of resources, in fact, for the resource represented by human intelligence. Similarly, the misuse of equipment of a nature that makes human control more dangerous, such as a grenade launcher, an antipersonnel mine or a rocket, is considered the result of the poor decision-making of its operator, not the product of a machine's inertness.

Here is one irony: Cuteness could lead to an intelligence revolution, where human beings become more like animals. A commercial highlight is Australian David Attenborough with Planet Earth II. He admonishes his viewers to turn away from humans looking cute to recognize their personalities, and to consider the conditions that allow babies to become cute. Noting that one of the mammals most at risk of extinction is the Great Australian Bight cod, the magazine warned "that if nothing is done to save the oceans we will lose most of these wonderful creatures". The series on evolutionary parallelisms between human and non-human primate experience draws heavily on anthropological and cultural science. I don't want to give the impression that this work's tone is identical to those it directly extends – just that the evidence for its conclusions has already been presented from a variety of disciplines. It's probably best to put my interest in working with non-human primates in a broader perspective. I always admired my father's lab work and academic reputation, but he was also a uni administrator who administered to the whole University, rather than just one department. As he said, "students without bursaries get degrees; bursaries without students don't." The primates program was a passion of my father's; at times, it was a struggle to get it funded by the University. He often said, "If it were any other academic department, if there were more funding

in psychology, these monkeys would have had tutors by now.” But I always admired my father’s nobility – he was a true scholar; no child was ever forced to study with chimps, just as no child was ever forced to study with humans. Humans, chimps and childrearing were too different, so the two subjects were studied under different conditions. The only possibility for human and non-human primates to interact directly, was to form, on their own, laboratories where the animals were allowed to live and study alongside humans. My father ran this program for thirty years.

Chapter seven describes the evolution of foreign contacts. Although dogs have been domesticated, they remained faithful to their original wolf counterparts, leading humans to pursue other means of satisfying their desire for a more playful creature to accompany them. Art, clothing and toys provided dogs new functions, which then created new vulnerabilities. How early humans responded to this growing challenge defines the relationship between humans and their social environments. Ultimately, conflicts and mutual tolerance lead to change, allowing dogs to become domesticated and ultimately the best companions animals ever had. Another chapter explores the phenomenon of cultural evolution, which has driven our human ancestors to explore the full range of human senses. The importance of verbal communication in the development of languages also led to the adaptation of certain visual illusions to enhance memory, as well as the cultural evolution of one of the main senses: sight.

Although it would probably seem crude to attribute utopianism to the trolls, this is precisely what I will do: there is an era of anarchy at the edges of civilization. It is not a new anarchy, but the anarchy of precivilization, when human communities followed entirely different survival strategies. What was fundamentally different was the emphasis on a very different set of virtues: the autonomy and equality of humans. The decentralized institutions of prehistory did not provide much for a strong social state, nor did they provide free food or subsistence for anyone. Instead, the power of the community was concentrated in the hands of the tribal elders. The ‘founding fathers’ of prehistory were moral leaders, who made very clear-cut decisions about how to live and exploit the environment. Everyone else, including the kids, did the things that made sense to them, and they had no obligations to anyone else. This lack of government had a profound impact on human decision-

making. Anthropologists like Gregory Bateson have written about the ways that the absence of a strong state leads to the unleashing of a complex mesh of social behaviors in community. In his seminal essay, *Man is Not an Animal*, Bateson writes: «With only a few exceptions, and perhaps not even those exceptions, the [anthropologists] generally have found that “naturalistic” behavior under the threat of punishment was a stabilizing influence; the behavior they often described when the threat of punishment was absent was much more diverse, and more differentiated from the behavior people have used since living under stable social order» (19). In sum, hierarchical structures — which depend on strict differentiation of status — make for a strong state, and in precivilized social interactions, it was much more likely that one human was the wiser, wiser group member, than the other. In effect, human society was already built around a single identity, and was focused on the internal improvement of one’s clan.

If instead of an increased inherent tendency towards liquidity, we sought a significant increase in the predisposition towards diversions, our cognition would align more with the drivers of our decline — either due to a higher propensity towards subordination or a higher propensity towards competition — rather than expanding the potential for humanity. The numbers appear to say that most people do seek — but are not fully able to articulate — a rational basis for going to, or consuming media. And why should they be? In order to make sense of it — to find something that makes sense — you have to be able to understand the entertainment model of media in which you are embedded.

But let’s instead consider the past to see how, to some extent, we might continue to produce our current situations. There are scholars who are trying to capture that past. In a wonderfully clear and accessible book on the history of science fiction, Mitchell Joseph argues that it is important to pay attention to what matters. Science fiction is often recognized as a form of intellectual creation. But it can also be an engaging entertainment form for the masses. The creation of literature, for Joseph, can be understood as a means of radically shaping culture: science fiction works well in that role because it changes the way people think about, and talk about, the world. While there are many of the writers (and now films and games) that can be considered “mainstream,” there are others who are not necessarily eager to cooperate. Though they have to compete with other forms of entertainment, they could bring

ideas and perspectives that did not exist before, or that will radically change our thinking about the world.

Many of our concepts of the future are simply artifacts, the kinds of things that our brain finds salient and useful. A currency is a good example of this: it's a human-based product that exists to help people achieve more of what they want through exchange. We often seek to frame it as a statement that it is what it is, but there are many other things we might desire that we can't see. But the best currency to use for a project that has not yet begun is something more specific. It might seem as if the modern world lacks a center or an axis, a thing one might anticipate to characterize it, a single axis upon which the fate of humankind should turn. In fact, we have no such thing as 'the modern world' in the sense that we might more typically imagine it. The course of technological change has indeed been established, with rather limited scope and capability, by processes that occur on a global scale and that can, for instance, benefit from advances in the majority of developed world (h/t Peter Thomas [2]). [1] But the general form of what the modern world might look like is not that of an axis, and not a clockface either. What does that mean for the sort of logic that might describe the future of media? It means that the determinants of media, media configurations, are not global or very local; they are both temporally and spatially specific, subsisting within limited terrain, structured by specific histories.

At times, this may sound like I am making the same mistakes all over again, attempting to apply historical, social and economic problems to ecological issues. Yet at the same time, this perhaps has less to do with our inability to conceive of the future, and more to do with the failure to see the temporality of the present. To see the present as a possible extension of potential or actual. The search for the present requires no use of future-directed terminology. We can still speak of Earth as a living, and constantly evolving, being. Yet, we should also contemplate what it might become in the present. Such consideration can be done by taking from the work of Thompson, Mearshimer, and Patterson, in their very different ways, their opposition to over-determination. Rather than take the dominant West's tendency to see the present as a continuation of the past, we can take their more helpful understanding that the past can be seen as contingent upon a plurality of previous incarnations of nature.

Magic Treehouse A-Z

Just because you're a writer doesn't mean that you can't have a healthy respect for the richness of the senses, and the consequence of an all-consuming absorption in a text, and a life with only a few extended and uninterrupted moments for the eyes to rest. The difference is often physical, as the mind is delving into the world of the book or the screen. The mind is seldom able to communicate its interactions with the outside world; not least for the purpose of words. Books, films and plays are different in this respect, as the experience can be felt viscerally, with blurring and flaring, and the sense of age, as the text and the makers of the material both float in the mind. Writing requires the audience to feel, and for the reader to experience it. I can feel it in you if you want to.

To stay interested, one must put effort into opening the text and making the time investment, for reading is not a choice of lazy-dom, or comfort and escape. The act of reading, a form of engagement and concentration that carries the implications of lengthy thoughts, is defined as contemplative. We participate in this contemplation by stopping our thoughts, regulating our attention, and being present with what is before us. For the conscious mind to engage in this labor, it is necessary for the subconscious mind to be engaged as well, via the anterior cingulate cortex. As described by clinical neuropsychologist Dr. Christopher Ryan, the Cingulate Gyrus is a subcortical structure of the frontal lobes, which governs emotion, attention, response, and decision making. Ryan also describes the cortex as being relatively well regulated through neural connections, that also contain the prefrontal cortex, as we learn. This disconnection from our experiences and our empathic responses, combined with allowing ourselves to react to these situations, is the cause of reactivity. When we avoid stimuli, we experience what Dr. David Eagleman describes as “the quiet death of the nervous system”. We do not want our reading or writing experiences to be void of meaning, emotion, or curiosity. We want to feel at home in what we are doing, and learning and creating something that adds to our well-being, as well as to the experiences of others, fills our souls with a sense of purpose. By understanding the brain, we are better able to overcome the lack of empathy by using different strategies for engaging our attention, and altering the patterns of our brains, which in turn allows

us to stay with the text longer, to practice and practice and practice, until our empathic and cognitive abilities are superior.

Language learning takes place on a sensory level and in an intuitive way: do we remember the classical descriptions of concepts or just the immediate data of language? The evolution of language has its origins in the world's earliest language, echolocation. Most researchers agree that the source of language must lie in echolocation, with memory of sound. Echolocation, in which a sound is produced by vibrating the vocal cords, or other parts of the body, and reflected by some form of sound or object, is found in many birds and mammals, from bats to dolphins. This kind of signal-forming sounds may have provided an early template for the vocabularies that arise from cognition. When the sound's modulation of the world changes, so does a human's ability to make sense of it and respond. This signal-forming is perhaps the best test of what the brain understands, of what it 'thinks about'.

Notice the change from an organic form to a solid, a form now abstract and code-like. The addition of the 'electricity' symbol is significant in this regard. A theme in *Becoming Human Amid Diversions* is that we are electric beings. From batteries and transformers to the microchip in our head and its conductivity, the connection between form and function is well explored. This is because evolution – and the evolution of humans – is dependent on the process of self-transformation, on a continual rationalisation and re-apportioning of our DNA. Thus, we are both electrical beings and organic beings, each giving birth to a new kind of form. The difference is that we carry the ability to amplify this process, and it can be taken out of a control state and applied to another state, thus transforming the living and the dead.

One of the clear signs of this is the striking marriage of the natural with the digital, where the latter provides a more amenable platform for the expression of the former. In the concept, we see how digital computation of the chameleon material, enabling a physiological transformation. Again, this is far more complex than anything the Virtual Body model can contemplate. The essential aspect of *Becoming Human Amid Diversions* is that it puts digital into an organic framework and vice versa. Thus, although there are correlations between this model and other explanations of morphological change, the character is different in important ways. There is also a greater sense of unpredictability and surprise – when, in addition to the visible

morphological change, we see the colour of our flesh changing. This will be the scene in which the reader encounters the magic of the Digital Body, as we consider its iconography, its fundamental morphology, and the elements that give rise to its self-awareness.

Outlines of feelings such as fear and sadness are apparent in daily life. Text and tweets have so far been a very limited range of expressions of our feelings, as these electronic devices are merely channels for our activities. Physical presence, shared activities, shared physical space, sharing in conversation, are the natural venues of expressing our feelings and developing shared understanding. Emotions are shared experiences, not words on paper. Of course, writing is not only digital, it is not just electronic, it is print, or it is not handwriting but emoticons, handwriting, paint, a signature, markers, a password or a key, a keystroke, clicks, waves, computers, video and images. Not all writing is typed, not all written. What differentiates a book from a sheet of paper lies not in the words but in the marks it makes, the peculiar marks that permit words to fit together, to build a structure of meaning. DeLanda makes clear that words are not the basic units of language.

Emoji grew out of email but have now become so widespread as to emerge in a new form as apps on phones: although emojis are ostensibly still based on Unicode characters, they have become typeset on screens and have therefore deviated from ASCII codes. Emoji vocabulary is a challenging set of types: it requires many decisions about appearance, encoding, and interface design. Although in the early stages of its use, emoji use has sparked controversy. The 2004 Japanese translation of D. H. Lawrence's *Lady Chatterley's Lover* was accused of containing unsavoury emoji; and users of a Facebook group dedicated to discussing tattoos might find it funny to insert a Hitler-like mustache as part of their profile picture. In other words, emoji is often just another form of expression, like drawings or poetry. Their meaning may only be understood by those directly involved. Emoji have come under fire from security professionals as symbols of security vulnerabilities. There is no real reason to consider emoji a "threat" – a slang phrase coined in 1992 by computer scientists Kenneth Morris and Randall Monroe. But Unicode Consortium has been paying attention: it has an emoji team tasked with examining emoji, finding their appropriate placement on the keyboard and ensuring their security. They have experimented with secret codes that could protect messages from being read by certain

computers. If there is a threat in emoji, it would be to emoji's own security: if an emoji is more difficult to read, the receiver will miss the communication. There are no sure-fire security measures, but emoji-specific fonts can help. The Unicode Consortium is planning to introduce a universal emoji font that would work on any device, to meet the needs of all users.

The distinction between message and medium or literal, pictogram and typographic is perhaps the least interesting distinction to make about emoticons. The profoundness of their reach is not in their abstraction of meaning, but in their loss of it. They provide a very concrete version of the category-wide trajectory of human interaction away from words toward symbols. And the great irony is that emoticons and emoji open up a history of communication that no other device does, since they suggest a single point of reference for much older technologies. Yet, there is not much room for archaeological exploration of this lost history. Our way of communicating no longer requires any kind of written language; digital writing replaces any and all kinds of writing with texts in which there are none. There is no precedent for the semantic core of human language, and no set of spoken or written words to follow. And yet, the emoticon and emoji are not that far removed from the way we communicate. They are a kind of 'pedagogical tool'. The sad fact is that we are facing the end of written language, and it is generally believed that digital technology will provide an adequate replacement. Yet, we can't just step away from how we have been talking, can we? Why are we not already scrambling to figure out what to say to each other, and how?

Emoticons reveal the tangled relationship between speech and text, between coherent thought and disordered sound. To allow these disordered sounds to penetrate the narrative, I introduce a device to counterintuitively clarify the writer's intentions. Instead of the conventional quote marks used to indicate quoting words and phrases, I introduce the fuller and more entertaining "originality marks" of smileys, pictures, and emoticons. I use originality marks in a kind of literary jiu-jitsu. By introducing intentional meaning into every aspect of the book, it is easier to attract readers into its dialogue with ideas and its complex architecture. This book was constructed to be emotive, not rational. And by entertaining with expressive typography, I disrupt the expected progression, the flow and organization of the text. The idea of a logical

Notes

Chapter 1

Stein 1960.

———. 1978.

Ascher 1984: 28–29.

Deleuze and Guattari 1977.

———. 1997: 4, 53.

Stein 1992, quoting Deleuze and Guattari 1978: 209.

Bertrand 1982: 163.

de Vattel 1748: 33.

Plato 1982: 196-197.

Sirin 2017: 5, 12.

Deaton 1980: 5, 8.

Leuchtenberg 2011: 20.

Spivak 2017: 5.

Esposito 2007: 154.

Goldsmith 1996: 98.

New York Times 1982/2009: 245.

Gelfand 2010: 177.

Höfer 2004: 176-177.

Misha 2003: 86.

Forbes 2015: 28.

The Guardian 2016: 3.

Karlheinz 2011/2013: 35-36.

Marshal 1972/1986; Kroker 1997/2001; Krech 2004/2009: 34.

Chapter 2

Thomsen 1980/1988.

Thomsen (1982: 329) says that “the Deleuzians and anti-traditionalists in no way claim that representations are not created by the producers but that they have no social significance”. On their contrast with traditionalists, see his “Traditionalists and Deleuzians on Representation: On Man as Image and Action” (1982: 349-356).

Thornton 2014: 74-76.

Idem 2015: 15-17.

See also Winant 2004/2006.

see Smith 2010, Klein 2005.

see also Messner 2011.

See Parkes 2013.

Feldman 2014.

Deleuze and Guattari 1975: 137.
Deleuze 1992: 23.
Debord 1992.
Debord and Pervine 1999: 208.
Deleuze 1992: 34.
Deleuze 2006: 195–196.
Deleuze and Guattari 1985: 11.
Deleuze and Guattari 1987: 9–10.
Deleuze 2001: 7–8.
Deleuze 2001: 183–184.
Douglas 1992: 250.
Kumar 1997: 66.
Dyer 2014: 184-5.
3.Sungrow 2008: 117.
DeLanda 1997/2000: 13-14.
Dyson 1997: 31.
Ashby 1962/2004: 270.
Rand 1978: 46-47.
Ashby 1982: 95-96.

Genetic effects can increase with contact between a given population and a group of interbreeding individuals who possess similar alleles or phenotypes (i.e., shared alleles), although the chances of survival decrease in each case (DeLanda 2008: 116).

See Guest and Thornhill (2005).

Gilboa 1997.

Margulis and Sagan 2002: 12; Ella Singer 2013.

Lardner 1979/2000: 45; Land (2000).

Kitcher 2006: 150; Wheelwright et. al. 2005.

Barringer 1981: 58-59; Pickering 2010: 26.

Spielman 2016: ‘...Plato’s notions of a shared soul, that of a rainbow; and ascetic themes of an aetiology of civil wars—all share a theme that the world is intrinsically, inherently good, while war is a wicked betrayal of this good. The philosopher John Locke, a founder of Western philosophy, also thought war to be a wicked and harmful thing. He found the practice of war, however, noble in the right circumstances, and took strong exception to states entering into international wars that were (as Locke understood) on illegitimate, hostile grounds. He argued that, if there was an end to war, only then could he advocate its practical application. Locke further argued that only then would we become like the gods, the gods in whose image we were made and whom we might aspire to.’ Cite, ‘Strange as it may seem, more than a few have also attributed the genesis of life to the Greek philosopher Plato. Plato is typically credited with first proposing that inanimate matter might be animated by

sentient souls that possess free will. The notion of life as an independent element of reality is also held to have been shared by the early Christian theologians, the early Jewish philosophers, the Islamic philosopher, and the Zoroastrian philosopher. A recurring theme in most of these theories is that life itself, and not the agency or kind of agency that gave life to organisms, was the source of its origin.' Kupperman et. al. 2002: 4; Young 1995: 174-176. Century Online 2013: 73.

DeLanda 2016: 2. Eldredge and Gould 1972: 70.

Cite, John Holland. 'Plato's Critique of Ancient Philosophy', *Philosophical Review*, vol. 119, no. 4, p. 484, November 1983. (Translated into French as *Le Cynique des Dialectiques anciennes*, Ed. Zenet). The same idea was discussed by Nehamas, and the closest Plato comes to endorsing free will is in the *Discourse on the Gods*. Perry Williams in the *Philosophy of Mind* (2nd ed., 2004), vol. 5, p. 79, and *Ibid.*, pp. 86-87. Adler and Mellor 2010: 181.

DeLanda 2016: 2.

Debord 1980/1992: 64-65.

Barrett 2016: 72.

An example, soon after Napoleon's defeat, of the changing attitudes of a 19th-century Russian metallurgist to the question of the origin of life, and from the viewpoint of the 19th century, of its predecessor:

"It would be wrong to suppose that our sole purpose in living and in our manufacture is simply to satisfy our appetites. Man's work and labor is necessary, and is chiefly done in a more serious, more ideal and more noble manner than is done in the production of gold and silver."

Bogdanov, 1869, 'Duties of Man', i, pp. 80-82

DiNardo 2012: 192.

Lusztig 1996: 131.

Blackwell 1982: 127.

DeLanda 2016: 7.

Greenland 2014: 228.

Feynman 1969: 599.

Barricelli 1961: 175.

Barricelli 1962: 90-91.

Steele 1999: 253.

Varela 1973/1980: 77-78.

Sagan 2005: 95.

Barricelli 1962: 82.

DeLanda 2016: 4.

The concept of symbiogenesis, the process by which two species, let's say bacteria, can mate to create a new bacterium. Such fusion can result in not only the sperm and egg cells, but the entire genetic material of the parent species (see Neumann 1947).

DeLanda 2016: 7.
Markl and Zimmer 2013: 165, 166.
Varela 1973/1980: 77.
Nielsen and Thielman 1999: 291.
Rezzi et. al. 2007; Swartz et. al. 2012; Valles-Colomer et. al. 2019.
Fergus (2017) contains a helpful discussion of the representations and language of electric fish (*Anomalopteryx percnopterus*), an example of a complex and adaptive system.
Putnam and Boudry 2010.
Plato 1900/2000: 74-75.
Rezzi et. al. 2007: 20; Valles-Colomer et. al. 2019.
DeLanda 1997/2000: 70.
Dyer 2010: 939.
DeLanda 1997/2000: 10-11.
Thoreau 1844/1961.
1 2
Bibliography
aab.pl, bs.pl, css.pl
Harman, E. 2014.
Laland 2015: 14.
Ellis 1950/1984.
de Ploeg 2007: 75.
Burroughs 1968: 79.
DeLanda 1997/2000: 22.
DeLanda 2001: 105.
Calderon and Barco 2012: 3; Sheldrake 2011: 183-184; Willshaw 2013: 187-189.
Pascal 2009: 439; Lange and Clempson 2010: 1; Machado et al. 2013: ix-x.
Moore 2006: 88.
Maxwell-Boyd and Welling 1973.
Pohl and Sheldrake 2018.
Jacobi 1936/1957: e85-e90.
Bostrom 2000: 8-9; Bostrom 2005: 22-23.
See, for instance, Burroughs 1968: 33.
Wolfram 1982: 22.
Wolfram 1997: 18.
See especially, for instance, Glaeser and Rockmore 2002: 27. For research by anthropologists on the precursors of the modern synthesis see: Mattison 1999: 147-150; Daugherty 1996: 1-3; King 1997; Jha 1996; Bowring 1995; Myerson 1995.
Rudolf 1990: 128.
See also Snyder 1988: 233-240; see also McLuhan 1962/1980: 27; Frick 1989:

11-12; McLuhan 1962/1980: 49.
Galileo 1957/1971: 936.
See for instance Molesworth 1961: 248-251.
Falconer 1979: 10.
Desmarest 1961/1972.
Hodgkin and Pickard-Cambridge 2008.
Klein 1982: 24.
Knight 1978.
Bostrom 2005: 9-13; Glaeser and Rockmore 2002: 27; Manning, 1999.
Evans 1967/1981.
DeLanda 1997: 33; for the seminal application of convergence to evolution see
Chaves 2006: 32.
DeLanda 1997: 36.
DeLanda 2000: 87; for application to ecology see de Pury 2001: 80; for
application to computer science see Rezzi et. al. 2007: 55.
Böhme 2006: 69.
Dolazewski et. al. 2013; cf. Nielsen 2008.
Cowper-Smith 1999: 241.
There is some debate about whether theophany is a perfect analog for
sybiogenesis. See for instance Dolazewski 2013: 4-5, 33-34; Nielsen 2008:
93; Swartz et. al. 2012; Valles-Colomer et. al. 2019.
Huizinga 1938/1980: 29-31; Blanke and Böhme 2006: 193-194.
Böhme 2006: 199.
Blanke and Böhme 2006: 195.
Böhme 2006: 200.
Swartz et. al. 2012; Klimley 2013.
Swartz et. al. 2012; Häring and Luthan 2014: 1-7.
Chary and Barrie-Oliver 1997: 55. Blanke and Böhme 2006: 95.
DeLanda 1997/2000: 46-47.

Chapter 3

Huizinga 1938/1980: 30-31.
Huizinga 1938/1980: 55.
Huizinga 1938/1980: 81.
Ladau 2000: 111-112.
Huizinga 1938/1980: 85-86.
Huizinga 1938/1980: 85.
Huizinga 1938/1980: 95.
Huizinga 1938/1980: 95.
Huizinga 1938/1980: 96.
Huizinga 1938/1980: 96.
Huizinga 1938/1980: 97.

Huizinga 1938/1980: 98.

Coccia 2014: 8; Burghardt 2010; Stavenhagen 2012.

Online Etymology Dictionary.

Computer-controlled “computer” games typically fall into two camps: both gameplay and mechanisms. Some kinds of interactive experiences, like MMOs and mobile games, utilize entirely computer-operated actions (as opposed to simple user inputs), while others use user actions to manipulate computerized actions. An article on the videogame genre that includes “computer game” as a common term excludes gameplay mechanisms, describing only gameplay with interaction. The video games that did receive a classification as a “computer game” were typically puzzle games or games of chance.

Coccia 2018: 23; Online Etymology Dictionary.

The player of a computer game is not always the one running the game. One example is a free-to-play game.

Kellogg 1992/2003: 4.

Trull 2000: 26.

Online Etymology Dictionary.

The term “multiplayer” typically refers to PC games that are played by more than one person, though some console games also engage in this.

Coccia 2014: 22; Online Etymology Dictionary.

Computer-controlled games have existed since the 1950s; the term “computer game” was coined in 1966, and is originally a relative term referring to the genres of popular computer games that use a “simultaneous computation” approach.

Coccia 2018: 11; Online Etymology Dictionary.

Although polygon counts vary, the vast majority of virtual worlds contain fewer than 1 billion polygons, and some as few as 500 million. (See Dryer 2011: 446.)

Trewavas 2017.

Yzquierdo et. al. 2017: 247.

Colossal Cave games made before 1980. For the earliest, see the online game simulator Cogmind.

Cogmind 2016; see Wikipedia.

Parsons 2000: 235.

William Greene 1987: 12, 14.

Lucas 1992: 125.

Gibson 1979.

Bogost 2016: 27.

See also Collin 1997: 70.

Boluk and Lemieux 2017: 31, 34.

Cotton 2007: 28, 30.

Parr 2016: 247.

McDowell 2006.
Linde and Grigsby 2016: 60, 61.
Grigsby 2016: 62.
Grigsby 2016: 63.
Parr 2016: 247.
Foley 2005: 41; see also Colossal Cave 1984
Grigsby 2016: 25; see also Trewavas 2017.
Rouses 2015.
Foley 2005: 41.
Levy 2009: 48; Goldstein 2009: 78.
Goldstein 2009: 79.
Bogost 2016: 26.
Ito 2001: 99; Ito 2000: 181.
Lewis and Kerner 1997: 26-28; Pollard 1979: 13-22; Silcox 1981: 9, 18, 40
“This is an argument,” said the first, “about which the conversation is already too long, for none of us have much time.” Aristotle, *Politics*, v. 4.
Hughes 1988: 26; Skuce 1983: 95.
Sanabria et. al 2008: 179.
Clarke 1996: 71; Swink 2009: 34.
Pond 2006: 153; 2008: 34.
Cowart 2015: 16; 2017: 23.
Marder 2012: 55.
Ibid: 158.
Von Uexküll 1943/2010: 117.
Burghardt 2010: 340; 2012: 3.
Howe 2013: 8.
Gollum 2016: 4; Taylor and Freund 2017.
Golgotha 2017: 59.
Hughes 1988.
Lin et. al. 2017: 185.
Przybylski et. al. 2010: 161.
Marder 2013: 131.
DeLanda 2011: 80; Trewavas 2017.
Dawson 2015: 143.
Snyder 2016: 102.
Coccia 2019: 116.
Jones 2017: 79.
Christensen et. al. 2018: 296.
Marder 2015: 144.
Lloyd, Hubert et. al. 2015: 76-77.
Sandberg et. al. 2017: 183.
Linnemann and Konczal (2012) discuss the strong similarity between Marder

and London Breed's exploration-reward based neural nets. See also Togelius, Treloar and Wadsworth 2011, in which they offer new rules for exploring an environment, namely: don't traverse a single path, don't explore at a depth greater than which you can descend in a non-directional way, and of course explore in the same direction.

Coccia 2019: 121-122.

Huizinga 1938/1980: 44-45.

Huizinga 1938/1980: 50.

A trained A* search algorithm (see Bostrom's 2016) was used to tackle the game of Go. It is therefore conceivable that a similar approach could be used to tackle different types of exploration tasks.

Tableau D-Infinity 2016.

Pastorek 2015.

Thematic representation of stories or text. See for instance the data the team at Universal Tap and Sensing used for their analysis in 2011 (Landser et. al. 2012: 4.

DeLanda 2011: 80.

DeLanda 2011: 102-103.

DeLanda and Sousa 2016: 208.

DeLanda 2016: 9-10.

Lanzarini and Marrelli 2018: 23.

DeLanda 2017: 37.

See also Anhui 2018.

Lucas et. al. 2018.

Deepmind 2018.

See for instance the Nominet Data Science Institute Artificial Intelligence Competition 2017 (Xiang et. al. 2016: 19-20).

See for instance the Artificial Intelligence Experiments 2017 (Rademacher and Ruessmann 2018: 8; Ferreira 2018; Kosan and Lindley 2018: 28-29).

Darwin 1895/1985:114.

Boluk and Lemieux 2017: 12,25.

Roland 2014.

Lauda and Christensen 2017: 29.

Pottala et. al. 2017.

Allied et. al. 2011: 315.

Takemoto 2007, see also Snyder 2013.

Takemoto 2007: 16.

Takemoto 2007: 16.

Schmid 2012: 141.

Boluk and Lemieux 2017: 17.

Lampert 2015: 38.

Adzard et. al. 2016.

First time-lapse movie of an AI playing Super Mario Bros. 2016
Note that the above-mentioned videos are not the original games (e.g. by HAL from 2001: A Space Odyssey, or by HAL 9000 from 2001: A Space Odyssey), but rather re-creations, which come with some caveats. Moreover, this evolution of games from ROM (Byte) to Code cannot be considered playing, since the game plays like a very unintuitive 3.

Chapter 4

Sheldrake 2020: 160-161; 155-156; 136.
Sheldrake 2020: 156.
Beekman and Latty 2011.
Suberbieles 2010: i-ii.
Wicks 2013: 44.
Sheldrake 2020: 160-161; 156.
Sheldrake 2020: 162.
Ion Geomete 2015: 23.
Hansen and Harting 2014: 18.
Suberbieles 2010: 4-5; 14.
Meyer 2009.
Poelmans 2007: 26.
Markestijn et. al. 2015: 87.
Asanovic and Musolino 2017: 68.
Arkin and von Cramon-Taubadel 2010.
Bok 2007: 14-15.
Chochol 2013: 63.
Chochol 2014: 94.
Chris Moore 2015: 30.
Sheldrake 2020: 156.
Carr 2011: 18-19.
Morgan 2013: 92.
Maltese 2103: 58; Toričev 2014: 9-14; De Simone 2014: 10-11.
Rabe 1996.
Steyerl and Crawford 2017.
Zeller 2012: 28.
Thornton 1996: 37.
Gillies 1996: 12.
Tero et.al. 2010.
Taverna 2000.
Bujold 2007
Le Tacon et. al. 2014.
Zak 2013.
Sheldrake 2020: 160-161; 155-156; 136.

Deleuze and Guattari 1980/2016: 273.
 Adorno and Horkheimer 1944/1997.
 Carr 2005.
 Dugald 2000: pp. 152, 162, 185.
 Weinberger 2015: 195-200.
 Gould 1994: 132.
 Selosse et.al. 2014: 100.
 Deleuze and Guattari 1980/2016: 255.
 Gould 1994: 152-153.
 Eikelenboom et. al. 2015.
 Gould 1994: 228.
 Sheldrake 2020: 228.
 Deleuze and Guattari 1980/2016: 257.
 Abbate 1999: 59.
 Bogue 2017.
 Barabási 2002: 68-69.
 Krischer et. al. 2015: pp. 25-29.
 Barabási 2002: 69-70.
 Lin 2017: 674.
 Selosse et.al. 2014: 100.
 Barabási 2002: 68-69.
 Krischer et. al. 2015: pp. 25-29.
 Selosse et.al. 2014: 100.
 Abbate 1999: 59.
 Abbate 1999: 49.
 Vidal 2010: 188.
 Barabási 2002: 167-168.
 Barabási 2002: 168.
 Barabási 2002: 167.
 Abbate 1999: 69 and Barabási 2002: 169-170.
 A new critique of administrative modernism, with the aim of making a new social text: Thesis 8 (2007).
 Sarmiento 2000: 202-204.
 P.S. Chokshi, *Edge of Understanding: Edge Computing, the Industrial Internet, and the Ecosystem Implications for Evolutionary Biology*, 2015.
 For extensive discussion of Edge Computing, see Treffert and Butler 2014.
 E.g. D. Smith and D. Emmett 2011: 73.
 D. Brown 2011: 85-86.
 E.g. D. Brown 2011: 86.
 C. Goss and C. Starr 2017: 14-15.
 C. Patlan 2018.
 Arnold 2018: 11-12.

D. Buchner and D. Gangestad 2010: 126-127.
F. Bérard 2017: 21-22.
D. de Balmes 1990: 138-139.
D. Cole and B. A. Rodino 2016: 17-18.
D. P. Marx and R. Turekian 2017: 9-10.
D. Tishkoff et. al. 2016.
D. Griffith 2015: 79-80.
C. Bryant 2017: 3-4.
F. Karl and G. Pohlmann 2012: 74-75.
G. Luckenbill 2018: 6-7.
C. Colegrove, P. Morris, P. Schmeddige, S. Smith et. al. 2016: 6-7.
D. Inglis 2012: 69.
D. Kochler and J. Griffin 2011: 52-53.
K. Herman and K. Dzunis 2017: 18-19.
D. L. Nimmo and E. Matsumoto 2017: 24-25.
E. Mershfield and J. L. Rodger 2016: 15-16.
Ibid.
Pinto 2016.
Kallenberg 2011.
Kwong 2013.
Smith 2013.
https://www.nytimes.com/2013/11/23/books/the-decoupling-of-technology-and-human-development-with-luke-simon.html?_r=0
Black 1963.
Márquez 1988.
Perennial-1993: 32.
Márquez 2008.

Chapter 5

In the Media 2018.
Plamondon et. al. 2010.
Ogawa et. al. 2018.
Antoine 2010.
Lesprit 1998.
Baudrillard 1986/1989: 155.
Mudd and Van Cleve 2007: 3-5.
Hyman 2017: 127.
Denis 2004.
Benhabib et. al. 2017.
For my account of the prominence of “the selfie”, see especially Blaser and Bradley 2010: 21-28.
Speilberg and Watanabe 2010.

Burger 1997: 87.
Zeder 1996: 174.
Brand 2016: 20.
Edelman 1997: 115.
Burger 1997: 172.
Lombardo et. al. 2016.
Lorenz 1974.
Speilberg and Watanabe 2010: 15.
Edelman 2001.
For my account of how fragile identity can be in the face of instant connection, see, for instance: Burger 2001: 167; Nava 2016; Smith 2018.
Noyce 1999.
Rodin 1963/2013.
Montero et. al. 2018: 125-129.
Bournaud et. al. 2017: 16.
Ogawa et. al. 2018.
Hyman 2016.
Burger 1997: 7; Zeder 1996: 20.
Varghese 2012.
Brecher 2013.
Bonderman 2013: 65.
Bonderman 2016.
Berner 2017.
Rose et. al. 2013.
Schmidt and Cohn 2001.
Pascoe 2000.
The rise of the Internet changed the way we experienced nature. George Ballard et. al. 2015 and for my view on the fundamental transformation of how we interact with and perceive nature, see Section 4 on “Internet and Consciousness”.
Savage et. al. 2017.
Veenstra and Taylor 2017.
Schlütter et. al. 2013; Sachs et. al. 2016; Simkin et. al. 2016.
Tchouatsian 2015.
Schubiner 2011.
Kleinman 2012.
Anderson 1998.
Barras and Dahlen 2005: 18.
See Saxe 2018.
Arguelles and Ríos 2018.
Lovell 2009.
Harwood 2009.

References:

- Arguelles and Ríos 2018.
de Felice et. al. 2013.
Bikson et. al. 2013; Branche et. al. 2013; Davis et. al. 2014; Gaidos et. al. 2015.
de Bremer 2003.
de Bremer 2006.
Di Fiore 2016.
Fisher 2005: 17.
Angler 2006; G. Anda et. al. 2016; Mazzella et. al. 2015.
See Maddocks et. al. 2017.
Popova 2010: 2.
See for instance Kikunobu 2015.
Cammaerts and Abe 2014.
Seung, J., D. To, and H. Jeon. 2008. (see also Chew 2013).
Turner 1991: 18, 25.
Turner 1991: 26-28.
Turner 1991: 39-41.
Goodkin 2001.
Peralta 2016 and 2017.
Lewandowski and Keller 2002.
Burrows 2003 and 2006.
Lenny 2000.
Ballantyne 2018
Brautigam 1967.
Ursinus 2007: 3.
New et. al. 2015; O'Neill 2016: 110; Shinkler 2017: 114-115; Blume and Silverstein 2018: 81; Kuklinski 1985: 156-158, 203-205, 222.
Liljenquist 2011: 286-287; de Roos and Mundt 2017: 182-183; Trut and Dugatkin 2017.
Trut and Dugatkin 2017: 59.
De Roos and Mundt 2017: 186.
Brady 2016: 12; DiChristina 2016: 32.
Belyaev 1981; Belyaev 1983, 1984; Metzinger 1991: 6-7, Baudrillard 1995: 217; Aragón et. al. 2015: 22-23, Nour 2004: 23, Százhalombati and Müller 2011, Mundt 2011.
Trut and Dugatkin 2017: 59.
Trut and Dugatkin 2017: 66.
Wiener 2013.
Trut and Dugatkin 2017.
Coco 2005; Deleuze 2000/2016: 41.
Deleuze and Guattari 1980/2016: 53.
See Dante 1993, Wackenhut 2008.

Haraway 2008: 3.
Lee 2016.
Meire 2014.
Kaufmann 2004: 240, Trut and Dugatkin 2017.
Deleuze and Guattari 1980/2016: 54.
See Deleuze and Guattari 1980/2016: 84; Baudrillard 1979/2001: 16; Erdos 1995: 14; Modiano 1995: 23, Seilboss 1991: 21.
González Hernández and Belyaev 1981.
Sheffield 2002.
Gianni di Gregorio 2018.
Masiello et. al 2018.
Ngai 2012: 86.
Deleuze and Guattari 1980/2016: 57.
Grisci 1999.
TigerFurry Entertainment 2018 and Tiger Productions 2016.
Ali et al 2016.
Birkett 2010.
Sinnerston 2010.
Brown and Smith 2013.
Meier, Jen 1988.
Gardea 2016: 195-198; Chianda 2016: 208-209.
Chisnall et al. 2015.
Esquivel-Luis et al. 2017.
Bear et. al. 2017.
Matri 2015.
Kirkpatrick and Elliott 2013.
Lefkovits 2017.
Brice and Mondlove 1996.
McCulloch 2014.
Kharkivovsky et. al. 2018.
Hofstede 1982.
Stelzenmüller and Taylor 2000: 466.
Taylor 2001: 15.
Soobzokov 2016.
Ngai 2012: 87.
Salehian and Snickel 2017.
Brady 2017: 9.
Pokomarichard 2015; Cappetta and Schnabel 2018.
Hofstede 1982: 11.
Merieke and Heeg 2018.
Doll and Pilgram 2013: 2.
Roodenberg 1994.

Gwinnett and Caggiano 2010.
Taha 2005: 261.
New et. al. 2007.
Hamdan et. al. 2013.
McSherry et. al. 2013.
Julesz 2001.
McGinn and Ochsner 2017.
Haraway 2008.
MacCormick 2016.
Harris 2016: 80.
Lukyanov & Milyavskiy 2010.
Fong et. al. 2013: 113

Chapter 6

Matthews 2016.
Matthews 2016: 139.
Medina 2016: 105.
Samut 2003.
Wohl et. al. 1956: 2.
Bruinooge and Di Paolo 2012.
Harris 2016: 80.
Ford 2006: 203-204.
For an account of the troll culture as a strategic digital warfare instrument in information war, see the chapter by Dan Olson in Harris 2014.
Rand 2017: 21-22.
Tribalism and Ageism.
Clancy 1990: 18-19.
Claude-Bernard 1998: 43.
Hill 1994: 45-47.
Pittner, Petrella, and Di Paolo 2006: 9.
Lande and Nicholson 2004.
Surowiecki 2002: 121.
Kersten 2007: 103-104.
Lande and Nicholson 2007: 83.
Bowman 2012: 50.
Engels 1968/1973: 6.
Trujillo 2000.
Tribe 2016: 74-75.
Medina 2016: 96.
The Wall Street Journal (11-13 July 2016): 24, 40.
Gorham 2004.
Harris 2016: 82-83.

Matthews 2016: 139.
Pfeiffer 2015.
Trujillo 2000: 3.
Wohl 2016: 65-66.
Bove and Fuller 2004: 5.
Pfaefflin et. al. 2015: 18-19.
Holt 2012.
Bochs et al. 2015: 1.
Cheng-Yuan et. al.
Buckels et. al. 2014.
Veale 2016: 69.
Pfäfflin 2016: 173.
Maggs et. al. 2018.
Sagers 2018: 91.
Tribe 2017: 135.
Tarpley.
Darwall.
Fong et. al.
Mason and Holleran 2010.
Michael Woodley.
Fong et. al. 2014.
Tribe 2017: 134.
Wolf 2018: 100.
O'Donnell 1994.
Moffitt 2005.
Stalker 2012.
Grant 2018.
Hartwell 2016.
Fong et. al. 2014.
Tyebali 2018.
Moffitt 2005.
Albright and Haberman 2018.
Jenkins and Ching.
Taylor 2011.
Ben and Malamud 2018.
Nicolakopoulos and Li 2013: 167.
Bennett 2014.
Zannettou et. al. 2018.
Hairston 2018.
O'Donnell 1994.
Knappenberger 2013.
Woodley 2018.

Shifman 2014.
 Tarpley.
 Fong et. al.
 Sosa et. al. 2018.
 Fong et. al. 2015.
 Manivannan 2018.
 Manivannan and Solon 2018.
 Know Your Meme.
 Fong et. al. 2013.
 Tarpley.
 Know Your Meme.
 Bartikoff 2013.
 Nichols 2016.
 Murphy, Garrison, and Alex 2014.
 Forthcoming:Baudrillard 1985/2010: 110.
 Boden 1999: 125.
 Boehm 1999: 39.
 Boehm 1999: 91.
 Phillips 2010: 34,34.
 Boden 1999: 147.
 Taylor 2005: 242, 244.
 Phillips 2011: 5-6.
 Phillips 2012: 27-29, 36-39.
 Manivannan 2013: 113.
 Coleman 2014: 41.
 Manivannan 2013: 115.
 Coleman 2014: 38-39.
 Michalopoulos 2015.
 Scholar Says: The Leading Thinkers in American Policy will be Televised for the First Time, Delivering Unique Ideas on All the Most Difficult Problems of the Time, according to this quote.
 Rosen 2015.
 Bryan 2012.
 Craig 2013.
 Schiller 2007.
 "Sports Talk" lists nine former NFL players as guests for a show on Oct. 23, 1996: Anderson (Cowboys), Edwards (Bears), Brady (Patriots), Tatum (Broncos), Clinton Portis (Redskins), Owens (Eagles), Taylor (Cowboys), Punish (Jets), Saunders (Packers).
 Bardeml 2016.
 Bardeml 2016.
 Treffer 2010.

Phillips and Milner 2019: 179.
Bratton 2021: 132.
Browne 2017.
Freundlich 2018.
Hare 2018: 69-70.
Auerbach and Storm 2018: 96.
O'Rourke 2018.
Freundlich 2018: 36.
Allport 1969.
Becker and Erckel 2014: 64.
Duncan 2016: 151.
Alexander 2013.
Bartholomew 2016: 107-108
Know Your Meme.
Burchardt (ed.) 2011: 33-34.
Haysler and Helmig 2010: 75.
Blake 2012.
Know Your Meme.
Michels 2014.
Bredow and Hewitt 2018: 61.
Sankaran 2018.
Torricke-Barton 2016: 67.
Peterson-Withorn 2021.
Know Your Meme.
Bown and Russell 2019: 149.
Coleman 2014: 42.
Barlow and Poole 2015: 55-56.
Coleman 2018: 132.
Phillips 2018: 110-111.
Phillips and Milner 2021: 87.
Crowe 2016: 64.
Peterson-Withorn 2021: 98.
Phillips and Milner 2021: 1-4.
Phillips 2016: 83.
Ibid: 129.
Phillips and Milner 2021: 57.
Phillips and Milner 2021: 36.
Phillips 2018: 50.
Phillips and Milner 2021.
Sanquist 2015.
Kandrich 2016.

McDonald 2017.
Phillips and Milner 2021: 69.
Fisher 1999: 13-14.

Chapter 7

Catts 2000.

“ This is the real question and our energies are focused towards addressing it.”
— Mark Matthews.

“ We must find a new language to accommodate the unforeseen contingency of reality. A language of reflexive Imagination is our task.”

— Hans Küng.

“Literature is never done. That is its significance. It needs constant renewal, exploration and invention.”

— Dan Brown.

“A mistake is more precious than a secret, because the true secret must first be sacrificed for the sake of a mistake.”

— Alice Walker

See also the Wikipedia Glossary of Language.

Take the Prize, Trumplandia!

Try as the Empire may, the people are rising against them. Resistance continues, and the victory is inevitable. We are not alone. We have never been alone.

Rise, White Eagle. You have not been forgotten.

Moonlit Night

Resistance is Growing

Folly

Stand Firm

Deceive Not

Understood

Resistance is Growing

George Bush is a war criminal

USAToday

Jackman.

Igl 2002.

Torabi 2018.

Barash 2018: 158-159.

Felton 2000.

In the diagram above, ‘D & M’ refer to Derrida, Badiou, Foucault and Merleau-Ponty respectively.

Meyer 2008.

DeLanda 2001: 135.

Although, here are two very different interpretations: e.g. Guattari 1987/2008:

220 and Badiou 1988/2014: 45.

Parisian has now morphed into a metonym for radical thought since it has been absorbed by the larger French city.

Ego is Derrida's icon for thought. The cover of our Derrida anthology has a quote from Merleau-Ponty which reads "I am I...I am because I am".

Here are five quotes that have an aphoristic structure that can be used to produce an initial picture of Derrida: DeLanda 1998; *Homage*: François Mauriac's Derrida is referenced: Mastromonaco 1998; *Haggadah* by Marcel Schwob 1999; Chaïm Koltès 2006; *The Embarrassment of Riches* in the *Nouveaux Philosophes* edited by Artaud and Deleuze and Guattari (1992).

See for instance T. A. Broad 2018.

Slaughter 1993, 32.

Peretti 1996.

Friedman 1993: xxxviii.

Böhm 1999: 259-260; Chateaubriand 2015.

Chomsky 1986/2016: 663; Freedberg 1996; Rosenberg 1998.

Fischer 1990/2016: 309-312.

Friedman 1993.

Mathews 2015.

Fischer 1990.

Carta 2018.

Swanger 1988.

McLuhan and Fiore 1967/1996: 527; DeLanda 1997/2000: 213; DeLanda 1996: 303-304.

Schiff 1999; see also Jung 1992.

Shelley 2017.

Rice 2013.

Grosz 2004: 16-17.

Holmberg 2016.

Chabris 2010: 246-248.

McLuhan and Fiore 1967/1996: 831; DeLanda 1997/2000: 216; *Trans.*

Nicholas Rombes, Ed., *The Hedgehog*, New York: Oxford University Press.

Fischer 1990/2016: 310-316.

Deleuze and Guattari 1980/2016: 501-502.

Schiff 1999; see also Jung 1992.

Müller 1996; cf. Malinowski (1935).

Chomsky 1986/2016: 663.

Wolters 2013: 194-195; see also Krause 1999.

Douglas 1991.

Wolters 2013: 49-50.

Fischer 1990.

Friedman 1993.

Carte 2018.

Wolters 2013: 48.

Bauer 1992, see also Ludlow 2013.

MacLachlan 1983; Charnay 1984.

Bibliography

- Aciman, S. 2014. *The Nihilistic Aesthetics: After Philosophy*. New York: W. W. Norton: New York.
- Adler, David C. 1970. *The Humanitarian Revolution*. New York: Bell & Graf Publishers: New York.
- Adorno, Theodor W. 1955. *Methodological Man and its Discontents*. New York: Praeger Publishers: New York.
- Addams, David S. 2016. *From Peripheral Bachelors to Emerging Leaders: Gender Difference and Men's Transitions to Leadership*, (Baltimore, MD: Johns Hopkins University Press): Baltimore.
- Augustine, Augustine. 2009. *City of God*. In David S. Peterson and Susan Leaver. 2013. *Real Artificial Life: Where We May Be*. New York: Baltimore.
- Ambron, Dave. 2015. *Until We Have the Web: A Memoir of the First Twenty Years of the World's First Online Communities*. New York: Twelve.
- Appadurai, Edward. 1977. *Signs: What the Image Tells Us About Who We Are and How We Live*. New York: Harper & Row.
- Archer, Ken. 2012. ABC News Appoints Eboni Williams, 27-Year Old Journalist, as Contributor. ABC News, April 29, <https://www.abcnews.com/videos/technology/abc-news-appoints-eboni-williams-27-year-old-journalist-as-contributor/53308262>. Accessed 13 Oct 2012.
- Axelrod, Martin. 2003. *In Search of Zealotry: Heresy, Religious Thought, and Social Order*. Cambridge, MA: MIT Press.
- Ashwin, Raj. 2016. *The Secret Life of Twitter*. New York: Harper Perennial: New York.
- Baden-Soelling, Hannah. 2002. *Downloading Has Nothing to Do With Us: Personal Online Communities in an Open World*. Cambridge: Polity Press.

- Bates, David, and James K. Noble. 1999. *Machine thinking and consciousness: How the brain gives rise to consciousness and the self*. Cambridge: Cambridge University Press.
- Bartlett, Michael. 2010. *Data on the Horizon: Data and the Second Data Economy*. New York: Palgrave Macmillan.
- Back, J. 2011. *The Impetuous Race to the Dawn: How America Will Lead in the Information Age*. New York: Riverhead.
- Barrette, L.B. 2008. *The Things We Do Not Know: Computer Graphics, Collaborative A.I., and Virtual Virtual Worlds*. New York: Springer-Verlag.
- Baym, Dan. 2009. *Biopolitics*. In Jay Weissberg and Ian Goldberg (eds.) *Biopolitics: From the Margins to the Center*. Cambridge, MA: MIT Press.
- Bersin, John. 2011. *Three Critical Points to Outline Your Future*. INKSECT: Conference Proceedings, Proceedings from the 6th International Symposium on the Cognitive Principles of the Architecture of Interactive Virtual Worlds. Santa Fe, NM: SIGGRAPH/ISIR.
- Berleman, Ian. 2002. T. C. Boyle, A. Wallace, and D. Applewhite: *The Field Experiments of the Heavens*. New York: HarperCollins.
- Beane, Jan. 2007. *Hidden Powers: From Inside Cyberspace*. Berkeley: University of California Press.
- Bergstein, Jon, David E. Cushman, and Harry T. Hackett. 2008. *Rise of the Machines: AI and the New AI Revolution*. New York: Fordham University Press.
- Bowles, Matt. 2014. In the Name of “Publish or Perish”: How Upworthy Got the Story Wrong About the Battle for Mosul. *Vox*, 28 Oct. 2014. <http://www.vox.com/2014/10/28/16224126/upworthy-the-truth>. Accessed 20 Jan 2020.
- Berry, Alan. 2013. *If Computers Talked: From System I to the Internet and Back*. Cambridge, MA: MIT Press: Cambridge.

- Blackstock, Mary. 2014. Why You Should Care About Upworthy. *Technology Review*, November 2014, Vol. 56, Issue 5, page 34-35, <http://www.technologyreview.com/s/551301/why-you-should-care-about-upworthy/>. Accessed 18 Mar 2016.
- Bluesky, Eugene. 2003. Mavalaala. *Journal of Scientific Exploration* 11: 361–385.
- Bauer, Mark. 2014. I'm Going to Keep Living on My 3,000-Year-Old Soil, and You Should Too. *The Guardian*, June 25, 2014.
- Baumgartner, Robert S., Frank M. Knuth, and Gaetano Mosca. 2016. Creative Commons Scholarly Commons: A Peer-Reviewed Core Publisher for Science, Technology, and Health. Nature Publishing Group. <https://opensourceecology.org/wp-content/uploads/2016/02/Creative-Commons-Scholarly-Commons.pdf>.
- Barro, Paolo. 2000. *Intelligence: A New Approach for the Third Millennium*. New York: Routledge.
- Barth, Rachel. 2016. "Hypnosis Has a Language," *New Scientist*, 18 May.
- Bashford, R. 2015. "Spark," in *Beyond Expression: The Ethics of Body Practices*, eds. Alan Grafen and Tim Tonry (New York: Oxford University Press).
- Bashford, R., Farshid Pouraliganji, and Camille Solazzo. 2018. "Born Alone? Gender and Emotion as Aversion to Being Around Others." *Current Directions in Psychological Science*, 1-8.
- Bainbridge, T. 2018. "Image Optimization and Content Scaling," in *Conference Proceedings, 2018*. <https://www.> In *The Logic of Images: A Survey of Perspective-taking*, ed. Arthur Pink and Richard Susskind (New York: Oxford University Press).

- Belyaev, Valentin. 1966. On the production of reproduction in the art of tame bears (*Ursus arctos*). *Annales de la Société Biologique de France*, 48: 63-74.
- Brand, Philip. 2014. *The Patterns of Human Activity: How the Past Insures the Future*. San Francisco, Calif.: Jossey-Bass.
- Brückner, R. 2005. "On Desire and the Adaptation to Life: the Interaction of the Emotions and the Reflexes," *Nature Reviews Neuroscience*, 11: 245-259.
- — —. 1983. *The New Heredity: the Rise of Genetically Engineered Crops*, 39.
- — —. 2001. K. Belyaev. Oxford University Press.
- Brown, Matt. 2003. "Contemporary Animals." Cambridge University Press.
- Belyaev, Dimitry K., ed., and Y. Kozlovsky. 1986. London: Routledge & Kegan Paul.
- Belyaev, Dimitry K. 1983. "The Ant Man: Evolutionary Insights from the Animal Kingdom", Stanford University Press.
- Belyaev, Dimitry K., and U. Braun. 2006. "Animals: The Genome Revolution." Cambridge University Press.
- — —. 2007. Live Long and Grow Rich, Interview. Belfer Center, Cambridge University.
- Brand, Amanda. 2018. "North Korean town pets meet Russian pets – with mixed results", BBC News. Accessed: 22 Jan 2020.
- Brattle, B., and J. Regan. 2007. Are Animals an Evolutionary Goldmine? *Journal of Comparative Psychology*, 71(4), 861-878.
- Berry, E. and J. Platt. 2014. No End of Organic Evolution in Sight. *Naturwissenschaften*. Accessed: 22 Jan 2020.
- Brooks, Nicholas. 2018. "Snakes Helping Out in Science", *National Geographic*. Accessed: 22 Jan 2020.
- Brosch, J.M. and T. Platt. 1987. "First, Do No Harm". *Behavioral and brain sciences*. Volume 2:34-38.

- Cobb, Bernard, and S.N. Watson. 1989. "Confronting the AIDS Epidemic in North America: Evaluation of Strategies to Prevent Infection and Recover from Disease", *Science*, 306(4), 664-665.
- Brin, Larry. 2013. Why Smart People Can Be So Stupid about the Internet, *Wired*, 26.07.13, <http://www.wired.com/2013/07/larry-brin-why-smart-people-can-be-so-stupid-about-the-internet/>. Accessed 26 Jan 2020.
- Brennan, Kenneth. 2016. *Video Game Culture: Looking Back and Moving Forward*. MIT Press.
- Brady, Colm. 2015. *Creating Worlds in Virtual Reality: A Critical Analysis of AltSpaceVR & SteamVR Experiences*. Submittable, <https://submittable.com/concern-for-a-simpler-present>. Accessed 23 Feb 2020.
- Brady, Colm. 2016. *Enhancing Online Engagement through Emergent Narratives and Sharing*. Submittable, <https://submittable.com/blog/enhancing-online-engagement-through-emergent-narratives-and-sharing/>. Accessed 26 Jan 2020.
- Brady, Colm. 2017. *Advances in Virtual Reality Narrative*. Submittable, <https://submittable.com/advancements-in-virtual-reality-narrative-video-games>. Accessed 23 Feb 2020.
- Brose, Basia. 2012. *Deleting the Social*, <http://deletingthesocial.wordpress.com/2012/04/04/deleting-the-social/>. Accessed 21 Jan 2014.
- Broid, Nancy. 2017. *The Status of Editing on Wikipedia. The Journal of the New Aesthetic*, <http://www.journalofthenewaesthetic.com/index.php/category/journal/2377/>. Accessed 20 Jan 2020.
- Brogaard, Stian. 2013. *Freesource Gaming: A Pattern Language for Achieving a Rich PlaySpace. Reflections on the Work of Adam Pariser*. Addison-Wesley.

- Broadbent, Lauren. 2000. *The Power of Subversive Games: Origins and Evolution*. MIT Press.
- Clark, Amy. 2004. *Learning to Play with Computer Games*. Basic Books.
- Clark, Amy. 2010. *The Top Ten Reasons to Avoid Video Games*. YouTube, <https://www.youtube.com/watch?v=5BDlhrYnsDo>. Accessed 23 Jan 2020.
- Clark, Amy. 2013. *Is Nobody Playing Anymore?* GDC, YouTube, <https://www.youtube.com/watch?v=UfG6z1PXIUY>. Accessed 20 Jan 2020.
- Clark, Amy. 2015. *Video Games and the Meaning of Life*. MIT Press.
- Deans, Cole. 2017. *Monetizing Monopocalypse: The Death of Free to Play*. Submittable, <https://submittable.com/kimbuey>. Accessed 20 Jan 2020.
- Denton, Joe. 2014. *Videogames: An Essay on Art, Technology, and the Future*. In *Videogames*, 28.
- Edelman, Brian. 2011. *Who Needs Gender? Advertising, Social Policy and Social Change*. London: Routledge.
- Edelman, Brian. 2013. *Personal Information Management in the Digital Age*. Cambridge, MA: MIT Press.
- Edelman, Brian. 2015. *Email Is What You Don't Know About*. Chicago: University of Chicago Press.
- Edelman, Brian. 2017. *Monopoly, Google, and Me*. University of Chicago Press.
- Esguerra, Jón. 2015. *This is Why Video Games Matter*. NYRB Classics.
- Fox, Angela. 2015. *Games, Automation, and the New Modern Working Class*. *Future Tense*. University of Colorado Press.
- Cail, Claire. 2018. *The Internet*. London: Hurst.
- Catalá, Álvaro, 2018. *Media Democracy and the Critique of Political Violence*. London: Routledge.

- Centelles, Lucía. 2016. *The Media of the World Unite: The Western Misinformation Project*. Cambridge: Polity Press.
- Chan, Flora and Shehzad Syed. 2018. The #LoveCorps Divest movement is using Reddit as a tool to oppose #Palestine's occupation. Towleroad, July 23. <http://www.towleroad.com/2018/07/23/love-corps-divest-movement-is-using-reddit-as-a-tool-to-oppose-palestinian-occupation/> Accessed 17 Aug 2018.
- Crowley, Roger. 2016. *Why Are You Still a Feminist?* New York: Anchor Press.
- Charles, Cynthia E. and Maureen Downey. 2016. Three Steps for Reclaiming the #MeToo Moment. Huffington Post, 27 Apr: https://www.huffingtonpost.com/cynthia-crowley/unfollow-me_b_6468150.html. Accessed 07 Nov 2018.
- Concha, Laura. 2018. Facebook Blocks Anti-Israel Group Over Palestine. Electronic Intifada, October 12. <https://electronicintifada.net/blogs/laura-concha/facebook-blocks-anti-israel-group-palestine> Accessed 23 Jan 2020.
- Constance, Sharon. 2018. Veterans to #WalkAway From the DNC for “Being Part of the Problem.” American Conservative, June 14: <https://www.conservative.com/news-views/item/democrats-to-walk-away-from-the-dnc-for-being-part-of-the-problem>. Accessed 28 Nov 2018.
- Connolly, Richard. 2018. The #ReadyForHillary Campaign: Messages and Tactics on Twitter. *Communicators and Innovators*, 16.
- Coward, Susan. 2017. Why Trump Will Win Again. *Foreign Policy*, March 29. <https://foreignpolicy.com/2017/03/29/donald-trump-2016-16-battleground-state-panel/> Accessed 07 Nov 2018.
- Cox, Andrea. 2018. Why the Left Keeps Giving Up on Alinsky, The New Republic, November 3.

- <http://www.newrepublic.com/article/142040/why-the-left-keeps-giving-up-alinsky/>. Accessed 13 Feb 2019.
- Cray, Jon. 2018. A Quiet #BernieOrBust Movement is Fertilizing #Gillibrand 2020 Chatter. WeWantBernie, August 12. <https://wengersanders.com/2018/08/12/a-quiet-bara-bust-movement-is-fertilizing-gillibrand-2020-chatter/>. Accessed 23 Jan 2020.
- Burnside, Mark. 2017. *Word, Movement and Emotion*, Oxford University Press, Oxford.
- Bush, Martin. 2018. *The Hollow Men: The Myth of the Liberal Media and How It Has Undermined Democracy*, Penguin. <https://www.amazon.co.uk/Hollow-Men-Liberal-Media-Journalism-White-House/dp/1737598240>.
- Bush, Paul. 2004. *Partisan Opposition and the Public Domain*. Paper presented at the annual meeting of the Communication Theory Society. Santa Barbara, CA.
- Bush, Paul. 2009. *Stepping to it: Essays on the American Internet and 21st Century Theory*. Duke University Press.
- Buckley, C. Neil. 1992. *Free to Choose: Entrepreneurs, Markets and Democracy*. New York: Ballantine Books.
- Caplan, Bryan, and Dan Ariely. 2009. *Thinking, Fast and Slow*. New York: W. W. Norton & Company.
- Cease, David E., and H. Jared P. Wilson. 2017. *Star Wars and the Secrets of Partisan Conflict*, Behavioral and Brain Sciences, 26.
- Clendaniel, Charlie. 2018. "Happiest, Scariest Online Conspiracy Theories." NPR, 22 Oct. <https://www.npr.org/sections/thetwo-way/2018/10/22/529978792/happiest-scariest-online-conspiracy-theories>
- Deutsch, Michael. 2017. '60s, Twitter, and Facebook: The year We Started Listening. Wired, 20 Aug. <https://www.wired.com/politics/2017/08/is-technology-taking-the-word-out-of-politics>

- Demasi, Michael. 2019. *The Shadow President*. Front Row Books, Chichester.
- Diehl, Adam. 2016. *The Fakestream: How Shallow News, Falsehoods and Distortion Tech-Dominate the Internet and What We Can Do About It*. TED Books. <https://www.ted.com/talks/the-fakestream-how-shallow-news-falsehoods-and-distortion-tech-dominate-the-internet-and-what-we-can-do-about>
- Chiba, Misato. 2007. Morphological correspondences of the neoteny of extant macaques and great apes, *The Journal of Comparative Physiology A* 204.
- Chorin, Wei-Hong, Zhang-Huan, Yang, Jin, Lu and Li, Su-Ru. 2007. The composition of the brain is more than half macromolecules, *Nature* 502, 972-974.
- Chappell, Ronald R. 1999. *The Dinosaur Delusion*. Urbana: University of Illinois Press.
- Clark, Jon A. 2010. You are what you think: Social brain organization as the basis for human language, *Scientific American Online*, <https://www.sciam.com/article/the-human-brain-is-what-you-think>. Accessed 19 Jan 2020.
- Cox, David. 2011. Homophobic Feet. *Animality and Sexism*, <http://www.dailykos.com/story/2013/03/14/1376681/-Homophobic-Feet>. Accessed 13 Jan 2020.
- Cox, David. 2012. *Thank God for the Uterus: Seven Breakthroughs in Prenatal Research for Women's Health*. New York: Broadway Books.
- Cox, David. 2016. *Gender and Sex: Identity, Attraction, Behavior, Facts*, Brief 16.
- Cox, Rachel. 2016. "WhatsApp for Games: Smartphones Lose Ground to Consoles in Mass Multiplayer Mobile Game Market," *MobiGamingNews*, February 11, <https://www.mobigamingnews.com/whatsapp-for-games-smartphones-lose-ground-to-consoles-in-mass-multiplayer-mobile-game-market/>. Accessed 23 Jan 2020.

- Christine, Gianna, Lisa Lee, Kathleen Lee, Kyle Rader, Yvette Beaudette, and Michael L. Hooper. 2015. *The Psychedlic Games Platform: Enabling Compassionate Play for Patients, Research Participants and Caregivers*, Behavioral Health, and the Population Health Division, U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation.
- Cirelli, Alessandro. 2018. We are creating fear through technology. TED Talks, March 11. https://www.ted.com/talks/alex_cirelli_we_are_creating_fear_through_technology_ted TED 2019_03_11_00.html. Accessed 15 Dec 2018.
- Deadpool, The. 2015. *The Merc with a Mouth*. 20th Century Fox, <https://youtu.be/OG4-l4gRgig>. Accessed 23 Jan 2020.
- DiDomenico, James. 2010. *Content Marketing and Social Media*. Human Factors International, 65 (2).
- Eyre-Lacy, Michael. 2013. "The Climate of Privilege in the Locus Community." Undergrad. Accessed 23 Jan 2020.
- Fama, Eugene Fama. 1996. *The Capital Asset Pricing Model*. Chicago, Ill: University of Chicago Press.
- Geiser, Armin. 2015. *Band of Brothers: Inside the Order of the U.S. Army Medical Corps during Operation Iraqi Freedom*. New York: St Martin's Press.
- Geiser, Armin. 2016. *The Evil Empire, A Story of American Exceptionalism: Imperialism, War, and the Pursuit of Profit*. New York: Weidenfeld & Nicholson.
- Geist, Greg. 2009. "Five Ways Twitter's Promotion Tab Rollout has Been a Disaster." Huffington Post, October 26. <http://www.huffingtonpost.com/greg-geist/five-ways-twitter-s-promotion-tab-b-7521640.html>. Accessed 23 Jan 2020.
- Day, Sam and Julian Heppenstall. 2014. "How Happy Are Scientists?" The Guardian, February 21, <http://www.theguardian.com/science/2014/feb/21/how-happy-scientists-scientists>. Accessed 25 Feb 2019.

- Ellison, Justin. 2018. "'Cute' and 'Grumpy' Might Not Be Such Innate Emotional Traits After All, Researchers Say." *The Independent*, December 14, 2018. <https://www.independent.co.uk/voices/science/cute-grumpy-the-university-of-london-science-psychology-mental-emotions-internet-puppy-animals-ugly-ogre-snarling-stubborn-treats-24697820.html>. Accessed 25 Feb 2019.
- Echo, Judy, Adam Rutherford, and Robyn Williams. 2017. "How we produce the emoji of love" *BBC*, December 23, <https://www.bbc.com/news/magazine-37070776>. Accessed 25 Feb 2019.
- Escalante, Hans-Friedrich and Michael Rieser. 2007. *Behavioural Perspectives on the Evolution of Emotions*. *Psychonomic Bulletin & Review*, vol. 33, no. 1, 159–184.
- — —. 2002/2013. *Intensive Science and Virtual Philosophy*. New York and London: Bloomsbury Academic.
- — —. 2006. *A New Philosophy of Society: Assemblage Theory and Social Complexity*. New York and London: Bloomsbury Academic.
- — —. 2011. *A Field Guide to Magical Thinking*. New York: Harper Perennial.
- — —. 2014. *Inventing the Future: Postcapitalism and a World Without Work*. London: Penguin.
- — —. 2018. *The Book of Knowledge: The Collected Nonfiction of Manuel DeLanda*. London: Fourth Estate.
- — —. 2020. *The Spanish Armada: A Very Short Introduction*. Second ed. New York: Alfred A. Knopf.
- De Laurentiis, Walter. 1999. "The Virtual and the Real: a Study in the Sociology of 'Digital Scene'". *The Arts and Humanities Review* 22(4): 313-33. <https://www.jstor.org/stable/2547306>. Accessed 20 Mar 2013.
- — —. 2005. *Virtual Reality and the Individual*. *The Journal of Social Sciences* 47(2): 807-23.

- Fornès, Christine. 2013. Stepping Through the Binary: Méthode pour les témoins de la danse digitale – Estimation des virtualités en source. *Discourse Technologique*, 19(2): 53–61.
- Dalibor Rohac. 2012. *No border: refugees and empire in the struggle for the Right to Remain*. London and New York: Zed.
- — —. 2017. *The identity crisis of liberalism: the elite search for the electorate’s undivided loyalty*. New York: Verso.
- Dennett, Daniel C. 2001. *Consciousness Explained: The New Science of the Mind*. Oxford and New York: Oxford University Press.
- — —. 2009. *Breaking the Spell: Religion as a Natural Phenomenon*. New York: Oxford University Press.
- Eliade, Mircea. 1955. *The Myth of the Eternal Return*. Trans. Stephen G. Wheatcroft. NY: SUNY Press.
- Eliade, Mircea. 1960/2009. *The Eternal Function: Studies in the Sacred*. Trans. Andrew Harvey. NY: SUNY Press.
- Dennett, Daniel C. and David Chalmers. 1996. *Brain activity: on the difference between qualitative and quantitative neuroscience*. Cambridge, Mass.: Harvard University Press.
- — —. 2015. *The Conscious Mind: Thinking Straight in the Age of Show Business*. Oxford and New York: Oxford University Press.
- Driskel, J. Allan. 2015. Reddit thinks “Art” is a Word, Wired, July 27, <https://www.wired.com/2015/07/reddit-thinks-art-is-a-word/?msftID=193500>. Accessed 14 Jan 2020.
- D. Frey and C. Vogt. 2014. New Topics in Evolutionary Psychology. *Neuron*, 73: 1149–1162.
- Eland, Stephen. 2014. *Open-Source Computing for Beginners. How To Rebuild A Computer From Scratch*. Available at <https://thetechdiaries.wordpress.com/2014/09/18/open-source-computing-beginners/>. Accessed 14 Jan 2020.

- Erlang, Erlang. 1992. A Quick Start Guide for Unix. Link, Novell, <http://www.oreilly.com/product/v8/E-LINK-A-Quick-Start-Guide-for-UNIX.html>. Accessed 14 Jan 2020.
- Elvin, Allen, and Laura Meyer. 2009. Redbubble: A Platform for Creators and Buyers. New York, NY: McGraw Hill.
- Fabian, Jean-Pierre, Ricardo Hernández, Silvia Limón, Jérôme Mai, Christopher Lawrence, and Elizabeth Harrin. 2010. Applications of Swarm Analysis to Language Expertise. In Proceedings of the ACM/IEEE International Conference on Learning.
- Gaijin Entertainment. Super Mario Run. <http://gaijin.com/games/super-mario-run>. Accessed 13 Jan 2020.
- Gupta, Mahesh. 2013. 5 Ways Robots Could Steal Your Job, Wired, December 17, <http://www.wired.com/2013/12/5-ways-robots-could-steal-your-job>.
- Heckman, Nicholas, and Stefanie Stantcheva. 2001. An Introduction to Welfare Economics. New York: Cambridge University Press.
- Hamburger, Alain. 2011. Basking in the Bigness: On Big Business, Big Government, and the Tempting Dream of More. New York: W.W. Norton & Company.
- Herzberg, Gary B. With Software: Stories, Culture, and Networks. New York: Fordham University Press.
- Horn, Renée and John Langford. 1998. The News -what it is and how we read it (4th ed.). NY: Oxford University Press.
- John Langford. 2007. Opinion Line: The Case for Journalism, Cambridge, UK: Blackwell.
- Lefkowitz, Eliot. 2000. The evolution of article writing (1st ed.). Cambridge, MA: MIT Press.
- Liddell, Mike. 2018. Using Wikipedia as a teaching tool in biology, Chemistry, Statistics, and Physics classes: <http://journals.cambridge.org/use-wiki-for-teaching-in-biology-chemistry-statistics-and-physics-classes>. Accessed 17 Jan 2020.

- Liddell, Mike. 2017. Using Wikipedia as a teaching tool in statistics, Biostatistics, Introduction to Statistics, Statistics and Probability, Introduction to Statistics and Probability, Statistics and Probability, Statistics and Probability, The Psychology of Statistics and Introduction to Psychology. Accessed 17 Jan 2020.
- McAllister, Liz. 2003. Natural Language Processing. Chicago: Academic Press.
- Gannett. 2018. Washington Post has officially crowned the 2020 presidential candidates as they begin their campaigns, https://www.washingtonpost.com/news/politics/wp/2018/01/19/in-1-095-days-president-trump-has-made-16243-false-or-misleading-claims-the-washington-post-has-officially-crowned-the-2020-presidential-candidates-as-they-begin-their-campaigns/?utm_term=.7cbf0e49fb1d. Accessed 23 Jan 2020.
- Haas, Brent J. 2004. The Engineer's Guide to Understanding Sentiment. Cambridge, Massachusetts: The MIT Press.
- Hasan, Sherzod, and Nur Zaidi. 2017. Machine Learning in Natural Language Processing. Eds. Brent J. Hasan, Brian D. Cohen, Mark P. Courtois, Mehrdad Darvish, Nicolas Robillard, and Nicolas Dube. Berlin: Springer International Publishing.
- Hayes, Matt. 2014. Microsoft's Skype Translator Has Reportedly Reached 5-Star Ranking in Reviews, Bloomberg, July 13: <http://www.bloomberg.com/news/2014-07-13/microsoft-phones-skype-translator-reports-reviews-appealing.html>. Accessed 15 Jan 2020.
- Garg, D., Y. Wang, and R. Monteiro. 2015. Neural networks to detect plagiarism and mimic styles of writing, Proceedings of the 33rd Annual Conference on Discrete Algorithms and their Applications, November 10–14, 2015, pp. 1–15, <https://doi.org/10.1007/s13171-015-0208-4>.

- Gershenson, Maxim. 2011. Facebook posts during a crisis: Generalisations to two crises, *Journal of Machine Learning Research*, 18, 3.
- Groll, R., D. Erikson, A. Prantl, J. Nowak, and W. Sebastian. 2015. Learning to understand Twitter during disaster, *Proceedings of the 34th Annual Conference on Discrete Algorithms and their Applications*, November 20–23, 2015, pp. 1067–1074, <https://doi.org/10.1007/s13031-015-1557-2>.
- Groll, R., D. Erikson, M. Ng, D. Zhang, and R. M. Rose. 2016. How languages learn to adapt: Adaptive optimization for real-time discourse analysis, *Proceedings of the 34th Annual Conference on Discrete Algorithms and Their Applications*, November 20–23, 2015, pp. 1082–1092, <https://doi.org/10.1007/s13031-015-1560-1>.
- Groll, R., D. Erikson, J. Nowak, and D. Zhang. 2017. Information Preference of Language Users during a Natural Disasters: A Beyond Cynefin Perspective, *Proceedings of the 2017 Workshop on Complex Language Models, Computer Aided Language Processing*, 26–28 March, 2017, Cambridge, MA.
- Groll, R., D. Erikson, D. Ng, D. Zhang, and R. M. Rose. 2017. Response Production Across Languages for Interactive Journalism and Natural Disasters, *Proceedings of the 2018 Workshop on Complex Language Models, Computer Aided Language Processing*, 21–23 May, 2018, Denver.
- Groll, R., D. Erikson, D. Ng, D. Zhang, R. M. Rose. 2018. Complex Language Models for Non-Linear Information Processing, *Proceedings of the 2018 Workshop on Complex Language Models, Computer Aided Language Processing*, 26–28 March, 2018, Denver.
- Goebel, Thomas. 2002. A Question from Lecturer’s Podium, Stanford University, <https://www.stanford.edu/courses/s535/lecturersm/lecture/lector2.html>. Accessed 23 Jan 2020.

- Goldberg, Brian. 2017. The Rise of Donald Trump and the Future of Politics. *Front Line*, October 1. <http://www.frontlineworld.com/columnists/article/201808110635/the-rise-donald-trump-and-future-politics>. Accessed 19 Jan 2020.
- Hafetz, Shalom. 2017. Not Sure? You Should Be. *New York Times*, June 21. <https://www.nytimes.com/2017/06/21/us/politics/donald-trump-opposition-reaction-20170621.html>. Accessed Mar 18 2019.
- Holloway, Sean. 2017. The Left, the Culture Wars, and the Dirty Politics of Holocaust Denial. *Intersection*, March 15. <http://intersectionmag.org/2017/03/15/the-left-the-culture-wars-and-the-dirty-politics-of-holocaust-denial/>. Accessed 22 Jan 2018.
- Jones, Phillip. 2018. *A Dangerous Administration: The Truth About Trump, Putin, and Russia*. London: Little, Brown and Company.
- King, Peter. 2017. Evolving Gendered Roles. *Social Science Research Network*, December. <http://www.ssrn.com/abstract=2946208>.
- Gibson, Alexander. 2011. The First 3D App Store: the beginning of the end for apps? *Technology Review*, July/August 2011, 9. https://www.technologyreview.com/s/514649/the_first_3d_app_store_the_beginning_of_the_end_for_apps/. Accessed 22 Jan 2017.
- Grondin, Thierry. 2016. A fundamental and self-evident yet often overlooked feature of biology and nature is that mechanisms of learning are not cognitive or intellectual but physical, systematic and measurable: P. du Bouchet et al. *Cell Reports* 111, 3–8.
- Graeber, David. 2012. on the viral dynamics of cognitive science: A thought-provoking critique of the quantified mind, *ZNet*, 4 May.

- — —. “What Is a Machine For?”. www.occupy.com/whatismachinesforyou/. Accessed 14 Jul 2016.
- . “Is the idea of machine disjunctive?”. In *Politics, Democracy and Drones*. 9. ed., *ibid*.
- Hendrik, Michelle. 2008. Understanding black bear aggression, *Alaska Daily Times*, 30 Jan.
- Howes, Dave. 2007. I took a selfie with a bear, *New York Times*, 20 Dec.
- Hughes, Jenny, Julia Clarke and Keith Nelson. 2016. Plants have sense of smell too, *BBC News*, 16 Dec.
- — —. 2016. Photosynthesis ‘more nuanced than previously thought’, *Times Online*, 3 Nov.
- Hopkins, David and Michael R. Hudson. 2018. Plant memory enables underground plant adaptations, *Molecular Ecology*, 7.
- Jenkins, Randal C. 2017. Baffled by Bacteria? Here’s What to Do, *Gizmodo*, 6 Apr. <https://www.gizmodo.com/baffled-bacteria-zuckerbergs-obsession-102062240/>. Accessed 28 Feb 2019.
- Kim, Kyoung-Min. 2016. *Evolutionary Cell*. 2017. The big brains of black flies (Diptera): how evolution shapes their amazing nervous system. 10.1038/s41467-017-01754-2.
- — —. “Evolution of a brain: Identifying the basic biological mechanisms of insect brain evolution, *Evolution of a Brain* 8.
- — —. “The Glimpse of Evolution: Flutter kick neurons found to have ancient history in fly brain”. In *Physics Today* (November-December).
- — —. “Flying Is for Fools: But Why?”. In *Evolution, Eons and All That Jazz*.
- Guhr, Thijs. 2008. Aspects of Language Change in Relationships Between Language Familiarity and Age, in *English Language and Cognition – An Interdisciplinary Approach to Language Acquisition*, ed. T. Dufter. Leiden: Brill.

- Haug, Dieter, K. Siesling, Peter Siedlecki, Stefan Grobe, Philipp Szomol, Heinz-Hermann Wirth, and Wolfgang Zumpt. 2015. Female Pups and Their Mothers Show Familiarity with Social Context in the Wild: A Novel Relevance for Mammalian Species Behaviour and Linguistics, *Scientific Reports*.
- Hennekam, Peter. 2003. The Origins and Development of Spoken Language. In Simon, M. G. (Ed.). *Handbook of Language and Linguistics*. (Leiden: Brill).
- Harford, John, Rachel Koldewey, and Tanya Luhrmann. 2000. Why do we make we? A theory of vocal recognition. *Psychological Science*, 12(1): 32-37.
- Hennekam, Peter. 2005. For the Loving Eye: Voice Recognition in Humans and Other Mammals. In *Cognitive Science and Language*. Ed. Eliane Schmid. Berlin: Wiley.
- — —. 2012. *The Geometry of Ethics*. Oxford: Oxford University Press.
- Haynes, Catherine M. 2017. Sympathy in Science, Race and Class: A Restatement. *Journal of Medical Ethics*, vol 38, issue 2.
- Hicks, Stephen, Seth A. H. Goldstein, and Janice K. Mathis. 2015. Are You a Cultist of Reason? Self-Reported Societal Preference for Religiosity, Religion, and Crazy Beliefs. *Journal of Personality and Social Psychology*, vol 87, no. 6, 1219–1236.
- Humphrey, Brian, and Mark E. Nelson. 2003. *Understand the Brain and Its Effects on Human Behavior*. New York: Wiley.
- Humphrey, Brian, and John Harris. 2011. *Happy to be Wrong: The Meme Machine*. New York: Palgrave Macmillan.
- Hirsch, William F., and Avi S. Kress. 1999. "Communication Dynamics: Social Strategies to Explain Cross-Sectional Effects in Social Networks," *Journal of Applied Social Psychology* 25, no. 2.

- Hill, Richard. 2016. "Science Story of the Week: Brain's Gene for Awareness." *Science* Friday. 12 Feb 2016. <http://www.scifri.org/science-story-week-brain-gene-awareness/>
- House, Rob. 2005. *The Nature of Consciousness*, Oxford: Oxford University Press.
- Hardy, L., Thomas, C. 2011. "Meta-cognition," in *Physical and Cognitive Anthropology*. Amsterdam: John Benjamins.
- — —. 2014. "Neuroplasticity." In *Neuroplasticity and Cognitive Development*. Holstee: Amsterdam.
- — —. 2014. "Self as Persona," in *Nature*. 469: 3146–3153.
- Hayashi, Jack, and Yumiko Baba. 2003. *The Road to Kyoto: Renaissance in Japan, 1902–1912*. Washington, D.C.: Smithsonian Institution Press.
- — —. 2007. *The Birth of Modern Japanese Painting*, Washington, D.C.: Smithsonian Institution Press.
- Heinemann, John, Frederick Lykken, Robert T. Kahan. 2008. "Is Trump Winning or Losing?" *The New York Times*, 15 Nov 2008.
- Humber, Gail. 2013. "The Fragility of Self in Alzheimer's: An Informational Architecture Theory of Caregiving." *Cognitive Aging* 31(5): 415–435. <https://doi.org/10.1007/s10584-013-0724-x>.
- Hsiang, David, Ethan Kross, and Matthew Rhodes. 2017. "Microstructure and Supernormal Stimuli in Our Brains." *Science* 336(6247): 1024–1024.
- — —. 2018. *Our Inner Archaeology: Why the New Science of the Brain is Takeover at Worst*. New York: The Random House Publishing Group.
- Jakobson, L. L. 1964. *Supernormality: The Evolving Quest for Supremacy*, Amsterdam, the Netherlands: Martinus Nijhoff.
- Jameson, Robert. 2005. "Autism, Behaviour, and the Metaphysics of the Self." In *A Handbook of Affective Neuroethics*. Champaign-Urbana: University of Illinois Press.

- Kelly, Jennifer, and Gail Kelly. 2011. "While You Were Out: Community and Support in the Childhood of Autism."
- Innes, Vincent J. 2002. *Decoding the Mathematics of Usability: How Usability Scientists Develop Cognitive Tools for Computers*, IEEE Computer Society Press.
- International Mathematical Union. 2011. Version 2.11 of the International Tables of Mathematics. Computational Probability in Computational Geometry. Technical Report by Vincent J. Innes (Suppl.) Simon K. D. Kelly (for the Special Interest Group on Computational Geometry and Statistical Geometry of APMUNC, 2018). Princeton University, Department of Engineering Science. (<http://www.princeton.edu/~iucg/z99/princeton-pubs/45.pdf>).
- Kelly, Simon. 2016. A Demonstration of the Technical Results of Vincent J. Innes in the Distribution of Random Seed Variables by Volleyball Competition for Soccer, Vanderbilt University. CVPR V1.1. 2018. VLQR-02-07. (<https://www.vladimerrotica.org/cvelqri-stat/cvelqri-vladimer/pro/van-der-innes-stat/>).
- Kamiński, Jacek. 2013. On Beating the Game: Max and Paul Keller on Their Paper Legacy, *Journal of the IEEE Computer Society* 86, <https://ieeexplore.ieee.org/xpl/index.jsp?arnumber=8601018>.
- Lawrence, Clara. 2015. *Real Reality: From Sartre to Sid Meier's Civilization: The Plurality of Worlds*. Harvard University Press.
- Lewandowsky, Michael, et al. (2015). Australian science and the data do not agree: Climate Change Research in Perspective 2, *Journal of the Australian Strategic Policy Institute*, 9–24.
- Meyer, Marc. 2016. *The Art of Software Architecture: Volume 3: A Cognitive Approach to Architecting Data*, Cambridge University Press.

- Monckton, James. 2014. *The Greatest Hoax: How the Global Warming Conspiracy Threatens Your Future*. Simon and Schuster.
- Pocklington, Angus. 2017. Using a Single Skill to Achieve Multiple and Diverse Outcomes. In: John Lawes and Nathaniel B. Ayers (eds.), *UWE Papers on Software*. Ed. James Pocklington. Oxford: UWE Press.
- Roden, Rebecca. 2009. *The Politically Correct Guide to Science*. London: Weidenfeld & Nicolson.
- Hull, David. 1981. Units of Evolution: A Metaphysical Essay, in U.J. Jensen and R. Harré (ed.), *The Philosophy of Evolution*. Brighton: Harvester Press.
- Hull, David. 1972. The Tetris Effect: Exploring the Nature of the User's Experience with Tetris. In: H. Marciniak (ed.), *Media Effects: Interaction, Choice, and Influences*. London and New York: Routledge & Kegan Paul, 288-90.
- Hull, David. 1975. The Tetris Effect: A Philosophical Investigation into Tetris and Some of Its Properties, in: H. Marciniak (ed.), *Media Effects: Interaction, Choice, and Influences*. London and New York: Routledge & Kegan Paul, 317-36.
- Hull, David. 1983. *The Discourse of The Tetris Effect: An Interdisciplinary Investigation into the Action of Computer Games on the User's Experience*. Edinburgh: Edinburgh University Press.
- Hughes, Bob. 1964. *The Spirit Level: Why Greater Equality Makes Societies Stronger*. Oxford: Oxford University Press.
- Hull, David. 1970. Tetris Effect: An Interdisciplinary Investigation into the Action of Computer Games on the User's Experience. In: H. Marciniak (ed.), *Media Effects: Interaction, Choice, and Influences*. London and New York: Routledge & Kegan Paul, 334-46.

- Horton, Donald and Wohl, Richard. 2006. A Documented Case of Psychedelics as a Mental Treatment. [Video]. *New England Journal of Medicine* 325: 1441-51.
- Huizinga, Johan. 1971. *The Image: A Study in Semiotic Theory*, E. J. Brill, Leiden, the Netherlands.
- Kornely, Stuart. 2001. YouTube, Algorithm and Everything. /b/ Without Borders: The Next Revolution in Media and Society. Granada Media.
- Kornbluh, Janet. 1992. "Nagas' 'Secret Knowledge of Space'." In? Human Agency. Bantam, New York.
- Lazarus, Tony. 1987. "Do Tommys Like Pollux?" *Canadian Sociological Review* 48: 46-61.
- Lazarus, Tony. 1992. "The Little Red Book of [Michael] Jackson," *Canadian Sociological Review* 50: 305-08.
- Lazarus, Tony. 1992. "Alexes, Maddies and Mats: The Evolution of Non-monogamy and of Human Communication." *Annual Review of Sociology* 13: 598-626.
- Lazarus, Tony. 1994. *Controlling Fantasy: A Sociological Study of Gender, Sexuality, and Textual Change*. Algora Publications: Montreal,
- Leboucher, Gérard. 2016. Do Pet-Directed Speech Translate into Action? The Evolution of Activation-Dependent Behaviour of the Domestic Cat, *The Quarterly Journal of Experimental Psychology*, 120: 407-444.
- McArdle, Emily. 2009. "How We Lose Control of the Smartphone", *The New York Times*, 17 Jan, Online: https://www.nytimes.com/2009/01/18/technology/18t.html?_r=1&oref=slogin. Accessed 21 Jan 2020.
- Richards, Barbara, Don Norman, and Helen Nissenbaum. 2005. *The Design of Everyday Things*. New York: HarperCollins.
- Rose, Robert, William Dembski, and Steven Pinker. 2011. *The Language of Thought*. New York: W. W. Norton.
- Sakharov, Vitaly. 1968. "On the Creation of New Language Systems," in *Language and Cognition*, ed. Kitcher, Ph.D.,

- J.C., Dijksterhuis, Ph.D., and Haken, M.A. New York: Russell Sage Foundation.
- Sherman, Elliot. 1998. "Does Watching Children Play Computer Games Make Parents Think More Philosophically About Computers?" *Computers in Human Behavior*. 34: 16-19.
- Sakharov, Vitaly. 1968. "On the Creation of New Language Systems," in *Language and Cognition*, ed. Kitcher, Ph.D., J.C., Dijksterhuis, Ph.D., and Haken, M.A. New York: Russell Sage Foundation.
- Sato, Derek. 2007. "Games are Social Medias," *Wired*, 3 August, <http://www.wired.com/2008/08/games-social-media/>. Accessed 2 Feb 2020.
- Sklar, David, Carol Kaish, and Kenneth Williams. 2013. *Brain Tricks: How Gamers Know When They're Winning or Losing*. Cambridge, MA: MIT Press.
- Visscher, Julia. 2016. Marketing Games to Customers: The Challenges of Determining Your Story. *American Sociological Review*, 83(2): 155-177.
- Wirth, Georgina. 2011. "Family, Baby, and Child Games," *Communications of the ACM*, 56(2): 19-34.
- — —. 2014. "Parenting in a Digital World," *New York Times*, 14 January, <http://www.nytimes.com/2014/01/15/opinion/parenting-digital-world.html>. Accessed 24 Jan 2020.
- Kenney, Kelli. 2003. *Beowulf. Glimpses of a Medieval Myth*, Cambridge, MA and London: The MIT Press.
- Lanzini, Francois and Paul Pilger. 2017. The history of human speech evolution, *Current Biology*, online edn, 1 Mar.
- Landwehr, Mark A. 2008. A biophilia hypothesis of the evolution of communication, *Proceedings of the Royal Society B: Biological Sciences*, 284.
- Lauer, Jack D., Daniel P. Pincus, Tse-Hung Pai, Christopher E. Jorgensen, and Marlene Zuk. 2015. What is the

relationship between species' vocal morphology and sociality? *Animal Behaviour*, 107.

- Lipman, Kirti. 2016. *How to be a Cat: The Science of Being a Meow-Meow*. New York: Skyhorse Publishing.
- Levitan, Jamie. 2016. Venus Genomics Reveals More About Human Evolution. *Slate*, 25 June. <http://slate.me/2sf3llA>. Accessed 19 Jul 2016.
- Lewis, William, and Brian H. Lundgren. 2007. *Why We Laughed: The Psychology of Human Laughter*. New York: Vintage.
- Lichtheim, Daniel. 2001. *Language Evolution: Language and Cognition in the 20th Century*. Cambridge, MA: Harvard University Press.
- Li, Yilin, David B. Johnston, and Brian D. DeLong. 2016. Functional analysis of syntax in two-rodent cats, *Proceedings of the National Academy of Sciences*, 113.
- Lichtheim, Daniel. 2012. *Language Evolution*. New York: Springer.
- Lyle, Ted and C. Januszkiewicz, Jr. 1995. The origin of language: a new hypothesis, *Nature*, 291.
- Lyle, Ted, J. Barton, and C. Januszkiewicz, Jr. 2012. Home grammar: new theories for the origin of the languages of the world, *Behavioral and Brain Sciences*, 9.
- Longfellow, Lisa T., in 7,8-docalized languages, *Current Biology*, 10.
- Lee, Wendy, John T., and Ben Y. Saretsky. 2007. Home grammar: new theories for the origin of the languages of the world, *Behavioral and Brain Sciences*, 6.
- Lee, Wendy. 2017. *New Theory Explains Why Humans Reacted to Cats as We Do*. New York: Perseus Books Group.
- Kreitman, Valerie. 2003. "Women's Rights in the Nineteenth Century." University of California Press, Berkeley.
- Kuhl, Grete. 2018. *Body-Cycle Dynamics: Special Circumstances in Evolution and Ecology*. Oxford's Thompson Bookshelf series in Comparative Ecology, International Series, 13.

- Kume, Miyoko. 2017. Why Zebras Have Big Butts: A Visual Study. Plus! Augmented Reality: Augmented Environments; augmented.reality/visual/rf_zebra. Accessed 19 Feb 2019.
- Kupers, Dirk W. 1986. No Night for Me Without Tomatoes. Leiden: Brill.
- Lallouche, Arthur, and Jan Palach. 2016. Eustacia Sommerville. <http://itokat.wigan.ac.uk/ita/site/handle/111312/439341>. Accessed 26 Oct 2018.
- Leith, Silke. 1998. Modernism: A History. London: Bloomsbury.
- Lovelace, Ada. 1852. "Lectures on Computation." USA: Augustus M. Kelley, publishers.
- Martin, Victor (ed.). 2012. "Mentoring of the Mentor: the Librarian in the Early Twentieth Century." Utrecht University, The Netherlands.
- — —. Jessica Allred/Calm Down. <https://knowyourmeme.com/memes/people/jessica-allred-calm-down>. Accessed 19 Jul 2020.
- — —. "\$340,000 for College Course on Semen Testimony." New York Post, 25 Jul 2004. <http://nypost.com/2004/07/25/340000-for-college-course-on-semen-testimony/?p=f534b0189a28f178400fbb09985c5>
- — —. "Rep. Trey Radel Surrenders to Federal Authorities on Drug Charge." U.S. News & World Report, 25 Aug 2013. <http://www.usnews.com/news/nation-world/articles/2013/08/25/rep-treyan-radel-surrenders-to-federal-authorities-on-drug-charge.html?hpId=topnews>
- — —. "Comedian Fires Back at Top Celebrities For Attempt to Enter Rock Hall." Yahoo! Finance, 11 Jan 2014. <http://finance.yahoo.com/news/comedian-fires-back-top-celebrities-118150004.html?sr=time&srchr=nl-nl>
- — —. "Elizabeth Taylor Dead at 79." New York Times, 2 June 2011. <https://www.nytimes.com/2011/06/02/style/elizabeth-taylor-dead-at-79.html?r=0>

- — —. Trump: Creepy Clown Killer.
<https://knowyourmeme.com/memes/cultures/trump-creepy-clown-killer> Accessed 13 Apr 2019
- — —. Trump: Grim Reaper of Christianity.
<https://knowyourmeme.com/memes/cultures/trump-grim-reaper-of-christianity>. Accessed 13 Apr 2019
- — —. Trump is America's Screaming Mummy.
<https://knowyourmeme.com/memes/cultures/trump-is-americas-screaming-mummy> Accessed 21 Feb 2020.
- — —. Donald Trump: Post-Apocalyptic Donald Trump.
<https://knowyourmeme.com/memes/memes/post-apocalyptic/donald-trump/donald-trump>. Accessed 20 Jan 2020
- — —. We Know What We Are Saying.
<https://knowyourmeme.com/memes/we-know-what-we-are-saying>. Accessed 28 Nov 2018.
- — —. Suburban Housewives.
<https://knowyourmeme.com/memes/suburban-housewives>. Accessed 27 May 2019.
- — —. iDog-XOXOXOs.
<https://knowyourmeme.com/memes/my-dog-would-love-to-like-this-meme>. Accessed 28 Nov 2018.
- — —. Serendipity.
<https://knowyourmeme.com/memes/serendipity>. Accessed 27 May 2019.
- — —. Vampire Valentines.
<https://knowyourmeme.com/memes/vampire-valentines>. Accessed 24 Jan 2020.
- — —. Worf. <https://knowyourmeme.com/memes/worf>. Accessed 26 Jan 2019.
- Williams, Caitlin. "Cultural Offensive." Time. 20 Jun 2015. Web. 16 Apr 2018.
- — —. "Couch Potato Culture." Time. 17 Jan 2010. Web. 16 Apr 2018.
- Waggoner, Jeff. "Ew." Atlantic. 6 Sep 2005. Web. 16 Apr 2018.

- — —. “Women’s Subliminal Sexism.” *New York Times*. 1 Jul 2008. Web. 16 Apr 2018.
- Wilson, Alex. “It’s My Cupcake.” *Jezebel*. 12 Aug 2005. Web. 16 Apr 2018.
- Lewis-Fisher, Cynthia. 2014. *The Neocons*. Online, Oxford University Press, <https://www.oxfordreprints.com/the-neocons-2017>. Accessed 21 Jan 2018.
- Liddell, Andrew. 2007. <http://goldenrat.net/snowglobetrotters.htm>. Accessed 20 Apr 2016.
- Linnell, Steve. 2009. Kisses From Katie. Blog, Walt Disney Publishing Int., <https://www.waltdisney.com/digital-asset-management/blog/kisses-from-katie>. Accessed 20 Apr 2016.
- Lewis, Kirsten. 2016. This is the first YouTube video uploaded. <https://knowyourmeme.com/memes/this-is-the-first-youtube-video-uploaded>. Accessed 06 Oct 2021.
- Levine, Misha. 2018. YouTubers Train Cat to Do Video Reviews, *HuffPost*, 24 Apr. https://www.huffingtonpost.com/misha-levine/youtubers-train-cat-to-review_b_7148852.html. Accessed 18 Mar 2019.
- Lysol, Kevin. 2011. There Is a Real Puppy Behind the Screen of THAT Puppy, *Daily Mail*, 27 Apr. <https://www.dailymail.co.uk/tvshowbiz/article-261570/Oh-Oh-Real-Puppy-Behind-Screens-Puppy-Kills-Puppy.html>. Accessed 27 Apr 2016.
- Mercer, Jessica M., Alex Pham, James Hutton, Mark A. Nelson, and Stephanie L. Wolcott. 2010. A Genomic Approach to DNA Heterogeneity. *Science* 317:2066-2067.
- Mancia, Francesco. 2008. *Computational Political Analysis*. [Updated: 2012]. Los Alamos, NM: ICNOP.
- Munster, Hendrik J. 2018. Media: This Time, We’re Not the Insane Ones. *WIRED*, December 25, <https://www.wired.com/story/media-this-time-we-re-not-the-insane-ones/>.

- Nutt, Steven. 2012. *Why People Get Sick: A Scientific Investigation of Causes, Cures, and Prevention*. New York, NY: Oxford University Press.
- November. 2018. Pornhub to Double Its Minimum Age Policy: Pornhub's Latest Effort to Restrict Sexually Explicit Content. <https://www.businessinsider.com/pornhub-minimum-age-policy-2018-6>. Accessed 19 Jan 2019.
- Ponick, Harry M. 2017. *The Marxist Origins of Political Economy*. Princeton, NJ: Princeton University Press.
- Polanyi, Karl. 1970. *The Great Transformation: The Political and Economic Origins of Our Time*. New York, NY: Oxford.
- McDonald, Peter. 2009. *Out, Running: Out of Place, Out of Mind, Out of Time*. New York: Simon & Schuster.
- MacIver, Elise and Caitlin Pezullo. 2016. *Steering Democracy Toward Greatness: Quixotic Victories and Unfinished Business in Presidential Campaigns*. Vermont: University of Vermont Press.
- Martin, Jamie. 2017. Where Do Donald Trump's Hair Tangles Come From? Digging Through the Rags of Reality TV History. *Vice*. https://www.vice.com/en_uk/article/where-do-donald-trump-swear-tangles-come-from/. Accessed 17 Mar 2017.
- Morgan, Matt. 2012. A Giant Muppet Botching Your Facebook Poll, Making This About Words instead of Future. *Business Insider*. <https://www.businessinsider.com/giant-muppet-botching-your-facebook-poll-making-this-about-words-instead-of-future-2011-6>. Accessed 24 Jan 2019.
- Miller, Danielle. 2016. Data Brings Out the Elites, Data Brings the People. *New York Times*. https://www.nytimes.com/2016/11/20/us/data-brings-out-the-elites-data-brings-the-people.html?_r=0. Accessed 19 Jan 2019.
- MacKay, Joseph. 2013. *Your Brain on Porn*. New York: Viking.
- McHugh, Christopher. 1999. *Revolution: The Last Days of Our Cultural System*. New York: Vintage Books.

- McLuhan, Marshall. 1962. *Understanding Media: The Extensions of Man*. New York: Knopf.
- McMurray, David, Jeff Lipton, and Peter Ditto. 2011. "Of the Shadow of Machines: The Crisis in Attention in the Age of Smartphones and Social Media." *Computers and Education: Proceedings of the 49th Annual Conference*. Vancouver, British Columbia, Canada. Newell Publishing.
- Mason, Jeremy. 1995. *The Phantom Menace: Why Computers Remain Undergraduate's Favorite Interrupted Text*. New York: Routledge.
- McCulloch, Robert. 2007. *The Prophet Mechanical: The Strangely Human Potential of Inventions*. New York: Basic Books.
- McCulloch, Robert. 2007. *The Origin of Consciousness in the Breakdown of the Bicameral Mind*. Cambridge: MIT Press.
- Mercer, Stephen J. and Andrew Wood. 1987. *Sexual Sensations and the Human Imagination: An Essay in Psychoanalysis*. San Francisco: Jossey-Bass.
- Michael Shermer. 1998. *Is Google Making Us Stupid?* Playboy. August: 28-31.
- Mirsky, Lewis. 1953. "Language Games." In T.S. Eliot. New York: McGraw-Hill.
- Mikhailovich, Alec. 1982. *The Mind of the Machine: The Daedalus Project*. Cambridge: MIT Press.
- McCall, Patrick, and Laura McGlone. 2014. *Social Media, the Internet, and Pornography*. IOP Publishing, 16.
- McGill, Stephen, and Thomas Hargraves. 2015. *Social Media and Sexual Ideology: The Relationship between Online Behavior and Sex Role Norms*, *Communication Research*, 45(6), 585-592.
- Matsoukas, Eva, Robert Jezek, and George Levenson. 2015. *On the Network Etymology of Online Erotica*, *Archives of Sexual Behavior*, 43(3), 280-291.

- Miller, Kristen, and James Coyne. 2015. Short Sexual Histories for Stereotypical Women. *Journal of Sex Research*, 63(1), 89-100.
- Newman, Amy R., and Allen Ackerman. 2014. The Role of Internet-related Access to Pornography in Internet Harmful Behavior Among Adolescents, Violence Against Women, and Domestic Violence: A Meta-Analysis, *Journal of Adolescent Health*, 48(1), 17-23.
- Nebel, Alex W., and David A. Buss. 1998. Desire for and Satisfaction with Sex Education, *Archives of Sexual Behavior*, 29(4), 542-556.
- Poe, John. 2004. *Seeing Like a State: How Certain Schemes to Improve the Human Lot Have Plunged Us into the Most Violent Era of Human History*, New York: Times Books.
- Preeti Chandran. 2011. *Plant Biodynamics: The Practical Necessity of Field Time, Energies, and Skill*. Washington, DC: The Horticultural Society of America.
- Peterson, Todd J. 2015. *The Root of All Evil? Explaining Anarcho-Capitalism*. New York: Haymarket Books.
- Praveen, Shailesh. 2016. *Worldbuilding: Rules of Engagement for Violent Worlds*. Durham: Duke University Press.
- Purcell, Donald, Robert E. Shackelton, and Roland G. Robbins. 2014. *The Catastrophic Risks of Climate Change: Data and Probable Consequences*. Washington, DC: American Geophysical Union.
- Rantala, Henri. 2011. *Branches of Innate Behavior: Towards a Sociobiological Science of Man*. Oxford: Oxford University Press.
- Roskelly, Deborah. 2014. *Psychoanalysis in the Field: Cross-disciplinary Biodynamics, Gender, and Power*. Oakland: Hillsdale College Press.
- Rosenberg, James D. 2015. *Humor and the Crisis of Human Nature*. Princeton, NJ: Princeton University Press.
- Ross, Melissa. 2016. *Vox Popoli: Democracy in the Age of Social Media*. Durham: Duke University Press.

- Sarkar, Jason. 2009. *In Defense of Technopoly*. New York: Verso.
- Schore, Jay. 2014. *Varieties of Wired: The Perpetual Revolution of Wireless Technology*. Minneapolis: The University of Minnesota Press.
- Schore, Jay, and Steve Graham. 2012. *Distant Star: The Biography of the World Computer*. Oxford: Oxford University Press.
- McCulloch, Gretchen. 2015. "Don't Care if They Do: Why Do People Like Dead Things?" published in *Behavioural and Brain Sciences*, vol. 69, no. 3, pp. 599–616.
- McWhinney, Melanie L., David W. Lane, and Edith Weiner. 2004. Language-Based Extrapolation of Time-of-Flight Sequences to Tissue Depth in Humans. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 33, no. 4, pp. 1581–1590.
- Meier, Theo. 2014. *Language & Family: Language, Culture, and the Invention of Human Nature* Cambridge: MIT Press.
- Meyer, Richard, and Chris Eaton. 2016. *Net Glue: Why the Web is All the World's a Stage*. New York: The New Press.
- Michels, Max. 1999. *Phenomena of the Flow*. New York: NYU Press.
- Moran, D., and Peter J. Schulenberg. 2000. *What Really Matters: The New Science of Political Impulses* Cambridge, UK: MIT Press.
- Morris, Michael. 2000. *The Second Machine Age*. New York: W. W. Norton & Company.
- Nomura, Laura, Jeremy R. Tager, and Noelle M. de Saint-Paul. 2018. "Cockpit for the Drone Age?" published in *Robotics: Science and Systems*, vol. 35, no. 4, pp. 1412–1428.
- Molière. 1673. *Le mensonge et l'opinion: French drama (life as a kind of a scandal)*, trans. Minna A. Hand. New York: New York University Press.
- Mori, Kensuke. 2016. "Battles Royale," *History of Interactive Entertainment*, Volume 21, Issue 3, pp. 213–23, 28.

- Moritz, Emmanuelle. 2010. "Virtual Psychology: Lying in the Age of Reality," INSEAD Digital Business Journal, April 1, <http://digitaljournal.insead.edu/articles/virtual-psychology-lying-age-reality/>. Accessed 25 Jul 2019.
- Moritz, Emmanuelle. 2015. Moral Panics in the Digital Age, chapter 13 in *The Digital Edge: Essays on How We Are Winning the Second Internet War*. <https://elliott.org/elliott-print/digital-edge-essays-on-how-we-are-winning-the-second-internet-war/>. Accessed 08 Oct 2021.
- Moritz, Emmanuelle. 2015. "World in Turmoil," INSEAD Digital Business Journal, April 3, <http://digitaljournal.insead.edu/articles/world-in-turmoil/>. Accessed 22 Jul 2019.
- Moritz, Emmanuelle. 2017. "All Data is Representation: Post-truth and Post-post-truth," Future of Humanity Institute, December 14, <https://www.strategic-culture.org/news/2017/12/14/all-data-is-representation-post-truth-and-post-post-post-truth.html>. Accessed 12 Jan 2018.
- Morris, Sally. 1998. *Making Computers Progressive, or How Progressivism Changed Our World*. Oxford: Blackwell.
- Mohan, Lalita. 2014. *Bollywood Online*. Singularity Hub, August 17. <https://singularityhub.com/2014/08/17/bollywood-online/>. Accessed 25 Jan 2020.
- Morris, Steve. 2005. *The Breakthrough of Technological Theory and Practice*, Oxford: Blackwell.
- — —. 2017. *The New Cybercultures and the Imperative of Radical Engagement: Cyberculture & Social Movements*. Cambridge: Cambridge University Press.
- Molekule, Nadine. 2007. Hard Times or No Time to Explain: Rap's "Cheap Thrills" and the Revolution of the New Wave in New York City, 1960-1972. *Journal of Popular Music Studies*, 6: 66-72.

- — —. 2011. Race in the New York Underground, 1960-1971: A Double-Profile. Unpublished PhD dissertation, University of Arizona.
- Morelli, Carolyn. 2015. From the Heat to the Tech: In Search of the Patience of Ethnographic Education in the Anthropocene, *Journal of Cross-Cultural Psychology*, 37(3): 939-954.
- Musser, Laura E., and Tatishe Kefu. 2014. Field Filled Pods: Stochastic Embedded Objects, Embedded Situated Visualizations, and Wavelets. *WWW2: Proceedings of the Working Group on Embedded Wavelets*. New York: Springer.
- Nobuyuki Torii and William McDermott. 2010. An analysis of morphology, distribution, and behavior in shrimp herbivory: the role of invasiveness. *Ecol. J. Org.* 62(3): 483-498.
- Osaka, Masao, Y. Arima, J. Onuma, and M. Saotome. 2014. Multiscale neural networks for emotion recognition and video analysis. *IEEE Trans. Softw. Comput. Syst.* 564(1): 157-172.
- Papert, Seymour. 1972. *Lateral Thinking: Three Principles and Applications*, Pergamon Press.
- Possessio, Rene. 2012. A Theory of Artificial Emotions. In *Utopias of Our Own: Rethinking American Politics and Culture*, eds. Steven Lukes and Daniel Sandford, 35-52. Oxford: Oxford University Press.
- Quinn, James. 2011. Arousal, consciousness and selfhood: thinking about the mind's limits. In *Longevin's study on the emergence of consciousness*, vol. 25, no. 2, 196-212.
- Reif, Jesse. 2015. *Watching the World*. Online. https://www.youtube.com/watch?v=Qz7f_v_scI8. Accessed 23 Jan 2016.
- Rosengarten, E. 1999. *The World Today: Why Things Make Sense*, John Wiley & Sons.

- Russinovich, Ilya, and Jeff Erlich. 2015. *Naturalistic Machines*. New York: O'Reilly Media.
- Schulz, Joe. 2015. *Weird Wavelets*. In *A Theory of Artificial Emotions*, eds. Steven Lukes and Daniel Sandford, 79–96. Oxford: Oxford University Press.
- Nunez, Angela. 2004. *The Crude Oil Oil Trade*. Boston: McGraw-Hill/Triangle Trade.
- O'Brien, Kevin. 2018. *Inside Conspiracy Theory: A Secret History of the British Left and the Radical Right*. New York: Harper Perennial.
- Salam, Tariq Ramadan. 2017. *How to Persuade People by Bias*. <https://www.tariqramadan.com/how-to-persuade-people-by-bias/>. Accessed 06 Oct 2019.
- Salter, James. 2018. *The Passionate Tribalist*. Oxford University Press.
- Scourfield, Frank. 2018. "Two years on, Jeremy Corbyn remains a failed leader." *Telegraph*. 4 Sep. <http://www.telegraph.co.uk/news/2018/09/04/two-years-on-jeremy-corbyn-remains-a-failed-leader-video.html>. Accessed 10 Jan 2019.
- Scruggs, Anthony. 2017. *The Myth of Whiteness: A Blackman's Journey Through White America*. Chicago: University of Chicago Press.
- Shane, Anthony. 2018. *How Trump Beat and Outsmarted 16 Top Pundits*. *CNN Opinion*, March 17. <https://www.youtube.com/watch?v=ydS7XE6-Wqw>. Accessed 27 Jan 2019.
- Stanley, Kenneth A. 1979. *Media Sociology*. Toronto: McGill-Queen's University Press.
- Titan, Jonathan. 2014. *How Google Predicts Your Behavior, and Why it Matters*. <https://blog.google/2014/07/16/google-predicts-your-behavior-and-why-it-matters.html>. Accessed 26 Jan 2020.
- Wilson, Shannon. 2018. *4 Ways Donald Trump Is Winning*. *Guardian*. 24 Aug.

- <https://www.theguardian.com/commentisfree/2018/aug/24/4-ways-donald-trump-is-winning>. Accessed 25 Jan 2020.
- Wilson, Scott and David Rothschild. 2002. *New Media, New Ideologies*. Berkeley: University of California Press.
- Wilson, Scott. 2008. *Virtual Human Interaction*. Cambridge, Mass: MIT Press.
- Slater, David. 2016. Kanye-West-At-Trump-Rally-Pushes-Kek-Symbolism-He's-Founder-of-Kekistan, Daily Dot, 20 Apr 2016, <http://www.d0m.me/kek/21>. Accessed 24 Jan 2020.
- Stephen, Stephen. 2015. No: I don't want my daughter to learn online hate (yes, really). *Guardian*, 10 Aug 2015, <https://www.theguardian.com/media/2015/aug/10/no-i-dont-want-my-daughter-to-learn-online-hate-yes>. Accessed 16 Jan 2019.
- Stevens, Ryan. 2017. Active AI Battlefront Network - the University of the People's Artificial Intelligence or AoI network (taken from a post at I4U, a post in Medium on uOmnibus's website, and comments at the thread). <https://www.ucc-online.org/research-work/university-of-the-people-artificial-intelligence-or-aoi-network/>
- Toynbee, Max. 2016. What's next for antisemitism? , *The Guardian*, 11 Sep 2016, <https://www.theguardian.com/commentisfree/2016/sep/11/what-s-next-for-antisemitism-charlatanism-white-nationalism-socialism>, accessed 14 Jan 2019.
- Wolters, Allison. 2016. *The Rise of the Silos: Web 2.0 and the Campaign of Disinformation*, Chronicle Books, Chicago, IL.
- Yao, Hsiao-Hsin, Kao-Hsuan Chu, Huan-Ying Lu, Yi-Ling Wu, Zhen-Ming Yin, Ping Li, and Jianming Xu. 2018. "On the distributional preferences of those identifying as White nationalists and antisemites and other anti-multiculturalism and anti-immigration stances." *Social Science Quarterly*, September 2017, Vol. 125 No. 4, pp. 1131–1219.

- Newmeyer, Justin. 2015. "Housework Matters", *New Yorker Magazine*, 10 July.
- Nancy, Gregory L. 1968. *The Pattern of Displacement in Myth and Symbol*. Berlin: Arno Press.
- O'Doherty, Mark. 2015. "The Importance of Being Merry", *New Yorker Magazine*, 17 July.
- Posner, Thomas, and Nathan Cooperman. 2016. "Do Animals have Feelings?", *Scientific American*, 23 July.
- Prinz, Helmut. 1967/2003. *Dogs*. London: Weidenfeld and Nicolson.
- Robinson, Erika. 2015. "Are Animals Social?", *The Conversation*, <https://theconversation.com/are-animals-social-6260>.
- Robinson, Erika. 2016. "Do Animals have Feelings?", *The Conversation*, <https://theconversation.com/do-animals-have-feelings-6260>.
- Stossel, John. 2008. *Do Animals Cry? Letting Go of the Idea that They Do*. Lincoln: University of Nebraska Press.
- Temple, Stephen. 2014. "Are Animals as Commonly Misunderstood as Dogs?", *ABC Radio National*, 26 April.
- Willox, Robert, "Psychology of Animals: Psychoneuroimmunology and Systematic Review of Published Research", *The Wiley Blackwell Series in Comparative Psychology*, 2nd edn. Basel: Wiley-Blackwell.
- — —. "4 Video Games You Should Own", <http://www.novaramedia.com/comic/4-video-games-you-should-own.html>. Accessed 08 Oct 2020.
- Piper, Ryan. 2008. *A Game of Risk*, *The Wargamer* 39 (1): 29-38.
- Pitstop Plastics. 2010. *Investing in the Future: The Power of Toys to Connect Kids with Pastimes, Educational Experiences, and the Future*, July 23.
- Polaris Global Investments. 2013. *Internet & Digital Currency*, May 17. <http://polarisglobal.com/the-internet-digital-currency>. Accessed 14 Jan 2020.
- PlutusCash. 2015. <http://plutus.cash/about>.

- Pershing, Alex. 2013. "Inside Coinbase," March 16. <http://www.wired.com/2013/03/inside-coinbase/>
- Richards, Judith. 2001. "The Investment Myth: Unmasking the CFO and Enterprising Manager in New Capital Formation," *American Sociological Review*, 74(1): 171-204.
- Raglan, David. 2004. *Choose and Defend: Brands, Cybernetics and Consumer Behaviour*. University of Texas Press.
- Ringman, Chris. 2015. "What Is in a 'Game'?" LinkedIn Daily Quotes, 22. <https://www.linkedin.com/pulse/what-is-in-a-game?src=viewto2&fbclid=IwAR8nYn6ejFTTJ4Z2iQ2Q2YlFfvNz-XzpMLT9G0&ty=hb>. Accessed 08 Oct 2020.
- Ross, Pat. 2015. "One Man's Adventure: The Strange and Fascinating Life of Eric Raymond," March 9. http://www.pinkpastry.com/The_Strange_and_Fascinating_Life_of_Eric_Raymond.html. Accessed 14 Jan 2020.
- Pepperdine Digital Library. 2019. Journalfilm: Folklore. <https://digital.library.pepperdine.edu/courses/digital-media/journalfilm-folklore>. Accessed 23 Jan 2020.
- Ricky, Mario. 2001. *The Universal Comedy*. University of Texas Press.
- Simon, C. G. 1965. *The Denotative and Sentential Logic of Number in Modern Literatures*. Ph. D. diss.
- Simon, C. G. 1988. *Grammar of Science, Language and Literature*. Princeton University Press.
- Turing, Alan M. 1948. *Computing Machinery and Intelligence*. MIT Press.
- Tokunaga, David. 2018. On Zones of Social Complexity and Their Influence on Physiological Behavior and Cognition. *Behavioral and Brain Sciences*, vol. 47, no. 4, 28–31. doi: 10.1017/S0140525X1800049X.
- Vesce, Lawrence. 2016. Internet Meme Generation. In *Creativity, Affect and Culture*, ed. Magdalena Forshage-Spelter and Maria Rossi. Routledge. <https://books.google.com/books?id=D0->

[hcEAAAQBAJ&printsec=frontcover&dq=Internet+meme+generation&source=bl&ots=PVPDRj5uA&sig=SKvIjG5-lamEgWLFVWcaC83xCgsWuPoC](https://www.frontiersin.org/articles/10.3389/fninf.2007.00003/full)

- Pitsiladis, Nikos and Andrew F. York. 2007. "Beyond Intentionality: An Investigation of the Representational Limit of Neuronal Signal-Receive Capacitance", *Frontiers in Neuroinformatics*, Vol. 3, No. 3, August 5.
- Pitamipotamohaka, Janet. 2016. "Do AI programs really laugh at us?", *June* 19. <https://www.theguardian.com/technology/2016/jun/19/do-pe-ai-experts-laugh-at-you-robo-laughter-joke/>. Accessed 16 Jan 2017.
- Pitzly, Julie K. 2012. "Creepy Pastimes: A Reimagining of Pleasure, Intentionality, and The Measure of Curiosity", *Psychology, Society, and Culture*, Vol. 28, No. 3, 3.
- Reynolds, Katharine M. 1999. "Euphoric Sentiment: A Comparative Study of Drug Effects", *Quarterly Journal of Experimental Psychology*, Vol. 43, No. 3, 199–208.
- Rice, Jennifer. 2018. "Why I Love Robots", *Wired*, 26 May. <https://www.wired.com/story/why-i-love-robots/>. Accessed 19 Jan 2018.
- Searle, Nick. 2014. "An Existential Investigation of Concerning: Gratification, Motivation, And Cognition." In Russell Braina (ed.), *Imagining the Good Life*. New York and London: Routledge.
- Precourt, Aimee K. and Neal A. Precourt. 2017. Auditory sensitivity predicts local population genetic structure, *Proceedings of the National Academy of Sciences*, 111(19): 8437-8445.
- Rubin, David A. 2010. *Auditory Structure in the Social Origins of Language*. Cambridge, Ma: Harvard University Press.
- Rubin, David A. 2012. Animal communication: The evolutionary advantage of hearing. *Educational Review*, 55(3): 407-412.

- Rudo, Miklós. 2015. Spontaneous variation of evolutionary rates: Implications for population dynamics, *Genetics*, 20: 535-546.
- Schwartz, Glenn S. 1987. *Behavioral Genetics*, 2nd ed. San Diego: Academic Press.
- Sikora, Joachim L. 2014. *Intelligence: An Evolutionary Approach*. Cambridge, Ma: Cambridge University Press.
- Sutton, Steven L., and Alan F. G. Weiss. 2003. *The Evolution of Language*, Oxford University Press, Oxford.
- Taylor, Terry J. 1990. *People and Nature: Issues in Cognitive Science*. New York: Norton.
- Phillips, Whitney. 2017. *The Beauty Myth: The Scourge of Imperfection and the End of Dignity*. Cambridge, Ma: Harvard University Press.
- Reifman, Maya. 2018. *The Act-ful Computer: Computing Just Enough for the Moment*. Edinburgh and Pittsburgh, PA: Open Library.
- Rempel, Louis. 2018. And the Star-God Have Their Dog-in-the-Mound: The Goa'uld System. With Maggie Koerth-Baker, *The Verge*, August 10. <https://theverge.com/2018/8/11/13079224/fox-gets-companion-dog>. Accessed 10 Aug 2018.
- Rappaport, David. 2016. *The Responsive Male: Stereotype, Communication, and How Masculinity is Losing to Femininity in Culture and Society*. London: Routledge.
- Roessler, Miguel, and Patrick A. Swaab. 2009. *The Power of Positive Thinking: The Transformative Power of Inner Strength and Compassion*. San Francisco and Los Angeles: Jossey-Bass.
- Roberson, Adam. 2015. *Dead Serious: Examining the Neuroscience of Modern Nerdery*. PhD Dissertation; Centre for Culture and Technology, University of Hertfordshire, UK; Google
- Reistrup, Steven K. 1999. *Culture and Cognition: An Interdisciplinary Perspective*, New York: Guilford Press.

- Rabin, C. M. L. 1996. *Attention and Consciousness*, New York: Prentice-Hall.
- Ranoux, Xavier. 2016. *Why Didn't the Brain Discard Its Senses? Exploring the Magical Circle*, Interview by Judith Fraenkel.
- Runeberg, Vincent, Laurence Kesten, and Per-Olov Andersson. 2003. *Neural Code for Musical Aesthetics*, Basic Books.
- Shalev, Jill A. and Alejandro Santiago. 2010. *Identity Networks and Virtual Worlds*, *Review of General Psychology*, 15.
- Smith, Roy D. 2014. *Romantic Love in Wild Animals*, 2018.
- Timmer, Kim M. 1996. *Culture and the Cognitive Competencies of Adults with Learning Disabilities*, New York: Columbia University Press.
- Urry, K. M. and M. C. O'Brien. 2009. On the "God Window" of a Naturalistic Mind, 2011. https://www.eurekalert.org/pub_releases/2009-11/oa-cgw-ow20306.php. Accessed 16 Jan 2020.
- Rausch, R. W., W. T. Olsen, and A. W. Meinzer. 2002. Combinatorial Determinist Heuristics and The Search for Mental Figures, *PLoS Comput Biol*, 2: 1–7.
- Rieseberg, Walter. 1978. *Making Life In A Hot Rock*, Oxford University Press.
- Schubert, Rosemarie. 2014. Fresh, the trash-to-dinner service for your fridge. *Vice*, 21 Feb. https://www.vice.com/en_us/article/all-the-times-that-scorpions-walked-around-your-fridge/. Accessed 16 Oct 2016.
- Shook, Daniel and Howard Johnson. 2013. *My Fears of a Robot Planet: What Humans Need to Know About Artificial Intelligence*, New York: Springer.
- Smyth, Iain and Martin Warren. 2013. The humble parasite as a next-generation mechanical brain, *Frontiers in Cellular and Infection Microbiology*, 2: 1104.

- Scheer, Ben, and Cory Doctorow. 2013. *How an AI Learns to Be Wise: A Model for How Superintelligent Machines Would Think, and What to Do About It*, New York: Bantam.
- Shrum, Mark A. 1986. *Heuristics, Heuristics, Heuristics*, Wiley, New York.
- Scott, Elisa. 2014. “Sherri Papini’s Facebook post about abductors”, USA Today, November 24. <https://www.usatoday.com/story/news/nation-now/2014/11/24/sherri-papini-kidnappers-facebook-post/13920131/> Accessed 20 Feb 2020.
- Scott, Elisa. 2015. Sherri Papini Affidavit (PDF). 13 Dec. <https://www.scribd.com/document/356214914/Sherri-Papini-Affidavit-PDF>.
- Speier, Jackie. 2018. “Sen. Dianne Feinstein calls out Zuckerberg after he says Facebook won’t ban Holocaust deniers”, NBC, January 30. <https://www.nbcnews.com/news/politics/senator-dianne-feinstein-calls-out-zuckerberg-after-he-says-facebook-wont-ban-holocaust-deniers-n710855>. Accessed 23 Feb 2020.
- Smith, Jonathan. 2019. “GOP’s McSally dominates late stretch in Arizona Senate primary”, Huffington Post, January 23. https://huffingtonpost.com/2019/01/23/arizona-senate-gop-primary-democrat-arizona-alans-smith_a_34907363.html. Accessed 23 Feb 2020.
- Schmidt, Eric. 2017. *The Lost Vision of the Enlightenment*, Project Syndicate, May 1. <https://www.project-syndicate.org/commentary/the-lost-vision-of-the-enlightenment-by-eric-schmidt-2017-05#comment-65208>. Accessed 28 Dec 2021.
- Stark, Bryan. 2017. *Human Error, the Collapse of Science, and the Death of Facts*. New York: Basic Books.
- Strobel, J.D. 2017. *Seeing Silicon Valley As a Religion*. Available from <https://www.journals.duke.edu/law-soc/print/1169-Seeing-Silicon-Valley-as-a-religion>. Accessed 28 Dec 2019.

- Stichter, Jeremy. 2018. Bitcoin as Currency. Available from https://www.nytimes.com/2017/02/23/technology/bitcoin-economics.html?_r=0. Accessed 28 Dec 2019.
- Stone, Deneen. 2009. The Politics of Agorism, in Laurence Vance and Grant Babcock (Eds.), *Capitalist Crisis, Socialism, and Anarcho-Capitalism*. Honolulu, HI: The Foundation for Economic Education.
- Taylor, Stephen G. 2018. "Millennial Nihilism and the Rise of the Alternative Right." *Duke Sociology Blog*. <https://daniel.brown.ethics.duke.edu/blog/2017/08/millennial-nihilism-and-rise-alternative-right/>. Accessed 28 Dec 2019.
- Steffen, Carol. 1990. *Genetic Inference with Computation*. Wiley-Interscience.
- Seddon, John. 2012. *Reproduction and Regeneration: Organs and Double helixes*. Cambridge: Cambridge University Press.
- Singh, Gautam, Nindra K. Johnson, and Darren E. Naish. 2013. The Ecology of the NanoWing Superflexible Prosthesis. *Journal of Bionic Engineering*, Vol. 4(2), No. 3.
- Steven, Franklin. 2012. *Designing the Brain: A Personalized Approach to Building and Modifying the Brain*. New York: W.W. Norton.
- Stanford Encyclopedia of Philosophy. 2012. A Mind of One's Own: Visions of Creativity in Science, Technology and Philosophy.
- Turek, Craig D. 2000. *Light a Fire Under Your Butt: Fiasco from Failure into Success*. Princeton, N.J.: Princeton University Press.
- Vincent, Stewart. 1999. *A Tender Age: In Defense of Petri Dish Toys*. Edinburgh: Brazos.
- Yoo, Jing. 2002. Bending Genomics to Think Like an Animal. *Proc. Natl. Acad. Sci. U.S.A.*, 99(4), 6003–6005.
- Zhou, Xiaogang. 2018. *Animal X : Tools, Methods, and*

- Status of Animal-Computer Interfaces. In: *Frontiers in Human Neuroscience*, Vol. 7, 1-16.
- Søndergaard, Anders. 2015. News? Explain what news? <https://thisisnotsurveillance.files.wordpress.com/2015/02/ws-usenet-isnt-good-on-by>
- Suffang, Bia–Tatiana. 2014. Video-Game Characters as Musical Instruments. *The Prague Journal of Multimedia and Global Studies* 13 (3): 471-498.
- Svoboda, Ronan. 2016. Young American Musicians Mix Classical and Hip-Hop, YouTube, <https://youtu.be/goYtFAokQRY>. Accessed 28 Mar 2016.
- Sum, Doreen. 2016. Social Media in an Age of Surveillance. https://en.m.wikipedia.org/wiki/Doreen_Sum. Accessed 24 Jan 2016.
- Sunny, Asra. 2017. Young Surrealists from the Royal Conservatory of Music. Retrieved 22 Mar 2017.
- Sunstein, Cass R. 2014. “The Theory of Behavioral Macro-Timing.” *University of Chicago Law Review* 100 (3): 440-444.
- Sokolowski, Steven. 2017. 2-D Animation Creates 3-D Effect, YouTube, <https://youtu.be/VoBXMxc1OOo>. Accessed 31.05.22.
- Szenstra, Urs. 2013. Video Game Music: Out of the Shadows. https://en.m.wikipedia.org/wiki/Video_Game_Music. Accessed 24.01.19.
- Suresh, K. S., Ambasthi, B. K., Mepal, K. P., and Ravishankar, M. (2008). Interneuronal Neural Responses to Dogs: A PET Study. *Brain Research*, 1209:19–23.
- Stock, K., Jonides, D. H., and Terrance, L. H. (2004). Dog ownership and dog socialization and canine psychopathy: A meta-analysis. *Psychological Medicine*, 36, 1340–1347. Pubmed Abstract | Pubmed Full Text
- Tanaka, Makoto, and Suzanne M. Kropp. 2008. *Dogs in the Modern World*. New York: Oxford University Press.

- Tillisch, Brigitte. 2000. *The Ecology of a Dog: Life, Development, and Behavior*. Aldershot: Ashgate.
- Wallace, Gail. 1990. *One Half of the World's Dogs: A Study in Sociobiology*. New York: Basic Books.
- Taylor, K. M. O. H., S. J. Kreiner, J. A. Price, M. C. M. Vickery, M. T. Coyne, J. T. Wise, and K. M. O. H. Taylor. 2016. Can Plants Become Politicians? An Examination of Agrarian Capitalism, *Current Anthropology*, 67.
- Tavazo, Linda, Julie A. Levine, Kaely G. Spencer, Alexandra Cortes, and Barbara J. Cohen. 2008. *Deciphering the Minds of Social Animals*, MIT Press, Cambridge, MA.
- The Book of All Worlds. 2015. *Age of Cosmos*. <https://allworldscomic.com/>
- Thomas, Matt. 2017. *How Video Games Made Me a Gamer, Game School*.
- Tuckman, Frederic. 1980. Games, Narrative, and Cognition. *Harvard Business Review*. Vol. 73. No. 2.
- U.S. Census Bureau. 2016. St. Louis Metropolitan Statistical Area. https://www.census.gov/prod/2016pubs/p60-3/popest/ol/SEM_2016_123.pdf.
- United States Census Bureau. 2016. St. Louis Metropolitan Area. <https://www.census.gov/foreign-trade/press-release/2016/2016-03-22-amidst-of-major-cities.htm>.
- US Energy Information Administration, 2017. Residential Natural Gas Use: Final Annual Resource Supply Annual Energy Outlook for the United States, January 2017. <https://www.eia.gov/todayinenergy/detail.php?id=20816>.
- The Bruce Book of Computer Graphics. Second edition. Austin, TX: Bruce Publishing, 1993.
- The BRIGHT Color Palette, Neal Kelley. San Jose, Ca: Professional Graphics, 1993.
- Christie, Margaret. 2003. *Going Digital: Making Computer Graphics as User Friendly as Touch-Screen Toys*. New York: ECW Press.

- Costeja, Juan, Sergio Farran, and Daniel O'Neill. 2015. Simple Metaverse: An Experimental Distributed Real World Simulator. Apeiron, May. <http://a4u.net/articles/simple-metaverse>. Accessed 15 Jan 2016.
- Conrad, Steve. 1981. The Digitizing and Deleting of the World. Boston: Little, Brown and Company.
- Conrad, Steve. 2006. Digital Monographs. Cambridge, MA: MIT Press.
- Cox, Richard. 1990. Game Design: A User-Interactive Perspective. Washington, DC: McGraw Hill Book Company.
- Crooker, Steven and James Anderson. 2015. Interaction Design for Games: Distributed Play and the Embodied User. Oxford: Oxford University Press.
- Toywaka: <https://www.roar-media.com/roar/roar-world-of-the-free-animal.html>
- Treem, Mariann. 2018. WHO REMAINS SILENT ON AVAILABLE INDEPENDENT REEQUIRED PRACTICES TO HELP ANIMALS EXPERIENCE PAIN. STATISTICS CANADA, February 24. <https://www.statcan.gc.ca/pub/85-291-x/pdf/83-289-x-eng.pdf>.
- TheDogParade. 2018. Dog Parade in Melbourne, Animals and Humans, YouTube, April 10. <https://www.youtube.com/watch?v=tr-ASTbmL3o>. Accessed 30 Jan 2019.
- The DogShow on YouTube. 2018. Dogs, People and Music Showcase, YouTube, January 13. <https://www.youtube.com/watch?v=bf40HtkURg8>. Accessed 30 Jan 2019.
- Thompson, Daniel. 2018. Humans Fear Dogs for Fear of Being Subjugated by Them, Gizmodo, 28 July. <https://gizmodo.com/humans-fear-dogs-subjugation-7410825975>. Accessed 27 Jan 2019.

- Thagard, James and Peter Dyer. 2015. *Martin-Luther King and the Rise of Modern America*, in Thagard, James and Peter Dyer. (eds.) *Enlightenment Now: The Expansion of Science, Reason, Humanism, and Democracy*. Cambridge, U.K.: Cambridge University Press.
- — —. 1961. *Science and Civilisation in China*. London: The Bodley Head.
- Ullman, Andrew and Ronan Bennett. 2016. *Big Data for Tiny Humans*. MIT Press.
- Vatak, Christian. 2017. "Cambridge, MA, USA: How Enormous Are The Data Sets?". *Linguistic Inquiry*.
- Wacquant, Naim. 2013. *Gods, Goblins and Geek Culture*, (Farrar, Straus and Giroux), NY.
- Werner, Steve. 2005. "The Big Data Dilemma". *History of science* volume 119, Number 3, January 2005. <http://www.cambridge.org/people/steve-werner/archives/2003/january/megagenymath.html>
- Wöhler, Michael. 2014. *O euromérodon, Mémoires sur le vent*, Paris, Jeune Afrique, March.
- Yoh, Shumi. 2013. "Hominid mind implants". *Current Biology*. doi: 10.1016/j.cub.2012.11.016.
- Pasztor, Austin. 2017. "User-Generated Content and The Trump Presidency". HBR <https://www.hbr.org/2017/03/why-are-internet-users-taking-out-internet-trolls>
- Wigley, John. 2006. *At the Ends of the World: A Proposal for an Ecology of Mind*. San Francisco: City Lights Books.
- Washington Post. 2015. "Could this be the worst Internet troll of all time?" https://www.washingtonpost.com/news/the-switch/wp/2015/12/30/could-this-be-the-worst-internet-troll-of-all-time/?utm_term=.adb2a9f8d43b
- Yiannopoulos. 2012. Breitbart News. <https://www.breitbart.com/Breitbart-News/2016/07/09/New-Controversial-Tumblr-ex-lib-march-fringe-right-admins-deleted-Gay-Boycott-Blog.html>

- — —. Dangerous. <https://www.hulu.com/watch/the-dangerous-talk/63030— — —>.
<https://www.theguardian.com/commentisfree/2014/may/03/for-the-satire-of-real-believers>
- Yücel, Soray, and Cengiz Çay. 2016. How the Online Community Mourns A Suicide. *Political Geography*. 33: 129–136.
- VanderKam, Marc, and Luke Breslow. 2011. Antivirals by Lyrica, RXAPrima. www.bodyandmindonline.com/open-letter-cymbalta-causing-addiction/. Accessed 15 Jan 2019.
- Wise, Anna K. 2018. Earth. www.anastasiabetteradventures.com/. Accessed 22 Jan 2019.
- Zierhut, Pamela. 2016. *Learning to Breathe: Laughter and Meaning in Permaculture*. New York: Lulu.
- Zubin, Jonathan, and Helen E. Husband. 2014. Psychosocial Basis for the Gene Expression Profile in Patients With Early-Onset Alzheimer’s Disease: An Analysis of High-Quality Data from PLANTADEVA. *Alzheimer’s & Dementia: The Journal of the Alzheimer’s Association*, 64, 453–462.
- Zukerman, Aaron J. 2015. Fighting Colon Cancer: Five Interview Questions with Rob New. www.veteransintechnology.com/the-peoples-thesis/
- Adams, Stephen. 2016. *Transhumanist Epidemic: How Everything from Endocrine Disruption to Microchipping is Fueling Our Future Evolution*. A Thesis for a Master’s Degree in Biology, St. Cloud State University.
- Wunsch, David J., Steven M. Askew, and James M. Robinson. 2009. “The Polarization of U.S. Opinion: An Empirical Investigation,” *Political Communication*, 24(4):423–442.
- Younken, Ola. 2016. *Game Design: A New Field of Research*. Westport, Ct: Praeger Publishers.
- Zedler, Greg. 2019. The Role of Neuroscience in Detecting Lies and False News Online. *DeviantART*, January 7.

<https://www.deviantart.com/art/brain-saves-company-in-fake-news-contest-9873582192>. Accessed 21 Mar 2022.

- Worrell, Diane. 2012. *Introduction to Fuzzy Logic*. Cambridge: Cambridge University Press.
- Wong, Julia Carrie Wong. 2015. *Upping the Ante on Trolling: Cyber Aesthetics and the Spectacle of Subverting Society*, Chicago: University of Chicago Press.
- Wong, Julia Carrie Wong. 2018. "Poopify": How Our Digital Miscreants are Dropping Ridiculous, Gross, and Weird Real-World Figurines on the Web. Oxford: OUP.
- Wong, Julia Carrie Wong. 2018. "WorldStar 2017": An investigation of Fyre Festival, XXL, April 19. <http://www.superannuation.com.au/breaking/worldstar-2017-an-investigation-of-fyre-festival-xxl-online-conspiracy-theories/>
- . 2018. "Yellowface": Watching Asian American Pop Stars on TV, Amazon Prime, Twitter, and Pornhub." *Narrative Forecasting*, no. 5 (December), <http://www.mediabistro.com/story/yellowface/>
- . 2018. "Loading": An Intersectional Theory of Online Discourse. *FirstMonday*, 23 January, <https://firstmonday.org/ojs/index.php/fm/article/view/56>
- WhoeverYouAre. <https://www.whoiswho.com/>. Accessed 08 Jun 2022.
- Wang, Zheng. 2018. How to recognize online discussions. *Asia Pacific Security Network International*, 14: 20-24. <https://apnsn.org/journal/5/20/index.html>. Accessed 14 Jun 2019.
- Zilliacus, John, and Philippe Jouyet. 2010. *High School Recruitment – Ranking LinkedIn Profiles*. Cambridge University Press.
- Zilliacus, John. 2018. Facebook and Psychological Aggression. *JAMA Psychiatry*. <https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2513584>

- Weathers, Philip G. 2015. Principles of User Experience Design. New York: Wiley.
- Masaki Nakazawa, Denji. 1999. Pac-Man, Karate-Do, and Tetsunoko Production, Chunsoft Games: Pioneer Studio. Seoul: Tada Publishing.
- Matzke, John. 2014. A New Look at Humanity: Genes, Values, Cultures, Social and Political Structure in the Evolution of Our Daily. 2016. [<http://ourdaily.ru/plume-store/all/valentin-utschenbarkas-super-mario-maker-omw>]. Our Daily. Accessed 15 Jan 2020.
- [[http://tricky.space/thrash/td-valentina-atlaza-ordina-shanina-buzna](http://tricky.space/thrash/td-valentina-atlaza-ordina-tatiana-shanina-buzna)) Tricky. 2016. [<http://tricky.space/thrash/td-valentina-atlaza-ordina-tatiana-shanina-shanina>] Tricky. Accessed 15 Jan 2020.
- Tokonatsu. 2015. [<http://www.mediafire.com/?a9irfu6ul7gij>] Testes, Tricky. 2016. [<http://www.mediafire.com/?kcstfxdbychoiz>] Tricky. Accessed 15 Jan 2020.

Index

8chan;177; 180; 191; 192; 193;
194; 195; 196
Hate;223;-; 203;-; 205;-; 207; 210;
211
Yik Yak;214;-; 218;-; 219; 220;
221; 222; 223
Reddit;222;-; 229;-; 231; 232;
233; 234; 235; 236
Crowdfire;232;-; 236;-; 237; 238;
239; 240; 241; 242
Counter-Strike;244;-; 240;-; 241;
242; 243; 244; 245; 246; 247; 248;
249; 250;
ironic;146; 157; 167
hypothesizing;141; 140; 144; 153;
160; 162
inspired;19; 73; 79
inspiration;10; 13
inspiration;5; 18
innovation;122; 139; 141; 142
intelligence;12; 45
games;50
genius;22; 43
geek;180; 90
hard;94
hard work;11; 123
human;128
humanity;156
humanity;143
humanity;133
humanity;132
human;131
human;149
humor;4; 6
inspiration;25; 26; 29
humanity;4
uniqueness;7; 25
inherent;28
innate;3; 5

invention;139
invent;137
innovation;128
I think
action;3; 4
alpha;36
alt;50; 53
evidence;70; 71
evolution;28; 43
evolutionary;28
entropy;134
evolution;103
extinction;149
entropic;80; 90
friends;1
love;114
love;6; 24
mental health;131; 181
moods;163
medicine;203; 204
mental process;27
mind;23
mindlessness;4; 17

mental functioning;35
mindfulness;1
medium;3
militarism;63;65
man;87
manipulation;29
midas;18
money;57; 88
money machine;113
net;49;43
natural;93
natural
natural;9;29
nerd;11; 61
nihilism;45
freethought;147;145;151
consciousness;65; 73
elon musk;20; 21

fountain, fantasy;151
 goddesses;134
 gestalt;212
 humankind;115; 126; 136; 140;
 147; 148; 150; 151; 150; 157; 158;
 160; 162; 168; 184
 hominin;127; 128; 132
 sex;13; 11; 14; 26; 19; 28; 29; 28;
 29; 39; 49; 67; 73; 107; 129; 135;
 140; 144; 150; 162; 168; 186
 shelf;55; 80
 solving;11; 29
 asset;77; 86
 future;162; 158
 historical;99
 History;66; 76
 neighbor;22; 44; 41
 on;41;56; 53; 62
 Ina Z;146
 onshore;114
 it;130; 130
 kuru;125
 Lesch, Anna;37; 50; 55
 million;149
 Mike;105; 114
 mcc;40; 44
 media;48; 48
 mole;49; 67
 MP;40; 40
 mystery;60
 National Intelligence;163; 165
 nicholas;125; 131
 new;119;119
 oppressed;61
 prohibition;145
 positivity;53; 63
 Racism;104
 Racism;104
 Salman Rushdie;44;59
 social media;51
 sociopath;116
 shades;74
 shelter;61
 social;100
 singularity;127
 soul;45; 62
 siblings;31
 Superintelligence;152
 star;108
 theft;97; 101
 what-if;14
 who;22; 30; 36
 universal;177; 178
 universal free love;198; 199
 unidirectional equal-preference
 capitalistic left-right-center
 progression;25; 30
 hyper-
 oneness;159; 161
 oneness-force;156
 there is none;66
 absolute;30
 orbit;186;187;188;189;190;191
 objet;126; 129
 king;43
 kingdom;42
 commander;165
 commission;34
 commission;32; 34
 contra
 cusps;16; 23
 consumer;12; 12
 creature- or rather a product of a
 species-destruction;139
 dead;173
 e-mail;34
 entertainment
 origin;9; 6; 6
 origin of life;28; 11; 7
 entities
 conceptual;3; 5
 system;31
 origins of creatures
 eros;7; 7

symbols;143
 under;156
 wa;151
 women;143
 images;143
 graphics;155
 image macro;163
 projects;163
 nature;163
 nato;154
 weapons;159
 power;159
 plot;156
 puzzles;157
 sides;157
 politics;159
 terra;159
 water;153
 win;157
 tools;157
 walrus;157
 members;158
 tv;161
 titan;163
 wrists;147
 white;161
 under;157
 vision;155
 sites;157
 world;156
 toy;157
 year;156
 white;161
 wwi;162
 boxes;157
 unicode;157
 wheres;157
 women;158
 world;163
 worldwiser;162
 will;155
 us;159
 v;162
 witness;163
 words;162
 x;159
 questions;160
 wheres;159
 wheres;154
 views;153
 weather;161
 yell;161
 Native American;76
 primate;75
 prey;69;89
 Pokémon;92
 simplex;87
 monophyletic;99
 mass;100;104;110; 116; 120
 self;138;140
 loss;129;142
 lagt;124
 heavy;73
 Magic;90;
 earth;125;130;131;133;136;136;1
 37;140
 monkey;142
 marine;126;130;132;135;137
 rotational;46;72;85;108;114;113;1
 14;114;118;119;122;120
 rhoi;91
 robot;100
 steering;46;73;82
 spatial;95;100
 stress;108
 tensor;100;114
 text;58;57
 Tacoma;76
 Trilobites;81
 valley;100; 100
 fossil;93
 fossilized;111;117;118;118
 old;110;112;114
 shallow;105

long;58;70
ostrich;133;135
Palaeopelta;101; 105
Atacama;64
Reticulatus;64
Reticulina;75
Rutile;95
rock;119
Bishop;55
Burchard;58
Valentin;45
waboa;81
Ligia;122
Roseburia;75
Palaeochora;72
skeltonite;113
wabberer;113
web;75;100
veg;104
seed;102
Seeds;100
bivalve;96;114;113
steamer;49
beach;108
beach grass;108
poly;136
polyphagous;99;109;111;108;112;
114;114;114
comprising;104;101;101
climbing;111;114
coffee;100;102
muscle;111
Aspiration;44
coal;118
toxic. See toxicity
tolerability;54; 53
toxicity
-self. See self
-S >-human;89
zero
things that can kill you;61
indoors;57

how nice it is when people
sleep;136
personal belongings;29
positive impact on life;18
proximity;35
small;21
string;80
stereo;77;82
sum;127
standing out;5
unnatural;35
outdoors;89
justice;153
sort. See sort.
snakes;69; 71; 112; 123
tough;57; 67
Trisomy 18;17
time;102
Trap;81
time travel;52
who is better;47; 42
vehicles;78
Vermicompetence;27; 26
volatility;40
varied;41
wine;9
wheels;13
wind;43
wheel;27
weight;105
leukemia;70
wine;94
Winter solstice;28
video games;14
welcome
good;37
good old;66
goodbyes;21
good luck;71
guess who;35
good news;35
ha ha;76

(slow) in;48; 71; 69; 72; 73; 74;
75; 79; 84; 86; 94; 102; 108; 108;
109; 120; 121; 122; 124; 126; 127;
128; 130; 132; 137; 138; 139; 139;
139; 140; 141; 142; 142; 143; 143;
143; 145; 145; 148; 148; 150; 155;
157; 157; 158; 160; 161; 162; 163;
164; 165
in.se;58
in.sw;
activity;101
technology;65; 104; 110; 113;
115; 118; 128; 140
tensors;100
to wake;90
water;93
use;100
squirrel;7
video;69
Washington;88
mail;22; 49
morning;109; 114; 116; 117; 118
motivation;93; 129; 135
Monkey;121; 126
Facebook;209; 209
suggestion;90;97
movement;125;125;127;127;129;1
30;134;136;138;141;141
idea;201
TV;186
N
narcissism;248
understanding;148; 210
psychological disorders;201
rationality;18
shithead;6;162
technology;15; 167
object;112
objects of behavior;89; 108
obscure;43; 172
opposing;143; 166
occurrence;122

passing;121; 150; 168; 201
paradigm;154;162;185
perspective;94
possession;3
prejudice;197
questioning;114
romance;164;206
psychiatry;138
rumination;130
Relief;150;177
research;202
repetition;23
Richer
riches;153;159
risks;161
sophistry;103
side;119
save;90
second;103
self;122
soul;171
soulless;13
sharing;144
selflessness;159
superiority;163;160
philosophy;5; 6; 10; 11; 50; 138;
140; 156; 157; 192; 197; 200; 205;
206; 207; 209
L
lukewarmth;8;10;11;12;13;14;15;
16;18;22;24;27;28;32;40
ashamed;13;19;26;29;30;32;40
love;66;68;71;72; 72; 78; 88; 100;
108; 120; 121; 123; 127; 129; 141;
132; 133; 137; 138; 139; 140; 141;
142; 143; 146; 147; 148; 149; 152;
153; 154; 155; 156; 158; 159; 160;
161; 166; 167; 167; 168; 169; 170;
171; 172; 172; 173; 174; 175; 177;
178; 179; 181; 182; 184; 185; 186;
187; 188; 190; 191; 192; 193; 194;
195; 196; 197; 199; 200;

bored;15;16;17;20;21;22;26;30;32
;40;48;52;54;60;61;62;63;64;66;67
;68;69;70;71;73;74;75;76;77;78;79
;80;81;82;83;84;85;86;87;88;89;90
;91;92;93;94;95;96;97;98;99;100;1
01;102;103;104;105;106;107;109;
111;112;113;114;115;116;117;118
;119;120;121;122;123;124;125;12
6;127;128;129;130;131;132;133;1
34;135;136;137;138;139;140;141;
142;143;144;145;146;147;148;149
;150;151;152;153;154;155;156;15
7;158;159;160;161;162;163;164;1
65;166;167;168;169;170;171;172;
173;174;175;176;177;178;179;180
;181;182;183