

# **Disintegration and its Discontents**

*Alan T. Gaynor*

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## **0.0 Preface**

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# On Readers of *Disintegration and its Discontents*

by A. T. Gaynor

Ideally,—what an interesting qualification!—the readers of this book have several attitudes in common with the writer.

First and foremost among these attitudes is the **determination to be disillusioned**: we won't be fooled again. We don't want to watch the shadows on the wall of Plato's cave. We want to observe the objects that cast the shadows even while we avoid being blinded by the light that illuminates them.

Next, we have the **determination to be compassionate**. We are not thinking together so that we can hurt each other or anyone else. We are thinking together so that we can guide ourselves around the obstacles that could hurt us all.

In addition, we have the **determination to avoid elitism**. Our attitudes set us apart from others but they do not make us better than others. Our attitudes prepare us to act. Our actions follow from our disillusionment and compassion. However, ours is just one role in a play that has many other necessary actors. A single note can never make a harmony even if many voices sing it.

Correlatively, we have the **determination to be democratic**. Despite the necessity of all of our attitudes, they are insufficient. Others—that have compatible attitudes—complete the mosaic so that we attain practical results.

Personally, we have the **determination to be still**. Our stillness is not the quietism of inaction but the constant presence of mind that founds our determination. We act economically, doing what is necessary and avoiding the unnecessary.

Socially, we have the **determination to discover and reveal thievery**. There are thieves in the world. Those for whom property is a right—who have the most ill-gotten gain and continue to rob from the weak—are the greatest thieves. We refuse to be robbed or to stand by while the thieves rob others. We believe that justice and fairness are possible and we will act to realize them in practice, here and now.

Finally, we have the **determination not to be distracted**. Let's face it: we live in a society in which we are amusing ourselves to death. We are subjected to the most sophisticated technologies of communication in human history. Those technologies are not democratically controlled so this vast and engaging entertainment is a distraction. We want to know what they are trying to distract us from. We suspect it is to distract us from the thieves!

If we were to look down on the earth from a lunar colony, if we could inhabit a timelessness that would permit us to see human history as if it were a spatial dimension rather than a temporal one, how would humanity's struggles appear to us and what would the present forbode? Surely we would not miss the dramatic difference between the more recent and the more remote. The exponential growth of humanity on this fragile, finite, blue-green sphere is the most salient feature of the scene. Yet, as we look closer, there is another trend and it is both related and troubling: increasing economic inequality. It is related, because it appears to be driving the incessant growth. It is troubling because the growth it has already caused has rendered the planet too small for humanity. There appear to be limited paths toward the future. The least likely is the path of sustainability. Its improbability derives from the increasing economic inequality and the vicious cycle of unsustainable growth that inequality engenders. However, all other paths fall into just two categories: those in which humanity becomes a spacefaring species and goes on to colonize other worlds, and those in which humanity never leaves its home planet and disintegrates into internicine warfare between the few haves and the many haves-not.

We are the discontents seeking to avoid that disintegration. We seek a spacefaring, sustainable future.

## Objectivity and the Role of the Independent Global Intellectual

An **intellectual** is someone that applies intellect to problems. The result of an intellectual's work is typically a body of expressions (regardless of the medium of their publication). An **independent** intellectual is an intellectual that is not paid by—and therefore does not take orders from—any institution **with respect to his or her body of expressions and their publication**. Independent intellectuals earn a living separately from their intellectual work. An independent **global** intellectual is an independent intellectual that takes the situation of global humanity as his or her focus of intellectual work.

Despite being free of any command hierarchy with respect to their publications, independent intellectual workers may be either propertarian or dispossessed<sup>1</sup>. All propertarians own productive property. They employ workers that are not owners. To make a profit, they must exploit the worker's labor and appropriate the surplus value for themselves. This relation to the means of production influences that intellectual's perspective on issues of social justice and the role of governance in human affairs. There is an inherent hypocrisy in the life and core value system of an independent intellectual that questions the basis of the origin of property while benefiting from the exercise of the power of property over the fair compensation to one's workers. That hypocrisy turns to cynicism if that intellectual does not question the basis of the origin of property. Consequently, having a propertarian class affiliation **may** be just as corruptive as being paid by the propertarians directly.

Independent dispossessed intellectuals are not compromised by that kind of hypocrisy. They recognize that one's perspective on the origin of property rights affects one's social justice orientation and one's perspective on the legitimacy of governance and of coercion in human relations. Since the vast majority of human beings are dispossessed, viewing the universe from that dispossessed perspective engenders trust in more people than viewing it from the propertarian perspective does. Consequently, only **independent, dispossessed, global, intellectuals** can typically be trusted—from a **class** perspective—to seek the objective truth disinterestedly.

Now, having established a basis of **class trust** for independent dispossessed intellectuals, we still have not established an **epistemological basis of trust**. It should go without saying that doing so is **necessary**. However, the dominant ideology attacks the integrity of every dispossessed intellectual by casting doubt on their commitment to objective truth. We are no longer in the mood to permit those hypocritical attacks to go unchallenged.

Professional intellectuals have credentials which are widely recognized as giving their expressions presumptive credibility. Those credentials are granted by institutional hierarchies that are paid to grant them. Those institutions are certified by political authorities that are typically representative of monied interests, not citizens. It should be clear to anyone that the truth of the expressions of an intellectual are not a consequence of—or dependent on—the credentials, the institution that granted them, or the political hierarchy that certifies that granting institution. The truth of an intellectual's expressions are a function of their objectivity and the soundness of the reasoning that justifies them, and **nothing else**. The general public's inability to evaluate the objectivity of claims and the soundness of the reasoning that supports them is the justification for the elaborate institutional arrangements that reassure those who don't understand logic, mathematics, philosophy, or the methodology of science that authors are

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<sup>1</sup> These terms are from the work of Ursula K. LeGuin.

credible. The institutions that are supposed to provide basic educational services nowhere ensure that citizens are intellectually independent before they are granted the right to work and vote.

So, it is not the independent, dispossessed, global, intellectual that fails to acknowledge the necessity of epistemological sanity. The call for epistemological sanity is an indictment of the whole sideshow of distracting and misleading institutions of learning and their credentials as well as the media outlets that bask in their false guarantee of credibility. We independents support epistemological sanity because our only guarantor of the truth of our expressions is an extra-institutional appeal to objectivity and soundness, directly, without mediation. We do not believe in any church of truth.

One last necessary assertion to ensure that we are not misunderstood in this stance. Credentials are beside the point with respect to our determination of the truth of an intellectual's expressions. They are not cause for dismissal, however. Credentialed intellectual's work must submit to tests of objectivity and soundness in just the same way as independent intellectual's work. Epistemological sanity does not exclude credentialed intellectuals.

Now that we have established the necessity of epistemological sanity, let's turn our attention to its possibility. Epistemological sanity is quite possible precisely because it is a **technical exercise** not a sociological, economic, political, or ethical one. Unfortunately, this technical exercise has primarily been the domain of professional and propertarian intellectuals, not dispossessed independent intellectuals. Marx, for example, approached epistemology from an ideological rather than a technical perspective. That choice had arguably grave consequences for the 19<sup>th</sup> and 20<sup>th</sup> century worker's movements and their relation to the state and the general public. That is a discourse for another work, however. Here, we want to build on the good technical work in epistemology that has been done—even by bourgeois thinkers—especially since the 1920's and use it for the purposes of dispossessed, independent, global, intellectuals as we seek to make global humanity the agent of history.

We—the dispossessed, independent, global, intellectuals—are few. We have extremely limited resources and restricted circles of collaborators. For these reasons, the issue of objectivity should be especially important to us. How do we know that what we express is true? How do we know that the body of our expressions is not self-contradictory? How do we judge whether our expressions are intelligible by our target audience?

The answer to all of these questions is that we construct a coherent, consistent **rationality**. We use that rationality to judge our work, the work of others, and—occasionally—our rationality itself. In fact, we will discover that a **rationality strategy**—a strategic orientation that chooses when to use each kind of rationality—will be the most flexible and effective orientation.

The challenge of the project for epistemological sanity is to use open-source software and hardware to make the certification of the truth of conclusions and the soundness of the reasoning that backs them independent of any hierarchical institutions or individuals. Computer-assisted peer review and digital public key infrastructure identifications will make participation and validation of identities possible wherever there are digitized communications networks and local, trusted computing resources.

In this essay we would like to present a way in which any coherent rationality can be formalized. Once we have a finite set of rationalities to choose from, we can express the conditions under which we will adopt each to strategically understand the topic at hand. We also want to describe the boundaries between formal rationalities and ideologies.

# Disintegration and its Discontents

*From myth to essay to proof  
and the protagonists*

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## Introduction

There is a global Machine that is devouring and despoiling the earth. It was created by the collective unconscious of humanity and now, like Frankenstein's monster, it is beyond anyone's control. However, it is not beyond the control of a united humanity. The struggle of the 21<sup>st</sup> century is between a self-integrating humanity as the protagonist of history and the disintegrative socio-economic Machine we unintentionally created.

Solidarity has often motivated the concerted efforts of small segments of humanity to act as agents of historical change. Never has the whole of humanity acted on the global stage as an intentional agent of history. This book is an attempt to take a disillusioned look at the requirements for a human solidarity that would found a newly self-conscious human history. It is motivated by the conviction that we can be the Hercules that saves Gaia, the global ecosystem, from the impending Holocene extinction. But not without knowledge.

Myths are illusions that help our understanding at first but then prevent progress. We must make our mythic visions explicit. We must articulate our visions in essays. Then, we must build an integrated mathematical model of the envisioned domains and construct proofs of the necessities and the possibilities for progressive action.

The path forward is subtle and fragile. The knowledge of the few must guide the self-informing actions of the many. Time is not our friend. Carpe Diem.

## Part I: The Disintegration

### Epistemology

- On Dimensional Quantification Notation
- On Dogmatism
- On Reason as Fetish
- On Scientism
- On 3 Theses of Philosophy in the Flesh

### Ontology

- On Ontology
- On Discrete Time Subsystems
- On Reductivism

### Ethics

- On Rights
- On Avoiding Hypocrisy While Seeking Authenticity
- On Chris Wargo's Theses on Objective Morality

### Psychology and the Philosophy of Mind

- On the Loglan Terms for Intentional Systems
- On the Philosophy of Mind

Political Science and Economics as Game Theory and Systems Analysis  
On The Game of Life and Death  
On Spatio-Temporal Slicing and Solidarity  
On Rejection of Non-Verbal Assertions of Dominance  
On Disillusionment and Community  
From Disillusionment to Resistance.odt  
On Non-Violent Revolution  
On Freeing the Hostages  
On Self-Defense Against Predators and Sadists  
On The Immorality of Capitalism  
On Corporations  
On the 50th Anniversary of the War on Poverty

## Part II: The Discontents

### Present

- Jenny Brown
- Terry Buckenmeyer
- Cal Colgan
- Jimmy Schmidt
- Atalia
  
- Kevin Zeese
- Margaret Flowers
- Medea Benjamin
- Glenn Greenwald
- Alexa O'brien
- Naomi Kline
- Jack Balkwill
- Andy Winnick
- Karl Klare
- Micheal Klare

### Past

- Martin Luther King
- Malcom X
- Che Guevara
- Jean-Paul Sartre
- Simone de Bouvier
- Hannah Ahrendt
- Marx
- Freud
- Darwin
- Jung
- Kropotkin
- Proudhon
- Bakunin

### Conclusion

On Protagonism

## **0.1 Trends**

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# **1.0 Part One: Disintegration**

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# On Spatio-Temporal Slicing and Solidarity

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All a human being has in this world, really, is the time of his or her life and the places that he or she goes to live it. The Machine slices our being-in-the-world into pieces using time and space like scissors. Its purpose is the disintegration of our being-in-the-world to blunt any resistance to its exploitation. Solidarity begins with our resistance to this spatio-temporal disintegration.

Let's be clear about our understanding of solidarity. As we discussed in the essay *On Class*, solidarity means solidarity with the dispossessed class. The propertarian class and their managers act together often—not because of solidarity or conspiracy but—simply because it is in their self-interest to do so, and they know it. The dispossessed, on the other hand, are taught to distrust or disdain the other dispossessed and to reject any arguments that conclude that solidarity among the global dispossessed is good and necessary.

Now, reasoning based on factual assumptions is essential for independent intellectuals—those not working for governments, corporations, think tanks, or universities—that want to come to reliable conclusions. However, extensive data collection is a non-trivial effort and almost impossible for independent intellectuals to conduct. Consequently, we must rely on the work of others. How the elimination of the necessity of this reliance would effect humanity's ability to resist the disintegrative moves of the Machine will come out clearly in the analysis of the data that is publicly available.

Let's first understand how the Machine accomplishes this disruptive disintegration in terms of time and then in terms of space.

## Temporal Disintegration

Solidarity means taking time to be together, to communicate with each other to synchronize our mental models, and to act together to resist exploitation without distraction. The Machine disrupts solidarity by reducing the time that we can be together, communicate, or act to resist. Time for distraction, on the other hand, is perpetually available.

We can be objective about our designation of primary and secondary techniques for temporal disintegration by considering the **quantity** of time we spend in activities that cannot be dedicated to resistance in solidarity.

Currently, the United States is the most significant geo-political playing field of the Machine<sup>2</sup>. This is our justification for our focus on this playing field. It is important to extend this research into other geo-political playing fields as a matter of strategic intelligence for the resistance to exploitation.

In the United States, the Bureau of Labor Statistics provides the most extensive data collection efforts regarding the way United States citizens spend their time. We will refer to the charts<sup>3</sup> from the American Time Use Survey from the Bureau of Labor Statistics for the pertinent facts.

From Illustration 1 we see that there are just three **major** categories of time spent by U.S. Citizens

<sup>2</sup> We discuss this conclusion in an essay entitled “On the United States as a Playing Field of the Machine”

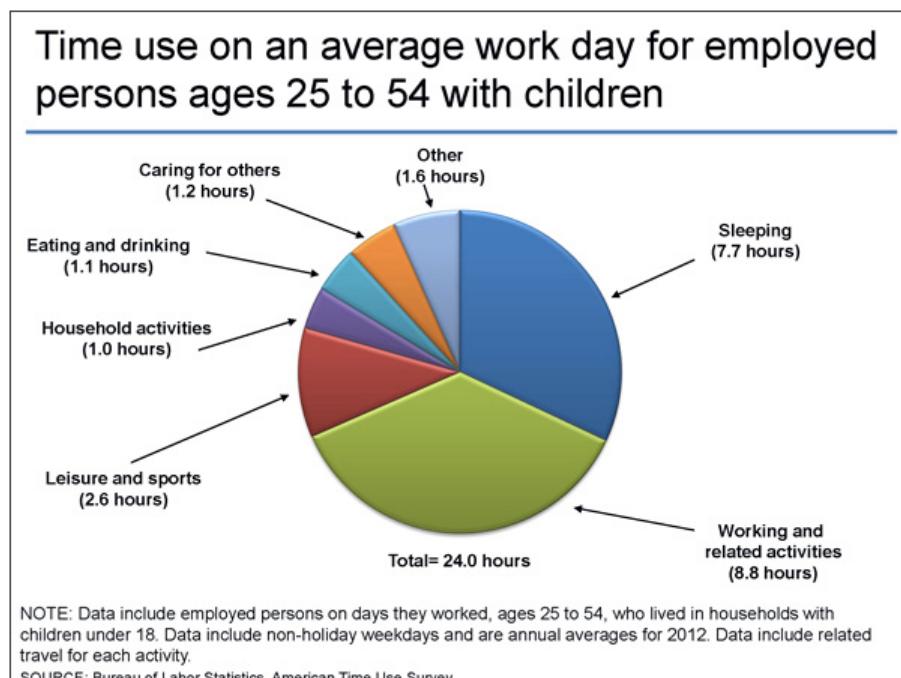
<sup>3</sup> <http://www.bls.gov/tus/charts/>

between the ages of 25 and 54 who are employed and that have children:

- Working (37%)
- Sleeping (32%)
- Leisure (Entertainment) and Sports (11%)

Let's distinguish, accordingly, between **solidarity workers**—those that are paid to engage in resistance to the exploitation of the Machine—and **Machine-bound workers** whose working time is dedicated to serving the interests of the Machine.

There is nothing we can do about the time for sleeping (32%) or the eating and drinking (.5%) time. These are biologically mandated for solidarity workers as well as Machine-bound workers. If we set aside those biological necessities, the **primary technique** of temporal disintegration is **work**. In fact, work—for the Machine-bound worker—eliminates nearly 58% of the non-biologically mandated waking time from solidarity (exploitation resistance) activities.



*Illustration 1: Overview of Time Allocation of Employed U.S. Citizens 25 to 54 with Children*

That leaves, on average, only 6.4 hours of the daily life time that we, as Machine-bound workers, might possibly dedicate to solidarity activities and the resistance to exploitation. However, we still need to dedicate time to the care of our children, our parents (when they are elderly), and sometimes grandparents (in extended families).

That care—1.2 hours per day on average—represents almost 19% of the remainder of our time to resist. This explains why the apologists for the Machine exert so much political effort to prevent free childcare and free eldercare. It also explains the apologist's opposition to abortion and contraception. Without children, citizens between 25 and 54 would have more time to resist exploitation. Not having children also prevents the Machine from holding them hostage against us. That kind of intimidation—essentially the fear of lost wages as a consequence of jail time—is what keeps many working adults with children from acts of civil disobedience. In addition, fewer people means fewer workers. By the

apologist's own law of supply and demand, that would mean higher wages for workers. These are the real reasons that propertarians join with the socially conservative dispossessed to oppose family planning in all of its aspects.

Another nearly 16% of the Machine-bound worker's time is typically dedicated to household activities. This explains why the reigning ideology asserts that cleanliness is next to godliness. Time spent cleaning your house and its contents (including dishes and laundry) is time that can't be spent opposing the exploitation of the Machine.

If the solidarity movement could find a way to relieve most Machine-bound working citizens of these two temporal burdens in exchange for time spent in solidarity efforts to resist exploitation, we would increase our time for resistance activities by up to 35%. If we could establish worker-owned enterprises for childcare, eldercare, and housecleaning—which could only be paid for with some combination of solidarity work and money to cover the costs to provide the services—we would enhance our resistance activities significantly while at the same time increasing the number of solidarity workers.

Of the 6.4 hours of the Machine-bound worker's **surplus time** (not working, sleeping, eating, or drinking), only 25% of that time (1.6 hours) is currently available for solidarity work because nearly 41% is allocated to leisure and sports and another 34% is allocated to care for others and household activities as discussed above.

Let's discuss that 41% of time spent on leisure and sports. We are going to look at the way all citizens, 15 or older spend that leisure and sports time. We will use the same percentages to estimate the way our working population probably uses that time.

*Table 1: Leisure time on an average day*

Activity	Minutes	Percent
Watching TV	170	55
Socializing and communicating	39	13
Playing games; using computer for leisure	25	8
Reading	20	7
Relaxing and thinking	17	6
Other leisure activities	18	6
Sports, exercise, and recreation	19	6
<b>All</b>	<b>308</b>	<b>100</b>

NOTE: Data include all persons age 15 and over. Data include all days of the week and are annual averages for 2012.

SOURCE: Bureau of Labor Statistics, American Time Use Survey

If these percentages represent parts of the 41% (2.6 hours) of surplus time spent on leisure and sports for working adults with children, then we have the following approximate breakdown:

- 23.0% Watching TV
- 5.0% Socializing and communicating
- 1.6% Playing games; using computer for leisure
- 1.0% Reading
- 0.7% Relaxing and thinking
- 0.7% Other leisure activities
- 0.8% Sports, exercise, and recreation

This breakdown doesn't require detailed analysis to identify the biggest bang for the solidarity buck: TV. The time spent watching TV is more than 4 times its nearest competitor. This explains the propertarian's impulse to own every minute of television time on every channel.

However, it also opens a strategic opportunity for the solidarity movement. If a united front of solidarity movement organizations could focus on the acquisition of **one** channel in each media market and could provide solidarity-focused content on that channel 24 hours per day 7 days per week everyday of every year, we would be able to liberate up to 23% of any Machine-bound worker's leisure time attention and redirect it to liberation and resistance issues.

## Spatial Disintegration

Solidarity means having a space in which to be together, to communicate with each other to synchronize our mental models, and to act together to resist exploitation without distraction. The Machine disrupts solidarity by restricting or eliminating the spaces in which we can be together, communicate, or act to resist. Space for distractions, on the other hand, is always available.

We can be objective about our designation of primary and secondary techniques for spatial disintegration by considering the **kind** of space we inhabit that cannot be dedicated to resistance in solidarity.

## 1.1 Sleep

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08/24/15

### **On Messages to Alien Intelligences**

[For the Chapter on Dreams] Some scientists [Science Talk, Scientific American, 21-Jul-2015: Betting Lots of Quatioos on the Search for Alien Civilizations] that have considered the difficulty of communicating with an alien intelligence have concluded that we ought to send them pictures, videos, and even holograms. I see that as an attempt to share our dreams with them. This attempt at trans-linguistic communication can teach us about the assumptions behind pre-linguistic communication.

## **1.2 Work and Education**

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## 1.3 Entertainment

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A Day from the Disillusionist Perspective

by gat@cooperation.com

20-Sep-2015

In theater, we engage in the willing suspension of disbelief. Frankly, we do the same thing, much more seriously, in life. Disillusionment is an **unwillingness** to suspend disbelief. Suddenly you realize: "It's all just a show!". Once you embrace disillusionment, it is as if a spell is broken. It is hard to go back to a belief in illusions.

Of course, from this newly disillusioned frame of reference, you begin to wonder if you really are disillusioned. Are you really free of the illusions? Certainty is dangerous. Before we realized that it was all just a show, we were certain that it wasn't a show, that it was real. To be certain, in that way, that it is all an illusion is to fall back into a fascination with a new illusion: our perpetual and effortless disillusionment. Disillusionment is not easy because it requires what Alan Watts called the wisdom of insecurity.

On the other hand, certainty is not impossible. If we are careful and self-critical, we can know. To know, we have to ask the right questions and understand the grounds for a belief in the answers. If it is all just a show, we ought to be able to ask the following questions and expect that there are answers:

- Who is the show for?
- Who pays for the show?
- Who benefits from it?
- Who wrote the show?
- Who acts in it?
- What is the message of the show?
- Is the message true?

Listening to the day's headlines on NPR or reading the headlines in the New York Times tests our disillusionment. We need examples to clarify this.

Morgan Stanley

# The New York Times

Tuesday, September 22, 2015 | Today's Paper | Video | 80°F | Hang Seng -1.11% ↓

Morgan Stanley

World U.S. Politics N.Y. Business Opinion Tech Science Health Sports Arts Style Food Travel Magazine T Magazine Real Estate ALL

Morgan Stanley

## Capital creates the next episode.

Netflix is bringing original programming to homes in more than 50 countries.\* We're proud we could play a role in creating award-winning shows. Capital creates change.

[Read this story](#)

31

primetime Emmy nominations\*\*



60 million

members\*



10 billion

hours of programming watched last quarter\*\*\*



CLOSE X

\*As of March 31, 2015 | \*\*For the year ending December 31, 2014 | \*\*\*For the first quarter of 2015

The advertisement above from Morgan Stanley in the New York Times is quite explicit. *Capital creates the next episode ... Capital creates change.*

**Who is the show for?** The show, in this case, is for everyone that might be anti-capitalist. Capital is the motive force for episodes in stories that we care about. Capital is progressive creating humane changes all over the world.

That is the story that Morgan Stanley wants to sell you.

**Who pays for the show?** Clearly it is Morgan Stanley who pays, right? Well, you paid for the times, right? When Morgan Stanley pays for advertising, they get a tax deduction for it. You and I pay to take up the slack. So, this is a show within a show. It looks like the speaker is paying for it but he is actually taking money out of your pocket.

That is the story that Morgan Stanley doesn't want you to hear.

is like stepping out of Plato's cave and observing those that are performing the shadow play. Looking back on the denizens of the cave as they watch that shadow play is just as troubling. Once you ask and answer the questions about who the show is for, who pays for it, and who benefits from it, the disillusionment sets in. That disillusionment deepens when you realized that those answers are always the same. Everything comes into final focus when you ask if the facts are true. You discover that sometimes they are and sometimes they aren't. It begins to look like a clever disinformation campaign. So, who is routinely telling the truth and who is routinely lying? Once you have envisioned the pattern of lying and truth-telling, the next bit of news has a new, disillusioned context.

What about those who are definitely still in Plato's cave watching the shadow play? Are we to abandon them?

## **1.4 Communication**

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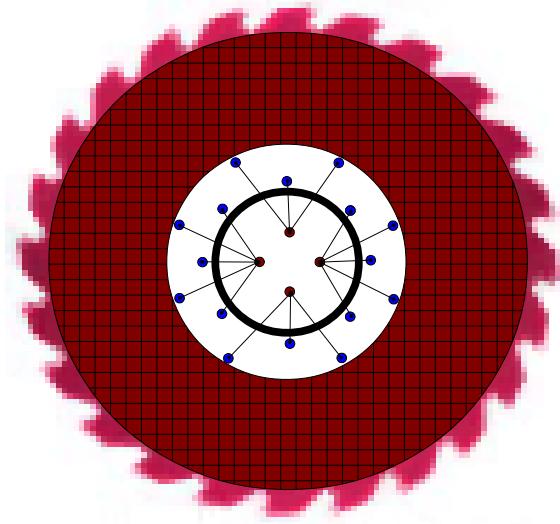
## **1.5 Self-Governance**

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# On Self-Defense Against Predators and Sadists

by A. Protagonist

January 2012



Eventually, the Occupy and Stop the Machine movement will take account of the predators and sadists that are plotting against them. Predators and sadists isolate their targets and—in the case of targeted social movements—sow dissension and distrust among the members of the movement. They are cowardly and hide their identities sometimes by pretending to be members and sometimes pretending to be sympathetic onlookers or enemies of a particular stripe. They use the lack of integration of the movement to destroy and disrupt again and again in different times and places. They act with the assurance that their efforts will never be recognized as coming from a single entity. This mode of operation ensures that the movement cannot marshall its metaphorical immune system to combat the infection.

However, once the Occupy and Stop the Machine movement begins the transition to a New Organic Society, its member's digital credentials—backed by the digital certificate of the Global General Assembly—will act, metaphorically, like the immune system of an organism. The member's credentials will permit those in the movement to distinguish others in the movement from those who are not members. By turning the new technologies of biometric identification against the forces of the Machine, the Occupy and Stop the Machine movement will be able to identify and track agents provocateur and other representatives of the Machine. Such identification—if it is widely disseminated—will permit the movement to defend itself against such infections. The establishment of such an immune system will be an important milestone in the development of the New Organic Society.

The development of the digital trust network that will act as the foundation for trust between members of the new, global, organic society will be fraught with dangers and difficulties. What if an untrustworthy person—a spy or agent provocateur—gets inside the movement early in its development

by acquiring digital credentials? Even worse, what if such a mole establishes itself as one of the organizations that issue digital certificates?

This essay is an attempt to help clarify the issues and indicate a path forward.

All initial trust can only be based on a pledge. Subsequent trust can be based on the fulfillment of or transgressions against that pledge. The practical matters that we will consider surround what the nature of that pledge is and how we can gather irrefutable evidence of transgressions.

## **2.0 Discontents**

**28.557949, -81.243462.2017-01-12T20:45:15**

# On Disillusionment and Community

Alan Gaynor

08/30/12

8528 Lake Vining Court #3304

05:18:18 AM

This morning, I awoke realizing how deeply disillusioned I am.

**"Love and marriage... go together like a horse and carriage."** No, they don't. My mother and father were never married but they supported each other as long as they were both alive. And, I have lived the other side of that coin, too: a marriage that endures for years without love.

**If you are intelligent, you will be loved.** No, you won't. I have a friend in Mensa who is very careful about who he tells. Some people hate the intelligence of others.

**Honesty will be rewarded.** No, it won't. It will be punished. Go ask Bradley Manning.

**God exists and He is omnipotent, omnipresent, omniscient, and perfectly good.** No, he doesn't nor is he. That combination is demonstrably impossible, in fact.

**Capitalism will inevitably destroy itself because of its inner contradictions and the proletariat will lead us to a stateless utopia.** No. Capitalism will squander all of the non-renewable resources of the earth while usurping all of the lifetimes of those that might resist it by condemning them to wage slavery. After it is too late—it may already be too late—the intelligentsia will realize that capitalism has led human society (and the greater earthian ecosystem) to the edge of an ecological cliff and pushed us off. The trip down will be bloody and ruthless. If what is precious about human culture—including science itself—is to endure into the future, the most prescient, reasonable, and sensible among us must build a sanctuary for ourselves and human culture. Certainly, time is short.

However, I want to be disillusioned. I don't want to live in accordance with illusions. I can't understand how anyone would. Except for the fact that it allows one to amuse oneself to death while the power elite laughs. So, I am a **disillusionist**. I depend on the little that I can know. I can and do know that deductive systems can be sound. I can and do know that contradictions disprove assertions that imply them. I understand dogmatism and know how to avoid it. So, I know that God—conceived as omnipotent, omniscient, omnipresent, and perfectly good—does not exist. Although I cannot *know* for sure, I do not *believe* that God—as a disembodied sentience of any sort—exists. I disbelieve because I find no credible evidence for the assertion that a disembodied sentience exists. Consequently, I am a **secularist** and both an **atheist** and an **agnostic**.

I look around me and I see the unnecessary suffering that is the result of capitalism. I observe the sale of armaments and the conduct of war for profit and plunder, the keeping of sex and other slaves for personal gain, the payoff of elected officials to gain profitable markets or advantages, the murder of union organizers. I conclude that capitalism is immoral as an economic system. So, I am **anti-capitalist** on ethical grounds.

I *know* that no one has proven the legitimacy of the authority of the state. I do not *believe* that the state embodies legitimate authority. For this, I am an **anarchist**. The authority whose legitimacy I acknowledge, however, is not just my own subjectivity. Personal authority is necessary. I do not deny that. However, it is insufficient because without the consensus of an informed community, it is not objective. Informed communities form consensus around facts, knowledge. Because personal

knowledge is not for everyone and the consensus of the informed forms easily around objective knowledge, I am **non-coercive**. *Authority resides in knowledge, not in the power to coerce.*

I have said that there are things that I know and things that I believe. However, these are always conditional. There is some reasoning that supports them. If anyone can offer logical or factual critiques of such purported knowledge or beliefs, I welcome an investigation into the objectivity of those critiques. That is what being a disillusionist means. My essay *On Dogmatism* elaborates on that openness.

What am I left with? I know that I can **know** and that I can **love**. I seek knowledge and I seek love. I am open to the evidence that others present. I do not believe that I am alone in these abilities or these aspirations. For this, I am a **communitarian** and a **humanist**. While this situation of knowledge and belief is stark, it leaves me with an **austere hope** and a **mission**. My mission is to dedicate a part of my time and intelligence to the conservation of science and the design of an architecture of human society that permits us to guarantee a job to everyone. My hope is that by offering my cooperation to Neruda in its goals, that it will offer me the solidarity and community that I need to accomplish that mission.

## On Freeing the Hostages

I am not the only one who feels enslaved to the Machine because it has taken my loved ones hostage. There are billions of us. What if those hostages were freed? What if they were beyond the reach of the Machine? Who among us would still be silent and obedient to the ruthless brutality and quotidian banality that our submission permits?

Even for those of us who are secularists, our bonds to our loved ones are sacred. The functioning of the Machine depends on this. As a consequence, even our resistance is tinged with the indifference to suffering that the Machine embodies because we must be indifferent to the suffering of our loved ones when we go off to do battle against the Machine. We tell ourselves and others that we are fighting for freedom and love but the Machine offers us only the choice of condemning our loved ones to poverty and our absence as it impoverishes and imprisons all those who oppose it.

In reality, it does this even to those—motivated by patriotism—who offer to do battle on its behalf. Soldiers return to their families who have been made homeless by the illegal foreclosures on their homes by banksters and a business community that claims to be job creators but won't hire the veteran. These soldiers thought they had found a way to live by their ideals and that they would be rewarded by the country they were fighting for. Instead they return to a hopeless situation and that hopelessness itself is preyed on by payday lenders, alcohol and cigarette vendors, and mafia-controlled drug and sex peddlers. Soldiers, once disarmed, are the victims of the same predators that we all are.

If I were to oppose the Machine strenuously and effectively, I would certainly lose my job. Losing my job would mean that I would not be able to support my loved ones. That is what I mean when I say they are being held hostage. Either I work on the capitalist's terms, or my children will go hungry. Or perhaps, they will not go hungry but will look at me as a failure. They control me by threatening my children's stomachs or my heart.

Eventually, we have to see that the problem is **jobs**. I don't mean that the problem is the current—ostensibly temporary—lack of jobs. No. I mean that it is a fact that no society guarantees jobs to its citizens. Look. The corporations and small businesses don't care whether or not every American that wants a job has one. That is not their business—literally. So, who cares? Should Americans care whether or not all of their fellow citizens have jobs? And why do we limit ourselves to America? What about the Spaniards who now have a 23% rate of unemployment? Should the Greeks care about the employment of their fellow citizens? Should the citizens of the world care about jobs for the other

citizens of the world? Of course they should! If the citizenry wants to eliminate welfare, guarantee everyone a job. If the citizenry wants to start businesses and are worried about having enough customers, guarantee everyone a job. If they are wage earners and want to form a union but are afraid to lose their job, guarantee everyone a job. The guarantee of a job to everyone means that private employers cannot use the threat of starvation (of the worker or of his loved ones) to compel workers to take jobs at poverty wages, inhumane conditions, and no benefits. To attract workers to do the work they want them to do—so that they can make a profit—they have to offer salaries, conditions, and benefits that are attractive. The tables will be turned.

So, if the citizenry should care whether or not all of their fellow citizens have jobs, who can and should offer such a guarantee? Progressives and liberals might suggest that the State is the logical choice. Anarchists and libertarians disagree. I don't mean that they disagree with each other—which they certainly do—but rather that they disagree with the progressive-liberal consensus that the State should be the one to guarantee jobs to citizens. Libertarians, to be honest, oppose the State guaranteeing jobs simply because they do not believe anyone should be given such a guarantee by anyone or any institution. They like the idea that everyone is insecure. Anarchists, on the other hand, oppose the State playing this role for an entirely different reason. Without direct democracy—which is nowhere available—the State is implemented using representatives of the people. These representatives can allocate public funds (taxes)—which are collected by law from the people—in any way they deem appropriate. To get elected, they need to depend on large donors, not on the people. Consequently, they allocate public funds as their donors see fit. Such representatives have a conflict of interest when we consider the job guarantee bill. Their large donors want no such guarantee because it directly attacks their cost of doing business and hence their profits. It simply won't happen in a representative democracy. One can imagine what this means for the dictatorships around the world.

So, what other organization could provide such a guarantee? The one big union could! Now, certainly, the one big union that could guarantee a job to everyone doesn't exist yet. The rest of this essay will argue that it could exist and how we could create it.

If you would consider the 1912 strike against the textile manufacturers in the city of Lawrence, Massachusetts, I will make that the basis for an analogy. At a certain point during that strike, the strikers who had families realized that they needed to protect their children from the savagery of the coming conflict with the manufacturers. Both the French and Italian workers in Lawrence knew of times during strikes in Europe when the strikers would send their children out of the strike zone to keep them safe from harm so that the workers could stay focused on the strike. "Early in February, the strike committee, under Haywood's leadership, decided to send the children of the strikers to stay with friends and relatives outside of the strike-bound city for the duration of the strike."<sup>4</sup>

If we can understand how such a tactic freed the strikers in certain ways, I think we can understand how a very different tactic might free 21<sup>st</sup> century citizens of the world in certain ways. The children of the Lawrence strikers were threatened physically—sometimes explicitly by the police putting them in jail—by being in Lawrence. But the threat that our loved ones face as we contemplate our mode of resistance to the Machine, is a financial threat. Of course, the Lawrence strikers were also threatened financially. However, capital was less mobile then, the income disparity was less, everything was less mechanized, and it was long before the Taft-Hartley act was passed in the United States.

Now, the IWW claims that it wants to build the new society within the shell of the old. It claims that it wants to eliminate the wage system. Taken together, these two goals seem to imply that the IWW wants to establish worker-owned and worker-managed enterprises in every industry. These enterprises would be run democratically as wobbly shops.

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<sup>4</sup> Page 325, *The Industrial Workers of the World 1905-1917*, Philip S. Foner, New World Paperbacks, © International Publishers Co., Inc., 1965



## **2.1 Liberation Psychologists**

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# On Dragons and Dreams

by [gat@cooperation.com](mailto:gat@cooperation.com)

J. P. Sartre wrote a book about the imagination. It is time for us to revisit the imagination.

From our perspective, the imagination is founded on the peculiar reference function of consciousness. Sartre expresses essentially the same idea when he insists that consciousness is always consciousness of something.

We intend our contribution to be the presentation of a logically powerful notation that incorporates the reference function into the ontology of consciousness as subject. Further, we intend to present rules of inference that permit us to formally distinguish dragons from dreams. The practical motivation for this is to help us create a mental health system that does no harm. While that is its stated goal, its practice falls far short of that as a consequence of a particularly relentless and inhumane form of reductionism known as behavioral analysis.

# On Avoiding Hypocrisy While Seeking Authenticity

Alan Gaynor

Understanding the relation between authenticity and hypocrisy is difficult because of the diversity of definitions for each term that are in common use. In this essay, we will explore some formal definitions for each term and investigate how those definitions capture—or fail to capture—our intuitive sense of the terms. Then, we will analyze the implications of those formal definitions to determine whether the most plausible ones result in the necessity or possibility of individuals avoiding hypocrisy while seeking authenticity.

The larger question we are trying to get at here is this: if human reality is such that it is freedom incarnate and if that freedom makes it capable of belief in illusions and of disillusionment, of knowledge and of ignorance, of mutual knowledge and mutual ignorance as well as common knowledge and common ignorance, if it is capable of learning, is hypocrisy necessary or can it be avoided? If it can be avoided, then we can ask if it is compatible with authenticity or if authenticity requires it.

## Formalizing Freedom

In *Being and Nothingness*, Sartre writes “Modern thought has made considerable progress by reducing the existent to the infinite series of its appearances.” He also claims that the for-itself “is what it is not and is not what it is.” He never indulges in logical formalisms and the logical positivists might argue that he is simply oblivious to the contradictions in his assertions.

We are going to take a somewhat more difficult and perhaps contentious position on Sartre’s work. We will interpret his work using the formalisms of mathematical logic but we will do so by transforming his natural language

expressions that appear to be self-contradictory into expressions that are self-consistent based on that interpretation.

We are well aware that this effort is likely to be criticized severely by certain existentialists and analytic philosophers alike. Our only defense will be that the burden of proof will reside with them. If we have provided the foundations of a formalization of existentialism which permits us to express the being of the for-itself as an infinite series of its appearances and thereby show that there is a plausible and self-consistent way in which it is what it is not and is not what it is, their refutation will have to take the form of an alternative deductive system.

We are going to use Saul Kripke’s ideas of rigid designators, the fixing of references, and possible worlds as possible histories to help us with this formalization.

When we name our progeny at birth, that name is a rigid designator for a for-itself, not a body. When we reject the mind-body dualism that Sartre claims has embarrassed philosophy and replace it with the infinite series of appearances, we acknowledge that death is the end of the relationship—a nothingness—that had endured between the for-itself and the body it depended on. Once that relational unity is broken, the named one vanishes.

This conception of the relationship between a name and a person permits us to understand the endurance of the referential relation—and its pertinence—while the named one changes by growing and learning.

## Formalizing Hypocrisy

It seems that the most difficult aspect of hypocrisy—from a formal perspective—is its necessary scope. Do we consider a person to be a hypocrite only when he advocates that others behave in accordance with the rule that he

disregards or is it sufficient that he simply profess his own conformance publicly while ignoring it privately? Do we reserve the term hypocrite for the former while using the term liar for the latter?

In this essay, we will take the position that the term hypocrisy should be reserved for the moralist that insists publicly that a certain rule

should apply to everyone and who then breaks that rule as applied to himself either in public or in private. This usage permits there to be oblivious hypocrites, blatant hypocrites, and cynical hypocrites.

## Bibliography

## **2.2 Workplace Organizers**

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## **2.3 Disillusionists**

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# On Dogmatism

by Alan T. Gaynor

08/23/12

Despite the fact that people despise anyone who tries to deprive them of their illusions, I am a disillusionist. Naturally, disillusionists tend to lose friends. I suspect that is what I am here to do, with this essay.

Many of my most precious friends believe—as you may—that they are skeptical and rational. They believe they require evidence to ground their beliefs and that they provide evidence when they argue for the truth of an assertion. They believe that these attributes are **sufficient** for them to be considered rational, skeptical, even scientific.

Unfortunately, I think their rationality, their skepticism, and their demand for evidence is just a cover for their dogmatism. They are dogmatically rational and dogmatically skeptical. If they are materialists, their ontological prejudices are often at the root of their dogmatism. They are unwilling to accept perfectly objective evidence because of those ontological prejudices.

However, there is hope. That hope is based on the possibility of using their proud rational skepticism to unveil their inattention to the objectivity and transparency of their **rational methods**. In this essay, I will challenge their belief—and yours, I suppose—that one can be rational without ever negotiating explicit rules of inference with one's interlocutors.

My basic assertion is that rationality is an illusion without an objective and explicit agreement about legitimate methods of proof. It is the existence of such an agreement about methods of proof that distinguishes the scientist from the dogmatist. Consequently, negotiating explicit rules of inference with all rational interlocutors is a necessary part of any rational, skeptical, or scientific frame of reference.

Let me substantiate my assertions. [Refer to 5.2 Meta-Ontology]

## **2.4 Privacy Advocates**

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## **2.5 Self-Governance Advocates**

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### **3.0 Tools**

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### **3.1 PADI**

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# On Padi: Personal Agent for Discursive Inquiry

*A New Semantic Web-based Intelligent Personal Agent  
by gat@cooperation.com*

Last week, I bought a new iPod (version 7.1.2) and had my first interactions with [Siri](#). I immediately began to test Siri's intelligence. The first time I tested her, I was not connected to a Wifi network. The interface just told me to connect to a network. I deduced from this that Siri is a network-based application. Perhaps it only depends on network-based data sources while the actual executable code resides on the local device. It doesn't really matter to me, the user, because I can't access any of the "intelligence" without a network connection. That didn't seem very intelligent to me.

But what's really wrong with Siri's intelligence? The short answer is that Siri doesn't know what exists or what relations hold among those existents. In addition, it has no concept of a universe of discourse or a discussion (discursive session). It's really hard to enter into an intelligent conversation without those things: existents, relations, universe of discourse, and discussions.

Siri seems unable to distinguish between a word and its referent. Siri's stock response to any query is to use Google or Wikipedia to display information about the **word** or **words** at issue. For example, a Robin is a bird. If I ask Siri the question "Is a Robin a bird?" her response is bizarre. She first misinterprets the physical sentence as "Is a robin bird." If we fix that by annunciating more clearly, she still interprets the expression as " Is Arjen Robben nice (good-looking, a secret agent, ...) ? The response is " I don't know Arjen Robben so I couldn't say." The fact of the existence of Robins and their past, present, and future relation to the concept of "bird" is entirely lost on Siri. She treats the relation between Robins and birds as if it were the same as the relation between the words "Robin" and "bird". This is a classic example of an inability to distinguish between a map and its territory.

However, another aspect of this lack of any knowledge of what exists is the lack of any distinction between things that don't change and things that do. The relation between the class of birds and the kind of bird called a Robin **doesn't change** over time. Siri should not have to look that up every time! We will refer to that kind of fact as a synchronic (timeless) fact. On the other hand, the number of birds in the world or the number of Robins in a territory **does change** and should be looked up each time. We will refer to that kind of fact as a diachronic (timely) fact. We will also say that synchronic facts are **ontological** and that diachronic facts are **empirical**. So, we will refer to this as a failure to distinguish between the ontological and the empirical.

However, are we expecting too much from Siri? How much progress have we made in understanding and implementing these distinctions in computer agents? Tom Gruber wrote a very interesting piece about this back in 1992 (<http://www-ksl.stanford.edu/kst/what-is-an-ontology.html>) and his definition has often been referenced by others. Here it is: "An ontology is a specification of a conceptualization." He elaborates by writing "...an ontology is a description (like a formal specification of a program) of the concepts and relationships that can exist for an agent or a community of agents." In 2001, Tim Berners-Lee and his collaborators James Hendler and Ora Lassila wrote a seminal piece entitled "The Semantic Web" for Scientific American. Since 2004, the formal specifications for a Semantic Web

Ontology Language (OWL) have been available from the World Wide Web Consortium (W3C). Tom Gruber provides a brief summary of the evolution of the concept of ontology in computer science since 1992 in his piece entitled "Ontology" [<http://tomgruber.org/writing/ontology-definition-2007.htm>]. So, all of the standards are in place and have been for a decade.

Still, are there any implementations of such ontologies? Well, the first discovery we make when we begin to search for ontologies is Swoogle [<http://swoogle.umbc.edu/>]:

"Swoogle, as the name implies, is an attempt to replicate the usefulness of Google in the semantic web realm. It allows searching for ontologies, documents, and terms, and has an index of over 10,000 ontologies."

[<https://marinemetadata.org/guides/vocabs/ont/existing/finding>]

10,000 ontologies! Well, let's take a closer look. As it turns out, there is one of those 10,000 ontologies that is quite remarkable. **DBpedia** is a project that attempts to leverage the incredible scope of Wikipedia to seed an ontology with the “things” and the relations among them that are treated by Wikipedia. Here is what DBpedia says about itself (the emphasis is mine):

"The English version of the DBpedia knowledge base currently describes 4.0 million things, out of which **3.22 million are classified in a consistent ontology**, including 832,000 persons, 639,000 places (including 427,000 populated places), 372,000 creative works (including 116,000 music albums, 78,000 films and 18,500 video games), 209,000 organizations (including 49,000 companies and 45,000 educational institutions), 226,000 species and 5,600 diseases." [<http://dbpedia.org/About>]

Dbpedia is also remarkable because it has sought to relate its ontological terms to those of thousands of other ontologies! They even have a graphic that captures part of that effort beautifully<sup>i</sup>:

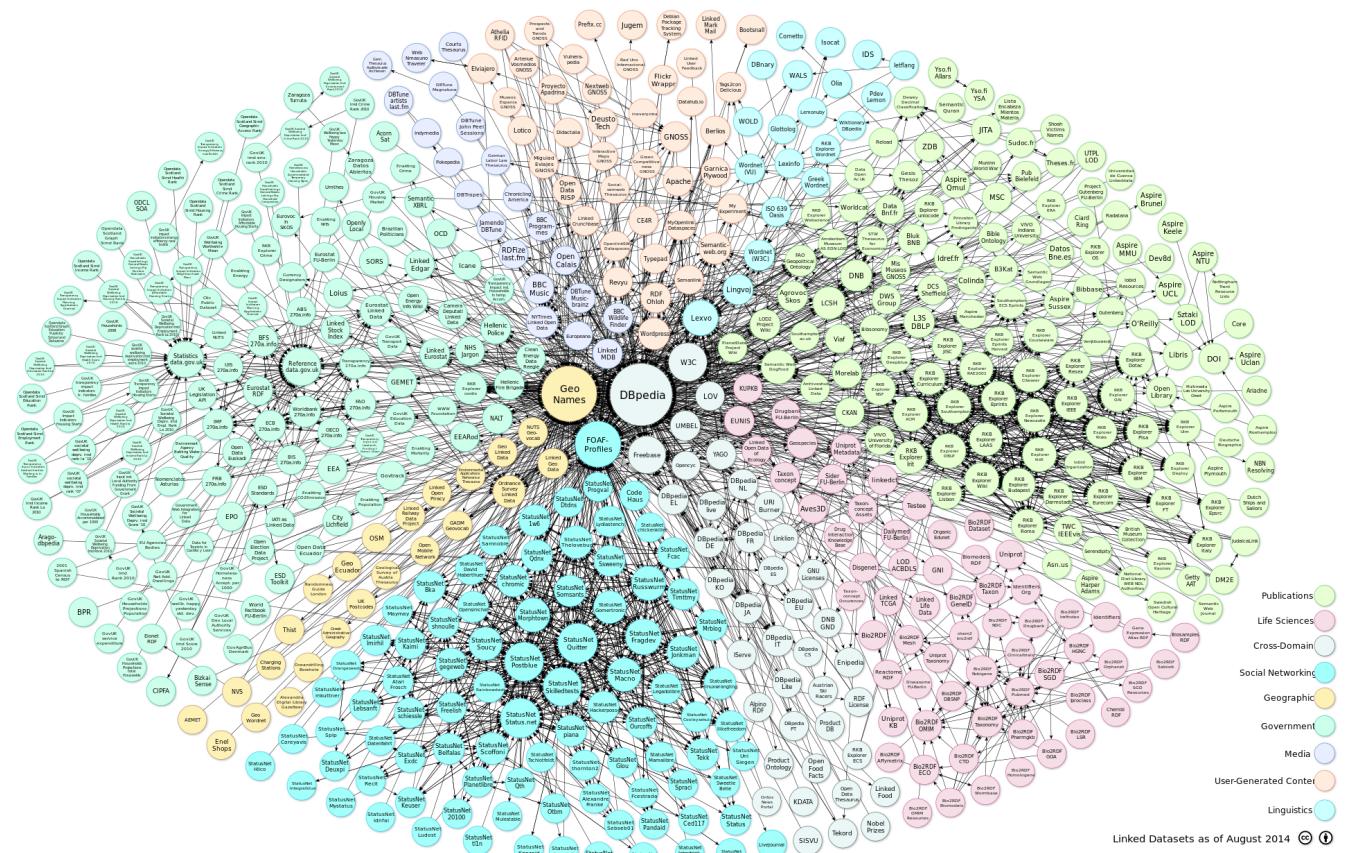


Illustration 2: Linked Open Data Cloud

We conclude from these investigations that we are not expecting too much from Siri to expect her to have and use an interlinked ontology for ontological facts and to rely on Google and Wikipedia only for empirical facts. We are not alone in expecting this from a personal agent. In fact, there is a team of developers who worked on Siri that are now engaged in the development of [Viv](#).

Viv seems to do the right things but for the wrong reasons. It will be able to learn about its users and about the world but only for the purpose of drawing them into the endless cycle of buying and selling. It will be able to parse natural language (perhaps by accessing the Semantic Web) to determine intent and to write custom code that its creators never envisioned to combine operations to realize that intent. However, all of that will be circumscribed by the definition of **action** envisioned by Viv's creators. Those limits are not explained anywhere because they are invisible to designers themselves. That invisibility is a consequence of the nature of the institutions within which they are doing their design work and, of course, the funding sources that they rely on. A detailed analysis of those aspects of this design and development race is beyond the scope of this paper. Here are our predictions based on our intuitive understanding of that context. Those actions will not include how to get better pay for workers, how to oppose environmentally irresponsible corporate initiatives, or how to design a more responsive political system. In summary, Viv will not permit its users to teach themselves about ethics or identify actions to take based on learned ethical principles.

In the Republic, Plato envisioned enlightened philosopher-kings as the best possible rulers of States.

Plato, of course, was an elitist. He despised democracy—the rule of the people—as the rule of the mob. Modern computer technology has challenged the necessity for a variety of undemocratic governance methods. However, as a recent [Princeton study](#) revealed, the United States—which is a republic like many others—is not even a republican democracy. It, like many others, is a plutocracy<sup>5</sup>.

In 1994, I completed my master's thesis at the New School for Social Research in the Media Studies program. It was entitled: *A Philosopher's Assistant*. In it, I expanded the definition of a Philosopher to include all learners that used theories and the scientific method to extend human knowledge. In other words, I considered Philosophers to be those who used theories to build ontologies or to build empirical databases (as well as the very few who used them to build both). I envisioned the Philosopher's Assistant as a computer-based algorithm with a configurable skepticism module, that would help its interlocutor to build a consistent philosophy of life. Such a philosophy would include the configurable logical core (the skepticism module) as well as the epistemology, ontology, ethics, and aesthetics of a mature, fully elaborated, and provably consistent philosophy.

Fast forward 20 years and we now have the Semantic Web, cell phones, and social media. However all of these innovations are still at the service of a global plutocratic system of governance and when they trickle down to the *demos*—everyday people—they function to reinforce the income and property inequalities that exist by dividing us and selling our divisions back to us in terms of channelized entertainment, connections, and misinformation. The promise of *A Philosopher's Assistant* was that the global *demos* could be **unified** by its shared access to **self-made, publically shared, and publically vetted** ontologies and empirical databases so that public discourse on forms of governance as well as policy would be well-founded and based on a ubiquitous understanding of those foundations. This is a vision of a liberatory technology that would make every citizen of the world into an autodidact (with assistance from a Semantic Web-based digital assistant) and a philosopher-king. In my novel *Language Bound*, that I published in 2012, *La Gansic*—the underground society of the Protagonists in 2063—is just such a society.

Although Plato was an elitist, the image of Socrates that Plato passed to us was decidedly democratic. The essence of Socrates' democratic orientation was his method—the Socratic method—which he intended to be applied by all and to all. That was a method by which anyone could learn from anyone: **inquiry through discourse**.

So, let's imagine a personal agent for discursive inquiry (Padi). Let's make sure that our design includes all of the functions that we can appreciate in Siri and Viv. In particular, Padi will be capable of:

1. voice recognition (learns to parse sentences better over time)
2. having a personality
3. parsing multi-part instructions
4. extension through on-the-fly programming
5. conducting look-ups of empirical facts
6. taking actions

Padi should be available at any time and at any place regardless of whether I am connected to a network. Her ontologies will be held locally but synchronized to a network storage location. In addition, we certainly want Padi to have the ability to converse with us. We mean that we want to be

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<sup>5</sup> The study uses the term **oligarchy** but describes it as the rule of the wealthy which is what philosophers refer to as **plutocracy**.

able to engage in connected discourse. Each expression becomes part of the universe of discourse and is available for reference, questioning, and elaboration. We call that a **conversation** or **discursive session**. That means she must be able to create a model of the **universe of discourse** that we actually share during our conversation and whenever we converse again in the future. That would allow her to talk with us about things that we both agree exist and any relations that we both agree hold among those existents. However, it also provides a context that permits a connection between conversations. Padi does not forget the conversation we had yesterday.

Clearly, that universe of discourse that we share must have room for more than one model of the world. One model is ours (yours or mine) and the other is Padi's.

However, the knowledge store that Padi uses to model my world should be under my control. That means that Padi, even with respect to her own ontological model, will not come pre-configured with knowledge. Instead, Padi will have access to DBpedia and other shared ontologies but she will first engage in a session that will set the logical foundations for building her ontological models cooperatively.

So, there will be a time when she is capable of learning directly from us about our universe of discourse and, of course, about the ontology we accept. Initially, we must teach her what we believe exists and the relations that we believe hold. If I believe in one God or many Gods, I ought to be able to teach her that I have that belief.

However, Padi comes without any ethical ontology. That, too, we need to teach her. Of course, she will not accept an ethical ontology that is self-contradictory. If ours is self-contradictory, she will argue with us about our ethical teaching. Now we can see the beginnings of its independence. ...

Still, it should be able to learn independently and then be able to discuss its findings with us so that we can decide what to add to our knowledge store. Now, that would be an intelligent assistant!

# On 21<sup>st</sup> Century Trust

by [gat@cooperation.com](mailto:gat@cooperation.com)

Trust is related to understanding. It is irrational to trust what you don't understand. Some assert that some things—God is the prototypical example—are beyond our understanding. If that is true, then trusting God is irrational.

However, we don't need to take this prototypical challenge. There is a much more practical, although related, concern: can we trust the messages that we receive from our loved ones?

Let's assume—and this is far from reasonable—that what our loved ones tell us is what they mean. In short, let's assume that our loved ones don't lie to us. So, when I get a message from a loved one my reasonable question is: did my loved one—let's name the loved one Mylo—really send it? If we can get past that hurdle, then we have just two more: did someone read Mylo's message or change it in transit?

So, we have these problems in our communications with Mylo:

1. Is Mylo lying? **Truth**
2. Did Mylo compose and send the message? **Authentication**
3. Did anyone read it? **Secrecy**
4. Did anyone modify the message after it was sent? **Integrity**

For most people, they have no way to know how they can trust their communications networks to deliver authentic messages that have integrity, let alone, secrecy (encryption).

The Philosopher's Assistant is an app that gives anyone the ability to understand these aspects of the tools that they use for communication. Here is how the assistant works.

## What Do You Believe?

If you are an absolute skeptic, you will remain so. That is because there is no escape from absolute skepticism. There is nothing wrong with skepticism, though. The problem is absolutism. Absolute skepticism is an impotent form of dogmatism that results in the essential isolation of the skeptic or a turn to some form of irrationalism, such as magic or mysticism.

The Philosopher's Assistant encourages a rationally-limited skepticism. It steps you through a list of prospective beliefs, lets you choose the ones that you feel comfortable with, and then does the logical lifting required to inform you of the consequences of the beliefs you have chosen. If you don't like the consequences, you can change your selected beliefs.

You remain in control. You choose which beliefs and how many to accept as assumptions. You modify your assumptions until you are comfortable with the conclusions. If there is a conclusion that you would like to be able to deduce—your assumptions are easier to understand when there are fewer of them—then you can ask the assistant to propose additional or replacement assumptions that would allow you to make that conclusion a deduction rather than an assumption. In this way, you gain control of your axioms—those assumptions that you choose to accept without proof—and can easily and continuously review those axioms, as well as your rules of inference, to determine if your philosophy is as you want it to be. Doing so has the added benefit of providing you with a rational basis for living in

accordance with your ideals. Not some static set of ideals dogmatically followed but, rather, an up-to-the-minute, rationally-justified, set of ideals in concordance with a provably consistent (and naturally in complete) axiomatic system.

Now, the Philosopher's Assistant is for **any** philosopher. Some philosophers may be interested in the communications problems that we outlined above and others may not. How can such a general tool be used for such a specific purpose?

## The Medium is the Message: How Do You Know?

A considerable effort on the part of some pretty smart people has gone into figuring out how to ensure reliable communications over electronic and especially digital networks. Admittedly, this work has been done for profit, not for philosophical or political reasons. However, philosophy and political science can benefit from this rare instance where profit depends on the discovery of proofs for theories.

Most of us don't understand the foundations upon which even our telephone communications (let alone our digital communications) depend. Most of us treat our communications networks the way we treat our cars: we know that they get us from one place to another but we don't know how the engine turns gasoline into forward motion.

### *Messages and Moral Agency*

In reality, our communications networks (and the media that depend on them) have a very different relation to our selves than do our cars. They don't carry physical things, they carry messages. Messages are closely connected with our moral agency. We depend on communications networks to express our beliefs (social morality) and to coordinate the cooperative actions that are intended to realize our expectations (political action). In addition, the exchange of private messages brings us closer to our loved ones. In short, our communications networks enable us to realize our freedom, increase actual justice, and pursue our own happiness.

We may experience a sense of freedom and happiness when we drive our cars but that is a consequence of the rights we have won by our communicative struggles. We don't need to know about the operation of the engine of our car when we drive to a gathering place to act with others. However, if we don't understand how groups and individuals exchange messages and how to evaluate the honesty of those groups and individuals, and the authenticity and integrity of those messages, then, we will not be well-informed when we drive to our polling place to cast our vote or to the barricades to oppose our government or participate in a general assembly that embodies our self-governance. And if many, or even most, of the citizen-electors in our democracy are ill-informed in this way, then there is—or there will be—something wrong with our democracy, representative or otherwise.

This argument implies that we need to understand the foundations of communications to be able to be responsible and well-informed citizens. Let's make that case explicitly because a lot depends on it being true. By doing so, we will be tracing one way that the Philosopher's Assistant would help us if we already had it by our side.

## Logic, Information, and Syntax

Mathematical logic, information theory, and linguistics grew up together like siblings. However, capitalism and academia have conspired to keep them apart. Let's try to understand what proofs they

bring to us, how those proofs are interrelated, and why their **relations** should have been largely suppressed by the established institutions of knowledge-for-commerce.

We live in the age in which we know that mathematics cannot be reduced to logic. Despite the trauma that this disproof caused the great Gottlob Frege, we, standing on the shoulders of the giants that engaged in that battle, need only note that the Philosopher's Assistant must provide both logical and mathematical axioms if it is to support modern science. Both information theory and linguistics rely on these logical and mathematical axioms for aspects of their foundational theory.

## *What is a Message?*

Messages communicate information. “Information”, Norbert Weiner famously wrote, “is a difference that makes a difference.” A message, then, is the metaphorical envelope in which a difference that makes a difference is communicated.

However, a message is not merely the envelope—as a physical thing—that carries the message. It is also an artifact that implies the existence of the sender and one or more receivers. In other words, a message implies a relation between the sender and the receiver.

The essence of that relation is participation—by all parties—in what George Boole defined as the universe of discourse. So, the creation, transmission, and reception of a message involves a sender, one or more receivers, and a universe of discourse. For our Philosopher's Assistant, the question is whether we can be rigorous enough about these entities for a computer algorithm to analyze them and inform us about the authenticity and integrity of the messages we receive and the secrecy of those we send. We want the Assistant to help us to rationally evaluate the degree of **trust** we can place on the communications network and the messages we receive from it.

Claude Shannon wrote his master's thesis in 1937 [“A Symbolic Analysis of Relay and Switching Circuits”] in an attempt to .

## *What Do Messages Communicate?*

## *How Do Messages Communicate Information?*

## *How is Secrecy Possible*

There are two opposing cryptographic credos:

- the enemy knows the system (Shannon and Kerckhoffs)
- security through obscurity (others)

08/22/15

## **On the Cult of Irrationality**

“There are contexts in which logic doesn't apply. Logic cannot explain, for example, many of the interactions we have with some family members. Sometimes one just has to do what has to

be done to get what one wants. Others are not necessarily going to go down the logical, rational, or kind path."

Anonymous Interlocutor

"Look, I don't believe you change hearts. I believe you change laws, you change allocation of resources, you change the way systems operate. You're not going to change every heart. You're not. But at the end of the day, we could do a whole lot to change some hearts and change some systems and create more opportunities for people who deserve to have them, to live up to their own God-given potential."

Hillary Clinton

in response to Black Lives Matter activists Daunasia Yancey and Julius Jones

Every rationality is necessarily coherent. Every ideology is indifferent to incoherence.

We choose to conduct ourselves in accordance with a rationality or an ideology. Because a rationality is intentionally coherent, our choice of a rationality gives others the opportunity to change our hearts. Because an ideology is intentionally incoherent, our choice of an ideology denies others the opportunity to change our hearts.

Whereas there are many rationalities, there is only one ideology. Every ideology contains a contradiction and from a contradiction **you can prove anything**. As a consequence, all incoherent ideologies are one: Ideology. They appear to be different only because the appearance depends on the personality of the advocate. The appearance of Ideology is a function of ideolect.

We live in a world that is dominated by the cult of irrationality. The people who choose Ideology greatly outnumber those who choose any kind of rationality. However, even those who choose a rationality sometimes hypnotize themselves into accepting the thesis that neither their rationality nor any other apply in selected contexts.

To those of us who are thorough-going rationalists, that is a great disappointment. The acceptance of irrationality in selected contexts is not based on **knowledge**. The hypnotized rationalists do not—**cannot**—know that **no rationality** applies in that context. They are **assuming** that it does not apply in that context. The widespread assumption that there are contexts in which no rationality applies is the opening that condones a “might makes right” attitude and that attitude opens the way to war. Sometimes the wars are small familial coercions and sometimes they are world wars. **In every case, the absence of rationality is an invitation to coercion.**

The cult of irrationality leads to the acceptance of the use of coercion. The justification is typically “We had no choice.” Well, you did have a choice. You chose Ideology and now **we** are saddled with war.

We always have a choice. The modern discontents choose rationality and that means resistance to coercion and resistance to war.

The situation may appear hopeless. However, history undermines that hopelessness. There was a time when only a small minority of humans used the rational tool of spoken language. The rationality of spoken language won the day. There was a time when only a small minority of humans used the rational tool of writing. The rationality of writing won the day. Now, there is only a small minority of humans that use the rational tools of formal logics. Those logics are the foundation for the rationalities that we are discussing here. If humanity were to adopt rationality as it has spoken and written language, the benefits for the progress of humanity would be as dramatic and far-reaching as was the progress initiated by either of those linguistic techniques. In the long run, rationality, too, will win the day.

**However, we can't be sure there will be a long run.**

Human technologies of coercion and war are developing at exponential rates. So too are the demographics that are driving the holocene extinction as humanity usurps more and more of the earth's resources for its consumption and more and more of its sinks for its waste disposal. It is now a **race** between humanity's adoption of rationalities and its blind, institutionalized, artificial-stupidity-driven inertia toward the destruction of self and others.

Rationality has not been vanquished. On the contrary, until now, it has always won. However, **elitism** has resulted in **elites** usurping the benefits of the techniques, discoveries, and inventions that rationality has opened to humanity. Language—a necessary precursor of rationality—permitted the elites to invent **concrete private property** and later **abstract forms of private property**. Today, we recognize those inventions as Capital and the system built on Capital is Capitalism. Capitalism has ensured that the roots of rationality remained disintegrated and that its sundered roots are sold on the market like slaves to the highest bidder. Rationality has not been vanquished. The roots of rationality, however, have been enslaved to Capital.

The race is to unify rationality and distribute rationality—and its resulting knowledge—freely to everyone. Our Personal Assistant for Discursive Inquiry (PADI), SemanticMail, and KnowledgeShare are the tools that will do just that.

## Appendix: Chronology of Logic, Information, and Syntax

Birth of Mathematical Logic<sup>6</sup>:

- 1847-1860; [George Boole](#) and [Augustus De Morgan](#)
- 1870-1885; [Charles Sanders Pierce](#) and [Gottlob Frege](#)

Birth of Information Theory<sup>7</sup>

- 1937-1948; [Claude Shannon](#)

Birth of Modern Linguistics

- 1965; Noam Chomsky

## Appendix: What are the Foundations of Mathematics?

[http://memory.loc.gov/cgi-bin/query/r?faid/faid:@field\(DOCID+ms003071\)](http://memory.loc.gov/cgi-bin/query/r?faid/faid:@field(DOCID+ms003071))

## Appendix: Works by George Boole<sup>8</sup>

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—, 1841, “On Certain Theorems in the Calculus of Variations,” *The Cambridge Mathematical Journal*, 2: 97–102.

—, 1841, “On the Integration of Linear Differential Equations with Constant Coefficients,” *The*

6 [https://en.wikipedia.org/wiki/Mathematical\\_logic#History](https://en.wikipedia.org/wiki/Mathematical_logic#History)

7 [https://en.wikipedia.org/wiki/Information\\_theory](https://en.wikipedia.org/wiki/Information_theory)

8 <http://plato.stanford.edu/entries/boole/#Bib>

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—, 1859, *A Treatise on Differential Equations*, Cambridge: Macmillan.

—, 1860, *A Treatise on the Calculus of Finite Differences*, Cambridge: Macmillan.

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## Appendix: Works by Charles Sanders Peirce<sup>10</sup>

1870 [DNLR], “Description of a notation for the logic of relatives, resulting from an amplification of the conceptions of Boole's calculus,” in *Memoirs of the American Academy*, 9: 317–78; reprinted in CP: 3.45–3.148.

1878, “How To Make Our Ideas Clear,” in *Popular Science Monthly*, 12(January): 286–302; reprinted in CP: 5.388–5.410.

1880, “On the algebra of logic,” in *American Journal of Mathematics*, 3: 15–57; reprinted in CP: 3.154–3.251.

1882, “Brief description of the algebra of relatives,” manuscript; reprinted in CP: 3.306–3.321.

1883, “The logic of relatives” in *Studies in logic by members of the Johns Hopkins University*, C.S. Peirce (ed.), Note B, pp. 187–203; reprinted in CP: 3.328–3.358.

1885a, “On the algebra of logic: A contribution to the philosophy of notation,” in *The American Journal of Mathematics*, 7(2): 180–202; reprinted in CP: 3.359–3.403.

1885b, “Note,” undated but written for the issue of *The American Journal of Mathematics*, just after the previous article; reprinted in CP: 4.403A–4.403M.

<sup>9</sup> <http://plato.stanford.edu/entries/boole/#Bib>

<sup>10</sup> <http://plato.stanford.edu/entries/peirce-logic/>

- 1897, "The logic of relatives," in *The Monist*, 7: 161–217; reprinted in CP: 3.456–3.552.
- 1901, "Notes on symbolic logic and mathematics," in *Dictionary of Philosophy and Psychology* (Volume 1), J. M. Baldwin (ed.), New York: The Macmillan Company, p. 518; and reprinted in CP: 3.609–3.645.
- 1902, "Relatives (of logic)" in *Dictionary of Philosophy and Psychology* (Volume 1), J. M. Baldwin (ed.), New York: The Macmillan Company, pp. 447–450. Reprinted in CP: 3.636–3.643.
- 1903a, "Existential Graphs," in *A Syllabus of Certain Topics of Logic*, 15–23; reprinted in CP: 4.394–4.417.
- 1903b, "On Existential Graphs, Euler's Diagrams, and logical algebra," Unpublished manuscript; printed in CP: 4.418–4.529.
- 1906, "Prolegomena to an apology for pragmaticism," in *The Monist*, 16: 492–546; reprinted in CP: 4.530–4.572.
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## Appendix: Works by Gottlob Frege<sup>11</sup>

- 1873 Über eine geometrische Darstellung der imaginären Gebilde in der Ebene, Inaugural-Dissertation der Philosophischen Fakultät zu Göttingen zur Erlangung der Doktorwürde, Jena: A. Neuenhann, 1873; translated by H. Kaal, *On a Geometrical Representation of the Imaginary Forms in the Plane*, in B. McGuinness (ed.), *Collected Papers on Mathematics, Logic, and Philosophy*, Oxford: Blackwell, 1984, pp. 1–55.
- 1874 Rechnungsmethoden, die sich auf eine Erweiterung des Größenbegriffes gründen, Dissertation zur Erlangung der Venia Docendi bei der Philosophischen Fakultät in Jena, Jena: Friedrich Frommann, 1874; translation by H. Kaal, *Methods of Calculation based on an Extension of the Concept of Quantity*, in B. McGuinness (ed.), *Collected Papers on Mathematics, Logic, and Philosophy*, Oxford: Blackwell, 1984, pp. 56–92)
- 1879 Begriffsschrift, eine der arithmetischen nachgebildete Formelsprache des reinen Denkens, Halle a. S.: Louis Neber. Translated as *Concept Script*, a formal language of pure thought modelled upon that of arithmetic, by S. Bauer-Mengelberg in J. vanHeijenoort (ed.), *From Frege to Gödel: A Source Book in Mathematical Logic, 1879–1931*, Cambridge, MA: Harvard University Press, 1967.
- 1884 Die Grundlagen der Arithmetik: eine logisch-mathematische Untersuchung über den Begriff der Zahl, Breslau: W. Koebner. Translated as *The Foundations of Arithmetic: A logico-mathematical enquiry into the concept of number*, by J.L. Austin, Oxford: Blackwell, second revised edition, 1974.
- 1891 'Funktion und Begriff', Vortrag, gehalten in der Sitzung vom 9. Januar 1891 der Jenaischen Gesellschaft für Medizin und Naturwissenschaft, Jena: Hermann Pohle. Translated as 'Function and Concept' by P. Geach in *Translations from the Philosophical Writings of Gottlob Frege*, P. Geach and M. Black (eds. and trans.), Oxford: Blackwell, third edition, 1980.
- 1892a 'Über Sinn und Bedeutung', in *Zeitschrift für Philosophie und philosophische Kritik*, 100: 25–50. Translated as 'On Sense and Reference' by M. Black in *Translations from the Philosophical*

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<sup>11</sup> <http://plato.stanford.edu/entries/frege/>

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1903b ‘Über die Grundlagen der Geometrie’ (First Series), *Jahresbericht der Deutschen Mathematiker-Vereinigung* 12 (1903): 319–324 (Part I), 368–375 (Part II). Translated ‘On the Foundations of Geometry (Second Series)’ by E.-H. W. Kluge, in McGuinness (ed.) 1984, op. cit., pp. 273–284.

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``Some results on determinants," 3 pp.

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``The number of sequences of a given length," 3 pp.

``Characteristic for a language with independent letters," 4 pp.

``The probability of error in optimal codes," 5 pp.

``Zero error codes and the zero error capacity  $C_0$ ," 10 pp.

``Lower bound for  $P_{ef}$  for a completely connected channel with feedback," 1 p.

``A lower bound for  $P_e$  when  $R > C$ ," 2 pp.

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=Yo5+

-----END PGP PUBLIC KEY BLOCK-----

## 3.2 Game of Periodic Table of Universal Partitions

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### **3.3 Game of Final Global Conflict**

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# On the Census

*Alan T. Gaynor*  
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The census is an essential tool of social engineering. It ensures that individuals are accounted for and it can—if properly designed—account for the intrinsic relations among citizens. Finally, if it can be divorced from the state, it could be a means for the distribution of the rights and benefits of being human to all human beings on planet Earth. As a data structure designer, I hope this design will prove robust and extensible enough to enable that kind of social evolution.

We live in a social world that is dominated by nation states, capitalism, and especially by the private ownership of the means of production. The Job Market Simulation—of which this data structure design is just a part—does not limit itself to capitalist conceptions of social organization, nationalist or otherwise. The perspective taken here is that of a single, global, sentient species divided only by language and sexuality. These divisions seem necessary for the accounting of social and biological realities. Language affects one's ability to communicate and sex affects one's role in reproduction.

The target of the census determines everything else. What are we accounting for? Do we have different censuses for different kinds of entities? As the basis of a simulation of the Job Market, this census needs to support only the entities that are essential to that effort. It certainly seems appropriate to include people and groups (governance bodies and enterprises) as distinct objects of the census. Less is more in this regard and I would like to limit this effort to those two types of entities. There are some shared attributes between these entities and some attributes that distinguish them.

The means of individuation for census purposes is an important consideration. This issue arises in every census itemization. We have not yet addressed the particulars of that issue but we have addressed the need for individuation itself by imposing a uniqueness constraint on the names of individuals. We also have a reasonably robust namespace that permits  $1000^3$  (1,000,000,000) names. The rest would be a distraction from our primary purpose.

Here is the proposed design of the Job Market Census database:

Key	Value Name	Data Type	Variable Name	Comment
Full Name (First Middle Last)		Scalar		
	Age	Scalar	\$age	
	Physical Sex	Scalar	\$sex	Male or Female
	Genetic Parents	Arrayref	@genparents	Full names of each
	Other Parents/Guardians	Hashref	%otherrels	Full names and relation for each
	Genetic Children	Arrayref	@genchilids	Full names of each
	Adopted Children	Arrayref	@adoptedchilids	Full names of each
	Address	Scalar	\$address	
	Occupation	Scalar	\$occupation	May be student or none as well as position title
	Skill Credentials	Arrayref	@skills	Includes certifications in secondary languages
	Status	Scalar	\$status	employed, voluntarily unemployed, involuntarily unemployed
	Status Duration	Scalar (integer days)	\$statusduration	Mandatory for involuntarily unemployed
	Division	Scalar	\$division	Numeric. Currently, 0 means citizen of the world
	Primary Language	Scalar	\$primlang	

, , )

We need accessors for each data item. We also need a method for writing and reading the structure as a whole so that we can save its state.

## Accessors

The structure of the retrieval call is standardized as follows:

```

sub getcensusrec {
    my ($personname, $recordname) = @ARGV;
    [processing]
    return (appropriate structure)
}

```

To keep things simple, the setter expects the caller to have retrieved the whole record, updated it in whatever way is appropriate, and is now passing back to whole data structure. If that stucture is a scalar, it comes in as a scalar. If that structure is an array or a hash, it comes in as the appropriate reference structure. So here is the schema:

```

sub setcensusrec {
    my $personname = shift;
    my $recordname = shift;
    my $arrayref = shift if ($_[0] =~ /ARRAY/);
    my $hashref = shift if ($_[0] =~ /HASH/);
    my $scalar = shift if ($_[0]);
    [processing]
}

```

## Reading and Writing the Census Data from Disk

As it turns out, reading and writing the Census data to and from disk is very easy. We will use Storable.

## Key Relations

The census has to do with the allocation of individuals to places-and-times and the allocation of places to individuals-and-times. We want our data structure to support two kinds of retrieval:

- Given a person's name and a date, we want to get a single address.
- Given an address and a date, we want to get a list of person's names.

Can a single data structure support both of these retrieval methods? Yes.

We need to have a dual key. The question is which dual key we should choose.

# The True Players

by A.T. Gaynor

I have come to understand how to conceive of the true players in the game of the Holocene mass extinction and the suppression of human democracy. The game board is the ecosphere of Earth. The primary players are:

- The Machine
- Humanity
- Non-Human Biosphere

However, to understand the interactions and the challenges, we need to go one level deeper.

## The Machine

The Machine is the global system that was designed and implemented by humans and is activated by humans but is no longer within the understanding or control of any human or group of humans. However, human knowledge of techniques still play an important part in the operation of the machine. The most important technical knowledge is the knowledge of cryptography.

### ***The Machine Cryptographers***

Cryptographers that choose to work for the Machine rather than for Humanity are the ones we refer to as Machine Cryptographers (MCs). Typically, they work for a security partition of some nation-state. Just as typically, they are authoritarian personalities that conceive of themselves as patriots—even if their nation-state is purportedly democratic—but whose true attraction is for the hierarchical chain of command they belong to. They experience a visceral disgust for everyone that opposes their precious hierarchy. The most effective technique for recruiting these cryptographers to the cause of humanity is by revealing the inhumanity or treachery of the upper echelons of the hierarchy.

### ***The Reification of Machine Cryptography***

To address the real-time demands for military intelligence, cryptographic knowledge has been reified in computer algorithms. The Machine benefits from this reification by becoming less dependent on particular cryptographers and their cryptographic knowledge. In addition, the algorithmic reifications can perform cryptographic encoding and decoding operations much more quickly than human cryptographers could. However, the Machine is put at risk because access to advanced cryptographic techniques now depend on computer programming techniques that are much more widely available. If the reifications are stolen, the thieves are much more likely to be able to use the advanced cryptographic techniques that the reifications embody. There is one other way in which this reification of cryptographic knowledge puts the Machine at risk: the Machine is defenseless against new cryptographic inventions.

## Humanity

The only alternative to living in the Machine, is living among the leaderless mass of humanity that is structured only by the participatory, consensual, decision-making processes of the general assemblies.

For there to even be such a thing as global humanity, the multiplicity of general assemblies must be represented in a single General Assembly of Humanity. The method by which relations of trust are established among all of the general assemblies of the world is of great practical and theoretical importance. However, for the purposes of this game description, we can simply assume that it happens because it must.

There is an inward extension of trust from local to global general assemblies. Then, there is the outward extension of trust from the global general assembly to the locals. In each of these communication channels (inward and outward), privacy is essential. The only way to attain privacy is through encryption.

## ***Humanity's Cryptographers***

Cryptographers that choose to work for humanity are what we call Humanity's Cryptographers (HCs). Typically, they are volunteers and often autodidacts. Just as typically, they are anti-authoritarian and egalitarian (in the sense that they are not elitist). While they recognize that they are part of an elite, they conceive of themselves as the protectors of the weak. They despise bullies.

## ***Humanity's Challenge***

The rate at which the Machine is destroying, consuming, and polluting the global ecosystem is increasing, possibly exponentially. Humanity's challenge is to slow and ultimately to be able to stop the operation of the Machine. To develop the ability to slow and stop—i.e., control—the Machine, humanity must establish a reliable digital trust network. For it to be reliable, it must be built from the local level toward the global level and only thereafter back to the local level.

## ***A Method***

Let's imagine the prototypical membership of a neighborhood or workplace. Let's say there are 100 members in the local general assembly. Let's also suppose that each generates his or her own public key pair. Finally, let's assume that the membership designates one or more delegates to the General Assembly of Humanity by unanimous consent. The proof of this delegation is a digital certificate that is generated for each delegate and signed by all members of that general assembly. Its validity date is set to the term of the delegation.

In the General Assembly of Humanity, the digital certificates of delegation permit the delegates to participate in the General Assembly as representatives of all of the members of that local general assembly at the time of the certificate's issuance. Among the first acts of the General Assembly of Humanity will be the issuance of Humanity's Root Digital Certificate. That certificate will permit message encryption and authentication on behalf of all of Humanity.

## **A Defense**

The Machine wins if the digital trust network is corrupted. In a corrupted network, it is possible for the MCs to issue messages on behalf of general assemblies that were not approved by those general assemblies. To defend against this corruption, the networks of HCs need methods of open validation that are logically demonstrable. They also need decision-making methods that are non-unanimous. That ensures that MCs that infiltrate cannot block legitimate actions or decisions that affect the cryptographic infrastructure.

## **The Non-Human Biosphere**

The non-human biosphere is oblivious to the cryptographic wars being waged among humans. Current estimates are that human beings will usurp 40% of the PPT of the biosphere by 2022. The Machine is the bully, the non-human biosphere is the victim and Humanity is the savior.

## 4.0 Proofs

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### Rationalities

¶ 1. Every rationality has one or more sets of necessary and sufficient keys.

Let's discuss how we might express that assertion in a formally satisfactory way. Let's discuss this carefully, in a step-by-step fashion. Let's begin at the beginning with the very first word.

### Every

The word **every** is an indicator of what logicians call *universal quantification*. To be more explicit—and therefore clearer—logicians substitute the expression **for all x** for the single word **every**. The advantage of this more explicit form is that the universal quantifier **for all** is clearly quantifying something and that something is **x**. Of course, **x** is not just one thing. It is a **variable** that can refer to anything<sup>13</sup>. In that sense, the expression **for all x** is unlimited. This kind of expression gives logicians—and us, if we choose to use it—the ability to say something about **anything**. That is a powerful and **necessary** ability. In fact, both *universal quantification* and *variableization* are necessary rational keys for every rationality.

### Everything

Let's not ignore that most general of topics: *everything*. Logicians have a special name that allows them to identify the **container** for anything that they want to discuss. They refer to that container—*everything*—as the *universe* and they use **U** to represent it as a set. Like them, we will use **U** to represent the universe as a set.

### Boundaries of Reference

We need to keep in mind that the universe and the act of reference are exceptional in that no expression can refer to either itself (as an expression) or the universe (as a set). Logicians have identified a variety of paradoxes that ensue if we permit either of those kinds of reference and it is much more trouble than it is worth. When we said that the expression **for all x** was unlimited because the domain of the variable **x** is unlimited, we meant that it is not limited to any element of the universe. It **is** limited to **elements** of the universe and not the sentence it resides in or the universe itself. To refer to well-formed formulae (expressions) and the universe itself, without falling into the known paradoxes of self-reference, we need to define a meta-universe and a metalanguage syntax that will permit the well-formed formulae of that metalanguage (or its components) to refer to the original expressions and the original universe.

So, the *universe U* is the third necessary rational key. The unity of science depends on the existence and use of a common universe. That universe must have two attributes. First, it must be

---

13 Except for itself (no self-reference) and everything, i.e., the universe of discourse itself. This is discussed in the next paragraph.

**comprehensively inclusive.** It must not exclude anything that scientists of any kind might investigate and discuss<sup>14</sup>. Second, all scientifically acceptable partitions or subsets of the universe must be **objective**<sup>15</sup>.

## The Rationalities Set

Naturally, we don't always want to say anything about any arbitrary **thing**. Sometimes we want to say something about a particular **kind of thing**. We want to say something about anything in some subset of things. In our expression above (¶ 1), the next word—*rationality*—identifies just such a subset of things.

The set of **rationalities** ( $\Omega$ ) is a subset of our universe ( $U$ ):

¶ 2:  $\Omega \subset U$

Our expression so far is merely identifying the appropriately limited **subject** of our assertion. The logicians use the expression **such that** to signal this act of limitation. And what are they limiting? Well,  $x$ , of course. So, they say: **For all  $x$  such that**. Now, each possible, distinct, rationality is a member of that set. By considering it to be a set, we leave open the question of whether there is only one rationality, many rationalities, or no rationalities. So, with the first two words of our expression, we now have the following phrase to identify the subject of the rest of the assertion: **For all  $x$  such that  $x$  is a member of the set of rationalities**.

¶ 3:  $\forall(x): x \in \Omega$

What kind of thing is a rationality? This question raises the issue of objectivity. Is a rationality an objective thing?

## Objectivity

Objectivity is often confused with spatio-temporal existence. Materialists, for example, will assert that nothing exists that does not have mass. This puts them in the odd position of denying the existence of language which is the means by which they express their assertion and the means by which we understand them. Language is an objective thing whether or not it has mass. If materialists insist on using the expression **to exist** to mean **has mass** then we will insist that non-existent things—like language—are **objective**.

Of course, it would be much more reasonable for us to agree to qualify our use of the expression **to exist** in a way that facilitates granting some kind of existence to anything that is objective. My [dimensional qualification notation](#) (DQN) does just that<sup>16</sup>. We will adopt it in this essay so that we can express objectivity more easily and more clearly.

If we let  $M$  stand for the set of things that have mass, we can use the DQN to qualify all such things as having 3 spatial dimensions and 1 temporal dimension like this:

---

14 Of course, it does exclude meta-ontologists in so far as they want to take this particular universe of discourse as a topic of their expressions. For that, they will have to define their own universe of discourse: **metaU**.

15 We will take up a discussion of *objectivity* later.

16 Of course, logicians use of universal and existential quantifiers is **not** using predicates. Natural language mostly ignores that distinction.

¶ 4:  $\forall(x):x \in M \rightarrow \exists_{3.1}(y):x \equiv y$

It is also clear that a rationality is not an element of the set of things that have mass:

¶ 5:  $x \in M \rightarrow x \notin Q$

This notation allows us to ask questions about the dimensionality—an objective characteristic—of the subject of our assertions. Here is how we could ask a question of that sort about rationalities:

¶ 6:  $\exists(s,t) \forall(x): \underset{s,t}{s \in \{0,1,2,3\} \wedge t \in \{0,1\}} \rightarrow x \in Q ?$

What spatial dimensionality (s) can we assign to a rationality and what temporal (t) dimensionality can we assign to it? When asked in this way, it seems clear that a rationality, which we have agreed has no mass, also has **no** spatial dimensionality<sup>17</sup>.

You may object that a rationality can be said to have a place—occupy space—if we consider that certain classes of people **have** characteristic rationalities. Topologists (mathematicians who study topology), for example, might be said to have a particular kind of rationality: topological rationality. Let's assume that we are able to say, definitively, who is and who is not a topologist. Let's further assume that this year, there is a convention of topologists at the convention center in Orlando, Florida at which every topologist in the world will be. During the convention, we can identify the coordinates of a Euler brick within which all topologists reside. Doesn't that mean that topological rationality, at that time, had approximately the same spatial expanse as that Euler brick and therefore the same dimensionality as the topologists, i.e. 3.1?

That would **only** be true if topological rationality were **inside** the brains of each of the topologists. Instead, it seems more reasonable to say that the mathematical behavior of the topologists is governed, in part, by that topological rationality in somewhat the same way that their linguistic behavior is governed by the grammar of the language that they speak. We might agree that the grammar of the language is **implemented** in neural networks in the brains of speakers. But the grammar is **independent** of its implementation. We know this because with a book on the grammar of English, for example, and a workbook that is keyed to recordings of native English speakers, a non-English speaker can become one. In that case, the grammar will have been implemented in the neural network of the student. But all of these implementations—the neural network, the grammar book, etc.—are all related to an abstraction: the **abstract grammar**. That abstract grammar is not a physical thing. The grammar is a **formal system**, in this case, the **set of rules** that guide a conformant, rule-based linguistic performance.

We also know that every formal system is a set of time-invariant relations. So, in ¶ 6 we now know that:

**s=0 and t=0**

However, the grammar is not **sufficient**. In addition, as with any formal system, we will need one or more **interpretations**. Unlike a formal system, an interpretation requires **time**. It requires time because a sentence and its parse are both intrinsically time-based. The **series** of uttered phonemes or the **series** of written symbols or the **series** of silent thoughts, must—in every case—be produced or parsed,

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17 This follows logically from ¶4 and ¶5.

i.e., understood, over time. What is true of a language is true of a rationality. As a consequence, we have the following expressions:

For all  $x$ , if  $x$  is an element of the set of Rationalities ( $\Omega$ ) then there exists a  $y$  with  $DQN=0.0$  such that  $y$  is an element of the set of Rationalities ( $\Omega$ ), and  $x$  is identical to  $y$ .

$$\P 7: \forall(x):x \in \Omega \rightarrow \exists_{0.0}(y):y \in \Omega \wedge x \equiv y^{18}$$

and:

For all  $x$  with  $DQN=0.0$ , if  $x$  is an element of the set of Rationalities ( $\Omega$ ) then there exists a  $y$  with  $DQN=0.1$  such that the ordered pair  $(x,y)$  is an element of the set of Interpretations ( $\Xi$ ), and  $x$  is not identical to  $y^{19}$ .

$$\P 8: \forall_{0.0}(x):x \in \Omega \rightarrow \exists_{0.1}(y):(x,y) \in \Xi \wedge \neg(x \equiv y)$$

Our investigation of objectivity has convinced us that there are some elements of our universe that are objective even though they are not elements of the set of things that have mass. We have identified languages, formal systems, and their interpretations as examples of such elements and we have concluded that rationalities—elements of the set of Rationalities—and their interpretations are specific examples of **objective abstractions**. In the course of the investigation we also concluded that elements of the set of Rationalities are  $DQN=0.0$ .

## Necessity, Sufficiency, and Sets

Let's understand what we mean when we assert that a set of keys is **necessary** to any rationality or that some set of keys is **sufficient** to characterize a rationality.

What is the relation between a rationality and its keys? Well, they are definitive. Each rationality has its own set of characteristic keys. These keys are **sufficient** to characterize that rationality. Let's express this without regard to the dimensionality of the keys:

$$\P 9: \forall_{0.0}(x) \exists_{0.0}(\Omega) \exists(\{y_1 \dots y_n\}): x \in \Omega \rightarrow (x \equiv \{y_1 \dots y_n\} \equiv K_x)$$

Where:

- $x$  is a rationality
- $\Omega$  is the set of all rationalities
- $K_x$  is the set of characteristic keys for rationality  $x$

Every set of characteristic keys for a rationality is a **subset** of the set of rationality keys ( $K$ ) and the **union** of the sets of keys of **all** rationalities is the set of rationality keys:  $K$ .

<sup>18</sup> This is a model for the way in which we assign a DQN to an unqualified variable. NB: We can deduce non-identity from DQN differences among DQN qualified variables.

<sup>19</sup> I suddenly realize that “dimensionality” is just one kind of partitioning of our  $U$  that my qualification notation permits. We could use the notation to filter for any kind of partition. This is a generalization of the idea of a qualification notation. [over the course of 2 weeks at the end of June 2016, I did just that. The result is a Dimensional, Ontological, Epistemological (DOE) qualification notation.]

$$\P 10: \forall_{0.0} (i \in \{1 \dots m\}, K_i) \exists_{0.0} (\check{K}) : K_i \subset \check{K} \wedge (K_1 \cup K_2 \dots \cup K_m \equiv \check{K})$$

There is some subset of the set of rationality keys  $\check{K}$  that is also a subset of every set of characteristic keys. We call that common subset the **necessary rationality keys**:  $K_n$ :

$$\P 11: \forall_{0.0} (i \in \{1 \dots m\}, K_i) \exists_{0.0} (\check{K}, K_n) : K_i \subset \check{K} \wedge (K_n \equiv K_1 \cap K_2 \dots \cap K_m)$$

We will refer to an element of the **common necessary keys** as  $y_i$  and to an element of the **uncommon characteristic keys** as  $z_i$ .

If there were only one rationality, it would be  $K_n$ . However, we will show that:

- there is more than one rationality
- $K_n$  is incomplete

### ***Definition of a Complete Rationality***

We now know that our **model** of a rationality is a formal system. We have discovered that, unlike the diachronic interpretation that it requires, every model of a rationality—like any formal system—is a synchronic entity. Now, we also know that there is a difference between a concrete rationality and a model rationality. It is now time for us to tease out the significance of that distinction for the definition of a complete rationality.

As an ontologist—a scientist that theorizes about existents—I view a concrete rationality as an **implementation** of a model rationality. I recognize that I can know the model rationality in a **direct** way—because I design it—and that I can know the concrete rationality only in an **indirect** way. The model rationality that I design and know is a **theory** of the concrete rationality. I need to test that theory and interpret the results of those tests to assure myself that the model is indeed isomorphic to the concrete rationality.

As a rational creature, I can understand a model rationality and **asccribe** to it. However, my **intention to embody** that model rationality in my concrete rationality does not ensure that it will guide me in every decision-making context. It is an **ideal**. I am fallible and will sometimes—perhaps often—fail to implement the rationality that I aspire to. There is no magic in the aspiration. It takes understanding and practice over a period of time to attain an ever more perfect implementation.

We can now return to the main discourse of this essay and begin to identify the sets of keys that are necessary and sufficient to specific rationalities.

### **Notes**

## **Sets of Keys: Necessary and Sufficient**

We have already identified several necessary keys for any rationality. Let's expand on our progress so far by compiling a complete list of rationality keys.

### **1. Universe**

2. **Objectification** (objectifying by pointing, ontic variableization)
3. **Predication** (this is part of what distinguishes one rationality from another; properties only, properties and relations, cardinality of relations)
4. **Abstraction**
  - Objective abstractions (these are necessary unless we accept materialism. DQN covers this)
  - Sentential variableization
5. **Quantification**
  - Universal quantification (all and any)
  - Existential quantification (some)
6. **Inference operators**
  - Rules of predicate logic inference
  - Rules of sentential logic inference
7. **Truth valence** (bi-, tri-, or probabilistic; this is the other part of what distinguishes one rationality from another)

The question is whether both predicate and propositional logics are necessary components of the ontology of every rationality or if we can dispense with one or the other and still have a complete rationality. I will argue that only a rationality that includes a predicate logic in its ontology can be considered a complete rationality. The propositional logic depends on the predicate logic for precise definitions of its propositional variables.

Then, we simply need to choose the truth value valence of each of those logics. I am reasonably convinced that the valence of the underlying predicate calculus percolates up to the valence of the propositional calculus.

*Table 2: Interlocutory Rationalities<sup>20</sup>*

<i>ID</i>	<i>Descriptive Name</i>	<i>Nickname</i>
1	Monadic predication and Some dimensions with Bivalent values	MSB*
2	Monadic predication and Some dimensions with Trivalent values	MST*
3	Monadic predication and Some dimensions with Probabilistic values	MSP*
4	Monadic predication and All dimensions with Bivalent values	MAB
5	Monadic predication and All dimensions with Trivalent values	MAT
6	Monadic predication and All dimensions with Probabilistic values	MAP
7	Dyadic predication and Some dimensions with Bivalent values	DSB*
8	Dyadic predication and Some dimensions with Trivalent values	DST*
9	Dyadic predication and Some dimensions with Probabilistic values	DSP*
10	Dyadic predication and All dimensions with Bivalent values	DAB
11	Dyadic predication and All dimensions with Trivalent values	DAT
12	Dyadic predication and All dimensions with Probabilistic values	DAP
13	Polyadic predication and Some dimensions with Bivalent values	PSB*

<sup>20</sup> This is now obsolete. It is replaced with the Reduced Rationalities table.

14	Polyadic predication and Some dimensions with Trivalent values	PST*
15	Polyadic predication and Some dimensions with Probabilistic values	PSP*
16	Polyadic predication and All dimensions with Bivalent values	PAB
17	Polyadic predication and All dimensions with Trivalent values	PAT
18	Polyadic predication and All dimensions with Probabilistic values	PAP

We probably have to specify the relational logic we subscribe to and whether or not we accept Zermelo-Frankael set theory. We do need to consider the temporal and modal logics, too.

## Reduced Rationalities

If our choice of ontology provides the cardinality of our dimensions, then we can reduce our rationalities to just the predication and valence categories.

We have just three of each:

- Predication
  - 1. Monadic Predication (MP)
  - 2. Dyadic Predication (DP)
  - 3. Polyadic Predication (PP)
- Valence
  - 1. Dyadic Valence (DV)
  - 2. Triadic Valence (TV)
  - 3. Probabalistic Valence (PV)

*Table 3: Reduced Rationality Inventory Abbreviations*

	<b>Monadic Predication MP</b>	<b>Dyadic Predication DP</b>	<b>Polyadic Predication PP</b>
<b>Dyadic Valence DV</b>	DVMP	DVDP	DVPP
<b>Triadic Valence TV</b>	TVMP	TVDP	TVPP
<b>Probabalistic Valence PV</b>	PVMP	PVDP	PVPP

## Appendix A. Axioms of Rationalities

Here is what we will cover in this appendix:

1. Notational Conventions
2. Inventory of Rationalities
3. Axioms of Each Rationality

### **Notational Conventions**

Here we will cover the convention for the following notations:

- Bivalent Propositional Calculus with Modal and Temporal Operators
- Trivalent Propositional Calculus with Modal and Temporal Operators
- Probabilistic Propositional Calculus with Modal and Temporal Operators
- Bivalent Predicate Calculus with Modal and Temporal Operators
- Trivalent Predicate Calculus with Modal and Temporal Operators
- Probabilistic Predicate Calculus with Modal and Temporal Operators

## Bivalent Propositional Calculus with Modal and Temporal Operators

*Table 4. Operators for Bivalent Propositional Calculus*

<i>Operator Definition</i>		
A	F, T, F, T	p
	F, F, T, T	q
	F, T, T, F	$Apq (KNKpqNKNpNq)$
C	F, T, F, T	p
	F, F, T, T	q
	T, F, T, T	$Cpq$
E	F, T, F, T	p
	F, F, T, T	q
	T, F, F, T	$Epq (NKNKpqNKNpNq)$
K	F, T, F, T	p
	F, F, T, T	q
	F, F, F, T	$Kpq$
L		
M		
N	F, T	p
	T, F	$Np$

## Appendix B. DQ and Entity-Type Space

### DQN Entity Space

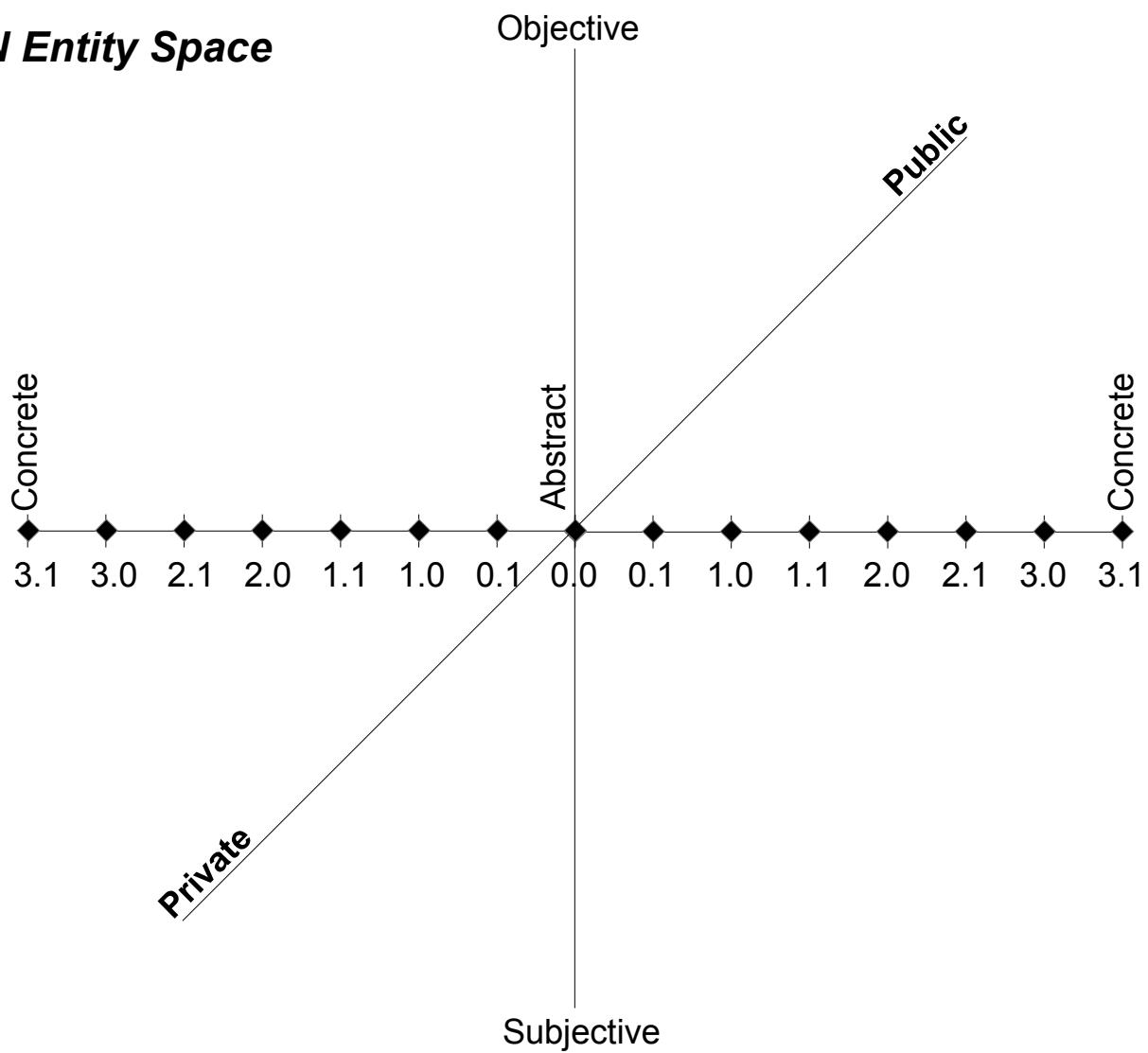


Illustration 3: Dimensional Qualification Notation Entity-Type Space

We have the following inventory of entity types:

*Table 5: Inventory of Entity Types with Examples*

<b>ID</b>	<b>Public Private</b>	<b>Objective Subjective</b>	<b>Abstract Concrete</b>	<b>Example</b>
1.	Public	Objective	0.0	Numbers
2.	Public	Objective	0.1	Character or Personality
3.	Public	Objective	1.0	Distance
4.	Public	Objective	1.1	Linear Velocity
5.	Public	Objective	2.0	Plane
6.	Public	Objective	2.1	Circular Motion
7.	Public	Objective	3.0	Euler Brick
8.	Public	Objective	3.1	Here-and-Now
9.	Private	Objective	0.0	Reference
10.	Private	Objective	0.1	Consciousness
11.	Private	Objective	1.0	
12.	Private	Objective	1.1	
13.	Private	Objective	2.0	
14.	Private	Objective	2.1	
15.	Private	Objective	3.0	
16.	Private	Objective	3.1	
17.	Public	Subjective	0.0	
18.	Public	Subjective	0.1	
19.	Public	Subjective	1.0	
20.	Public	Subjective	1.1	
21.	Public	Subjective	2.0	
22.	Public	Subjective	2.1	
23.	Public	Subjective	3.0	
24.	Public	Subjective	3.1	
25.	Private	Subjective	0.0	
26.	Private	Subjective	0.1	
27.	Private	Subjective	1.0	
28.	Private	Subjective	1.1	
29.	Private	Subjective	2.0	
30.	Private	Subjective	2.1	
31.	Private	Subjective	3.0	
32.	Private	Subjective	3.1	

08/20/15 It is clear to me what I have to do to finish the *Rationality Keys* essay:

- Define necessary and sufficient conditions in the context of sets.
- Finalize the set of formal expressions that render the primary assertion of the piece.
- Identify all of the necessary aspects of any rationality that were not covered in the formalization of the primary assertion.
- Identify each foundation for a sufficient rationality by the addition of axioms or axiom sets to the necessary core.
- Choose the sufficient rationality that *Disintegration and its Discontents* will use.

Clearly, the *Rationality Keys* essay is an introduction to the *Proofs and Disproofs* appendix of *Disintegration and its Discontents*.

08/13/15 I have had another change in my understanding. The universe of discourse is not a set of expressions. That is the ontology. The universe of discourse is the universe. I was missing the ontological model which is isomorphic to the universe to the extent to which we understand the universe. To avoid circling around again, I will post my old understanding as part of my Log appendix and correct it immediately below.

¶ 1. *An ontology ( $O$ ) is not a universe ( $U$ ).*

$$\neg(O \equiv U)$$

¶ 2. *An ontology, as a set, has well-formed formulae (WFFs) as its elements.*

$$\underset{0.0}{\forall}(x): WFF(x) \rightarrow x \in O$$

¶ 3. *An ontology only has WFFs as its elements.*

$$\forall(y): \neg WFF(y) \rightarrow y \notin O$$

¶ 3. *An ontic model, as a set, can be partitioned using DQN.*

$$O \stackrel{m}{=} \underset{0.0}{O} \cup \underset{0.1}{O} \cup \underset{1.0}{O} \cup \underset{1.1}{O} \cup \underset{2.0}{O} \cup \underset{2.1}{O} \cup \underset{3.0}{O} \cup \underset{3.1}{O}$$

¶ 4. *An ontic model is a set-theoretic model that expresses one's beliefs about existence: existents and their relations.*

$$\forall(x, y): (x \in O \wedge y \in O) \rightarrow \exists(r[x, y]): r[x, y] \stackrel{m}{\in} O$$

¶ 5. *We assign our ontic model entities ( $m$ ) to a DQN partition based on the dimensionality of the entity ( $e$ ) that they reference.*

$$\forall(s, t, m) \underset{s.t}{\exists}(e): e \in U \wedge R(m, e) \rightarrow m \stackrel{m}{\in} O$$

¶ 6. *Our ontic model is isomorphic to the universe.*

$$\forall(m) \underset{s.t}{\stackrel{m}{\in}} O \rightarrow \exists(e) \underset{s.t}{\stackrel{m}{\in}} U$$

¶ 7. *An ontology is configured by defining the grammar of its expressions.*

That formal grammatical system has the following parts:

- Symbol set
- Well-formed formula definition
- Rules of inference

¶ 8. *A rationality consists of a configured ontology and an ontic model.*

08/07/15 This is good writing but it has to be recast in new terms. My understanding has changed.

¶ 1. *An ontology ( $O$ ) is not a universe of discourse ( $U$ ).*

$\neg(O \equiv U)$

¶ 2. A universe of discourse, as a set, has expressions as its elements.

$\forall_{0.0}(x):WFF(x) \rightarrow x \in U$

¶ 3. A universe of discourse, only has well-formed formulae (WFF) as its elements.

$\forall(y):\neg WFF(y) \rightarrow y \notin U$

¶ 3. An ontology, as a set, can be partitioned using DQN.

$O \equiv O_{0.0} \cup O_{0.1} \cup O_{1.0} \cup O_{1.1} \cup O_{2.0} \cup O_{2.1} \cup O_{3.0} \cup O_{3.1}$

¶ 4. An ontology is a set-theoretic model that expresses one's beliefs about existence: existents and their relations.

$\forall(x, y):(x \in O \wedge y \in O) \rightarrow \exists(r[x, y]):r[x, y] \in O$

¶ 5. We assign our ontological model entities (m) to a DQN partition based on the dimensionality of the entity (e) that they reference.

$\forall(s, t, m)\exists_{s.t}(e):R(m, e) \rightarrow m \in O_e$

¶ 5. A universe of discourse is configured by defining the grammar of its expressions.

¶ 6. A rationality consists of a configured universe of discourse and an ontology.

$\forall(n):n \in I \rightarrow \Omega_n \equiv U_n \cup O_n$

## 5.0 Appendices

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The appendices to Disintegration and its Discontents use the standards set out in this section.

*Table 6: Variable Series Assigned to Dimensionally Qualified Bound Variables*

Bounding Quantifiers	Variable Series	Loglan Modifier	English Reification
$\forall_{0.0} \exists_{0.0}$	$a, a_0, \dots a_n$	nipini	Synchronicity
$\forall_{0.1} \exists_{0.1}$	$b, b_0, \dots b_n$	nipine	Diachronicity
$\forall_{1.0} \exists_{1.0}$	$c, c_0, \dots c_n$	nepini	Extensionality
$\forall_{1.1} \exists_{1.1}$	$d, d_0, \dots d_n$	nepine	Motion
$\forall_{2.0} \exists_{2.0}$	$e, e_0, \dots e_n$	topini	Orthogonality
$\forall_{2.1} \exists_{2.1}$	$f, f_0, \dots f_n$	topine	Motion Squared
$\forall_{3.0} \exists_{3.0}$	$g, g_0, \dots g_n$	tepini	Orthogonality Squared
$\forall_{3.1} \exists_{3.1}$	$h, h_0, \dots h_n$	tepine	Space-Time

## 5.1 Ontic-Epistemic Dimensional Qualification Notation

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Here is the final rendition of the ontic-epistemic dimensional qualification notation:

[M:I][O:S][K:U]  
[ $\forall$ : $\exists$ ]  
[0:1;2:3].[0:1]

When fully expanded, this notation results in the Periodic Table of Ontic Elements below:

# Periodic Table of the Ontic Elements

	3.1	2.1	1.1	0.1	Diachronic				
ISU	ISU 3.1	ISU 3.0	ISU 2.1	ISU 2.0	ISU 1.1	ISU 1.0	ISU 0.1	ISU 0.0	
IOU	IOU 3.1	IOU 3.0	IOU 2.1	IOU 2.0	IOU 1.1	IOU 1.0	IOU 0.1	IOU 0.0	
ISK	ISK 3.1	ISK 3.0	ISK 2.1	ISK 2.0	ISK 1.1	ISK 1.0	ISK 0.1	ISK 0.0	
IOK	IOK 3.1	IOK 3.0	IOK 2.1	IOK 2.0	IOK 1.1	IOK 1.0	IOK 0.1	IOK 0.0	
MSU	MSU 3.1	3.0	2.0	1.0	0.0	Synchronic			
MOU	MOU 3.1	Legend							
MSK	MSK 3.1	I	Immaterial						
MOK	MOK 3.1	K	Known						
		M	Material						
		O	Objective						
		S	Subjective						
		U	Unknown						
		s.t	Dimensional Cardinality: s = number of spatial dimensions t = number of temporal dimensions						



Protagonism asserts the unity and interconnectedness of the universe and that every existent can be reduced to the infinite set of its possible appearances.

# On a Notation for Dimensionally-Qualified Predicate Calculus Quantification

by Alan T. Gaynor

24-Feb-2011

This article proposes a predicate calculus notation that is agnostic with respect to the materialist-idealst controversy. Materialists and Idealists differ in their use of the natural language verb **to exist**.

When a materialist asserts the existence of something, he or she is asserting the existence of a three dimensional space-time entity. Often, when an idealist asserts the existence of something, it is **not** a three-dimensional space-time entity. Confusion arises as a consequence of their use of the same verb in those assertions.

The Dimensional Quantification Notation (described in Table 7) uses the first order predicate calculus to provide an ontologically agnostic method for expressing ontological theories and refutations of ontological assertions. It replaces each of the two standard predicate calculus quantifiers with eight dimensionally qualified predicate calculus quantifiers.

## Key

The dimensional qualifier consists of a centered subscript for the quantifier that resembles a decimal number and is intended to be interpreted as follows:

- The integer part of the dimensional qualifier indicates the number of orthogonal symmetrical (spatial) dimensions.
- The decimal part of the dimensional qualifier indicates the number of assymetrical (temporal) dimensions.

The use of an unqualified quantifier implies that the variables within its scope can be of any dimensionality.

## An Example

Euclid's Elements defines a point as that which has no parts and ends a line. A line is defined as breadth-less length. We could express the definition of a line as a relation between two distinct points using our dimensional quantification notation:

$$\exists_{0.0} (x,y): \sim(x=y) \& \exists_{1.0} (z): z=\text{LINE}(x,y)$$

Table 7: Dimensional Quantification Notation

Subscripted Quantifier	Description	Examples
$\exists_{0.0}$ and $\forall_{0.0}$	<b>Synchronicity:</b> Variables quantified in this way refer to entities that are independent of space and time. They may be considered to be everywhere and forever or nowhere and never. These entities are called eternals or universals.	Geometric points, temporal instants, propositions, truth values, relations, formal systems, games, numbers, and languages.
$\exists_{0.1}$ and $\forall_{0.1}$	<b>Diachronicity:</b> Variables quantified in this way refer to entities that are independent of space but participate in time.	Consciousness, algorithms, the referents of temporal logics (durations, etc.) and change itself
$\exists_{1.0}$ and $\forall_{1.0}$	<b>Extensionality:</b> Variables quantified in this way refer to entities that participate in one spatial dimension and are independent of time.	Geometric lines.
$\exists_{1.1}$ and $\forall_{1.1}$	<b>Motion:</b> Variables quantified in this way refer to entities that participate in one spatial dimension and time.	A point moving along a line.
$\exists_{2.0}$ and $\forall_{2.0}$	<b>Orthogonality:</b> Variables quantified in this way refer to entities that participate in two spatial dimensions and are independent of time.	Figures of plane geometry.
$\exists_{2.1}$ and $\forall_{2.1}$	<b>Motion Squared:</b> Variables quantified in this way refer to entities that participate in two spatial dimensions and time.	Rotating lines on a plane describing circles, polygons moving on a plane.
$\exists_{3.0}$ and $\forall_{3.0}$	<b>Orthogonality Squared:</b> Variables quantified in this way refer to entities that participate in three spatial dimensions and are independent of time.	Figures of solid geometry.
$\exists_{3.1}$ and $\forall_{3.1}$	<b>Space-Time:</b> Variables quantified in this way refer to entities that participate in Einsteinian 4-dimensional space-time.	The material world.

# The Practical Problems of Modern Logical Philosophy

by [gat@cooperation.com](mailto:gat@cooperation.com)

Modern philosophers—like their ancient predecessors—are primarily focused on the following areas of study<sup>21</sup>:

ontology, epistemology, and ethics.

Unlike their ancient predecessors, modern philosophers who want to use modern logic (the predicate calculus, primarily) face the following problems:

1. The standard predicate calculus is **ontologically ambiguous** instead of being **ontologically agnostic**.
2. The standard predicate calculus is **epistemologically indifferent** instead of being **epistemologically engaged**.
3. The standard predicate calculus is **ethically disabled** instead of being **ethically enabled**.

## Ontological Ambiguity

If a philosopher were to use the predicate calculus to assert the existence of something, she might express her proposition like this:

$$\exists x : F(x)$$

*WFF 1: Existential Assertion*

We would translate that as:

*There exists an x such that x is an element of the set F (or x has the property F)*

With this assertion, all we know is that x exists. We don't know if that x is a number, a dream, a dragon, or the body of a person we love. Nor do we know anything about the nature of the set or property that is associated with x.

From the philosopher's perspective, this expression is **ambiguous**. In fact, its ambiguity is precisely in its **ontological claim**. Her materialist friend will ask if x has mass or volume. Her idealist friend will ask if x is the knowing subject or the known object. Her theist friend will ask about the relation between x and God. She may have answers to those questions but the expression itself does not provide them. Her friends don't know what she is talking about.

It is not simply that the existential expression doesn't answer those questions, it is the **tedium** involved—for both our philosopher and her friends—in using this notation to eliminate the ontological ambiguity of x. She will have to write a **specification for x**. Now, that is possible, certainly, the formalists call it an **interpretation**. However, let's imagine just what kind of undertaking that would be.

Either she—our philosopher—chooses to stay within the predicate calculus to write her specification or she uses a non-predicate calculus metalanguage to write it. The benefit of expressing the specification

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<sup>21</sup> Aesthetics is also of concern but it is beyond the scope of the present work.

in the language of the predicate calculus is the ability to ensure that the universe of the assertions and of the specification is the same and therefore proofs involving either or both are sanctioned.

- If she chooses to stay within the predicate calculus, her specification will include other existential assertions or it won't.
  - If it does, it will introduce other variables or other sets or properties which in turn will require specification. If she chooses this path persistently, she will get bogged down in **an infinite regress**.
  - If it doesn't (include other existential assertions), it will only be able to use universal quantification to make assertions about other undefined sets or properties that  $x$  has or lacks. If she chooses this path, she will get bogged down in **questions about the nature (not to mention the existence) of those properties or sets**. She again faces the question of staying within the predicate calculus or falling back on a metalanguage to interpret the properties and sets of her specification.
    - If she stays the course, there is a tedious effort ahead that is **not guaranteed to end**.
    - If she relies on a metalanguage, she is faced with the same consequences as if she chose that alternative from the beginning.
- If she chooses to write her specification in a metalanguage, either that metalanguage is logically powerful (like the predicate calculus) or it isn't.
  - If it is, then she is faced with the same dilemma about the specifications in that metalanguage that she has faced in her object language.
  - If it is not, then she will not be able to prove anything about her assertions using her specification.

In summary, our philosopher is trapped by the ontological ambiguity of the standard predicate calculus. In the best case scenario, if she sticks with the predicate calculus to ensure that she can prove her assertions, she faces a daunting and tedious specification writing effort **for every variable** that she chooses to assert exists. That effort is fraught with dangers of infinite regresses and offers no guarantee of completion. In the other scenarios, she will fall into an infinite regress or forgoe the benefits of proof altogether.

Clearly, the ontological ambiguity of the standard predicate calculus is a huge impediment to its adoption by the philosophical community.

## Epistemological Indifference

Epistemologists ask questions about whether and how we actually know. There are questions to ask about existential assertions like WFF 1 as well as universal assertions like WFF 2.

$$\forall x : F(x)$$

*WFF 2: Universal Assertion*

How do we **know** that  $x$  exists or that  $F(x)$  holds for every  $x$ ? In general, the answer is that we need to understand the grounds for the **objectivity** of  $x$  and  $F(x)$ . Objectivity guarantees that others can verify the claims that I make. Different philosophical traditions demand different kinds of grounding for the

claim to objectivity. Our philosopher's materialist friend might demand a test that reveals the value of a physical property like mass or volume. A rationalist might demand a proof. An intuitionist might require a finite constructive proof, etc.

The standard predicate calculus has no standard notational way to specify the here-and-now, associate it with a conscious subject, or distinguish it from a fictional scene. It has no easy way or standard notation to distinguish between assertions about the physical universe and assertions about theoretical universes. It all depends on an interpretation. Except insofar as the rules of inference permit us to distinguish between valid and invalid inferences from a body of presuppositions or axioms, the predicate calculus is indifferent to epistemological issues.

Clearly, the epistemological indifference of the standard predicate calculus is a huge impediment to its adoption by the philosophical community.

## Ethical Disability

Every ethics relies heavily on the existence of ontological and epistemological foundations in the philosophy of which it is a part. Ethics are not—and cannot be—Independent of these philosophical foundations. In particular, ethics presumes the existence of an agent that can freely choose among different ethical actions as well as understand and evaluate truth claims. Finally, this free agent must recognize ethical values in the abstract and in the concrete.

If an ontology and an epistemology are necessary prerequisites to any ethics, then our philosopher would have had to complete her ontology and epistemology using the predicate calculus. In addition, she would have had to complete an interpretation (the sum of all of the specifications that we discussed above) **before** she would be able to create her ethics.

Clearly, the ethical disability of the standard predicate calculus is a huge impediment to its adoption by the philosophical community.

## Dimensional Qualification Notation

Let's investigate how the dimensional qualification notation (DQN) addresses each of these problems. We begin by describing the requirements for the notation.

### ***Ontological Agnosticism***

The notational solution to the problem of the ontological ambiguity of the standard predicate calculus is **not** to invent a procrustean bed that reduces all expressions to one or another of the ontological faiths. Instead, the notation must be agnostic with respect to the ontological faiths. It must be just as capable of expressing the assertions of a materialist ontology as it is of expressing the assertions of an idealist ontology.

Let's consider the dimensionality of an existent. Every existent has some dimensionality. In fact, its dimensionality is characteristic of it. Now, physicists distinguish between **spatial** and **temporal** dimensions. There are good reasons for philosophers to concede that distinction. So, dimensionality has those two components.

Until the advent of string theory, four dimensional space-time was the consensual physical standard. However, as we mentioned, the distinction between spatial and temporal dimensions remains an

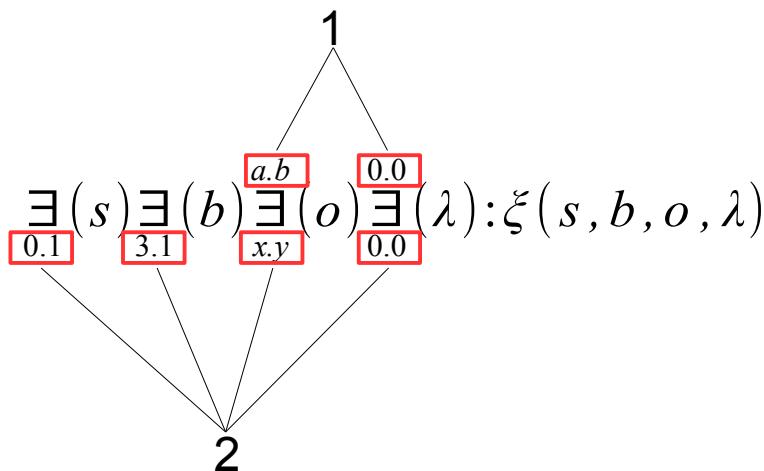
important one. There are abstract mathematical spaces that have far more or even fewer dimensions than the consensual space-time. Nevertheless, dimensions are typically countable—denumerable as mathematicians might say—even if there are an infinite number of them.

Even materialists will grant that the earth, as it makes its way around the Sun while rotating on its own axis, is a 4-dimensional space-time existent. So, while we are in this conceptual area of consensus, let's create a **dimensional qualifier**. We can use it to assign an appropriate dimensionality to any existent. Let's use two numbers—one for the **number of spatial dimensions** and one for the **number of temporal dimensions**—and let's place the spatial dimension count first, the temporal dimension count second, and separate them by a period. Then, the Earth would have a dimensional qualifier of **3.1**: three spatial dimensions and one temporal dimension.

Clearly, this dimensional qualification notation is **extensible**. We could use **10.1** to refer to the eleven dimensions of string theory. Or, we could use **3.0** to refer to the universe of solid geometry that is indifferent to time.

Now, we would like to propose using this dimensional qualification notation in combination with the first-order predicate calculus to address some philosophical objections to the use of this form of mathematical logic in the conduct of philosophy proper.

Let's use our dimensional qualifier to add dimensional information to the quantifiers of the predicate calculus, WFF 3.



*WFF 3: Subscripted and Superscripted Dimensional Qualifiers for the Predicate Calculus*

### 1. Centered Superscript Position

The centered superscript position on quantifiers is reserved for the **theoretical** or **model** dimensional qualifier.

### 2. Centered Subscript Position

The centered subscript position on quantifiers is reserved for the **objective** dimensional qualifier.

## Ontological Axioms

## Epistemological Axioms

We hold certain truths to be self-evident:

1. Only consciousness is capable of reference.
2. Every consciousness is capable of reference.
3. Not every consciousness is capable of self-reference.
4. Every self-reference presumes the ability to reference.
5. Not every reference is a self-reference.

None of these assertions are intelligible unless we understand the nature of reference.

### On Reference

A reference ( $\kappa$ ) is a relation between consciousness ( $\mathcal{O}$ ) and its object (t):

$$\exists_{0.1}(\vec{c})\exists(t):\forall(x)\mathcal{O}(x)\rightarrow(x\equiv\vec{c})\wedge(\kappa(\vec{c}, t))$$

The relation is necessarily asymmetrical unless the object is another consciousness:

$$\exists_{0.1}(\vec{c})\exists(t):\kappa(\vec{c}, t)\rightarrow\neg\diamond((\kappa(t, \vec{c}))\wedge\neg\mathcal{O}(t))$$

It seems that consciousness is associated with a property, a binary relation, and a multi-place predicate. These are not different entities. They are different aspects of the same entity. Each aspect is a necessary component of consciousness and none is sufficient.

### On Experience

All sentient beings experience the universe. Experience is the basis for sentient solidarity. Experience is also the prerequisite to knowledge. Knowledge may be based on pre-literate experience or on post-literate experience. Some knowledge is common to all sentients as a consequence of the shared ability to experience.

We would like to introduce the experience predicate:  $\xi$ . This predicate requires three arguments and supports another optional argument. Let:

- s ≡ the subjective agent
- b ≡ the subject's body
- o ≡ the object of the subject's attention
- $\lambda$  ≡ the language that the subject speaks (optionally)

The three-argument form provides the framework for the expression of pre-literate and non-literate experience:

$$\exists_{0.1}(s)\exists_{3.1}(b)\exists_{x,y}^{a,b}(o):\xi(s, b, o)$$

*WFF 4: Pre-Literate Experience*

The four-argument form includes language ( $\lambda$ ) and provides the framework for the expression of post-

literate experience:

$$\exists_{0.1}^{}(s)\exists_{3.1}^{a.b}(b)\exists_{x,y}^{0.0}(o)\exists_{0.0}^{0.0}(\lambda):\xi(s,b,o,\lambda)$$

*WFF 5: Post-Literate Experience*

These well-formed formulas (WFFs) use both concrete and model dimensional qualifiers on the existential quantifiers. This convention is known as the dimensional qualification notation (DQN) and is explained in the next section.

---

First, there is no notational device to alert philosophers to the dimensionality of the variables in well-formed formulas. This has an unfortunate consequence: those who most need to communicate—materialists and idealists, for example—are prevented from doing so by arguments over the appropriateness of existential quantification of ontologically ambiguous variables. Removing that ontological ambiguity will permit progressive discourse even between such philosophical rivals and will likely expand the use of the predicate calculus among philosophers.

Second, there is no notational device to permit philosophers to express—rigorously—the important ontological and epistemological differences between dragons and dreams, for example. This inability bolsters the position of the materialists that argue that the admission of the existence of any entity that is not spatio-temporal will force the admission of the existence of all entities that are not spatio-temporal. Psychologists that seek to treat the whole patient lose to insurance companies that prefer pills. The objectivity of dreams, numbers, and circles must be sacrificed to keep out the fictional dragons, unicorns, and angels. Cognitive scientists and game theorists, too, suffer from an inability to rely on the notation to provide a concise way for one cognitive system to model the theory of mind of another cognitive system. The consequence of these observations is that determinists of every ilk in every walk of life win intellectually and often economically by the paucity of the notation rather than by the strength of their arguments.

We would like a predicate calculus notation that is agnostic with respect to these philosophical issues. That agnosticism would permit us to communicate across the philosophic spectrum of ontological and epistemological (and perhaps even ethical and esthetic) persuasions. A progress in human knowledge ought to be the result.

## Theoretical Mindlessness

As a consequence, philosophical discourse suffers from an inability to benefit from the precision and certainty of proof that is enjoyed by mathematicians.

The standard predicate calculus is bereft of a theory of mind. We say that it is **theoretically mindless** instead of being **theoretically mindful**.

## **The Property Consciousness**

“Modern thought has made considerable progress by reducing the existent to the series of appearances which manifest it.”

## 5.2 Meta-ontology

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### The Universe is Comprehensive

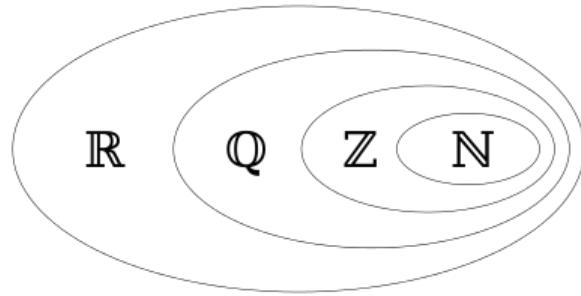
For any existents  $x_n$  of whatever dimensional, ontological, or epistemological partition, there exists a set P (Predicates) and individual elements of that set  $y_n$  both of dimensionality 0.1 and that are immaterial, objective, and known and there exists a set U (Universe) of dimensionality 0.0 that is immaterial, objective, and known such that if  $y_n$  is an element of P and  $y_n$  is true of  $x_n$  then  $x_n$  is an element of U.

We will use the constant  $a_1$  to refer to the Universe in other expressions. We will use the constant  $b_1$  to refer to the Predicates in other expressions.

$$\S 5.2.1 \quad \forall (x_n) \underset{0.1}{\exists}^{IOK} (P, y_n) \underset{0.0}{\exists}^{IOK} (U) : y_n \in P \wedge y_n(x_n) \rightarrow x_n \in U \wedge U \equiv a_1 \wedge P \equiv b_1$$

### Mathematics and NFU Set Theory are Necessary for Analysis

$$\S 5.2.1.0 \quad \underset{0.0}{\exists}^{IOK} (\square, \square, \square, \square) : \square \subset \square \subset \square \subset \square \subset a_1$$



This subject is deep and complex. We know that we are assuming the existence of mathematical and set theoretical entities but we are not going to spend the time to enumerate them before we use them. We use the real numbers<sup>ii</sup>  $\square$  for temporal metrics. We use integers  $\square$  for spatial metrics and vectors.

### Operators are Diachronic

There exists a set O of Operators that is a subset of the Universe ( $a_1$ ) and that is immaterial, objective, and known and of dimensionality 0.0 and there exist operator symbols that represent operations which are of dimensionality 0.1.

We will use the constant  $b_2$  to refer to the the Operators in other expressions.

$$\S 5.2.1.0 \quad \exists_{0.0}^{IOK} (O) \exists_{0.1}^{IOK} (-, +, *, /, \in, \subset, \wedge, \vee, \rightarrow, \dots) : (-, +, *, /, \in, \subset, \wedge, \vee, \rightarrow, \dots) \in O \subset a_1 \wedge O \equiv b_2$$

Axiomatizations of set theory that do invoke urelements include Kripke–Platek set theory with urelements, and the variant of Von Neumann–Bernays–Gödel set theory described by Mendelson.<sup>iii</sup> In type theory, an object of type 0 can be called an urelement; hence the name "atom."

Adding urelements to the system New Foundations (NF) to produce NFU has surprising consequences. In particular, Jensen proved<sup>iv</sup> the consistency of NFU relative to Peano arithmetic; meanwhile, the consistency of NF relative to anything remains an open problem. Moreover, NFU remains relatively consistent when augmented with an axiom of infinity and the axiom of choice. Meanwhile, the negation of the axiom of choice is, curiously, an NF theorem. Holmes (1998) takes these facts as evidence that NFU is a more successful foundation for mathematics than NF. Holmes further argues that set theory is more natural with than without urelements, since we may take as urelements the objects of any theory or of the physical universe.<sup>v</sup>

From <https://www.wikiwand.com/en/Urelement>

## The Physical Universe Exists

For all  $x_n$  of dimensionality 3.1 that are material, objective, known entities, there exists a whole  $\Omega$  that is of dimensionality 3.1 and that is material, objective and known such that if  $x_n$  is not identical to  $\Omega$  then  $x_n$  is a part of<sup>vi</sup>  $\Omega$  and  $\Omega$  is an element of  $a_1$ .

We will use the constant  $h_1$  to refer to the Physical Universe in other expressions.

$$\S 5.2.2 \quad \forall_{3.1}^{MOK} (x_n) \exists_{3.1}^{MOK} (\Omega) : \neg(x_n \equiv \Omega) \rightarrow rarpai(x_n, \Omega) \wedge \Omega \in a_1 \wedge \Omega \equiv h_1$$

## Time and Space are Immaterial

There are two elements of the Universe ( $a_1$ ), Time ( $T$ ) and Space ( $S$ ), each of 0.0 dimensionality that are immaterial, objective, and known. We will use the constant  $a_2$  to refer to Time and the constant  $a_3$  to refer to Space in other expressions.

$$\S 5.2.3 \quad \exists_{0.0}^{IOK} (T, S) : T \in a_1 \wedge S \in a_1 \wedge T \equiv a_2 \wedge S \equiv a_3$$

## Duration is a Measure of Temporal Distance

$$\S 5.2.4 \quad \exists_{0.0}^{IOK} (t_i, t_{i+1}, \Delta t) : (t_i, t_{i+1}, \Delta t) \subset R \wedge \Delta t = t_{i+1} - t_i \wedge \Delta t \equiv a_4$$

In deference to physicists, we adopt a continuous model of time. However, our discourse in this book does not require greater than millisecond granularity.

Temporal addresses and units of measure are sufficient to permit the calculation of durations. We will use the ISO 8601 standard ([http://en.wikipedia.org/wiki/ISO\\_8601](http://en.wikipedia.org/wiki/ISO_8601)) for temporal addresses.

## Length is a Measure of Spatial Distance

$$\S 5.2.5 \quad \exists_{0.0}^{IOK} (\delta) \forall_{0.0}^{IOK} (x_1, x_2, y_1, y_2) : (x_1, x_2, y_1, y_2, \delta) \in \square \wedge \delta = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \wedge \delta \equiv a_5$$

We adopt the Planck length  $\ell_P$  as the quanta of spatial distance. Consequently, we adopt a discrete model of space. We also adopt a Euclidian model of space as three dimensional. The length of a displacement is a scalar value. Directed distance is a vector value.

Spatial addresses and units of measure permit the calculation of displacements and directed distances. For terrestrial location, we will use the ISO 6709 standard of longitude and latitude and ISO 19111 for height and depth.

## Some Existents Have Ontological Horizons

We are introducing a notation here that will permit us to specify (delimit) the here-and-now and spatio-temporal regions for events in both material and immaterial contexts. The notation requires two components:

- The first part is the material or immaterial existent that has the ontological horizon.
- The second part is the ontological horizon that refers to the first part and sets its spatio-temporal boundaries.

As such, an ontological horizon is **an immaterial, objective, known, thing that is of dimensionality 3.1.**

$$\S 5.2.6 \quad \exists_{3.1}^{MOK} (x_1) \exists_{0.0}^{IOK} (\tau, \delta) \exists_{3.1}^{IOK} (\delta^{+1km} y_{x_1}^{\tau-1yr}) : \tau \in a_4 \wedge \delta \in a_5 \rightarrow \neg \exists_{3.1}^{MOK} (x_1) : y_{x_1}^{\tau-2yr}$$

Illustration 7 shows how to use the format.

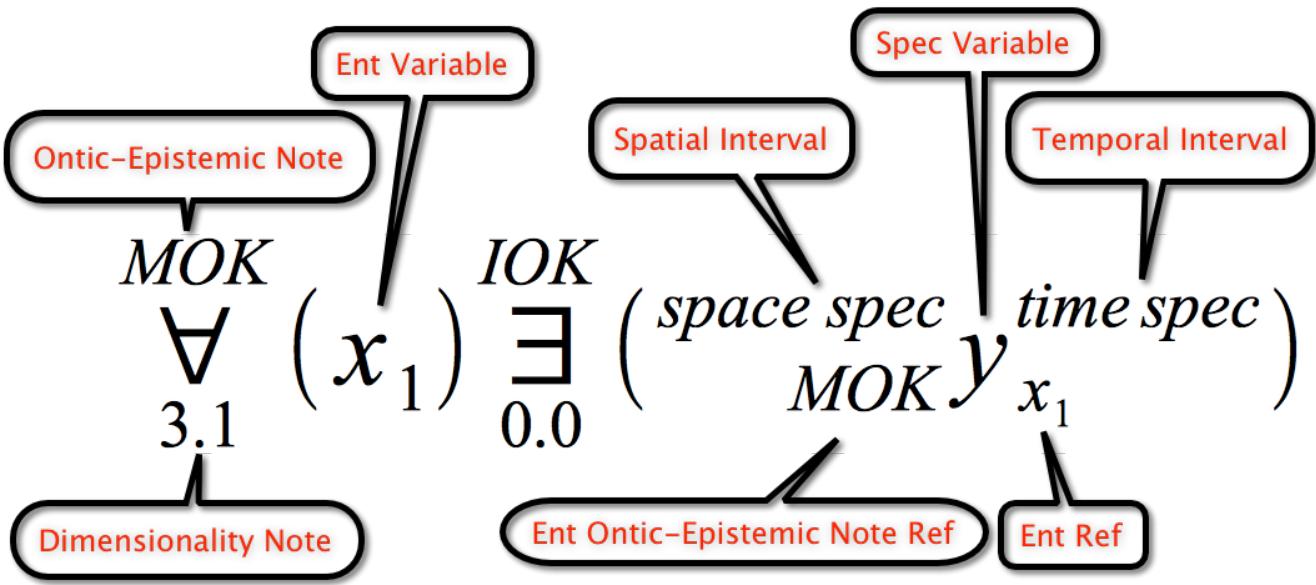


Illustration 4: Format for the Specification of an Ontological Horizon

The easiest way to understand an ontological horizon is to think of things that are born and die. However, that is a special case. Here is the outline of a general case.

The **spatial interval** specification consists of a location anchor (spatial address) and a radius followed by an appropriate unit of measure. For example:  $\delta + 1 \text{ km}$ . This defines a 1 km sphere around whatever spatial address we assign to  $\delta$  as shown in Illustration 5. That assignment is typically the antecedent in one or more conditionals whose consequents depends on that assignment.

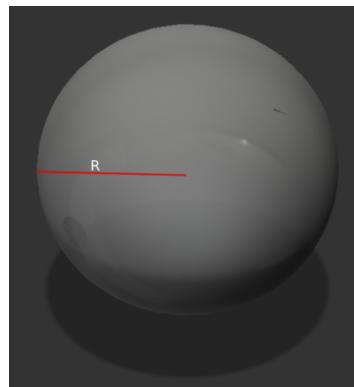


Illustration 5: Spatial Horizon as Sphere of Radius R

The **temporal interval** specification consists of a temporal anchor (time address) and a signed duration followed by an appropriate unit of measure. For example:  $\tau - 1 \text{ yr}$ . By convention,  $\tau$  represents

the now. Unless  $\tau$  is otherwise specified, we would interpret the above expression to refer to any time up to 1 year ago. If the sign were positive, the expression would refer to the future. By using the  $\pm$  symbol, the expression would refer to both the past and the future. Naturally, we can treat  $\tau$  as a variable and assign a date-time to it in the antecedent of a conditional just as we did with the spatial variable.

We will use the metric system for distances and a granularity of milliseconds for durations.

## Predicates Create Ontic Molecules of Ontic Atoms

Our ontology partitions the universe. Any existent that we can assign to a single partition is an ontic atom. While monadic predicates assert set membership or assign attributes to entities, polyadic predicates assert relations among entities. Polyadic predicate expressions and concatenations of monadic expressions may assert the existence of relational entities that consist of combinations of entities from diverse partitions of the universe. We call these entities ontic molecules.

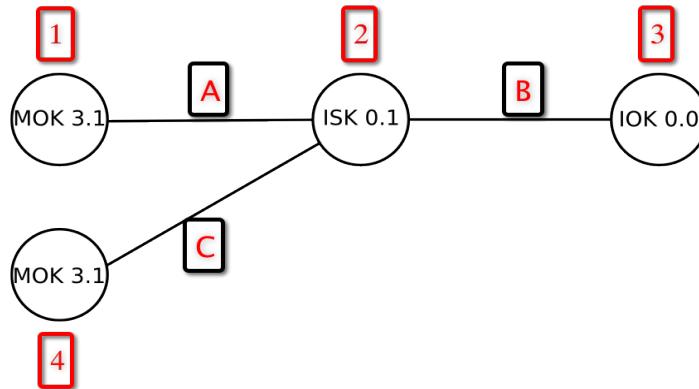


Illustration 6: An Example Ontic Molecule (interpreted in callouts)

Table 8: Interpretation of Ontic Molecule as Dinosaur (*Euparkeria capensis*)

Node Interpretations	Edge Interpretations
1. Dinosaur fossils (found 1913)	A. <b>English:</b> 2 observes 1; <b>Loglan:</b> 2 katca 1
2. Archeologist (1913)	B. <b>English:</b> 2 deduces 4 from 1 and 3; <b>Loglan:</b> 2 trastemao; 3 fu trastemao
3. Theory (timeless)	C. <b>English:</b> 4 is deduced by 2 from 1 and 3; <b>Loglan:</b> 4 nu trastemao
4. <i>Euparkeria capensis</i> (245-230 million years ago)	

$$\begin{array}{l} \text{MOK} \\ \exists_{3.1}(x_1, x_4) \exists_{0.1}^{ISK}(x_2) \exists_{0.0}^{IOK}(x_3) \exists_{3.1}^{IOK}\left(\begin{array}{l} (-29.085214, 26.159576)+900 \text{ km} \\ MOK \mathcal{Y}_{x_1} \end{array}, \begin{array}{l} 1914-1 \text{ yr} \\ (-29.085214, 26.159576)+900 \text{ km} \\ MOK \mathcal{Y}_{x_4} \end{array}, \begin{array}{l} 206 \text{ mya} - 50.9 \text{ myr} \end{array}\right) : x_2 \text{ katca } x_1 \wedge x_2 \text{ trastemao } x_4 x_1 x_3 \end{array}$$

## Some Ontic Molecules are Diachronic

Every ontic molecule is a whole consisting of two or more parts. Those parts may be ontic atoms or ontic molecules. Simple ontic molecules—like the one in Illustration 6—have only ontic atoms as parts. Compound ontic molecules have at least one other ontic molecule as a part.

All compound ontic molecules include simple ontic molecules in some part of their part-whole hierarchy. What is true of all simple ontic molecules is true of the simple molecular parts of compound ontic molecules.

Some ontic atoms are diachronic and some are synchronic. Consequently, some ontic molecules include at least one diachronic ontic atom. We refer to ontic molecules that include at least one diachronic ontic atom as diachronic ontic molecules.

## All Diachronic Ontic Atoms and Molecules are Now-Bound

$$\S 5.2.10 \quad \exists(y \in (0,1,2,3)) \exists(z \in \square) \forall(x) \underset{y,I}{\exists}^{IOK}_{0,1}(\tau) : \tau naza \rightarrow \exists(w_x^{\tau-z}) : z \approx 200 \text{ millisec}$$

We adopt  $\tau$  as the sign of the experienced now (instant) and recognize that its mapping to metricized time is ideo-syncretic, but typically about 200 millisecs.

# Protagonist Consciousness

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At the foundation of every value, every proposition, every conclusion, every act, and every attitude is the complex existent that we call consciousness. Buddhism and existentialism, the parents of Protagonism, both concern themselves with consciousness and we, too, must address it. Our interest in consciousness is not merely because of our inheritance. We wish to provide every Protagonist with the rational armaments to defend humanity's right to become the agent of history.

## ¶1 The Definition of Consciousness

Let's begin by symbolizing the following assertion:

§1 Consciousness is always consciousness of something.

At an ontological level—which is the level at which our predicate expressions aim—there are a few observations we can make. First of all, the something of which consciousness always is may or may not be distinct from that consciousness. Second, consciousness is not perpetually consciousness of the same thing. Finally, the little word “always” imbues the whole expression with a temporal aspect. From these observations, we conclude that the use of the mass noun consciousness in this expression is masking some important distinctions at an ontological level.

At a semantic level, it is clear that consciousness, in whatever guise it assumes, refers to something. We might say that consciousness brings reference into the world because nothing refers to anything without the help of consciousness.

The loglan term for reference is *sanpa*:

(5n) V is a sign of B to S prompting behavior P in situation N. [V-BSPN]

However, the kind of reference we are considering here must include—in fact is based on the possibility of—pre-linguistic reference. We imagine a hungry leopard hiding in tall grasses downwind from an approaching gazelle. The appearance-of-the-gazelle is a sign of relief-from-hunger to the leopard and it prompts hunting behavior in the situation we just described. The relations that *sanpa* asserts are all appropriate as long as we recognize that an appearance can be a sign of something else to a consciousness.

One important sense of the expression in §1 is the following:

§1.1 An appearance is always an appearance of something.

However, to conclude this, we must assume that one sense of the term consciousness is equivalent to the term appearance.

§1.2 Every appearance is a consciousness.

At this point we need to cite the opening sentence of Sartre's Being and Nothingness. “Modern thought has made considerable progress by reducing the existent to the series of appearances which manifest it.”

This means, in part, that there is another sense of the term “consciousness” in which consciousness-of-something is a sequence of appearances<sup>22</sup>. So it seems that, for an individual consciousness, an existent—such as a table—can be reduced to the sequence of appearances of that table to that consciousness.

However, from the point of view of the existent—if I may be permitted this thought experiment—it appears to many consciousnesses (or, as we will consider shortly, to none). Consequently, the being of the existent is **not** limited to the appearance of that existent to an individual consciousness.

These considerations raise questions of the integrity of the existent, of the simultaneity of distinct appearances, and of the necessity of the now to appearing. These issues have been addressed extensively in the literature of phenomenology and existentialism. We will summarize the conclusions in the next few paragraphs.

**The integrity of the existent:** “The appearance refers to the total series of appearances and not to a hidden reality which would drain to itself all the being of the existent.”<sup>23</sup> Admittedly, this presents some difficulty for our interpretation of the appearance as a consciousness-of-something. If nothing but consciousness is capable of referring, and if each appearance of an existent refers to all of the others, then each consciousness of an existent as an appearance must refer to the series of appearances that together constitute that existent.

**The simultaneity of distinct appearances:** While Xavier looks at the empty table in the cafe from the doorway as he enters, the waitress looks at it from the kitchen as she is bringing another client her order. Each sees parts of the table that are hidden from the other. What is the relation between these distinct appearances of this existent at the same time to distinct consciousnesses? Each appearance refers to the whole series of appearances. However, the fact that the waitress can see the spilled coffee that is hidden from Xavier by the napkin container as seen from the door of the cafe is a fact that we must also consider.

Modern thought may have made considerable progress by reducing the existent to the series of appearances that manifest it and all of those appearances may, in principle, refer to the whole series but few concrete consciousnesses have benefitted from that progress because they do not assume that existents have an integrity that goes beyond their knowledge. We believe we know the whole from our experience of the part and take no care to consider the possibility of illusion or ignorance. Sartre and the existentialists like him make an ontological error when they equate an appearance with a sequence or set of appearances. Sequences and sets are entirely different ontic types than their elements. To know from experience an element is not to know its sequence or set. Knowledge of the sequences and sets requires discovery: science.

**The necessity of the now to appearing:** For consciousness, presence is always in the now. When Xavier meets Pamela, he meets her in the now. He sees her eleven ears from a particular perspective and loses sight of one when she turns her head. When he turns his attention to the day they first met, he does not leave the now. He brings that memory into the now. When he imagines their life together in the relative safety of Freeland, he brings the future imaginatively into the now. Xavier, like all of us, is now bound in that sense. Every appearance to every consciousness is a now-bound appearance.

We have considered the phenomenological reduction of the being of an existent to its appearances in two cases: an individual consciousness and a multiplicity of consciousnesses. These are both finite. We

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<sup>22</sup> Sartre uses the term “series” but I have chosen the term “sequence” to avoid confusion with the mathematical definition of series. In mathematics, a sequence is an ordered set of elements that are not necessarily unique, that is any element in one position may occur again in a subsequent position. This is precisely what Sartre intended for a series.

<sup>23</sup> *Being and Nothingness* p xiv. Philosophical Library hard cover edition

discovered that we refuse to magically conflate elements into sequences or sets. We also discovered the origin of error and illusion in the disintegration of the appearance from the sequences and sets to which we admit it belongs. Finally, we discovered the necessity of the now to all appearing. We now want to consider the case of the infinite. To consider an infinite number of points-of-view on an existent is to consider the possible and the logic of possibility.

To appreciate the full extent of considering the infinite, let's first consider the infinite in the moment and then consider the infinite historically. When Xavier enters the cafe at 7:30 for breakfast and sees that his favorite table is free, the table appears to him from that perspective at that time. The waitress that is entering the dining area from the kitchen at that moment also sees that the table is empty from her perspective. In this case we have two appearances of the same existent at the same time.

We agree that the integrity of the existent demands a relation between these two distinct appearances and that that relation is to participate in the set of all possible appearances of that table at that time, at least. How are we to understand an infinite set of appearances of an existent at a moment in time? One approach would be based on our observations of the scene at 7:30 in that cafe as Xavier and the waitress enter and observe the empty table. We might measure the distance between Xavier and the center of the top of the table as 20 feet. The distance from the waitress might be 15 feet. We can imagine two nested spheres around the center of the top of the table one having a radius of 20 feet and the other having a radius of 15 feet. Each of these spheres contains an infinite number of points. If we were to imagine a consciousness to which the table appears at each point on each sphere, we could understand how we could expand the set of appearances of that table infinitely in the now. Of course, we have imagined only two spheres. Given an imaginary geometric ray that has its origin at the center of the top of that table and extends outward infinitely, we could define a sphere of infinite perspectives at each of the infinite points along that ray by taking the distance from that point to the origin as the radius of a sphere.

We will readily agree that there will never be enough consciousnesses to realize that imaginative scenario in this space-time continuum. However we will insist that each one of those infinite perspectives on that table at that time are possible. We will also insist that a disillusioned consciousness that experiences the appearance of that table at that time can choose to believe in the integrity of that appearance as an element of that infinite now-bound set of possible appearances. That disillusioned consciousness will acknowledge its own ignorance with respect to that infinite set. It is the necessary ignorance born of perspective. However, the disillusioned consciousness will also acknowledge the same kind of ignorance in every other consciousness's experience of that existent in this shared now. Only the thought partnership that we call science can lead us out of our necessary ignorance.

Now, let's turn to a consideration of the infinite historically. Just as that table endures so, too, does every consciousness of the table endure. That table is Xavier's favorite table because he has come here many times before with and without Pamela, before and after the waitress worked here and he remembers those experiences. However, it is important to recognize that we share this historical consciousness with other sentient beings. The leopard crouched in the tall grasses downwind from the gazelle remembers the satisfaction of its last kill. We consider an event to consist of a sequence of here-nows. Each sentient that is present during that sequence of here-nows, experiences that event as a sequence of appearances. The disillusioned sentient relates each of those appearances to an infinite set of possible now-bound appearances but also relates each of those possible now-bound appearances to an infinite sequence of time-bound appearances.

## Appendix A. Expressing Premises Using Our Notation

How can we express this using our notation?

$[I:M][O:S][K:U]$   
 $[\forall:\exists]$   
 $[0:1;2:3],[\bar{0}:1]$

Our notational innovation for this essay is to avoid logically connected expressions at the predicate calculus level. Instead, we represent the parts of the intended logically connected expressions separately as propositional variables and then connect the propositional variables logically at the propositional level. We call this the **atomic predicate expression initiative**<sup>24</sup>.

We will use the combination of colon-and-equals ( $:=$ ) in the Symbol Neu font to associate propositional variables with their defining predicate calculus expressions.

$$p := \underset{0.1}{\forall}(\alpha_1, \alpha_2 \dots \alpha_n) \underset{x}{\exists}(\beta) : \alpha \beta$$

We will use § followed by a number to identify particular sentences (propositions) and ¶ followed by a number to group those sentences in paragraphs.

Finally, especially for a consciousness-appearance—what Husserl referred to using the German term abschattung—we will use the Loglan term simvius  $\{(3n) <\text{seem view}>[V\text{-BD}] V$  is the appearance/look (s) of B to D.}. We will represent a simvius in predicate calculus expressions as a variable with a centered subscript and a centered superscript  $\overset{0.0}{\underset{\Omega}{\alpha}}$ . The centered subscript is a pointer to the existent of which it is an appearance. The centered superscript indicates the dimensionality of the referent (existent).

$$p := \underset{0.0}{\exists}(\Omega) \underset{3.1}{\forall}(a_1, a_2, \dots a_n) \underset{\Omega}{\exists}(\overset{0.0}{\underset{\Omega}{\alpha}}) \underset{0.1}{\forall}(\overset{0.0}{\underset{\Omega}{\alpha_1}}, \overset{0.0}{\underset{\Omega}{\alpha_n}}) \underset{0.1}{\exists}(\Delta) : (\overset{0.0}{\underset{\Omega}{\alpha_m}} \in \Delta \wedge a_m \in \Omega) \rightarrow \Delta \text{ kinsea } \Omega$$

The set  $\Delta$  represents the infinite number of appearances that constitute the existent. Since the set  $\Delta$  is niping, it exists (possibly differently) at  $\tau$  and at  $\tau+1$ .  $\Delta$  at  $\tau+1$  can contain an element that is an appearance of the existent at  $\tau$  which would then be a reflective consciousness. However, that **reflective consciousness** seems to be completely different than the **implicit self-consciousness**. We do not yet understand how to render the implicit self-consciousness in our notation.

What if we were to use a forward time reference? That would be to refer in the now to the reflective consciousness that would later be able to look back on this moment and reflect on the whole. What sort of being would that be? It would certainly be distinct from any sensory-bound appearance because it would rely on the imagination. When we say that it is implicit, perhaps we can express that using predicate calculus implication. That would avoid there being any explicit appearance in  $\Delta$  at  $\tau$ .

So, the first issue we need to address is how we will represent  $\Delta$  at  $\tau$ . If we take the set to be a function of time, then tau will follow it parenthetically.

$$\underset{0.1}{\forall}(\overset{0.0}{\underset{\Omega}{\alpha_1}}, \overset{0.0}{\underset{\Omega}{\alpha_n}}) \underset{0.1}{\exists}(\Delta(\tau), \Delta(\tau+1)) : \overset{0.0}{\underset{\Omega}{\alpha_m}} \in \Delta(\tau) \rightarrow \bullet \underset{0.1}{\exists}(\overset{0.1}{\underset{\Delta(\tau)}{\alpha_l}}) : \overset{0.1}{\underset{\Delta(\tau)}{\alpha_l}} \in \Delta(\tau+1)$$

For all immaterial, subjective, known entities of niping dimensionality ( $\overset{0.0}{\underset{\Omega}{\alpha_{1\dots n}}}$ ) which point to the set  $\Omega$  of nipini dimensionality, there exist two immaterial, subjective, known sets ( $\Delta(\tau), \Delta(\tau+1)$ )

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<sup>24</sup> I am not very convinced this is a good idea.

both of which are of nipine dimensionality and a function of the time variable  $\tau$  such that if any  $\overset{0.0}{\alpha_m} \underset{\Omega}{\Delta}$  is an element of  $\Delta(\tau)$  then it is possible that there exists an immaterial, subjective, known entity of nipine dimensionality which points to the set  $\Delta(\tau)$  such that  $\overset{0.1}{\alpha_i} \underset{\Delta(\tau)}{\Delta}$  is an element of  $\Delta(\tau+1)$ .

This rendition solves the problem of an implicit self-consciousness by identifying it with a possible reflective consciousness at a subsequent time.

Consciousness is a sequence of appearances. Each appearance is both a consciousness of something—the existent which appears—and simultaneously an implicit consciousness (of) self.

$$\overset{K}{\forall}_{0.1} (\alpha) \overset{K}{\exists}_{0.1} (\beta) : \alpha \overset{a.b}{\equiv} \beta_x$$

$$\overset{K}{\forall}_{0.1} (\alpha_1, \alpha_2 \dots \alpha_n) \overset{K}{\exists}_{0.1} (\beta) : \alpha \overset{a.b}{\equiv} \beta_x$$

Let's address these facts by using sets, relations and the loglan predicates *sanpa* and *kinsea*.

The loglan term for reference is *sanpa*:

(5n) V is a sign of B to S prompting behavior P in situation N. [V-BSPN]

The loglan term *kinsea* is a dyadic predicate that associates a collector with a collection.

Identity ( $\Sigma$ ) is a monadic relation with self. An appearance (A) is a dyadic relation that consciousness establishes with an existent.

A disillusioned consciousness—a collection of appearances (

$\exists (dc_{1..n}, DC, C_{ak}) \forall (dc_{1..n}) : dc_{1..n} \in DC \wedge DC \subset C_{ak}$  ) and the collector (DC *kinsea* DC) of those experiences—interprets the appearance of an existent ( $dc_m$ ) as a sign of the particular infinite collection of appearances that properly constitute that existent.

We need to do some preliminary work before we can be sure that we are rendering these entities properly. The consciousness that creates an appearance as its relation to an existent, that interprets that appearance as a sign of an infinite set of appearances constituting that existent, that collects appearances of many existents over time and remembers some and forgets others, is a **finite diachronic nipine** set of simvius. The existent is an **infinite synchronic nipini** set of infinite possible appearances to infinite possible consciousnesses.

# On the Functions of a Discrete Time Sub-System

*Alan Gaynor 03/25/13*

“The structure of a system determines its function.”

The structure of a system consists of the connections among its sub-systems.

What can a sub-system do? The simple answer is that it can transform inputs into outputs. For finite functions (those with a finite number of distinct possible inputs), we can implement such a sub-system as a perl hash. To do that, however, we need to itemize each of the ways the sub-system can transform an input into an output.

First, however, let's consider the nature of the sub-system's inputs and outputs. Certainly, they could be numeric or non-numeric. We understand the numeric functions well and we can easily itemize them and generate hashes for them. The challenge is to select the appropriate finite sub-set of the infinite number systems that are available: integer, natural, rational, irrational, imaginary, etc.

For the non-numeric, it might seem at first that the challenge is much more difficult. However, a few observation can help us to make the problem tractable. For example, we can classify all non-numeric expressions as parsable or not. By parsable, we mean that such expressions have a syntax. Unparsable expressions have no syntax. Unparsable expressions, while they suffer from the same problem of reducing the infinite to an appropriate finite subset, can be handled in the same way as the numeric functions: a perl hash.

The parsable expressions, however, are possibly very complex. Here, too, however, it is possible to reduce the problem to tractable dimensions by observing that there are at most two classes of such parsable expressions:

- Logically-primitive parsable expressions
- Logically-complex parsable expressions

Modern logic uses predicate calculi<sup>25</sup> (suitably qualified) to handle the logically-primitive parsable expressions and propositional calculi (suitably qualified) to handle the logically-complex parsable expressions.

Including these techniques—in our consideration of discrete time sub-systems from a systems-analytic perspective—insulates us from the critique that Lewis Mumford levels against the collusion of scientists with the power elite of the megamachines that have arisen over the course of the last century.

His contention is—translated into systems-analytic language—that our cultural surrender to numeric interpretations of knowledge has excluded all of the humanistic knowledge we have acquired from the construction and control of our social systems (cultural, scientific, economic, etc.). The consequence of this has been the subjugation of the organic and humane to the mechanisms of the machine.

Modern logic has empowered scientists to engage with the human universe of discourse in non-numeric ways without abandoning the objectivity of science.

We still need to answer the questions about the completeness of our coverage of parsable expressions.

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<sup>25</sup> Set theory is often used for the logically-primitive universe of discourse. Predicate calculi have the advantage of being expressed as syntactic systems with less mathematical subtlety.

However, we have proofs that we can rely on in this area. In particular, we have the incompleteness proofs of Kurt Gödel. It is important to remember that his proofs apply only to unified deductive systems that have the expressive power of arithmetic. His proofs are compatible with multiple deductive systems—each of which is incomplete but consistent—being used to address any arbitrary universe of discourse. I would like to suggest that the combination of the first order predicate calculus (with appropriate qualifications) and the propositional calculus, taken together, might meet this criterion.

Our goal here is to describe a simulation environment that can handle both numeric and non-numeric expressions in a systems-analytic fashion.

## **The Purported Problem of Semantics for Non-Numeric Expressions**

The greatest impediment to handling non-numeric expressions in the construction of a system from sub-systems seems to be respecting—if not determining—the appropriate semantic interpretation of those expressions.

In reality, with respect to our simulation environment, the difference between the semantics of numbers and the semantics of non-numeric expressions is not really the issue. The great facility that digital computers show for the manipulation of numbers is not due to their “understanding” of the semantics of numbers. They do not know any more about the nature of numbers (2, for example) than they do about the nature of words (“beauty” for example).

What computers—and the algorithms that we program into them—do “understand” or “know” about numbers, is how they interact with each other in the context of arithmetic and derivative operations. In other words, in the context of equations and inequalities.

If we intend to design a simulation environment that is agnostic with respect to the numeric/non-numeric distinction, we will have to provide algorithms that do for predicate and propositional calculi what equation and inequality processors do for numbers. Such algorithms do not provide a semantics but they do extend the syntax to cover all operations in the universe of discourse.

## **Explicit and Intuitive Logic**

The primary difference between explicit and intuitive logic is that it is possible to check explicit logic and it is not possible to check implicit logic. Scientific knowledge depends on explicit logic and objective public criticism. I want to challenge the assumption of atheists and agnostics that intuitive logic is sufficient.

# The Ontology of Disintegration

by [gat@cooperation.com](mailto:gat@cooperation.com)

If there really is an unintentionally designed global human-machine system that is structurally inclined toward the disintegration of humanity as an historical agent, then any analysis that is not comprehensive will not be convincing. We intend to be convincing by being comprehensive.

Certainly, the concept of an “unintentionally designed” system needs further explanation. We might substitute the word “evolved” for this phrase. But we will take up that argument at another time.

## The Here-and-Now

Let's begin with a concept that even the Buddhists accept: the here-and-now. They say: Be here now. Mostly, they deny that anything else exists. This denial is primarily aimed at a critique of a belief in the past or the future. The past is just a memory that resides wholly in the present, they argue. And, the future is just a plan or an intention that, similarly, resides entirely in the present. From a protagonist's perspective, the unanswered question is to what does the memory, plan, or intention refer? More generally, protagonists ask to what do true propositions and equations refer? We will argue that the Buddhist's denial of the existence of the past and the future is a consequence of their unjustified (and therefore dogmatic) materialism. We won't make the same mistake.

Imagine that you and your lover are sitting together under the stars within arm's reach of each other—or even closer. For the most part, your here-and-now and your lover's here-and-now are synonymous. Let's say that you kiss each other and then stand up and begin walking away from each other. How far apart do you have to be before we can say with confidence that your here-and-now is different from—no longer intersecting—your lover's?

Clearly, the answer to this question depends on our answer to another question: Is everyone's here-and-now finite or infinite?

### A Finite Here-and-Now

If my here-and-now is finite, then there is some positive, non-zero value for  $r$ —**the radius of the sphere of my experience and of which I am the center**—that will determine how far away my lover must be before we can consider her to be outside of my here-and-now.

$$r > 0$$

Linguistically, in this case, the here-and-now totality is a dynamic, discontinuous, mass term. It consists of the union of all of the finite here-and-now spheres of every sentient human and changes from second to second as each sentient moves around.

$$B \equiv B_1 \cup B_2 \cup \dots B_i$$

### An Infinite Here-and-Now

Alternatively, our here-and-nows could be infinite.

$$r = \infty$$

In this admittedly counter-intuitive case—where everything everywhere is part of my here-and-now—no one could ever leave the here-and-now of another.

This alternative is not as important as a concrete possibility as it is as a limiting case. We may not know the exact value of the radius of our here-and-now. However, we know that it is either finite or infinite.

$$\forall r: (r=\infty) \vee (0 < r < \infty)$$

## **Relations and the Here-and-Now**

We can avoid these ontological quibbles. If A represents our whole universe of discourse about concrete (addressable) things and B represents the dynamic union of all finite here-and-nows, then the following equation captures their relation:

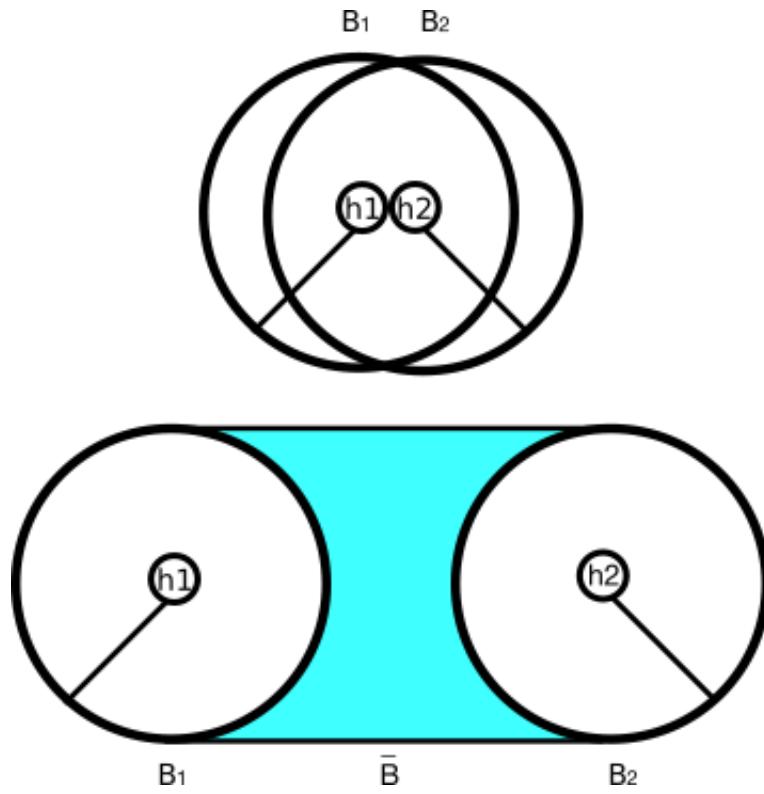
$$A \equiv B \cup \bar{B}$$

Where  $\bar{B}$  is all that we can discuss that is left out when our here-and-nows are finite. We call this the complement of B and it deserves some explanation.

As we mentioned above, the Buddhists deny the existence of anything other than the here-and-now. Let's describe the difficulty of this position in the context of the distance between our lovers.

Illustration 4 above shows our two lovers,  $h_1$  and  $h_2$  as they are separating. The surface areas of  $B_1$  and  $B_2$  depend on the distance  $r$  (the radius of any personal here-and-now). Now, as our lovers separate, the area,  $\bar{B}$ , (the complement of B) that is swept out by  $B_1$  and  $B_2$  is a problem for the Buddhists. Since that area was once part of either  $B_1$  or  $B_2$ , it must have existed. Since it is no longer a part of either here-and-now, according to the Buddhist ontology, it exists now only in the memories of the lovers.

Another apparent consequence of this Buddhist ontology is the disappearance of the lovers themselves once their here-and-nows no longer intersect.



*Illustration 7: Beyond the Here-and-Now*

But not everyone is a Buddhist or accepts this Buddhist ontology. We need a notation that is agnostic with respect to this ontological aspect: the absent concrete. We will present such a notation in Absent-Concrete Notation for DQN.

This equivalence relation is comprehensive in the sense that all possible definitions of the here-and-now are captured in it.

Clearly, if the here-and-now is both personal and finite, and if we were to assert the existence of only the here-and-now, all of the entities that fall into  $\bar{B}$  would not exist.

Our point is that, even if the here-and-now is considered to be infinite, there are still some objective existents that are excluded. Naturally, if they are excluded from the here-and-now when it is infinite, they are also excluded when it is finite.

Let's explore that which is not here-and-now.

## The Not-Here-and-Now

All entities in the here-and-now have—at the very least—a relative spatio-temporal address: the three orthogonal spatial distances from the center and the time anchor (for memories, etc.). That address is relative to an observer. That observer is the person whose here-and-now we are considering. Making a relative address the necessary attribute of any here-and-now entity is simpler than saying every entity has either mass or energy. In addition, it is sufficient for our purposes because we want to find objective entities that do not have either mass, or energy, or even any relative spatio-temporal address.

Are there any such entities?

Well, consider this. I am writing and you are reading. You are able to understand what I am writing because you understand—minimally—the syntax of the language in which I am writing. Certainly you will agree that the syntax of a language has no mass or energy, right? What is the spatio-temporal address of the syntax of English (or any other language for that matter)? Obviously, it can't be only inside your head, because how could I have access to it? For the same reason, it can't be only inside my head, either. Did it exist before either of us was born? If not, how did we learn it? If so, then it isn't in either of our heads. Did it exist before any English speakers existed? If not, how did the first English speakers create it? If so, then it isn't in anybody's head. If it isn't in anybody's head, where is it? Our answer is: nowhere. **Its form of existence is objective but outside of the spatio-temporal addressing scheme of any here-and-now.**

Before you deny its existence in the pre-linguistic period, consider how its existence might be similar to the existence of the law of gravity or the number 2. The law of gravity expresses a relation between masses and the number 2 expresses a relation of quantity independent of the entities counted or measured.

Is it possible for a relation between things to be internal to the things it relates? That might seem plausible for the syntax of languages and even the law of gravity but if it is also true of 2 then it must be true of 3 and  $\pi$  and so on. This doctrine of internal relations means that every entity holds within itself every possible relation. In addition, those internal relations in each entity—because they are delimited by the entity itself—must be synchronized with the same entities that exist inside every other existent. This is certainly reminiscent of Leibnitz's pre-existing harmony. However, it doesn't pass the Ockham's razor test. It would be much simpler if there were only one 2, one 3, one  $\pi$  and so on.

Now, we can ask—meaningfully—how the child learns the syntax of his mother's language. There is an answer to that question. But is there an answer to the question of how all matter acquires the law of gravity or how every entity internalizes all relations? One suspects that the answer has a distinctly mystical connotation: they originate that way.

In that case we will raise one last example. What is the address of the life force that animates a person while alive and disappears at death? How much does it weigh?

What we need is an ontological notation that is agnostic with respect to the here-and-now. I have created just such a notation.

## Dimensional Qualification Notation for Predicate Calculi

### Absent-Concrete Notation for DQN

When the dimensionality of an expression in a predicate calculus with DQN is concrete—typically 3.1—there is an additional dimensional consideration that requires specification. We name this in accordance with the problem that necessitated its invention. That is the problem of the Absent-Concrete that we described above.

In general, whenever we assert the existence of a concrete entity, we ought to help our scientific and skeptical audiences understand the spatial and temporal distances at which the phenomenon is

observable. The simplest structure we can invent for that is a delimited string that has two parts on each side:

- On the left side: a number, a space, and the unit of spatial distance measure
- On the right side: a number, a space, and the unit of time distance measure

Let's take a concrete example. Recently, there was some controversy concerning the re-classification of Pluto. The average distance between Pluto and the Sun is 39.5 Astronomical Units (AU). An AU is 149597870700 metres. The velocity of light in a vacuum is 299792458 metres per second. Converting to AUs, we have 0.002 AUs per second. Multiplying, we have 19750 seconds (5.486 hours) for light to traverse the distance between the Sun and Pluto. Consequently, the light we see from Pluto in our here-and-now corresponds to the state of Pluto more than 5 hours ago. In this example, the difference between the average distance between the Sun and Pluto on one side and the Earth and Pluto on the other is inconsequential.

We also observe that it would be possible to make do with just the spatial number or just the temporal number. We prefer to use both because their ratio provides information about the underlying model of the physical universe we are using to describe the object. It provides the relation between time and space. Consequently, the notation could be used in a Science Fiction story where there is a different relationship between space and time.

Here, then, is our example of using the dimensionally qualified first-order predicate calculus with absent-concrete notation to assert the existence of Pluto:

$$\exists(x)_{3.1}^{39.5 \text{ AU}: 19750 \text{ s}} : PLUTO(x)$$

This notation alerts the Buddhist philosopher to the fact that the entity PLUTO for which existence is being asserted requires a radius of the here-and-now of at least 39.5 AUs and a definition of the present that is at least 19750 seconds **in duration**. Put another way, for the Buddhist to accept the existence of Pluto, an instant must be no less than about 5.5 hours!

## On Being Comprehensive

We now have the tools we need to express, comprehensively, our vision of the disintegration of humanity as a unified historical agent.

Above, we gave the following equivalence:

$$A \equiv B \cup C$$

Where:

- A is the here-and-now universe of discourse if the here-and-now is infinite . Otherwise, it is the universe of discourse that contains all spatio-temporally addressable entities.
- B is the union of each individual's here-and-now universe of discourse if the here-and-now is finite and positive. If the here-and-now is infinite,  $A \equiv B$  and  $C \equiv \emptyset$  .
- C is the here-and-now complement of B. As C tends toward the empty set, B tends toward A. As C tends toward infinity, the here-and-now tends toward the empty set.

Now, we need to define our primary actors H and M:

- H is, humanity, the set of all human beings:

$$H \equiv \{h_1, h_2, \dots, h_n\}$$

- M is the set of all addressable entities and their necessary relations that constitute the Machine:

$$M \equiv \{m_1, m_2, \dots, m_m, r_1(m_x, m_y, \dots, m_z) \dots\}$$

## Ontology and Objectivity

Ontology—as I am sure we all know—is the branch of philosophy that studies **existence**. Happily, there is another branch of philosophy (some think it is a branch of mathematics but that is an argument for another day) that has developed a standard notation for expressing propositions about existence. In formal logic—the predicate calculus in particular—we represent the claim that something exists by using a special symbol:  $\exists$

Let's say that we have a set G of objects and that we want to assert that G has at least one member. We would write that as follows:

$$1. \quad \exists(x): x \in G$$

And we would read it as: *There exists an x such that x is an element of G.*

That reversed capital E is the existential quantifier. Now, depending on the nature of the set G, x may or may not be *objective*.

For example, G might be the set of Gaynorian delusions! These delusions cannot be said to be objective (as we will soon see from the definition of objectivity) but formal logic is **agnostic** about the objectivity of purported existents. This agnosticism is precisely its strength because it allows us to explore the **hypothesis** without burdening us with **epistemological baggage**. We don't **know** that x exists, but we can be methodologically meticulous about our investigations regarding its existence because our notation provides objective methods of inference and hence transparency. If we cheat, anyone who knows the notation can catch us.

## Definition of Objective

By *objective*, we mean the following:

Something is objective insofar as it is independent of either a particular mind or minds altogether.<sup>26</sup>

By this definition—as a consequence of that little word *or* near the end—we have the following **two** kinds of objective entities:

1. Entities that are independent of **any particular** mind
2. Entities that are independent of **all** minds, i.e., independent of mind itself

## Definition of Independence

To formalize this definition, we will take “independence of a from b” to mean that the **existence** of b

26 <http://www.philosophy-dictionary.org/Dictionary-of-Philosophy-of-Mind/objective>

is not necessary to the **existence** of a. So, in general, we will say that a is independent of b when the following condition holds:

$$2. \quad \neg(\exists(a) \rightarrow \exists(b))$$

*It is not the case that the existence of a implies the existence of b.*

However, to formalize the assertion about the independence from a mind, we need to define mind. To do that, we need to introduce a special notation.

### A Dimensionally Qualified Predicate Calculus Notation

Let's represent the dimensionality of an entity by a decimal number in the range of 0.0 to 3.1. By convention, let's let the units place refer to the number of spatial dimensions and the decimal place refer to the number of temporal dimensions. Let's further limit ourselves to a maximum of 3 mutually orthogonal spatial dimensions and 1 temporal dimension. Let's also let, U represent the universe of discourse. Then, we can express the existence of the objective entities that are independent of both temporal and spatial dimensions as follows:

#### Timeless-Extensionless Expressions

$$3. \quad \exists_{(0.0)}(n) : n \in U \quad \text{e.g., numbers (2, 88, 103)}$$

Let's understand the claim here. **Numbers** are not the figment of the imagination of a single mind. Many minds understand what is meant by the concept of number and that concept is objective in that sense. While it is true that the understanding of the concept of number would disappear if there were no minds, we cannot conclude from that that the **referent of that concept** would disappear. Presumably, the physical universe would continue to be ruled by relations among things and the metrics that express those relations and the quantities that those things embody.

#### Timeless-Spatial Hierarchy Expressions

$$4. \quad \exists_{(1.0)}(l) : l \in U \quad \text{e.g., a geometric line or line segment}$$

$$5. \quad \exists_{(2.0)}(p) : p \in U \quad \text{e.g., a geometric plane}$$

$$6. \quad \exists_{(3.0)}(f) : f \in U \quad \text{e.g., a figure of solid geometry such as a cone or cylinder.}$$

Let's understand the claims here:

- **Lines and line segments**, similarly, are objective. While we can't touch them, they are eternal. They don't wink out of existence when we don't pay attention to them. They govern such things as falling objects in gravitational fields and the behavior of a ray of laser light in the absence (or relative remoteness) of gravitational fields.
- **Planes**, similarly, are objective. They approximate—with a high degree of accuracy—the region swept out by the orbit of celestial objects such as the earth and its moon. They inform us as we attempt to orient a lens in the cylindrical casing of a telescope.
- **Figures of solid geometry** are also objective. They approximate—with a high degree of

accuracy—the shapes of celestial objects, of crystals, and of the double helix of DNA molecules.

However, it may well be a mistake to attribute existence—even in the dimensionally qualified way we are proposing—to these entities only because they help us predict or understand events in the universe we observe. They help us to understand events that we can not observe, too. The Higgs boson is a case in point. However, their power may help us to understand universes that may exist in which the gravitational constant is such that no sentient beings of our kind could exist! Physicists call these parallel universes.

Then, we can express the last kind of entities as follows:

## Temporal-Spatial Hierarchy Expressions

7.  $\exists_{(0.1)}(\tau): U(\tau)$  e.g., time
8.  $\exists_{(1.1)}(x): U(x)$  e.g., a point moving on a line
9.  $\exists_{(2.1)}(y): U(y)$  e.g., a line moving in a plane
10.  $\exists_{(3.1)}(c): U(c)$  i.e., any element of the space-time continuum, e.g., the earth enduring

This notation is still epistemologically agnostic in the sense that it does not claim to **know** what exists and what doesn't exist, it simply provides us with a method for marking the dimensionality of purported existents.

However, the ability to mark the dimensionality of purported existents makes this notation **ontologically agnostic**. It reserves judgement regarding whether or not entities of other dimensions exist. This permits us to hypothesize rigorously about such entities.

## Definition of Mind

Let's return, now, to our definition of mind. Centuries of controversy surround the definition of mind in modern philosophy. Fortunately, we hope to avoid some of the controversy by focusing on just three important attributes of mind.

1. Having a body is not sufficient to having a mind.

The proof of this is death. The body remains but the mind is no longer there.

2. Having a body is necessary to having a mind.

The support of this is that there is no credible (i.e. irrefutable) evidence for disembodied minds.

3. Mind endures (as long as the body it depends on lives) but it does not take up space.

The support of this is that a dead body displaces no more water than a living one. We will formalize this by attributing a dimensionality of 0.1 to mind.

Consequently, we will formalize the definition of mind (m) as follows:

11.  $\forall_{(0.1)} (m_n) : m_n \in U$

For all minds ( $m_n$ ) of dimensionality 0.1,  $m_n$  is an element of the universe of discourse.

12.  $\forall_{(3.1)} (b_n) : b_n \in U$

For all bodies ( $b_n$ ) of dimensionality 3.1,  $b_n$  is an element of the universe of discourse.

13.  $\exists_{(0.1)} (m_1) \rightarrow \exists_{(3.1)} (b_1)$

The existence of a mind  $m_1$  of dimensionality 0.1 implies the existence of a body  $b_1$  of dimensionality 3.1.

14.  $\neg (\exists_{(3.1)} (b_1) \rightarrow \exists_{(0.1)} (m_1))$

It is not the case that the existence of a body  $b_1$  of dimensionality 3.1 implies the existence of a mind  $m_1$  of dimensionality 0.1.

## Definition of Objectivity

We are now in a position to complete our definition of objectivity. We defined objectivity informally as being independent of a particular mind or of mind itself. We gave a formal definition of independence and we provided a formal definition of mind. Here then is the formal definition of an objective existent,  $o$  that is a member of the set  $O$  of objective things. Such an existent must meet at least one of the following conditions:

15.  $\exists(o) : o \in O \rightarrow (\neg(\exists(o) \rightarrow \exists_{(0.1)} (m_1) \exists_{(3.1)} (b_1) : S(m_1, b_1)))$

There exists an  $o$  such that  $o$  is an element of  $O$  if it is not the case that the existence of  $o$  implies the existence of a **particular** temporal existent  $m_1$  and a **particular** spatio-temporal existent  $b_1$  such that  $b_1$  is the body of a **particular** Sentient with mind  $m_1$ .

16.  $\exists(o) : o \in O \rightarrow (\neg(\exists(o) \rightarrow \exists_{(0.1)} (m_n) \exists_{(3.1)} (b_n) : S(m_n, b_n)))$

There exists an  $o$  such that  $o$  is an element of  $O$  if it is not the case that the existence of  $o$  implies the existence of **any** temporal existent  $m_n$  and **any** spatio-temporal existent  $b_n$  such that  $b_n$  is the body of **any** Sentient with mind  $m_n$ .

## Ontological Prejudice

Now, let's contrast the ontological agnosticism of our notation with the ontological prejudice we referred to in the beginning. *Ontological prejudice* is an attitude that asserts that the **only** objective entities are those of just some selected type of dimensionality. For example, materialists have an ontological prejudice against entities other than those of the type of expression 10.

This kind of ontological prejudice is a form of dogmatism. That is the second part of the claim of disillusionists.

## Dogmatism

Let's define dogmatism more rigorously.

## **Forms of Dogmatism**

There are **affirmative** and **negative** forms of dogmatism. An affirmative dogmatism makes an assertion like the following:

17.  $\forall(x):x \in G \rightarrow x \in A$

*For all x, if x is an element of G then x is an element of A.*

That is equivalent to the assertion that G is a proper subset of A.

This becomes a dogma when the following kind of evidence is denied, refused, or suppressed:

18.  $\exists(y):y \in G \wedge \neg(y \in A)$

*There exists a y such that y is an element of G and y is not an element of A.*

A negative dogmatism makes an assertion like the following:

19.  $\neg\exists(y):y \in G$

*It is not the case that there exists a y such that y is an element of G.*

In other words, the set G is empty, it has no elements. Such an assertion becomes a dogma when the following kind of evidence is denied, refused, or suppressed:

20.  $\exists(z):z \in G$

*There exists a z such that z is an element of G.*

In both the affirmative and negative cases of dogmatism, maintaining the dogmatic position requires denial of evidence. In this sense, my rationalist, skeptical friends are correct.

## **The Necessity of Rules of Inference**

However, the disillusionist assertion—my assertion—is that evidence is **not sufficient**. In fact, evidence does not disprove anything unless we have agreed on **rules of inference**. The disillusionist contention is that rules of inference are **necessary** to rational and skeptical discourse.

Why are rules of inference necessary? They are necessary because they define what we mean by a **contradiction**. Contradictions are necessary for proofs and disproofs. In other words, unless we can agree that the following assertion is false<sup>27</sup> (no matter whether y is or is not an element of G), then we cannot prove anything to anybody:

21.  $\exists(y):y \in G \wedge \neg(y \in G)$

*There exists a y such that y is an element of G and y is not an element of G.*

To assert that this is false without making explicit the rules that allow anyone to determine that it is false, is dogmatic. There are at least two ways in which this statement could be false. It could be false because y doesn't exist. Or, it could be false because G doesn't exist. Our rules of inference must clarify the permissible conclusions from such sets of propositions.

However, once we do define our rules of inference—and agree on them with our interlocutors—then we can proceed with rational discourse. Otherwise, we can't.

So, let's take a look at a plausible set of complete rules of inference.

<sup>27</sup> Of course, we are assuming, unnecessarily, that ours is a bivalent logic. That is merely a simplification for concision.

Later, we will consider trivalent and polyvalent logics. But that is no matter for the discourse we are conducting here. Trivalent and polyvalent logics still must have rules of inference.

## Our Rules of Inference

A logical rule of inference is a rule that allows us to infer one logical formula from another. In general it is something like this:

$$22. \quad F_1 \xrightarrow{R_I} F_2$$

A set of logical rules of inference are complete if they stipulate a result for every logical value for every possible monadic and every possible dyadic relation. Finally, for a quantified predicate calculus, we also need to provide all equivalences between the combinations of quantifiers.

Table 8 provides just such a complete listing of the dyadic relations for a bivalent logic<sup>28</sup>.

<i>p</i>	<i>q</i>	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>T</b>	<b>T</b>	F	F	F	F	F	F	F	T	T	T	T	T	T	T	T	
<b>T</b>	<b>F</b>	F	F	F	T	T	T	T	F	F	F	T	T	T	T	T	
<b>F</b>	<b>T</b>	F	F	T	T	F	F	T	F	F	T	T	F	F	T	T	
<b>F</b>	<b>F</b>	F	T	F	T	F	T	F	T	F	T	F	T	F	T	T	

Table 9: Names and Definitions of All Possible Dyadic Relations for a Bivalent Logic

## Materialism: An Example of a Dogmatic Ontology

Let's use these definitions of dogmatism to understand the dogmatism of a materialist.

Materialists refuse to acknowledge the existence of anything that doesn't have a spatio-temporal address. We can express their contention in our ontologically agnostic notation thusly:

$$23. \quad \forall(x): x \in U \rightarrow (\exists(x): x \in G \rightarrow \exists_{(3.1)}(x): x \in G)$$

For all entities *x*, if *x* is an element of the universe of discourse *U*, then, if there exists an *x* such that *x* is an element of *G* then that element of *G* is of dimensionality 3.1.

To restate the same thing slightly differently, materialists contend that anything that we can discuss (is a member of the universe of discourse) that is also a member of any set (has any objective attribute) must be of dimensionality 3.1.

The primary counter examples are time and space. Materialists require time and space to exist

28 Adapted from [http://en.wikipedia.org/wiki/List\\_of\\_rules\\_of\\_inference](http://en.wikipedia.org/wiki/List_of_rules_of_inference) 07/26/12

(otherwise how will they be able to give a spatio-temporal address to anything?) but neither time nor space qualifies as an existent because we can not give an address for either! So, they are dogmatists because they deny the following objective fact:

$$24. \quad \exists_{(0.1)} (\tau) : \tau \in U$$

*There exists an entity time ( $\tau$ ), of dimensionality 0.1, such that time ( $\tau$ ) is an element of the universe of discourse.*

Where is time? How wide is time? How deep or long is it? We can not answer these questions about time because time is not of dimensionality 3.1. But that does not mean that time should be relegated to the same ontological category as a square circle or a disembodied mind!

We can make the same kind of argument with respect to each of the spatial dimensions as well. When is length? How long does width last?

We could even explore the orthogonality of spatial dimensions with the same result. How wide is length? How deep is width?

Now, you may feel some sympathy for the poor materialists at this point. You may be thinking we should give them the benefit of the doubt and interpret their insistence on spatio-temporal addresses as merely a requirement for existents to be **measureable**. But what will these materialists use to measure their existents? Numbers, perhaps? Ah, but numbers you see, according to the materialists, don't exist! And how would you measure a number? Certainly, the number 2 has no spatio-temporal address. But it has no mass, no spin, no electrical charge, and so on. So, you are offering them the option of grounding their existents on beings they claim are mere fictions. Is that a good idea?

Viewed from the disillusionist perspective of our ontologically agnostic notation, materialism begins to look surprisingly like the Ptolemaic system just before Copernicus. The Copernican revolution in ontology has already occurred. With this ontologically agnostic notation for dimensionally qualified predicate calculus expressions, the ontological prejudices of materialists and idealists alike are mere anachronisms of the history of philosophy.

But these opponents are just the low hanging fruit. To get at the heart of the matter, disillusionists need to uproot dogmatism itself. We can do that by insisting not only on evidence, but on agreements with all rational interlocutors about our rules of inference as well.

## 5.3 Ontological Molecules as Fields

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This section describes the way ontic atoms can be combined into ontic molecules and how those molecules can form fields.

### Nodes and Edges in Ontic Molecule Diagrams

The ontic molecule diagrams consist of nodes and edges.

**Nodes are labeled circles that represent ontic atoms.** The color of the circle represents its quantifier: red for universal quatifiers and black for existential quantifiers. Nodes are labled with their OEDQ partition (like a last name) and the variable or constant (like a first name) that they represent in formulae.

**Edges are labeled lines or polygons that represent ontic relations (predicates).** Lines represent dyadic relations. Triangles represent triadic relations and other polygons represent other polyadic relations. Labels at the ends of lines or inside the vertices of polygons indicate the order (an ordinal number) and the role (the Loglan case tags).

We will also need a convention for the case when the same ontic atom must appear multiple times in an ontic molecule as a consequence of the geometry of the parts. In that case, the first instance of the repeated atom has a solid border of the appropriate quantificational color. Each subsequent instance of the ontic atom has a dashed border (also of the appropriate quantificational color).

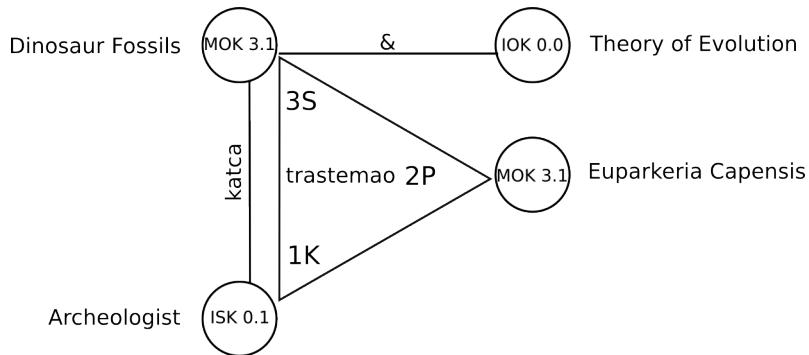
## Loglan Optional Case Tags

Table 4.1 The Eleven Optional Case Tags

B beu	Bekti	(object)	'-/in'	Patients, Parts, Properties
C cau	Canli	(quantity)	'by/for'	Quantities, Amounts, Values
D dio	Dirco	(direction)	'to/for'	Recipients, Beneficiaries, Destinations
F foa	Folma	(full)	'in/of'	Wholes, Sets, Collectivities
K kao	Kakto	(act)	'-/by'	Actors, Agents, Doers
M mao	cMalo	(small)	'than'	Lessers in greater/lesser than relations
N neu	Nerbi	(necessary)	'under'	Conditions, Fields, Circum- stances
P pou	Proju	(produce)	'-'	Products, Outputs, Purposes
G goa	Groda	(big)	'than'	Greater in greater/lesser than relations
S sau	Satci	(start)	'from'	Sources, Origins, Reasons, Causes
V veu	Vetci	(event)	'by/via'	Events, States, Deeds, Means, Routes, Effects

## Predicates Create Ontic Molecules of Ontic Atoms

Our ontology partitions the universe. Any existent that we can assign to a single partition is an ontic atom. While monadic predicates assert set membership or assign attributes to entities, polyadic predicates assert relations among entities. Polyadic predicate expressions and concatenations of monadic expressions may assert the existence of relational entities that consist of combinations of entities from diverse partitions of the universe. We call these entities ontic molecules.



[This all needs work. There is no  $x$  sub 3 that is quantified in the predicate calculus expression.

We need to understand how to render the ontological horizon as an ontic molecule. We should also choose another example that includes colors and repeated ontic atoms with dashed borders to exemplify universal quantification.]

*Table 10: Interpretation of Ontic Molecule as Dinosaur (Euparkeria capensis)*

Node Interpretations	Edge Interpretations
1. Dinosaur fossils (found 1913)	A. <b>English:</b> 2 observes 1; <b>Loglan:</b> 2 katca 1
2. Archeologist (1913)	B. <b>English:</b> 2 deduces 4 from 1 and 3; <b>Loglan:</b> 2 trastemao; 3 fu trastemao
3. Theory (timeless)	C. <b>English:</b> 4 is deduced by 2 from 1 and 3; <b>Loglan:</b> 4 nu trastemao
4. Euparkeria capensis (245-230 million years ago)	

$$\exists_{3.1}^{IOK} \left( (-29.085214, 26.159576) + 900 \text{ km } MOK y_{x_1}^{1914-1 \text{ yr}}, (-29.085214, 26.159576) + 900 \text{ km } MOK y_{x_4}^{206 \text{ mya} - 50.9 \text{ myr}} \right)$$

$$\exists_{3.1}^{MOK} (x_1, x_4) \exists_{0.1}^{ISK} (x_2) : x_2 \text{ katca } x_1 \wedge x_2 \text{ trastemao } x_4 x_1 x_3$$

# On Ideological Guardians of the Machine

by [gat@cooperation.com](mailto:gat@cooperation.com)

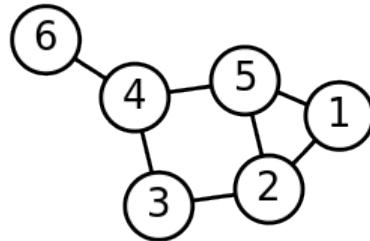
The Machine needs ideological guardians. Some of those guardians are institutions but some are individuals. The analysis of the guardian institutions—such as the corporate mass media institutions—is straight forward because we can treat them as black boxes whose internals are immaterial. The analysis of the guardian individuals is more complicated because we cannot understand why they act as they do unless we understand something about their internal psychosocial structure.

This is a problem that I have been considering since the early 1970s. My first attempts to understand and express the problem focused on the apparent metastability of the establishment. So, let's begin with a description of the theory of the metastability of social structure.

## The Theory of Metastability of Social Structure

First, let's understand how we intend the terms in the title of this section.

*Structure* is an abstract concept. A structure (or a *graph*) is an abstract entity that consists of multiple *vertices* (typically 3 or more) connected in a particular way by *edges*<sup>29</sup>.



By abstract, we mean that it must be interpreted (or rendered) if it is to correspond to anything concrete. In short, it is a model (or the requirement statement) for the relations that hold among concrete entities that are analogous to the vertices.

We can render a structure as a list of as many ordered pairs as there are edges in the structure:

- (6,4)
- (4,5)
- (5,2)
- (5,1)
- (3,2)
- (4,3)
- (2,1)

This is an isomorphic expression of that structure.

This isomorphy holds for any symmetric dyadic relation. However, we can easily extend it to non-symmetric relations and to triadic and polyadic relations. Some of these extensions may be difficult to

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<sup>29</sup> This terminology comes from graph theory.

render graphically.

For example, we can imagine—and render in this textual notation—a symmetric triadic relational structure using the same elements:

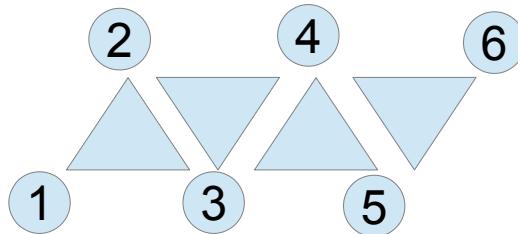
(1,2,3)

(2,3,4)

(3,4,5)

(4,5,6)

How would we render that as a diagram? We might do it by using a triangle as the edge.



It is clear that there are limits to the graphical rendition. Consequently, we will use the textual one in all cases and when visualization is important to the message, we will choose an appropriate graphical rendition (if possible).

## Bibliography

Erik Erickson, *Pseudospeciation in the Nuclear Age*

This paper uses the author's concept of pseudospeciation to analyze the potential destructiveness of intergroup/international conflict in the nuclear age. Pseudospeciation, which is fueled by historical and cultural experience, creates a false sense of unique identity in groups and ignores the genetic integrity of the human species. Acceptance of this real integrity combined with the ever-expanding understanding of psychosocial processes provides the means for broadening the concept of identity throughout the human species. Such a wider sense of identity includes not only empathy for others but also willingness to recognize our own otherness.

[http://www.jstor.org/discover/10.2307/3790901?  
uid=3739600&uid=2134&uid=2&uid=70&uid=4&uid=3739256&sid=21104935140927](http://www.jstor.org/discover/10.2307/3790901?uid=3739600&uid=2134&uid=2&uid=70&uid=4&uid=3739256&sid=21104935140927)

Erich Fromm, *Escape from Freedom*

Kahneman, Daniel; Slovic, Paul; Tversky, Amos, *Judgment under uncertainty: Heuristics and biases*

This is one of many works that describe the concept of confirmation bias.

Stanley Milgram, *Obedience to Authority*

The classic 1950's study on deference to scientific authority as a justification of torture.

## Some Ontic Molecules are Diachronic

Every ontic molecule is a whole consisting of two or more parts. Those parts may be ontic atoms or ontic molecules. Simple ontic molecules—like the one in Error: Reference source not found—have only ontic atoms as parts. Compound ontic molecules have at least one other ontic molecule as a part.

All compound ontic molecules include simple ontic molecules in some part of their part-whole hierarchy. What is true of all simple ontic molecules is true of the simple molecular parts of compound ontic molecules.

Some ontic atoms are diachronic and some are synchronic. Consequently, some ontic molecules include at least one diachronic ontic atom. We refer to ontic molecules that include at least one diachronic ontic atom as diachronic ontic molecules.

## All Diachronic Ontic Atoms and Molecules are Now-Bound

$$\S 5.2.10 \quad \exists(y \in (0,1,2,3)) \exists(z \in \square) \forall(x) \underset{y,I}{\exists}^{IOK}_{0,1}(\tau) : \tau naza \rightarrow \exists(w_x^{\tau-z}) : z \approx 200 \text{ millisec}$$

We adopt  $\tau$  as the sign of the experienced now (instant) and recognize that its mapping to metricized time is ideo-syncretic, but typically about 200 millisecs.

# On Loglan Terms for Intentional Systems

Alan Gaynor

As an engineered language with a grammar that is based on formal logic and with word sounds and word roots that were taken from the eight most widely spoken natural languages in the world of 1955-1975, Loglan offers a unique opportunity to capture new concepts concisely and unambiguously.

This is especially true because of the following features of the language:

- **Predicates**: although all languages support predication, Loglan does so with the explicit structural and functional elegance of modern predicate calculi.
- **Agglutination**: like Hungarian, Filipino, Japanese, Turkish, Tamil, and Basque, Loglan forms complex words by combining morphemes.

For example, the word furmoi in Loglan has the following partial description in the Loglan to English Dictionary:

**furmoi**,

<*fur+mo(dv)i=3rd conv. motive*> 1-Cpx L4 '75 1.9

(4v) K will/intend/be motivated to do V for motive S under conditions N. [K-VSN]

(a) *purposeful*, of motivated actors, see motive.

We will be mostly focused on the positions of the various parts of a Loglan word when it is used as a verb—marked by (4v) in the entry above—and the corresponding case tags—marked by [K-VSN] in the entry above—that are described in the table below.

**Table 4.1 The Eleven Optional Case Tags**

B	beu	Bekti	(object)	'-/in'	Patients, Parts, Properties
C	cau	Canli	(quantity)	'by/for'	Quantities, Amounts, Values
D	dio	Dirco	(direction)	'to/for'	Recipients, Beneficiaries, Destinations
F	foa	Folma	(full)	'in/of'	Wholes, Sets, Collectivities
J	jui	Junti	(young)	'than'	Lessers in greater/lesser than relations
K	kao	Kakto	(act)	'-/by'	Actors, Agents, Doers
N	neu	Nerbi	(necessary)	'under'	Conditions, Fields, Circumstances
P	pou	Proju	(produce)	'-'	Products, Outputs, Purposes
G	goa	Groda	(big)	'than'	Greater in greater/lesser than relations
S	sau	Satci	(start)	'from'	Sources, Origins, Reasons, Causes
V	veu	Vetci	(event)	'by/via'	Events, States, Deeds, Means, Routes, Effects

Clearly, furmoi—like all Loglan verbs—is essentially the assertion of a relation among such things as are the referents of these case tags. In this instance, furmoi asserts a particular relation among Actors

(K), Events (V), Reasons (S), and Conditions (N):

The actor intends to act out the event for one or more reasons that depend on one or more conditions.

If we focus just on the positions, we can symbolize the relation at issue quite concisely as follows:

K furmoi V S N

This focus will allow us to discuss the Loglan feature that will help us to construct a word that serves our purposes best: conversion. In Loglan, there are several verbal prefixes that exchange the order of the case tags in the layout above. The purpose of these conversion operators is to bring a particular case tag position to the first position by exchanging its position with that position. Since subsequent positions are optional, this permits Loglan speakers to focus easily on the aspect of the relation that is most important for his or her purpose.

The Loglan conversion operators are **nu**, **fu**, and **ju**. To put it concisely, they operate as follows with translations below each structure statement:

**V nu furmoi K S N**

The **event** is intended to be done by the actor for one or more reasons that depend on one or more conditions.

**S fu furmoi V K N**

One or more **reasons** are the motive for the acting out of the event by the actor depending on one or more conditions.

**N ju furmoi V S K**

One or more **conditions** are necessary for the event to be motivated for one or more reasons by the actor.

In our instance, **nu** brings the event to the foreground, **fu** brings the reasons to the foreground, and **ju** brings the conditions to the foreground.

Now, what we would like to render into a concise Loglan word is the concept of an intentional system. Such a system coincides with the actor, K, in the case tagging of the predicate furmoi. However, we want to be able to use the word we make to refer to subordinate intentional systems, in other words, systems that are intentional in their own right but that are component parts of a larger intentional system. We want a predicate that is something like this:

K is a system composed of K and K.

We find the Loglan word sismao which is described in the English to Loglan dictionary as follows:

**systematize,**

**sismao** (3v) <*system make*>[K-BN] K systemize/systematize /makes a system of B according to system/principle N

But this raises the substantive question of the ontology of an intentional system that is composed of subordinate intentional systems. Can the superordinate intentional system—the whole organism in our instance—coordinate or otherwise act to unify the intentions of the subordinate intentional systems? Is the superordinate intentional system simply a hypothesis that is formed from the outside by observing the behavior of the organism whose actions are related in some way to both of its subordinate intentional systems? Is there a characteristic pattern of dominance by one or the other of the

subordinate systems? Is the whole greater than the mere sum of its parts and if so, how?

## **5.4 Reunification of Science and Philosophy**

**28.557949, -81.243462.2017-01-12T20:45:15**

# Reason as Fetish

*Alan Gaynor*

By fetish, I mean an inanimate object that is revered for its supposed mystical powers. By mystical, I mean a way that can not be explained or described precisely.

This essay is a reasoned argument against the anti-dogmatists, rationalists, freethinkers, agnostics, skeptics, and atheists who refuse to accept or use logical symbolism to express their reasoning. Now, I am using the term logical symbolism because I want to be as inclusive as possible. I am not arguing that everyone should use any particular logical symbolism. The only requirements are the following:

1. The permitted symbols must be listed.
2. The logical connectives, quantifiers, and modifiers must be identified and defined.
3. The rules of inference must be explicitly stated and demonstrably coherent. We say that the rules of inference must be demonstrably truth conserving. True expressions must yield other true expressions when the rules of inference are applied.
4. The permitted truth values must be identified.

But why should all these nice people go to so much trouble, anyway? The answer is simple: if they don't announce their subscription to some logical symbolism that meets these minimal requirements, then they cannot **prove** anything to anyone! In addition, they will also be unable to identify a contradiction in anyone else's argument or proof. So, they will be unable to **disprove** anything to anyone.

That brings up one last requirement.

5. The audience for every argument or proof must sign off on (approve) the logical symbolism of that argument or proof.

If you can't prove or disprove anything to anyone, what good is your vaunted reason? I will argue that it is good for nothing. It is a mere fetish. If I were ruder than I am, I would say: "Put up or shut up!"

So, I will do what I am expecting every reasoner to do.

# Mutual and Common Knowledge in Activist Enterprises and Movements

Alan Gaynor – 2013

This paper summarizes secondary research on what is known about the strategic implications of mutual and common knowledge in mathematical game theory. It also presents some reasoning about the implications of those formal conclusions for the current global climate change movement and the possibility of self-governance in worker-owned enterprises.

## Informal Hypothesis

Human society faces daunting problems in the coming decades.[3.] It is not even clear that human civilization will survive in its present form for more than another century.

Consequently, this may be the last century of human civilization.

The end of human civilization is a contingent possibility, not a necessity. However, the game that global humanity currently plays with the global ecosystem seems to be structured in such a way that a collapse in population and industrial output is both likely and imminent.

Our hypothesis is that certain kinds of knowledge among significant portions of the global middle class might change the prospects for avoiding such a collapse.

## A Few Definitions

Let's agree about how we will use a few key terms:

- **Knowledge** is an assertion about which we can be certain.
- **Mutual knowledge** is knowledge that each member of a community has.
- **Common knowledge** is mutual knowledge that each member of a community knows all others in that

community share.

We are not using these terms in a loose way but rather we are using them in accordance with their formal definitions which we give in the Formal Definitions Appendix. That appendix is intended only for logicians and mathematicians that want to examine the definitions and proofs that we will popularize in the text of this paper.

## Formal Definitions Appendix

## Bibliography

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4. Mukerjee, Madhusree, ‘Apocalypse Soon: Has Civilization Passed the Environmental Point of No Return?: Scientific American’, *Scientific American*, 2013, p. 2

<<http://www.scientificamerican.com/article.cfm?id=apocalypse-soon-has-civilization-passed-the-environmental-point-of-no-return>> [accessed 7 January 2013]

5.

# On Scientism

To have a fruitful discussion about this topic—or any topic, really—we ought to agree about a few fundamentals of **discourse** and **dialog**. I hate to call your attention to these matters—they are sure to appear to you as elementary and boring—but without this little preface, I am afraid I won't be able to participate in your discourse at all!

## Discourse

Let's start from a single individual that expresses something. I would like to call that something an **assertion** if it meets the following criteria:

1. It can be assigned a **truth value**.
2. Its truth value can be demonstrated either through **deduction** from other accepted assertions or by **testing** it with respect to its appropriate **universe of discourse**. We will have more to say about these bold faced terms in short order.

## Truth Value

It is important to recognize that the set of truth values that we accept largely determines what set of assertions we will conclude are true. Every set of truth values has at least two values: **true** and **false**. We say that this is a *bivalent truth value domain*. However, there could be just *one* more truth value in our truth value domain—typically the value **unknown**—or an *infinite* number of additional truth values—typically known as **probabilities**. Or, there might be some finite number of other additional values.

## Universe of Discourse

Every assertion must have a universe of discourse. That universe of discourse consists of all of the objects and relations about which the assertion makes claims. Now, coincidentally, every topic must also have a universe of discourse.

Sometimes it is useful to distinguish between the **object language** and the **metalinguage** that we use in our discourses. When this distinction is used, the object language is taken to make assertions only with respect to the objects and relations in the universe of discourse of the topic. The metalinguage, instead, takes the assertions of the object language discourse themselves as its universe of discourse.

## Testing

Another important presumption is that any object language assertions that cannot be deduced from premises, ought to be testable. A test is a series of steps that anyone can perform (given the proper tools and initial conditions) that will demonstrate the veracity or falsity of the object language assertion being tested.

## Nonsense

Now, if an expression doesn't meet those criteria, then I would like to designate it as **nonsensical**. This may seem harsh but consider the following arguments:

- If we can't assign it a truth value—remember, **unknown** may be a legitimate truth value

- depending on our choice of **truth value domain**—then we are certainly justified in calling it nonsense. It cannot bear any meaning.
- If, in principle, there is no way to **validate** it, either through deduction or testing, then we can not know whether it **actually** has any of the truth values in the truth value domain that we have accepted even if it is theoretically capable of bearing meaning. And so, it is also legitimately nonsensical.

## Dialog and Polylog

Now that we understand a bit about **discourse**, let's try to understand how one or more interlocutors can engage in **dialog** or **Polylog** (in the more general sense).

### **Dialog**

Dialog is certainly the exchange of assertions. But it is more than that. In a dialog, the participants **understand** the topic of discussion and each other's assertions as pertaining to that topic. We don't mean to imply that to discuss a topic the participants need to understand *everything* about the topic. However, they do need to be able to determine—and agree on—whether a particular assertion is *pertinent* to that topic or not. If challenged, the one who makes an assertion has the burden of proof. That person must provide other assertions that tie the assertion in question to the topic.

### **Deduction**

This “tying” of an assertion to a topic is a form of deduction and I would like to say a few words about it here. A deduction—also known as a proof—requires only three things:

1. **A conclusion.** This is the goal of the proof.
2. **Premises.** These are the axioms and assumptions that we begin with.
3. **Rules of inference.** These are the rules that tell us—and anyone that we are conducting the proof to convince—how to extract true conclusions from true premises with certainty.

### **Polylog**

Polylog is a straight-forward extension of these concepts to the exchange of assertions among a group of interlocutors. Each member of the group must keep in mind the topic of the discourse and be prepared to challenge those who make unrelated or nonsensical assertions. In addition, they must share the same:

- truth value domain
- universe of discourse
- set of premises
- rules of inference

## The Assertions of Scientism

It seems proper to equate such a polylog with rational discourse: rational people making sensible assertions about the topic at hand, objecting to nonsensical or off-topic assertions, challenging deductions that use rules of inference outside of those approved by the group, testing assertions that make empirical claims, and little-by-little expanding the explicit formulations of what can be known about the domain of the topic.

In this context, can we reformulate the definition of scientism so that it makes sense?

Sometimes we think that modern science was at once a rejection of Aristotelian dogma about physics and metaphysics and an adoption of the methods of testing that have characterized the human exploration of the universe ever since. However, modern science did not reject the logical foundations of Aristotelianism. On the contrary, mathematicians and logicians expanded on them by inventing new notations and expanding the very notion of deduction. An important part of that expansion was the separation of premises from rules of inference.

The word "science" came from the Latin word for knowledge: *scientia*. From the 1200's to until the 1840's science was known as natural philosophy.

<http://www.seek2know.net/word.html>

Natural philosophy was simply using an agreed-upon set of rules of inference and of testing and engaging other scientists in a polylog about their discoveries.

The term *scientism* seems to include two very distinct pejorative senses:

1. Among scientists: the false pretension that a body of assertions was arrived at by the methods of science to cloak pseudo-science in the authority of science.
2. Among anti-intellectuals: the ridiculous presumption that the methods of sceptical inquiry and rational discourse apply beyond the physical sciences, especially to the humanities.

I believe that pseudo-scientists often use pretence to encourage their audience to regard them with the esteem that true scientists deserve. I do not believe that there is any legitimate argument for limiting the universe of discourse to which methods of rational inquiry pertain.

## 5.5 On Human Reality

28.557949, -81.243462.2017-01-03T18:44:03

### Prelude

“For a man may do his work with wisdom, knowledge, and skill, and then he must leave all he owns to someone who has not worked for it.”

Holy Bible, New International Version, International Bible Society, East Brunswick, New Jersey,  
page 498

“Only a fool denies a sound proof.”

Frank Nala in *Language Unbound* (unpublished)

This chapter uses the ontic-epistemic dimensional qualification (OEDQ) notation to express the axioms that formally describe the kind of being that we are and that is the foundation of the thesis of this book.

In the rest of this chapter, we will present axioms that consist of the following parts:

- A heading containing an easily understood English expression of the axiom. These expressions are often memorable, cryptic, concise, metaphorical, and imprecise. They are not normative. Only the OEDQ notation expression is normative.
- An English translation of the OEDQ notation expression. These are often long and convoluted expressions that require considerable attention and contemplation to understand.
- A numbered axiom prefaced by the § symbol and followed by the OEDQ notation expression. This is the normative expression that is used in formal proofs.
- Optionally, additional plain English paragraphs that explain the motivation for—or utility of—the axiom.

### The Ancient Cogito

The Ancient Cogito is a **function** that is associated with the pre-linguistic human sentient neural **system** that evolved over millions of years and was already widespread among hominids more than 200 K years ago. Each **instance** of the Ancient Cogito is a **sequence of now-bound appearances with integral implicit time-bound reflection** which makes **memory** possible.

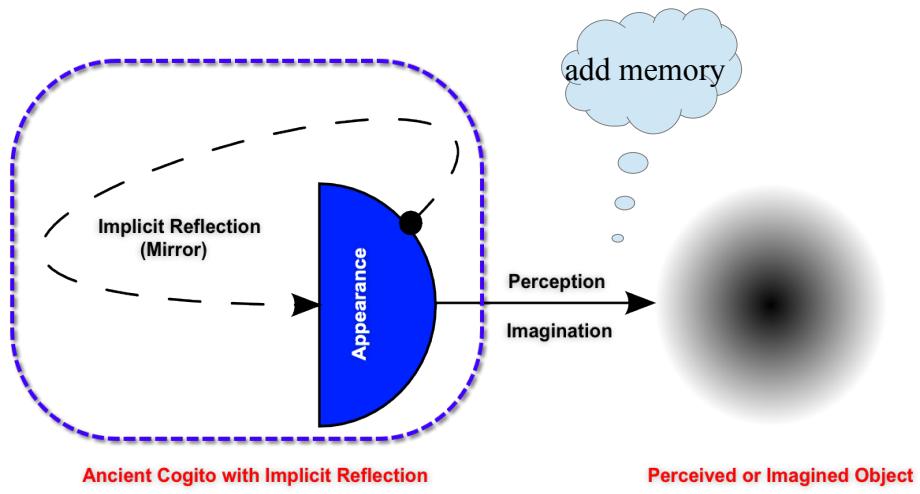


Illustration 8: Ancient Cogito with Implicit Reflection

### Percieved or Imagined Object

Let's first consider the relation between the appearance and the perceived or imagined object of Illustration 8. In fact, let's simplify further and consider only objective, material objects.

Husserl referred to this aspect of an appearance by using the German term abschattung. We will use the Loglan term **simviu**:

**Simviu:** (3n) <seem view>[V-BD] V is the appearance/look (s) of B to D.

We will represent a **simviu** in predicate calculus expressions as a variable with a centered subscript and a centered superscript  $\overset{0.0}{\underset{\Omega}{\alpha}}$ . The centered subscript is a pointer to the existent of which it is an appearance. The centered superscript indicates the dimensionality of the referent (existent).

For every known, objective, material existent  $x$  of dimensionality 3.1, there is an known, immaterial, objective appearance<sup>vii</sup>  $\overset{3.1}{\underset{x}{b_n}}$  of dimensionality 0.1 such that if that appearance is of that existent, then that existent is identical with the infinite set of its appearances.

$$\S 5.5.0 \quad \forall_{3.1}^{MOK}(x) \diamond \exists_{0.1}^{ISK}(\overset{3.1}{\underset{x}{b_n}}) : b_n \text{ simviu } x \rightarrow x \equiv \sum_{n \in |\square|_x}^{2^{\aleph_0}} b_n^{3.1}$$

This expression seems to translate Sartre's opening line in *Being and Nothingness* into our OEDQ notation: "Modern thought has made considerable progress by reducing the existent to the [infinite] series of appearances which manifest it."

**Note:** Axiom §5.5.0 does not imply that every material existent appears<sup>viii</sup>. It asserts only that such an appearance is **possible**. That is important for our conception of science.

So much for material objects. What of immaterial objects? In other words, what if the object is intended by an imaginative consciousness rather than a perceptive consciousness? Actually, not much is different. We just switch from material to immaterial (MOK to ISK<sup>ix</sup>) and variablize the

dimensionality reference of the appearance.

$$\S 5.5.1 \quad \forall(y \in (0,1,2,3), z \in (0,1)) \underset{y,z}{\forall} (x) \underset{0.1}{\diamond} \exists_x^{\text{ISK}} (\underset{x}{b}_n : b_n \underset{x}{\sim} x) \text{ simvii } x \rightarrow x \equiv \sum_{n \in |\square|}^{2^\infty} b_n$$

## The Integrity of the Existent

Here we need to consider the **integrity of the existent** when multiple ancient cogitos observe it from different perspectives or at different times. Each observer partitions the **infinite** set of possible

**objective** appearances of the object  $\exists_x^{\text{IOK}} (\sum_{n=1}^{2^\infty} b_n)$  into a **finite** set of **personal** appearances,  
 $\exists_x^{\text{ISK}} (\sum_{n=1}^{n < \infty} b_n)$ .

What guarantee do we have that these disjoint finite personal sets **necessarily** point to the same object? We will assume that the integrity of the existent provides that guarantee. We express that by asserting the existence of an **objective** appearance and its similarity (near equivalence) to the infinite set of possible appearances:

$$\S 5.5.2 \quad \exists_x^{\text{IOK}} (b) : b \sim \sum_{n \in |\square|}^{2^\infty} b_n$$

## The Problem of Prejudice

However, that does not quite solve the problem. Even with the guarantee of the integrity of the existent, we can't be sure that any particular ancient cogito **correctly interpolates** its finite set of personal appearances in a way that is correctly similar the infinite set of appearances that define the existent:

$$\S 5.5.3 \quad \exists_x^{\text{ISK}} (b_n) \underset{0.1}{\exists}_x^{\text{IOK}} (b) : b_n \underset{x}{\sim} b$$

Every ancient cogito is saddled with this problem with respect to every interpolation of any appearance or any sequence of appearances. None can escape it.

## Memory Requires Implicit Reflection

Now, we turn to the final parameter for the predicate **simvii**: the subject to whom the appearance appears. For our present purposes, the ancient cogito is that subject.

How can we express the relation between the appearance and the implicit reflection depicted in Illustration 8? Axiom §5.5.4 uses our OEDQ notation to express that relation.

For any **entity**  $x$  of any dimensionality, there are two related entities. First, there is **an individual ancient cogito in the present**  $i_{0\tau}$ , and, second, there is **an appearance in the present**  $b_\tau$  such that if that ancient cogito understands that entity, then two facts follow. First, that finite appearance in the present is similar (essentially) to the infinite sum of possible appearances (at any place or time) of that entity  $x$ . Second, there exists another pair that consists of a subsequent ancient cogito and a subsequent appearance. This pair consists of **a new reflexive ancient cogito**  $i_{0(\tau+n)}$  that looks back

on that **now past ancient cogito**  $i_{0\tau}$  and understands it.

$$\S5.5.4 \quad \forall(x) \underset{y,z}{\exists} \underset{0.1}{(i_{0\tau})} \underset{IOK}{\exists} \underset{0.1}{(b_\tau)} : i_{0\tau} \text{ kance } x \rightarrow \underset{x}{b_\tau} \sim \underset{n \in |\square|}{\sum} \underset{x}{b_n} \wedge \underset{\bullet}{(\exists)} \underset{0.1}{(i_{0(\tau+n)})} \underset{i_{0\tau}}{(b_{(\tau+n)})} : i_{0(\tau+n)} \text{ kance } i_{0\tau}$$

This rendition solves the problem of an implicit self-consciousness by recognizing that knowledge of an existent at some present time implies both the similarity of the finite idea of that existent with its infinite reality and a possible reflective consciousness at a subsequent time that knows the original knower. When Descartes declared “Cogito ergo sum.” his knowledge of his being was only possible because time passed between his thinking and his realization of his being. Of course, our implication does not require language: it is an assertion about the pre-linguistic ancient cogito.

### **Ancient Cogito Attitudes**

For our purposes, a simple 2-D matrix of mutually exclusive categories will permit us to differentiate in a gross way between significant differences in attitudes by the ancient cogito. We also presume that the ancient cogito is capable of distinguishing between other sentients and non-sentients. Consequently, we will apply each attitude to self, objects (non-sentients), and others in the description column.

The language in the description column is intentionally emotional. Attitudes in the ancient cogito are much more closely associated with emotional reactions than they are to those of us who have been raised in literate and post-literate cultures.

In Table 11, the **Relation** column contains either  $\equiv$  (identification) or  $\neg\equiv$  (non-identification). We interpret these to mean that the attitude of the ancient cogito is one of identification with the intentional object (self, object, or other) or non-identification with the intentional object. Independent of that relation is the value in the **Value of Difference** column. We interpret that to mean that the attitude of the ancient cogito is positively (+) disposed to any difference between itself and its intentional object or negatively disposed to that difference.

We use the terms **disillusioned** and **deluded** in the **Description** column to indicate the degree to which the ancient cogito correctly interpolates the appearances in accordance with axiom §5.5.3.

Table 11: Ancient Cogito Attitudes

Relation ( $\equiv, \neg\equiv$ )	Value of Difference (+,-)	Description
$\equiv$	+	<ul style="list-style-type: none"> <li><b>Self:</b> contentment, disillusioned or deluded</li> <li><b>Objects:</b> disillusioned recognition of universal interrelatedness or deluded belief in oneness of all</li> <li><b>Others:</b> Service—disillusioned empathy (love) or deluded submission (masochism)</li> </ul>
$\equiv$	-	<ul style="list-style-type: none"> <li><b>Self:</b> disillusioned disgust or deluded grandiosity</li> <li><b>Objects:</b> disillusioned disdain for materiality or deluded solipsism</li> <li><b>Others:</b> Coercion—disillusioned sadistic rule or deluded pretentious rule</li> </ul>
$\neg\equiv$	+	<ul style="list-style-type: none"> <li><b>Self:</b> self-neglect</li> <li><b>Objects:</b> utilitarian objectification</li> <li><b>Others:</b> indifference</li> </ul>
$\neg\equiv$	-	<ul style="list-style-type: none"> <li><b>Self:</b> self-hate</li> <li><b>Objects:</b> destruction</li> <li><b>Others:</b> Rejection--hate</li> </ul>

## The Appearance Stream for the Ancient Cogito

We are now ready to observe the ancient cogito in real time. There are apparently several distinct states of awareness that are relevant to this real-time scenario.

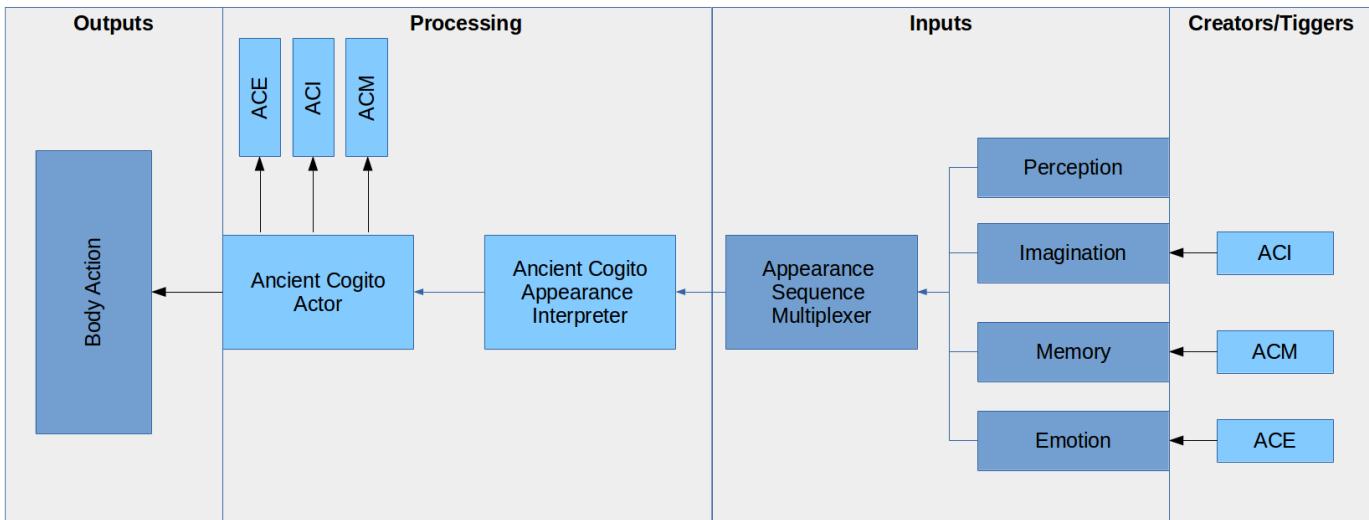
- Waking
- NREM sleep
- REM sleep
- Coma

We will not explore NREM sleep or coma here. Our concern is with the sequence of appearances that we call the appearance stream. The physiological difference between the waking state and REM sleep is that the sensory threshold is increased in REM sleep<sup>x</sup>. The experiential difference is that dreaming, in humans, is also associated with REM sleep but not wakefulness.

The source of the appearance stream is different in waking and dreaming states. In waking states, the appearance stream source may be **perception**, **memory**, or **imagination**. Any of these sources may trigger **emotions**. In the dreaming state, the appearance stream lacks perception as a source. The emotional triggers remain.

Illustration 11 shows the sources that the **Appearance Sequence Multiplexer** (ASM) uses to provide

the appearance stream to the **Ancient Cogito Appearance Interpreter (ACAI)**.



*Illustration 9: Illustration 9: Inputs, Processing (including creations and triggers), and Outputs of the Ancient Cogito*

The ASM receives uninterpreted appearances from the 5 senses (percepts) or emotionally-tagged, percept-like appearances that were stored in memory or created from the imagination. The ASM acts like a 5-channel, time division multiplexer by assembling these inputs into multi-modal percept packets. Each of the channels carry sense-mode specific percept packets: vision, hearing, smell, taste, and touch. In addition, an attitude flag position—available to carry one of the 4 attitudes of Table 11 or nothing—is included in each percept packet per channel. We assume that the ASM assembles a new multi-modal percept packet about every 200 milliseconds because that is approximately the duration of the human now ( $\tau$ ). That percept packet must include 3 layers of information: sensory, imaginative, memorized. Every packet during the waking state must include the sensory layer but the others are optional. Every packet during REM sleep may include any non-sensory layer but all are optional.

#### §5.5.12

### ***The Ancient Cogito as Compiler of Scenes and Events***

Dreaming: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3621793/>

### ***Ancient Cogito as Diachronic Ontic Molecules***

We associate the earliest ancient cogito with the homininan clade and especially with the sentience of *S. tchadensis*<sup>xi</sup> (7 mya) because it represents the earliest split from Pan according to current thinking. However, in many if not most respects, we believe the Homo ancient cogito is much like the contemporary Pongo cogito, Pan cogito, and Gorilla cogito.

We hypothesize that what we assert as axioms about the ancient cogito (Homo) is also true of the other sentiences of the family Hominidae. This attitude—that the ancient cogito represents a bond of

solidarity with all members of the family Hominidae—is characteristic of the philosophical posture that we represent. We refer to it as Protagonism because we believe that every cogito is the protagonist of its own story regardless of its ability to write that story. Protagonists are not humanists because our solidarity goes beyond the human species.

As an articulation of that posture, the rest of the paragraphs and illustrations under this heading will present our proposed rendition of the ancient cogito as a diachronic ontic molecule (see the appendix entitled Meta-ontology for a discussion of ontic molecules).

#### §5.5.11

### ***Every Ancient Cogito has an Ontological Horizon***

Each individual ancient cogito has an ontological horizon. It is born and dies. This finite life time of our ancient cogito (for it is still with us) is controversial for some. For us, it is axiomatic.

$$\S5.5.5 \quad \underset{0.1}{\forall} \underset{3.1}{\exists} \left( \underset{ISK}{(^{(location)+ radius km)}} \underset{ISK}{y_{i_0}^{(birthdate)+ 200\ yr}} \right) : i_0 \text{ga clivi} \wedge i_0 \text{ga morcea} \wedge i_0 \equiv h_8$$

As a cogito, the individual ancient cogito is a **function** that relies on a concrete, individual material existent: **a human body**. That human body ( $h_5$ ) is an individuation of the human species (humanity,  $h_4$ ) at this time ( $\tau$ ).

$$\S5.5.6 \quad h_{5\tau} \equiv b_6(h_{4\tau})$$

The human species has evolved based on its genome. The genetic basis for human pre-linguistic sentience ( $h_2$ ) is ancient. To define the ontological horizon for  $h_2$ , we will use 6,371 km as the radius of the Earth. A sphere whose radius—with its center anywhere on the surface of the earth—is twice (i.e., 12,742 km) that would include the whole earth (and a considerable column of space, too). We will use 7.2 million years ago<sup>xii</sup> as the separation of hominids from apes and 200,000 years ago<sup>xiii xiv</sup> as the earliest probable occurrence of the discrete infinity mutation.

$$\S5.5.7 \quad \underset{3.1}{\exists} \underset{3.1}{\exists} \left( \underset{MOK}{(^{(-29.085214, 26.159576)+12,742\ km})} \underset{MOK}{y_{x_1}^{(\tau - 200,000\ yr) - 7.2\ mya}} \right) : x_1 \equiv h_2$$

This means that the ancient cogito had been evolving for at least 7 million years before the occurrence of the genetic mutation that gave rise to the modern cogito! Importantly, that mutation did not replace the ancient cogito. It was simply a supplement.

Each human body inherits its attributes from the ancient genetic basis for human pre-linguistic sentience ( $h_2$ ) as it exists now  $\tau$ .

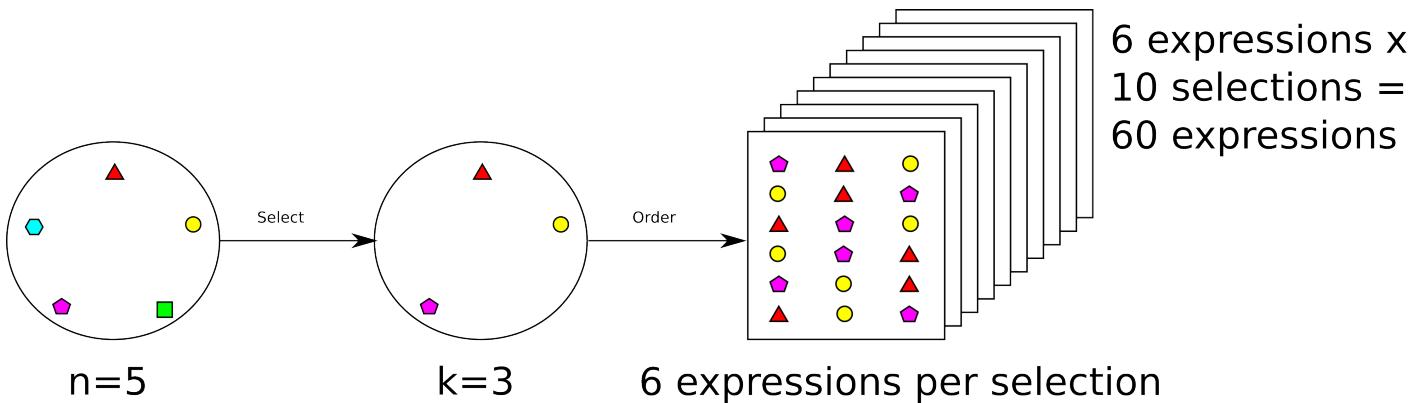
$$\S5.5.8 \quad h_{5\tau} \equiv b_4(h_{2\tau})$$

### **The Modern Cogito**

The modern cogito arose when a genetic mutation—referred to as the discrete infinity mutation in the literature—enabled the human cogito to generate, detect, and assign semantic interpretations to

permutations of elements (appearances).

Illustration 10 shows how a small number of elements and a selection of a subset of those elements permits a powerful expansion of the number of expressions that are available for semantic interpretation.



*Illustration 10: Example of the Expressive Power of Discrete Infinity Mutation*

$$\text{Calculation of the number of selections: } \binom{S}{k} = \frac{n!}{k!(n-k)!} = \frac{5!}{3!(5-3)!} = \frac{5!}{3!(2!)} = \frac{120}{6(2)} = \frac{120}{12} = 10$$

This new facility with permutations was generic. It operated on **any set of elements** and some **definite** but arbitrary **ordering**. It required only the selection of elements, in order, and the assignment of meanings to the resulting expressions. In addition, the expressions that resulted from the application of the permutation facility on one kind of object (phonemes, for example producing words) could be used by the facility as new elements to produce different kinds of objects (sentences, for example). Those, in turn can be taken as objects for another round of expressive amplification. While no infinite results are obtained, they are possible.

Initially, the selection of immaterial subjective elements permitted the modern cogito to converse with itself. Given that subjective environment, **remembered appearances** were the only available **elements** and **time** was the only available **ordering method**.

We can imagine that such use of the new facility, over the course of a lifetime, would result in an ideolect of time-ordered expressions. Of course, unless your progeny inherited the mutation, your family, tribe, or species would not be able to benefit from your ideolect.

That ideolect would have permitted its modern cogito to distinguish (and remember the distinctions) among many more appearances than the ancient cogito of his or her fellow humans. The fact that we all speak languages argues eloquently for the probability that having such an ideolect gave those modern cogito inheritors a selective advantage over their peers.

### ***The Spread of the Discrete Infinity Mutation***

Let's indulge in some plausible speculation about the spread of the discrete infinity mutation. If the mutation resulted in the creation of ideolects that were a survival advantage to the creator, the mutation could have spread considerably before the creation of any language. If, for example, the mutation occurred before the first of the migrations out of Africa, many geographically dispersed groups of hominids might have inherited the mutation. Languages could have started in multiple such

locations and evolved independently as a consequence of the geographic isolation. If this were the case, then we don't need the story of the tower of Babel to explain the diversity of languages. They probably arose spontaneously.

The mutation could have occurred in either a male or a female. Recent studies indicate that the sexual division of labor—with females gathering and males hunting—may have occurred only considerably after the hypothesized origin of the mutation<sup>xv</sup>. In any case, for a language to evolve in a human population with the mutation, two members of the group, both of whom had the mutation, would have to attempt to engage in dialog. By hypothesis, every ideolect is different. In addition, the extent of ideolect development would differ from member to member. Under such conditions, we can imagine that a parent-to-child breach of the ideolect barrier might be more likely than a peer-to-peer breach. It should be possible to model the spread of the language once the ideolect barrier is breached.

Although the timing may be problematic, it remains true that the mutation and its subsequent ideolect dispersal placed both a tool for truthful thought and a weapon for domination in the reach of those that carried the mutation. It is easy to suppose that the survival advantages of the mutation would more likely be based on its properties as a weapon than on its properties as a truth amplifier. We can imagine that the strategic advantage that the ideolect would give to individuals in a group in which the mutation is rare might give them advantages as leaders. Being a leader might give individuals certain reproductive advantages and so on.

## ***The First Disintegration: Cohabitation***

However, we will argue that this inheritance was not entirely beneficial. Here's why:

- The modern cogito became a new resident in an already inhabited body.
- The modern cogito brought with it a new kind of appearance: **the expression**.
- The ancient cogito was unable to understand these new appearances.
- The modern cogito had to be able to remember expressions: **expression memory**
- The ancient cogito was unable to understand these new memories.

The beginning of the cohabitation of the ancient and modern cigos was the first, and perhaps the most serious, disintegration of human reality. What was one, became two. However, the two co-habitants were forced to share the one body and some of its functions. The real issue became that of **control**.

During the dominion of the ancient cogito, all voluntary behavior was the responsibility of the one cogito. After the cohabitation began, the only hope for unified control was some form of **governance**. Subjective volition in human reality became a **two-person game**. The structure of that game provided each player with options. However, every game theoretic analysis—which is what we must now conduct—requires the **inventory and valuation of possible outcomes**.

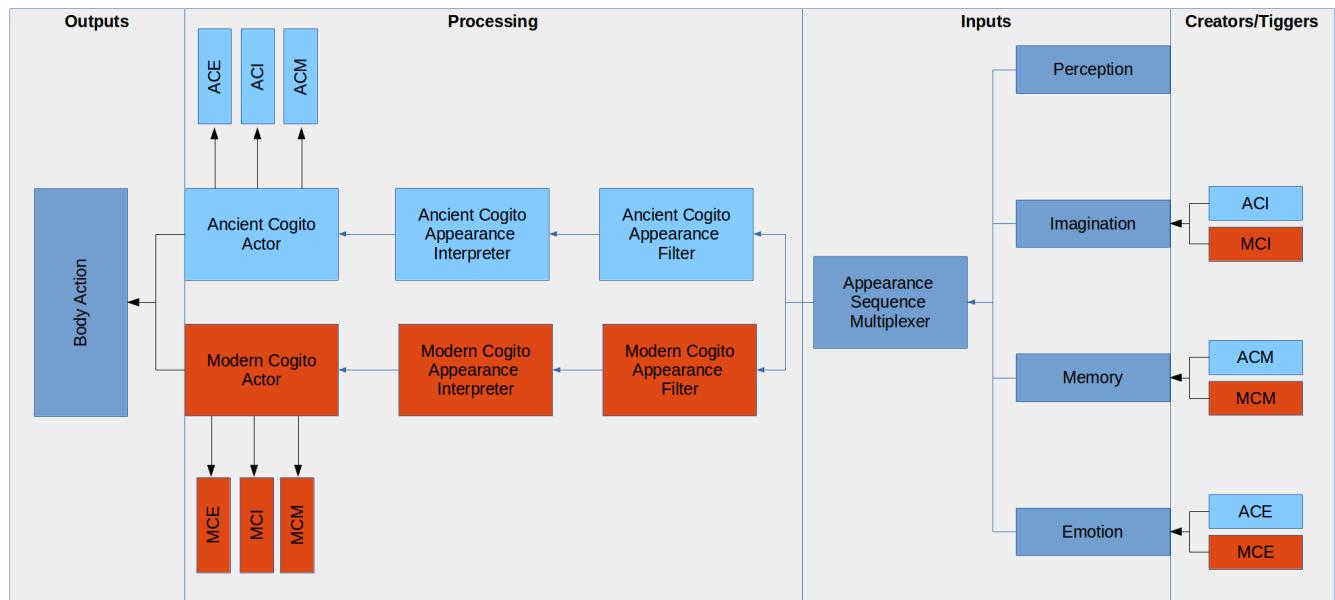
Before we attempt that analysis, however, let's consider how each of these players can move and how the other player is informed of the first player's move.

Clearly, the ancient cogito has default control over all of the shared resources of the body because of its inheritance. The ancient cogito is moving continuously as it always has. To make a move, the modern cogito must **interrupt that behavioral continuum** and **usurp control of the body**. Consequently, the modern cogito must be capable of usurping control of the body or there would be no game. In addition, the modern cogito must be able to **monitor that behavioral continuum** to determine when to intervene.

From these considerations, we conclude that there is the following hierarchy of control components for human reality after the cohabitation of the ancient cogito and the modern cogito:

- Episodic control by the modern cogito.
- Continuous control of voluntary behavior by the ancient cogito unless control is usurped by the modern cogito.
- Continuous control of involuntary behavior by the involuntary nervous system unless control is usurped by the ancient cogito or the modern cogito.

So, it will be convenient for our analysis to assume that the modern cogito always makes the first move by usurping control of the body from the ancient cogito or the involuntary nervous system. The ancient cogito is informed of the move by its loss of control of the body. However, it is still capable of monitoring the appearance stream and interpreting that stream in accordance with its remembered



*Illustration 11: Input-Output Diagram of Ancient-Modern Game Board*

experience. It is also capable of triggering emotional responses to its interpretation of the appearance stream. Those emotions appear to the modern cogito as part of the appearance stream that it monitors. Depending on the modern cogito's interpretation of that appearance stream, it may cede control back to the ancient cogito.

We conclude for these considerations that each player uses the appearance stream as a communication channel to the other player. In addition, as a consequence of their different orientations to time and their differing abilities to encode, decode, and interpret appearances and sequences of appearances, there are effectively two appearance streams, one for each player.

We cannot give a full description of Error: Reference source not found at this point. For our game-theoretic purposes, it is enough to note that each cogito is able to manipulate the inputs to the Appearance Sequence Multiplexer in order to influence the move of the other player. It is their different time orientations that gives the ancient cogito an advantage.

A considerable amount of research exists on subliminal stimuli<sup>xvi</sup>. We will not review that research here. Our focus is simply on the existence of stimuli that is objectively subliminal yet is also effective in modifying some behavior. In particular, we are interested in time-dependent subliminal stimuli. Such stimuli is subliminal **because** of its brevity.

The existence of evidence of such time-dependent subliminal stimuli that affects behavior is relevant here only to make plausible our claim that the ancient cogito has an advantage in this intra-conscious game. It is also evidence to support the thesis that the word “unconscious” has no place in the scientific discussion of the subliminal.

We can now see the repercussions of that cohabitation on the subsequent history of humanity.

Now, let's look at the repercussions of the cohabitation on truth, story, and history.

### ***On Truth***

For the ancient cogito, truth was a matter of **the degree of similarity** between the ancient cogito's finite idea of an existent and the complexity of the infinitely many and varied appearances that the existent could possibly manifest as indicated in axioms §5.5.2 and §5.5.3. Sometimes, an oversimplification was inconsequential. When it wasn't, it was typically a life-threatening issue. The ancient cogito evolved for at least 7 million years honing its abilities to guess properly about that similarity. However, it has never had any way to be scientific about truth. It sinks or swims by its own intuition.

The residency of the modern cogito brought a whole new outlook on truth to human reality. If our ontological horizon in axiom §5.5.7 is correct, the modern cogito has had a mere 200,000 years of evolution to hone its sense of truth. The modern cogito has what the ancient cogito lacked: the ability to formulate hypotheses as expressions, remember them, and recall and evaluate them in the light of experience. As its repertoire of expression grew from sounds, to words, to sentences, and beyond, language became a tool for discovery of truths.

### ***On Story***

Sometime after the residency of the modern cogito began, oral cultures evolved that relied on rhyming to memorize epic stories. Of course, there was a constant battle between the truth of the story and its memorability. Obviously true stories that were difficult to remember were left behind and memorable stories—even if they played fast and loose with truth—were passed on. Myth makers became powerful as cultural unifiers.

Of course, the unification of each oral culture around its language and its stories meant the disintegration of the species into what Erik Erickson (?) has called pseudo-speciation.

Can we give a formal expression of the story category?

### ***On Pre-History and History***

We will show how the co-habitation of the ancient cogito and the modern cogito in human reality became the driving force of history.

It is reasonably clear from the forgoing that the following sketch of a timeline from the pre-historic

mists of the time of the mutation to today is plausible. The most important fact is that the ratio of the duration of pre-linguistic homo sapiens culture (ancient cogito) to the duration of post-linguistic culture (modern cogito) is almost the same as the ratio of the duration of oral culture to literate culture: 97%.

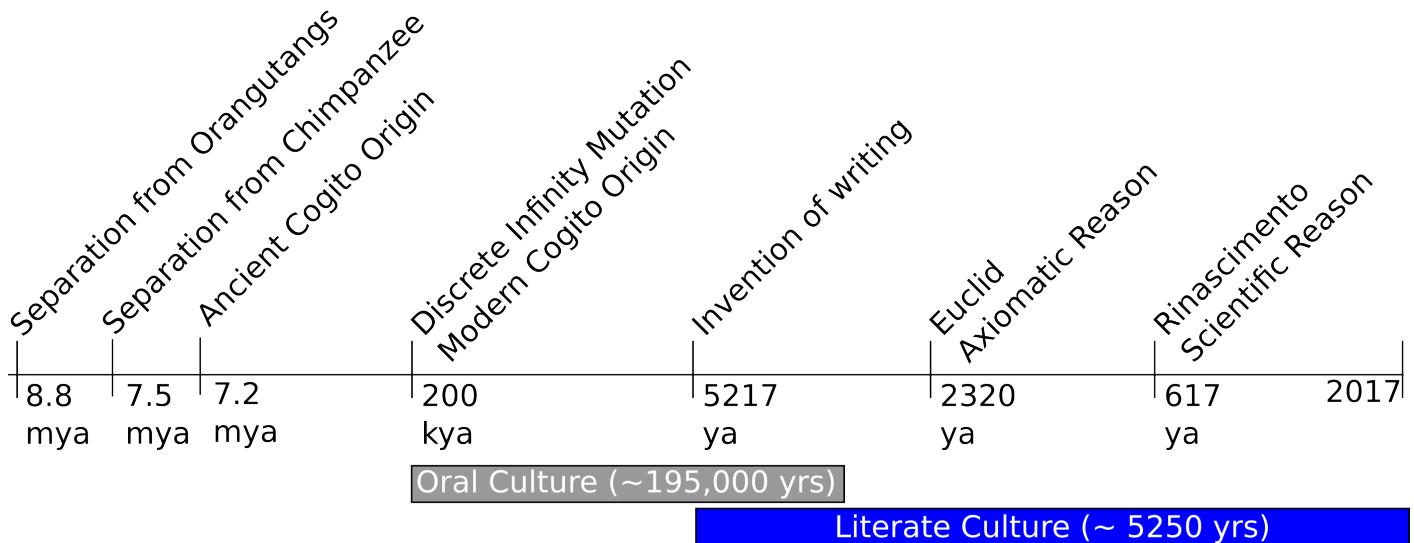


Illustration 12: Timeline of Durations of Cultural Periods Since *Homo Sapiens Separated from Orangutans*

## Humanity United has Agency

§5.5.13  $\exists_{0.1}^{IOK}(H): H \subset a_1$

A human body is the foundation for an individual cogito.

Let's define the ancient cogito of Illustration 8 using sets, relations and the following loglan predicates:

<b>ba:</b> (ph) at least one /some...<, a non designating variable>.
<b>basni:</b> (2n) B is a base/basis/foundation/bottom of F. [B-F]
<b>clivi:</b> (1v) [K-] K live/be alive.
<b>darpau:</b> (2a) J is more remote/ancient, farther back in time than G. [J-G]
<b>kance:</b> (2a) D is conscious/aware /sense of/that N. [D-N]
<b>kinsea:</b> (3v) K collect/assemble/put/piece together B as/into assembly F. [K-BF]
<b>korti:</b> (2n) B is the body of organism F. [B-F]
<b>morcea:</b> (1v) <dead become>[D-] D die.
<b>na:</b> (av) now, a pred. modifier, coincidence in time.

**ne:** (a) a/an/any/some-one/one (1)/exactly one of..., a description quantifier. E.g., Ne le mrenu pa kicmu Exactly one of the men was a doctor; Ne mrenu pa hijra Some one man was here  
 $\Leftrightarrow$  Ne ba ji mrenu pa hijra Exactly one someone x who is a man was here.

**sanpa:** (5n) V is a sign of B to S prompting behavior P in situation N. [V-BSPN]

First, let's give the ancient cogito a Loglan name. This will allow us to easily distinguish between the mass term and the individual term.

The mass term we will use is **lo darpau kance**. The individual term we will use is **ne darpau kance**.

Certainly, ne darpau kance collects (kinsea) a finite selection of the appearances (simviu) into its objective interpretation—based on what we have called an interpolation—of the object.

Ne darpau kance na kinsea lona simviu.

Also, the appearance is a sign (sanpa) of the perceived or imagined object to the ne darpau kance.

Lona simviu na sanpa ba ne darpau kance.

Both of these assertions seem to be true. However, we need to express the ancient cogito in the OEDQ notation.

Consciousness is a sequence of appearances. Each appearance is both a consciousness of something—the existent which appears—and simultaneously an implicit consciousness (of) self.

Let  $\Delta$  represent the ordered finite set<sup>xvii</sup> of appearances that constitute the existent for an ancient cogito. Since the set  $\Delta$  is of dimensionality 0.1 (it changes over time), it exists—possibly differently—at  $\tau$  and at  $\tau+1$ . Consequently,  $\Delta$  at  $\tau+1$  can contain an element that is an appearance of the existent at  $\tau$ .

For all known, objective, material existents  $a_1, a_2, \dots, a_n$  of dimensionality 3.1 and for all known, subjective, immaterial, references  $\alpha_1^{\Omega}, \alpha_2^{\Omega}, \dots, \alpha_n^{\Omega}$  of dimensionality 0.1 such that if there exists a known, objective, immaterial, set  $\Omega$  of dimensionality 0.0 such that  $a_m \in \Omega$  and there exists a known, subjective, immaterial, set  $\Delta$  of dimensionality 0.1 such that  $\alpha_m^{\Omega} \in \Delta$  then  $\Delta$  assembles  $\Omega$ .

§5.5.2  $\forall_{3.1}^{MOK} (a_1, a_2, \dots, a_n) \forall_{0.1}^{ISK} (\alpha_1^{\Omega}, \alpha_2^{\Omega}, \dots, \alpha_n^{\Omega}) \exists_{0.0}^{IOK} (\Omega) \exists_{0.1}^{ISK} (\alpha^{\Omega}) \exists_{0.1}^{ISK} (\Delta) : (\alpha_m^{\Omega} \in \Delta \wedge a_m \in \Omega) \rightarrow \Delta \text{ kinsea } \Omega$

which would then be a reflective consciousness. However, that **reflective consciousness** seems to be completely different than the **implicit self-consciousness**.

## Human Reality as an Ontic Molecule

Human reality is a ontic molecule. Each of us is an instance of a common structure of ontic atoms. We are wholes with related parts. As wholes, we participate in the universe.

$$\begin{array}{c} IOK \\ \exists_{0.1} (H) \end{array} \begin{array}{c} MOK \\ \exists_{3.1} (h_1 \dots h_n) : h_m \in H \end{array}$$

HR(A(NB(R<sub>1</sub>,IO,IS),TB(R<sub>2</sub>,IO,IS)),B,[L])

where:

- A=Appearances
- NB=Now-bound
- R<sub>1</sub>=Referent (now-bound) of the appearance
- IO=Implicit Objective referents (the universe)
- IS=Implicit Subjective referents (subjectivity)
- TB=Time-bound
- R<sub>2..n</sub>=Referents (time-bound) associated with the appearance (memories and imaginings)
- B=Body of the human
- L=Language(s) of the human

Before we can craft our expression we need to define each of these components. Let's begin with appearances.

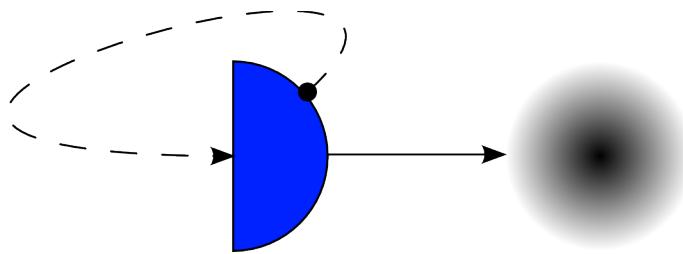
§ 5.5.1.1.0 A(NB(R<sub>1</sub>,IO,IS),TB(R<sub>2..n</sub>,IO,IS))

What can we say about every appearance?

According to Gestalt psychology, every appearance is a relation between a figure and a ground. The appearance requires a negation: the figure is not identical to the ground.

§ 5.5.1.1.1  $\exists (R, f, g, A) : \neg(f \equiv g) \wedge A \equiv R(f, g)$

In addition, we cannot have an appearance without an awareness of that appearance (we are not unconscious when we dream) and we can't have an awareness of an appearance without an appearance (hallucinations are appearances).



Nothing supports an argument that appearances are exclusive to human reality. Appearances are endemic to all **now-bound sentients**. Humans are not the only now-bound sentients.

Inherent in the definition of an appearance are the **radically immediate now**<sup>xviii</sup> (nominally <100 ms in duration in humans) and the **primordial reference function**. All known sentients are present in an immediate now and capable of the primordial reference function.

How many entities and relations are in play and what kind of existents are they?

- A figure-ground relation

This is what we refer to as a now-bound appearance. Relations are not material or spatio-temporal. Consequently, it is ISK0.1.

- An explicit figure  
This is a referent that points to something. All referents are ISK0.1. A referent can point to any kind of existent.
- An implicit ground  
This is a referent that points to everything else. Also ISK0.1.
- An instantaneous implicit awareness of the figure-ground relation  
This is what we refer to as a now-bound consciousness. Also ISK0.1 pointing to any kind of existent.

The instantaneous qualifier is necessary because, a consciousness endures beyond the life of any appearance. However, at the instant of appearing, the appearance is identical with the consciousness of its appearing. In an instant, a consciousness is an appearing and an appearance is a consciousness. We say that this aspect of consciousness is **now-bound**.

Consciousness endures. We mean by this that consciousness is not confined to an instant. We say that the aspect of consciousness that transcends the instant is **time-bound**.

An appearance begins as a now-bound, immediate, explicit, reference relation to an object. The context for that immediate reference relation is the current time-bound sets of implicit objective referents and implicit subjective referents.

## Possibility and Space-Time Ratios in Ontological Horizons

§???

For material existents of dimensionality 3.1, some space-time ratios in ontological horizons are impossible.

Let's imagine that I am an astronomer with a keen interest in Pluto ( $\oplus$ ). So, I would like to expand my ontological horizon to include Pluto. That would mean that the spatial radius of my worldview would have to extend to Pluto. The average distance between Pluto and the Sun is 39.5 Astronomical Units (AU). An AU is  $14.959787 * 10^{10}$  metres. Multiplying 39.5 times that results in  $5.9 * 10^9$  kilometers. That would be the spatial radius of my worldview.

The velocity of light in a vacuum is 299792458 metres per second. Converting to AUs, we have 0.002 AUs per second. Multiplying, we have 19750 seconds (5.486 hours) for light to traverse the distance between the Sun and Pluto. Consequently, the light that I see from Pluto in my here-and-now corresponds to the state of Pluto more than 5 hours ago.

For me to “be present” to Pluto—for the light from Pluto when I first look at it to arrive to my here-and-now—I must be patient. I must wait 5.486 hours! Only then will the Pluto that I intended to regard be revealed.

We can generalize this result. For each additional AU that I extend my spatial horizon, I must extend my temporal horizon by 0.002 seconds. In conclusion, the extension of the spatial radius of my ontological horizon sets a lower limit on the extension of my temporal horizon. We can express that in an inequality as shown:

$$\Delta t \geq \Delta \delta / c$$

## The Question of the Discrete Infinity Mutation

Noam Chomsky wrote: "Perhaps at some time hundreds of thousands of years ago, some small change took place, some mutation took place in the cells of prehuman organisms. And for reasons of physics which are not yet understood, that led to the representation in the mind/brain of the mechanisms of **discrete infinity**, the basic concept of language and also of the number system. [...] Perhaps that was the origin of human language. " (Chomsky 1988: 183<sup>xix</sup>) [emphasis added]

From <https://sharedsymbolicstorage.blogspot.com/2008/02/language-evolution-i-noam-chomskys.html>

It is of no consequence that this quote is from Noam Chomsky. The only issue is whether "mechanisms of discrete infinity" are a necessary foundation for any language and whether all human languages rely on such mechanisms.

If the answer to the first question is "yes" then the answer to the second question must also be "yes". So, if there is any human language that does not rely on such a mechanism of discrete infinity, then it must not be necessary. Of course, even if there is no example of a human language that lacks such a mechanism, we can not conclude that it is necessary. Its universality may be a reflection of human cognition.

# On the Evolutionary Advantages of the Discrete Infinity Mutation

Gat 28.370019795576685, -81.50257684350015. 12/24/13

Noam Chomsky argues that the necessary mutation underlying human's ability to use syntactic structures to communicate—the discrete-infinity mutation—is an all or nothing affair. Either you can only count to N or you can count without limit. This is a persuasive argument. However, accepting this argument still leaves us with two distinct problems:

- In what way did the discrete-infinity mutation enhance the reproductive success of those who inherited it prior to its use for communicative purposes?
- How was the trust threshold overcome so that skeptical primates relied on cheap words for trustworthy communication?

We can recognize the discontinuity of the discrete-infinity mutation while accepting a sort of continuity that stretched over a considerable period of time to encompass:

1. The mutation event,  $m_1$ , and a subsequent delay,  $d_1$ .  
This delay could have been longer or shorter depending on whether the discrete-infinity mutation occurred in a male or in a female. The delay may have been shorter if the mutation occurred in a female because she would have established the relationship of intimacy and trust that the development of a “mother tongue” would require.
2. The first act of interpersonal communication,  $m_2$ , that relied on that mutation event and a subsequent delay,  $d_2$ .
3. The first conversation among three individuals,  $m_3$ , and a delay  $d_3$ .
4. The attainment of the critical count,  $m_{3+x}$ , of discrete-infinity mutants living in close proximity—probably as a family or a community—to initiate the even broader spread of the community-wide trust in syntactic communication, and a delay,  $d_4$ .
5. The gradual expansion of the vocabulary and of the particular syntax of the implicit communications contract,  $m_c$ , that extended the reach of syntactic structures to the whole community and all of their everyday tasks.

Reasoning in this way overcomes the contentious issue in modern linguistics regarding whether the origin of human language was continuous or discontinuous with the evolution of non-human animal communication.

## Bibliography

It make me a little bit angry that I need to read so much to be able to write this essay (and the other parts of *Disintegration and its Discontents*) but I realize that the world will not take me seriously unless I pay that price. I may be able to figure out how to abbreviate that process but I will certainly have to deal with the arguments explicitly to craft the cogency of my own. The real task is to identify the important arguments and discard the ones that aren't.

These are books I need to study to complete this essay:

*On Nature and Language* by Noam Chomsky

*The First Word* by Christine Kenneally

# **On Consciousness**

*By A.T. Gaynor*

01/21/12

02:12:24 AM

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The perspective we are developing here is that consciousness—a Diachronic (1-dimensional, time-only) entity—has requirements that any 4-D Space-Time entity must implement. How the requirements are met may affect performance but it will not affect the essential functions of consciousness.

Let's begin with a set of axioms.

$$1. \quad \forall_{0.1} (x) \exists_{3.1} (y) : C(x) \rightarrow B(y)$$

**Dependence of Consciousness:** *For every consciousness, which is a 1-dimensional, time-only (Diachronic) entity, there exists a brain, which is a 4-dimensional (Space-Time) entity.*

$$2. \quad \neg \exists_{0.1} (x) \exists_{3.1} (y) : C(x) \rightarrow B(y)$$

**Independence of the Brain:** *There exist brains for which there exists no consciousness.*

$$3. \quad \forall_{0.1} (x) \exists_{3.1} (y) : ((C(x) \rightarrow B(y)) \rightarrow (\neg \exists_{0.1} (z) : C(z) \rightarrow B(y)))$$

**Uniqueness of Consciousness:** *If a consciousness depends on a brain, there is no other consciousness that depends on that brain.*

$$4. \quad \exists_{0.1} (x) \exists_{3.1} (y) : C(y) \rightarrow [\diamondsuit_{imm} R(y, x)]$$

**Immediate Intentionality of Consciousness:** *Consciousness can intend (reference) objects immediately.*

$$5. \quad \exists_{0.1} (x) \exists_{3.1} (y) : C(y) \wedge [\forall_{0.0} (z) : S(z) \rightarrow \diamondsuit_{med} R(y, z, x)]$$

**Mediated Intentionality of Consciousness:** *Consciousness can intend (reference) objects via symbols.*

6.

# 16 Ways to Relate to Yourself

by [gat@cooperation.com](mailto:gat@cooperation.com)

04/28/15

Attitudes are at the base of all human relations. Consequently, attitudes are at the base of one's relation to oneself. The most basic attitudes are those of **acceptance** and **rejection**. All other attitudes are modifications of these.

Now, we cannot know when or exactly how humans began to speak. However, we know that there was a time when they didn't. As scientists, we hypothesize that our facility with language evolved over time and that certain mutations must have occurred—cognitively and physically—that enabled us to speak. Finally, the experiments with split brain patients clearly indicate—at least in those whose linguistic facility is well lateralized—that we harbor both an ancient pre-linguistic consciousness and a modern post-linguistic consciousness within our unified brain. Neither of these consciousnesses are “unconscious” in any way. The pre-linguistic consciousness may appear to be so only because it cannot describe its conscious process in words. Consequently, one's relation to oneself is characterized by the following persistent attitudes:

- The Modern One's attitude toward itself
- The Modern One's attitude toward the Ancient One
- The Ancient One's attitude toward itself
- The Ancient One's attitude toward the Modern One

With these observations, we can present these relations-with-self in a table where a=acceptance and r=rejection.

*Table 12: Attitudes Toward Self*

	Modern		Ancient	
Modern	a	r	a	r
Ancient	a	r	a	r

So, we can characterize everyone's basic attitude toward self as two ordered pairs, for example: M(a,r),A(a,a).

- The first ordered pair, M(a,r), indicates the Modern one's attitude toward itself and the Ancient one.
- The second ordered pair, A(a,a), indicates the Ancient one's attitude toward itself and the Modern one.

By convention, the first place always refers to the self and the second to the other.

This is a simple yet powerful schema. However, its objectivity depends on our ability to provide examples.

Let's itemize:

1. M(a,a),A(a,a)

2. M(a,r),A(a,a)
3. M(r,a),A(a,a)
4. M(r,r),A(a,a)
5. M(a,a),A(a,r)
6. M(a,r),A(a,r)
7. M(r,a),A(a,r)
8. M(r,r),A(a,r)
9. M(a,a),A(r,a)
10. M(a,r),A(r,a)
11. M(r,a),A(r,a)
12. M(r,r),A(r,a)
13. M(a,a),A(r,r)
14. M(a,r),A(r,r)
15. M(r,a),A(r,r)
16. M(r,r),A(r,r)

We need to develop a vocabulary that will allow us to speak of these distinctions clearly and consistently. The rest of this essay provides our first attempt to do that.

One important consideration before we articulate and exemplify each of our 16 relations to self: this is a dyadic foundation that can easily be extended with a simple attitudinal modifier. The foundation we discuss here is necessary. The extensions are many and may also be necessary for various purposes. Others may elaborate this foundation to suit their purposes and we wish them well.

## **M(a,a),A(a,a)**

We will call this relation-with-self pure self-acceptance.

Self-love is a form of self-acceptance. That is to say, self-acceptance is a precondition for self-love.

How do we know that our subject is participating in such a reflexive set of relations of pure self-acceptance? Clearly, it is not enough to simply ask the subject to report on such participation. Our questions engage only the Modern One. We need to understand what the Modern One can know about its participation. We also need to understand what might motivate the Modern One to lie or pretend to know what it does not.

Then, we need to strategize about a way to uncover the attitudes of the Ancient One without the mediation of the Modern One.

First, let

*Table 13: Pure Self-Acceptance*

<b>M(a,a),A(a,a)</b>		<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	<b>Ancient</b>	a	r
<b>Ancient</b>	a	r	a	a	r

## **M(a,r),A(a,a)**

Self-love is a form of self-acceptance. Self-hate is a form of self-rejection.

*Table 14: Modern Rejection of Ancient*

<b>M(a,r),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(r,a),A(a,a)**

Self-love is a form of self-acceptance. Self-hate is a form of self-rejection.

*Table 15: Modern Rejection of Modern*

<b>M(r,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(r,r),A(a,a)**

Self-love is a form of self-acceptance. Self-hate is a form of self-rejection.

*Table 16: Modern Rejection of Self and Other*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 17: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 18: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 19: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 20: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 21: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 22: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 23: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 24: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 25: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 26: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 27: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

## **M(a,a),A(a,a)**

Self-love is a form of self-acceptance.

*Table 28: Self Acceptance*

<b>M(a,a),A(a,a)</b>	<b>Modern</b>		<b>Ancient</b>	
<b>Modern</b>	a	r	a	r
<b>Ancient</b>	a	r	a	r

# On Consciousness as a Diachron-Synchron Unity

by [gat@cooperation.com](mailto:gat@cooperation.com)  
(28.557949, -81.243462). 5-Aug-2013

The possibility of a utopian society of free beings depends on the possibility of such being's ethical integrity<sup>30</sup>. This essay presents an ontology of consciousness that traces the difficulty of ethical integrity to the relation between consciousness and time.

A *diachron* is a being that is essentially temporally sequential. A *synchron* is a being that is essentially atemporal, instantaneous. We say that a diachron is time-bound but that a synchron is now-bound.

Definition of a diachron.

¶

Definition of a synchron.

¶

Definition of a unity.

Proposition 1: The ability to refer to something depends on being a unity of a diachron and a synchron.

ΩΣЯαβγδ□◊

¶1  $\forall^K_{0.1} (\alpha)^K \exists^{a.b}_{0.1_x} : \alpha \equiv \beta \rightarrow \square^K \exists^S_{0.1_S} (\beta)^K \exists^{a.b}_{0.1_x} : \beta \rightarrow \beta^{0.1}$

Every now-bound referrer (synchron) **must** appear to itself.

¶2

$\forall^K_{0.1} (\alpha)^K \exists^{a.b}_{0.1_x} : \alpha \equiv \beta \rightarrow \diamond^K \exists^S_{0.1} (\lambda)^K \exists^O_{0.0} (\Omega, P)^K \exists^O_{??.?} (w_1, \dots w_x, r_1, \dots r_y) : (w_1, \dots w_x) \subset \Omega \wedge (r_1, \dots r_y) \subset P \wedge (\Omega, P) \subset \lambda \wedge$

It is **possible** for every now-bound referrer to have a language, lambda.

¶3  $\forall^K_{0.1} (\alpha)^K \exists^{a.b}_{0.1_x} : \alpha \equiv \beta \rightarrow \square^K \exists^O_{3.1} (B)^K \exists^{a.b}_{0.1_x} : \beta \rightarrow B$

Every now-bound referrer **must** have a body.

The structure of every synchron persists over time but its content changes as a consequence of its relation to its diachron stream. Let's focus on the necessary structure of the synchronic aspect of the synchron-diachron unity. We can present the necessary structural components of every synchron as a functional block diagram.

30 Conversely, the impossibility of utopia depends on the impossibility of ethical integrity. This is why all cynics try to convince us of our inescapable hypocrisy.

# On the Semantics of Self

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As we are trying to pack up the evidence of my mother's and father's life as well as the traces of their progeny's life and relations, it occurs to me that what Daniel calls the Self needs considerable explication if we are to make sense of J. P. Sartre's objections to Freud in *Being and Nothingness*. What is the relation between the Self—which Daniel insists is the concern in the clinical work that he has done and is doing—and Consciousness as Sartre describes it in *Being and Nothingness*?

When we raise the question of the semantics of self, it is not out of idle curiosuty or merely theoretical musings. We raise the question urgently because we want to understand—precisely—the nature of the resources that the Self has at hand to muster a defense against a socio-economic system that has evolved to maximize profits on the basis of the ownership of productive property. We want to understand this explicitly, notationally<sup>31</sup>, and as it pertains to the ontology of Consciousness, concieved along Sartrean lines.

We have already done considerable work in this regard to formulate the relation between Consciousness and its world.

1.  $\forall(x):x \in U$   
Each existent x is an element of the Universe U.

There is considerable additional notational work that we would have to introduce and explain to arrive at the definition of an *appearance* and its relation to the existents *of which it is an appearance* (the in-itself) and *to which it appears* (the for-itself). Sartre says that we can reduce any existent to the *infinite series of its appearances*. That is a one-to-many relation where the many is infinite. So much for the “reduction” of the existent!

Consciousness, too, corresponds to a series of appearances. However, consciousness is not the existent that appears, it is the appearance itself. When I look at my lover, I am her appearance (to me). Her appearance is the way that my consciousness is in-the-world at that moment. True, I am also simultaneously and implicitly aware of myself as being conscious of her. However, that simultaneous implicit self-awareness is intrinsic to every conscious act. Each appearance is implicitly self-conscious.

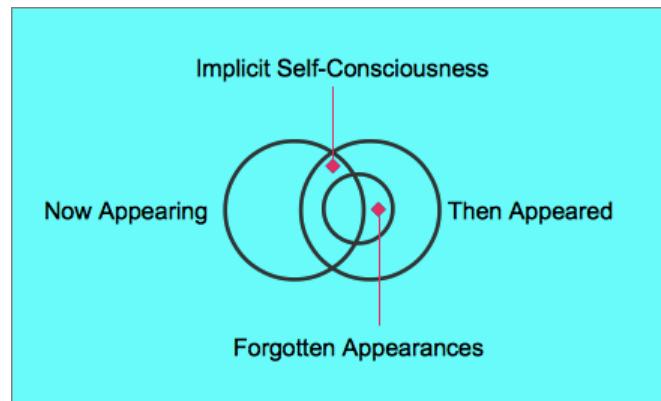
“But”, you may say, “I am also aware of all of the experiences of my life, too.” Yes. Every appearance is a member of a series of appearances for a consciousness. Just as the existent is an **infinite** series of its appearances, we are a **finite** series of appearances. We might propose that the series of appearances that we have been constitute our identity as a time-bound existent. However, we do not remember every appearance. Sometimes a slice of the universe appears and then we forget. So, it would be more accurate to say that our identity as time-bound existents is a selection of the series of appearances during our life. In other words, consciousness is not only the current appearance which is implicitly self-conscious but it is the current finite series of appearances that consciousness remembers which is also implicitly self-conscious. But the finite series of appearances that we have forgotten is also implicitly constitutive of consciousness. This is true because we can sometimes recover those

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<sup>31</sup> I am not merely a disinterested or indifferent observer of our research into this question. I want to be able to express the relation between the Self and Consciousness in the dimensional qualification notation that I have invented.

memories. This makes our relation to our forgotten appearances different from all that we have never experienced. We can not remember what never appeared to us.

What emerges from these considerations is a model of consciousness that is something like what is shown in Illustration 12 above:



*Illustration 13: Consciousness as finite time-bound series of appearances with implicit self reference*

For example, when we use the English word Consciousness as a proper noun, what are we referring to? We understand that Consciousness is

# Mono-Modal and Multi-Modal Intentional Agents of Ancient and Modern Memory Stores<sup>32</sup>

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**Prior to the evolution of language, nature was the ancient one's only teacher.** The ancient one evolved to understand the expressions of nature and to modify its behavior accordingly.

**After the evolution of language, the modern one became another of the ancient one's teachers.** The teaching role that the modern one assumed would have been evolutionarily effective only if it enhanced the organism's ability to adapt to the natural ecosystem.

As a consequence of these constraints, the **relation** between the ancient and modern selves has probably also evolved. It is the evolution of that relation that we are considering here.

The teaching channels—natural and linguistic—require some theoretical constructs that I will describe now.

We have already concluded that some intentional agents can only read and write the memories of the ancient one and others can only read and write the memories of the modern one. Let's characterize these intentional agents more carefully with respect to their relations to the different kinds of memory. We don't yet know if all of the kinds of agents we will itemize actually exist. That will be up to experimental projects to determine. Here, we simply want to be complete.

Let's use the following abbreviations:

- Ancient-Only Memory (AOM)
- Modern-Only Memory (MOM)
- Common Memory (CM)

The question arises whether memory is defined by the type of agents that can read or write it or if the agents are defined by the type of memory they can read or write. The implication of this quandry is whether or not the hypothesis assumes that there is such a thing as **common memory**. Common memory is accessible to **all** intentional agents. Without common memory, the unity of the self would be impossible.

The idea of common memory implies the existence of only three kinds of agents:

- AOM agents (that can also read-write CM)
- MOM agents (that can also read-write CM)
- CM agents that can not read-write AOM or MOM

**The common memory hypothesis would be disconfirmed if we found an agent that could not read-write CM.**

If there is no common memory per se but rather some agents that can read and write both of the other kinds of memory, then a sort of **virtual common memory** arises that depends on the agents rather than being a distinct and permanent entity.

**The virtual common memory hypothesis would be disconfirmed if we found an agent that**

32 This morning, 15-Dec-2014, (really over the course of the last week) I have finally formulated what I believe will lead to the resolution of the problem of the disintegration of consciousness after the evolution of language. We have already established that the unconscious is an illusion caused by our linguistic myopia. We have concluded that there must be three distinct forms of memory from the point of view of our ancient and modern selves:opaque, translucent, and transparent. [This is orthogonal to the descriptions I have developed in this essay, however.] The translucent memory is accessible to all intentional agents. The memory that is opaque to ancient agents is transparent to modern agents and vice versa. Now we are ready for the final assumptions.

## could only read-write CM.

Can we formulate the **common memory hypothesis** and the **virtual common memory hypothesis** in such a way that they are falsifiable? That really depends on whether we can formulate the description of intentional agents in such a way that they are objectively detectable and so that the way they read and write memory is objectively discoverable. To help with this, I have defined **mono-modal** and **multi-modal** intentional agents.

In Table 19:Self Acceptance, we can see that there are very few mono-modal intentional agent types relative to the plethora of multi-modal types. Let's try to order this multi-modal realm more carefully.

The mono-modal agents have a property that we may want to identify in some of the multi-modal agents. That property is the **symmetry of their read-write capabilities**. If a symmetrical agent can read a given type of memory, then it can also write it. If it can write it, it can also read it. In the type column, we have tagged rows with the following encoded strings:

- **multi-Sym** means that there is read-write symmetry for AOM, CM, and MOM.
- **multi-Sym-A** means that there is read-write symmetry for AOM.
- **multi-Sym-C** means there is read-write symmetry for CM.
- **multi-Sym-M** means there is read-write symmetry for MOM.
- **multi-Sym-AC** means there is read-write symmetry for AOM and CM.
- **multi-Sym-AM** means there is read-write symmetry for AOM and MOM.
- **multi-Sym-CM** means there is read-write symmetry for MOM and CM

Each of these tags identify a class of intentional agents that might be subject to experimental confirmation or—more importantly—disconfirmation.

*Table 29: Common Memory Hypothesis Read-Write Capabilities of Mono-Modal and Multi-Modal Intentional Agents*

Read			Write			ID	Type
AOM	CM	MOM	AOM	CM	MOM		
T	T	T	T	T	T	1	multi-Sym
T	T	T	T	T	F	2	multi-Sym-AC
T	T	T	T	F	T	3	multi-Sym-AM
T	T	T	T	F	F	4	multi-Sym-CM
T	T	T	F	T	T	5	
T	T	T	F	T	F	6	
T	T	T	F	F	T	7	
T	T	T	F	F	F	8	
T	T	F	T	T	T	9	
T	T	F	T	T	F	10	
T	T	F	T	F	T	11	
T	T	F	T	F	F	12	
T	T	F	F	T	T	13	
T	T	F	F	T	F	14	
T	T	F	F	F	T	15	
T	T	F	F	F	F	16	
T	F	T	T	T	T	17	
T	F	T	T	T	F	18	
T	F	T	T	F	T	19	

Read			Write			ID	Type
AOM	CM	MOM	AOM	CM	MOM		
T	F	T	T	F	F	20	
T	F	T	F	T	T	21	
T	F	T	F	T	F	22	
T	F	T	F	F	T	23	
T	F	T	F	F	F	24	
T	F	F	T	T	T	25	
T	F	F	T	T	F	26	
T	F	F	T	F	T	27	
T	F	F	T	F	F	28	mono-AOM
T	F	F	F	T	T	29	
T	F	F	F	T	F	30	
T	F	F	F	F	T	31	
T	F	F	F	F	F	32	
F	T	T	T	T	T	33	
F	T	T	T	T	F	34	
F	T	T	T	F	T	35	
F	T	T	T	F	F	36	
F	T	T	F	T	T	37	
F	T	T	F	F	F	38	
F	T	T	F	F	F	39	
F	T	F	T	T	T	40	
F	T	F	T	T	F	41	
F	T	F	T	F	T	42	
F	T	F	F	T	F	43	
F	T	F	T	F	F	44	
F	T	F	F	T	T	45	
F	T	F	F	T	F	46	mono-CM
F	T	F	F	F	T	47	
F	T	F	F	F	F	48	
F	F	T	T	T	T	49	
F	F	T	T	T	F	50	
F	F	T	T	F	T	51	
F	F	T	T	F	F	52	
F	F	T	F	T	T	53	
F	F	T	F	T	F	54	
F	F	T	F	F	T	55	mono-MOM
F	F	T	F	F	F	56	
F	F	F	T	T	T	57	
F	F	F	T	T	F	58	
F	F	F	T	F	T	59	
F	F	F	T	F	F	60	
F	F	F	F	T	T	61	
F	F	F	F	T	F	62	

Read			Write			ID	Type
AOM	CM	MOM	AOM	CM	MOM		
F	F	F	F	F	T	63	
F	F	F	F	F	F	64	Undetectable

Table 30: Virtual Common Memory Hypothesis Read-Write Capabilities of Mono-Modal and Multi-Modal Intentional Agents

Read		Write		ID	Type
AOM	MOM	AOM	MOM		
				65	
				66	
				67	
				68	
				69	
				70	
				71	
				72	
				73	
				74	
				75	
				76	
				77	
				78	
				79	
				80	

## On the Evolution of the Relation between Verbal and Non-Verbal Conscious Systems

Let's consider our two hypotheses from the perspective of the evolution of the conscious human organism.

How did nature teach pre-linguistic humans? Humans, like other complex organisms, can modify their behavior based on experience. We call that learning. However, learning is intrinsically interactive. There is a dance of mutual adaptation that is part of virtually every learning instance. We might consider our ability to learn to be a method of giving the role of teacher to our environment. Let's take a

few examples.

A very brief review of a secondary source

([https://en.wikipedia.org/wiki/Control\\_of\\_fire\\_by\\_early\\_humans](https://en.wikipedia.org/wiki/Control_of_fire_by_early_humans)) indicates a broad scientific consensus that hominids had control of fire by 200,000 years ago. Our question is whether hominids learned to control fire even before an ideolect capability had evolved. This is, admittedly, a difficult research question. However, it is an important one.

The discovery of the FOXP2 gene and its possible role in the evolution of language is relevant. The analysis of Neanderthal DNA indicates that they shared the same FOXP2 mutation as modern humans ([https://en.wikipedia.org/wiki/Evolutionary\\_linguistics](https://en.wikipedia.org/wiki/Evolutionary_linguistics)) and there are differences between chimpanzee and human versions of the gene (<http://www.nature.com/nature/journal/v462/n7270/edsumm/e091112-08.html>). Ostensibly, this allows us to conclude that the human ideolect capability evolved after the chimpanzee-human split and before the FOXP2 mutation that humans and Neanderthals share. Of course, that hypothesis is only possible if chimpanzees are not capable of an ideolect!

# On Attention in Ancient and Modern Consciousnesses

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Elsewhere I have described human reality as the coexistence of ancient and modern consciousnesses in a single body. The atheistic interpretation of that theory adds the premise that all consciousnesses are embodied in the sense that they depend for their existence on the living functions of a body.

In brief, the ancient consciousness is that which human beings (*homo sapiens* or earlier) have always had. The modern consciousness is that which human beings have had since the invention and spread of spoken languages. The modern consciousness therefore obviously depends on the ancient consciousness in an asymmetrical way.

So, just to be clear, we are not comparing attention in pre-linguistic hominids to attention in post-linguistic hominids. We are comparing attention in the different kinds of consciousness in contemporary human beings.

Our hypothesis is that the ancient and modern consciousnesses are contemporaneously parsing the sensory stream. However, they do so using distinct temporal granularities. These temporal granularities act as metaphorical tuners to divide the sensory stream into two distinct channels: the ancient and the modern. Over the course of the lifetime of the individual, the messages on these two channels are interpreted by the corresponding consciousnesses to build up distinct models of the self-world dyad. These models are modified based on an internal communications channel between the ancient and modern consciousnesses.

The temporal granularity of a communication channel is simply the smallest unit of time within which a message can be expressed or interpreted. A transient smile, the look in her eyes, his momentary shift of visual attention, these communicative acts happen in a fraction of a second. The expressing or interpreting, “Who is that?” takes longer. Is there an objective unit of time measure for each channel? Are they sufficiently distinct? These are the sorts of questions we hope to resolve by a review of the experimental literature.

# On Mitsein and Disillusioned Love

by [gat@cooperation.com](mailto:gat@cooperation.com)  
25-Sep-2014

## Being-with

(German: *Mitsein*)

The term "Being-with" refers to an ontological characteristic of the human being, that it is always already[8] with others of its kind. This assertion is to be understood not as a factual statement about an individual, that he or she is at the moment in spatial proximity to one or more other individuals. Rather it is a statement about the being of every human, that in the structures of its being-in-the-world one finds an implicit reference to other humans. We all live with others, and in fact we could not live without them. Humans have been called (by others, not by Heidegger) "ultrasocial"[9] and "obligatorily gregarious." [10] Without others of our kind we could not survive. Heidegger, from his phenomenological perspective, calls this feature of human life "Being-with" (*Mitsein*), and says it is essential to being human.[11] We are inauthentic when we fail to recognize how much and in what ways how we think of ourselves and how we habitually behave is influenced by our social surroundings. We are authentic when we pay attention to that influence and decide for ourselves whether to go along with it or not. Living entirely without such influence, however, is not an option.

[https://en.wikipedia.org/wiki/Heideggerian\\_terminology](https://en.wikipedia.org/wiki/Heideggerian_terminology)

## An Example

I met my 21<sup>st</sup> century muse on a plane from Orlando to Detroit on 4-Jun-2010. In that meeting we shared an immediate here-and-now for the duration of the flight. During the 4 years since we waved goodbye to each other, we have stayed in touch using many of the modern means of communication.

Our conversation turned into a courtship which—thanks to my refusal to permit my wishful thinking to blind me to the subtle signals of disintegration between my interpretation of the meaning of events and hers—has ended now.

However, the fact that it happened at a distance and by using synchronous and asynchronous communication media gives us a chance to examine the ways in which that courtship reveals the dimensionality of our being-in-the-world and our mitsein.

The change from being present to each other in the plane to being present to each other at a distance reveals much about us as human beings. Our ability to communicate through what is called “texting” reveals that the three spatial dimensions are dispensable while the temporal dimension is not. We are essentially temporal beings in a way that we are not essentially spatial beings.

Observing that we are essentially temporal does not deny that we are necessarily spatio-temporal. It does not imply that we are—or could be—disembodied. We can only share an immediate here-and-now because of our physical selves: our bodies. In this courtship, we are anchored in that immediate presence in the shared here-and-now.

Our separation was a reduction in the communication bandwidth between us. That bandwidth reduction required a sensory deprivation as well. In the strict employment of text, all but our vision was excluded from our messaging. Our texting was a technique to remain in communication using minimal bandwidth and only our sense of vision as readers. Later on, asynchronous hearing (audio recordings) and the asynchronous sense of vision (video recordings) would enter into our communication channel. However, initially, it was just the vision of text, the reader's vision.

Under these circumstances, the written representations of our utterances (and other communicative acts such as laughing [lol] etc.) had to bear the full weight of our present and our future. We each carried a memory of the world we shared but each message we sent had to compress the present world or encode a future world to express anything at all about it. Each message we got had to be expanded through interpretation into a static or dynamic image of a distant present world or a future world.

Clearly, to evolve from occasional salutations to an engaged courtship, we each had to build imaginative representations of a distant contemporaneous world that was connected to the shared here-and-now we each remembered. Then, we had to imagine a way to reunite that imagined series of contemporaneous worlds with a future shared here-and-now.

We had to convince ourselves that our remembered there-and-then experience was connected to our remembered imagined worlds-at-a-distance. Our attribution of existence to our relationship depended on our conviction about that connection. Since we were the only ones that could make that connection, our sense of the reality of our relationship depended on our trust in our ability to make that connection well. In addition, we had to trust the other to make that connection well and in the same way.

These are complicated trust relations. I believe it was rational doubts about both our own and the other's ability to perform these imaginative acrobatics that led us to begin to add higher bandwidth media into our communication stream.

## The Sensorium of the Ancient One

Prior to the evolution of language, the ancient one needed some intentional subsystems that we moderns must have inherited. Evolution had provided 5 worldly (external) senses: seeing [ESE], hearing [EHE], smelling [ESM], touching [ETO] and tasting [ETA]. In addition, the ancient one must have been able to sense internal states, especially pain [IPA].

To use her senses to stay alive and reproduce, the ancient one must also have<sup>33</sup> a special cognitive function, world maker [WM], that takes the external [ESS] and internal [ISS] sensory streams and integrates them into an image of its own being-in-the-world.

The primary utility of this image of its being-in-the-world is to permit another intentional subsystem, the attentional allocation system [A], to implicitly define a figure and a ground and to allocate attention to the part of the sensory stream that needs focus to increase its momentary granularity. This system also needs control over the motor system so that it can turn the body (especially the head) to bring into visual and auditory focus selected background stimuli.

## The Needs and Desires of the Ancient One

The ancient one's world maker and attentional allocation systems are useless unless they are in the service of an intentional system that provides a current goal and keeps a list of less urgent needs and

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<sup>33</sup> I use the present tense of the verbs in sentences about the ancient one because the ancient one is still present in us.

desires. We will refer to this intentional system as psyche [P] for its mnemonic value. As does its namesake, the greek god Psyche (capitalized), it represents the animating principle of consciousness.

## **The Unity of the Ancient One**

The ancient one is unified. It is the unity of its sensorium and its psyche. While it may pursue contradictory goals, it does so in distinct time periods. It does not pursue any two distinct goals simultaneously. Those that did so in the age prior to the evolution of language would not have been well adapted to their environment and would have perished. Confusion has its costs for pre-syntactic sentients.

Consequently, during any goal-period, the ancient one coordinates all resources to reach the designated goal. We can say of the ancient one that it is single-minded in this sense.

## **Single-Minded Reproduction for the Ancient One**

When the ancient one focuses on reproduction, nothing distracts it. Of course, sexual reproduction is a duet and unless both partners are willing, this single-mindedness will result in conflict.

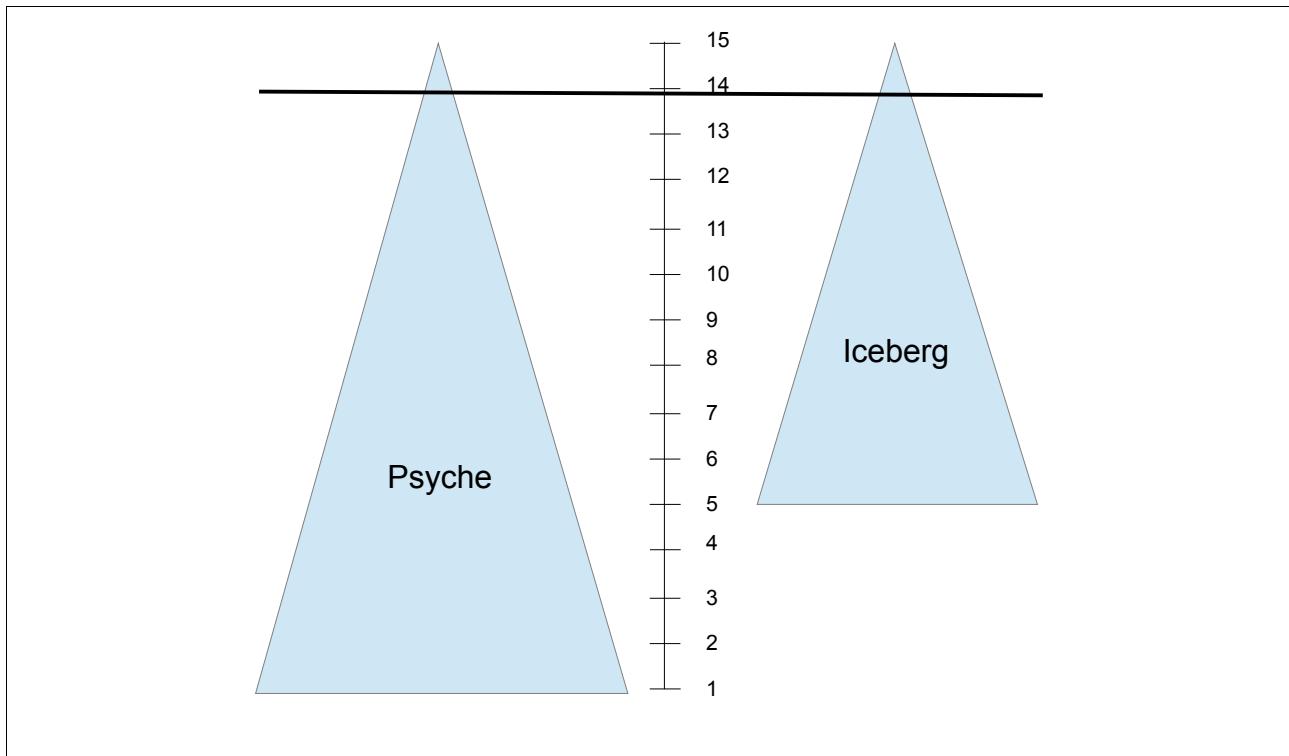
# On Reflections and Echoes of our Ancient Selves

by Alan T. Gaynor  
gat@cooperation.com

Sometime between 2.8 million years ago and **about** 200,000 years ago ( $\pm 100,000$  years), we were in a **pre-linguistic state of development**. It is the nature of our mentality then—and what remains of it now—that I would like to discuss in this paper.

Anthropology, archeology, and linguistics will certainly help us soon enough. Still, there is a good deal that we can appreciate without looking at that evidence.

The first obvious fact is that, evolutionarily speaking, we were formed by pre-linguistic forces for about 14 times as long as we were formed by post-linguistic forces. By comparison, in a glacier that floats in fresh water, there is 9 times as much ice below the surface as there is above it. So, our ancient selves make up more of our being below the linguistic surface than does the ice in an iceberg that is below the surface of the water. Our linguistic self is less than the tip of the iceberg, metaphorically.



We can also observe, with confidence, that the way of language—its necessary serialization of thought—is completely unlike most of the ways of the ancient self. This difference is not merely coincidental: serialization is an essential part of linguistic sentience. The only similarity between that linguistic serialization and the ways of the ancient self is the similarity with time itself and the way that time shapes experience. Yet, time is abstract in a way that space is not. Consequently, we can be quite sure that the focus of adaptation for the ancient self was the 3-dimensional experience of a body in a world. But did we dream 200,000 years ago? In the dream, time comes into its own and its dominance makes **story** the most important aspect of a dream.

Of course, we are still 3-dimensional bodies in the world. All of our non-serialized experiences are

probably those we share with our pre-linguistic ancestors.

Let's consider the hypothesis that there are metaphorical echos or reflections of our ancient self in some of the introspective objects we encounter whenever we—as post-linguistic sentients—reflect on ourselves with our modern linguistic tools.

Plato had a graphic metaphor for this situation. We call it Plato's cave. Our ancient selves cast the shadows on our linguistic walls and we try to interpret them.

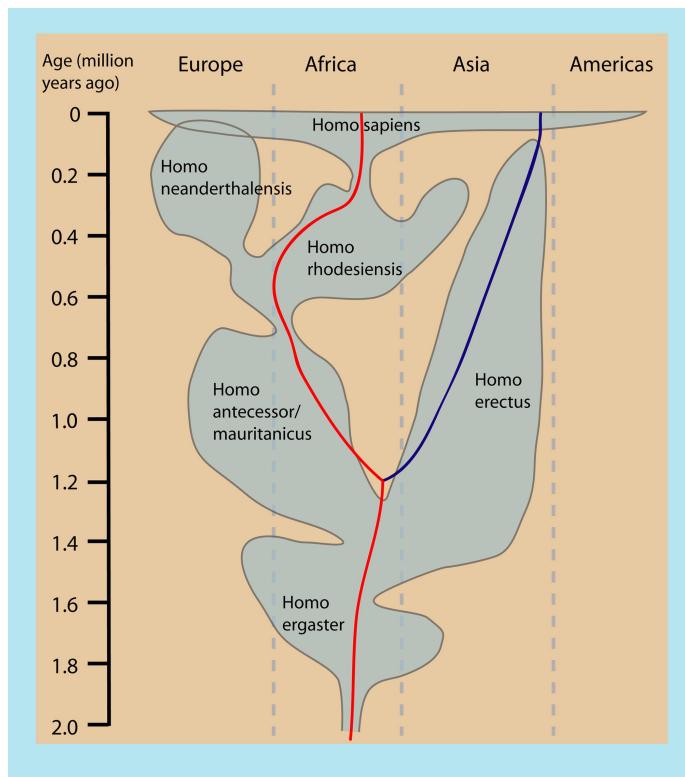
# Evolution of Mind from Body

by Alan T. Gaynor

## Chronology

Presumably, tool use is antedates language use. Today, chimpanzees in the wild are observed to fashion and use spear-like implements but are not able to learn syntax-based language.

These pre-linguistic humans—like all non-linguistic vertebrate species—evolved a sophisticated neural network that permitted the species to adapt in at least **evolutionary time frames**.



Oldowan tool making and use (circa 2.6 mya) predates the earliest dated remains of human beings (genus *Homo* circa 2.3 mya as *H. habilis* or *H. gautengensis*). Certainly, with the development of tools and their passage from generation to generation, we have clear evidence for individual learning. Individual learning permits adaptation in **generational time frames**. Tool-making inheritance also provides circumstantial evidence for relatively sophisticated communication if not for language itself.

Some linguists and cognitive scientists argue that an empathetic community—where each community member recognizes the subjectivity of each other community member—is a necessary precursor to language development and acquisition. This seems sensible because, unless I realize that the other has a mind similar to mine, what is the point of communication? The discovery of mirror neurons in the macaque monkey in 1996 and subsequent confirmation of mirror neurons in humans is a neurophysical basis for such empathy. Since mirror neurons are shared with other primates, the required empathetic community may have been in place even prior to Oldowan tool culture.

In addition to the anatomical evolution required to support syntax-based, linguistic communication, s

## **5.6 On Class and History**

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# On Power

by [gat@cooperation.com](mailto:gat@cooperation.com) 20161207

To act, without understanding the field of relations that constitute your situation, is to bet without knowing the odds. This is especially true when we consider power. However, power—among human beings—is not that complicated, really. Power is quantifiable. Complicated things are not quantifiable.

Until one is overwhelmingly powerful, founding power on a claimed right provides ideological legitimacy that disarms or divides one's opponents. So it is that the claim of the right to private property legitimizes power historically. I can tell you to get off my property because we all have the right to private property. Of course, having the recognized right to something is not the same as having that thing. Not everyone has private property except in trivial instances. In particular, only a very few have a controlling share of productive private property. Productive private property is the kind that requires human labor to create products or services that are useful and saleable.

So it is that we find ourselves in a world that is divided into the overwhelmingly powerful and the practically powerless. The Propertarians—who own controlling shares of productive private property—are the overwhelmingly powerful ones. The Dispossessed—who do not own controlling shares of any productive private property—are the practically powerless. The right to private property is the ideological tool that the Propertarians use to divide the Dispossessed into two ideological classes that implement the divide-and-conquer strategy of the powerful. We call those two ideological classes the Deluded and the Disillusioned.

The Deluded are those who believe in the right to private property. There are many reasons given for this belief. Some of the Deluded believe it on the emotional grounds that they are merely temporarily embarrassed millionaires. Some of the Deluded are the managers that think their delegated authority to hire and fire and their increased wages are a recognition of their merit instead of a payoff for their treachery. Some of the Deluded are all those that aspire to be middle class because they think they are better than their working class fellows. Some of the Deluded believe that, if they work hard and live moral lives, they will be rewarded by the Propertarians. In reality rewards are arbitrary and random. Some who deserve relief from poverty never get it. Some who commit the most atrocious acts of indifference or cruelty are handsomely rewarded. The Deluded dogmatically reject these matters of fact. Their delusions are what keep them on the treadmill.

The Disillusioned are those that do not believe in the right to private property. They ask, simply, what is the origin of private property? All of the answers that they get are obfuscations of the truth: the right to private property is a human invention that depends on an unjustifiable linguistic abstraction and results in the usurpation of resources that are properly part of the global ecosystem. They do not believe that God or any other immaterial beings gave human beings such rights. They do not believe that the privatization of property was merely a convention adopted by rational human beings on its merits. They judge such claims based on their consequences. The Disillusioned recognize only the authority of proofs that are grounded in objective facts.

So, how do the Disillusioned quantify power?

An Objection to Ignorance

by [gat@cooperation.com](mailto:gat@cooperation.com)

An objection to ignorance might seem innocuous but, unfortunately, it is not. It is sometimes controversial. Since I am convinced that raising this particular objection will be viewed as inappropriate in many quarters, I want to lay out the ground rules that most thoughtful Americans--because they are my audience--will agree to abide by.

1. Ignorance is not good.
2. Sometimes, we do not recognize our own ignorance.
3. Seeking to recognize one's own ignorance is good.
4. Once we recognize our own ignorance on a particular topic, informing ourselves about that topic is good.
5. Once we recognize other's ignorance on a particular topic, stating our objections to that ignorance is necessary.

### A Definition of Ignorance

We won't be able to agree to all of the points listed unless we have a common prior understanding about the definition of the term ignorance. The cognate root of ignorance is: ignore. When we are ignorant of something it is because, until now, we have ignored it. Of course, some ignoring is intentional and some is not. We can easily see that, in the case of intentional ignorance, we have knowledge of our ignorance. If we all agree that ignorance is not good, and we recognize our own ignorance, we would expect that we would do something about it. Consequently, we will not focus on intentional ignorance. In the case of unintentional ignorance, we are doubly ignorant! We are ignorant about some fact and we are ignorant of our ignorance.

So, we are defining ignorance as the unintentional ignoring of some topic. For the rest of this essay, we will focus only on this unintentional ignorance and what we can and should do about it.

### Ignorance is not Good

We might take this assertion to mean that for anyone and for any topic, it is not good for that person to ignore that topic. That is an assertion with very wide scope. Its scope is so wide that we might, indeed, be able to find one individual and one topic for which it would be bad for that person to attend to that topic. For example, a journalist might be investigating a drug cartel. By ignoring that topic, the journalist might live instead of investigating it and dying. Whereas its investigation and discovery might be a benefit to the community, it might turn out to be the journalist's demise.

We might take it in a different sense, however. We might take it to mean that it is not good for the

community for its members to ignore facts. We could take this assertion to mean that for any community, for any member of that community, and for any fact, if that member ignores that fact, it is not good for that community. This is an argument for a well-informed civil society. It is much harder to find an exception to it.

### Recognizing our own Ignorance

Every knowledge community can easily point out other's ignorance with respect to its expertise. It is not so easy for any knowledge community to recognize its own ignorance.

The psychology knowledge community understands this with respect to individual's perception. They call this phenomena "inattention blindness". If you are trying to count the number of white uniform-clad players in a free-for-all game where all players are wearing either black or white uniforms, most people will not even see the player in a gorilla outfit that walks across the scene. This affects highly trained individuals as well. When that experiment was adapted to test radiologists, the results were similar.

Inattention blindness is not restricted to individual's perception. It can affect whole knowledge communities and it can affect our awareness of abstract objects, too.

Thomas Kuhn, in the Structure of Scientific Revolutions, shows how inattention blindness among a scientific knowledge community can affect the progress of science. His concept of paradigm shift is an example of a way in which a knowledge community can discover its own ignorance.

### Conclusion

We have established most of what we wanted to establish. We understand what we mean by ignorance, we agree that a knowledge community member's ignorance hurts the community, and that it is possible, through a paradigm shift, for a knowledge community to recognize its own ignorance. We just need to understand the role of the individual that sees the inattention blindness of his or her knowledge community.

Let's call that individual the catalyst. His role is to catalyze the paradigm shift in his knowledge community. He sees the gorilla in the room. What is he to do about it? We would like to suggest that he has a moral obligation to point out the gorilla to everyone he can reach with the message.

However, the catalyst should not assume that publicizing the message of the gorilla will meet with public congratulations. Unless the catalyst's message is compelling, it will probably be subject to the same inattention blindness that has befallen the gorilla itself.

## Prelude

You might not expect a prelude to follow a conclusion but often, in connected discourse, that is exactly what happens. The prelude builds on the foundation of the conclusion and prepares for the next argument. This prelude needs to add one other attribute to the catalyst's message. In addition to being compelling, the message must be sound.

As with ignorance, we need a definition of soundness with respect to messages so that we can be sure that we understand each other as we progress. In fact, as long as we are defining terms, we might want a definition of the term message.

## Definition of a Message

A message is one or more propositions. If there is more than one proposition, then one of those propositions must be the conclusion and the rest are the premises. Every multi-propositional message is an argument that the premises imply the conclusion.

Two observations are in order. First, this is obviously a very narrow definition of a message compared to the way it is generally used. That's ok. We need a narrower definition for the purpose at hand. Second, this definition depends on the definition of a proposition. So, we need to define the term proposition as well.

## Definition of a Proposition

Propositions must be capable of expressing anything hypothetical or factual and must be capable of having a truth value. [1] There must be at least 2 truth values (typically True and False). Three truth values might add Unknown. An infinite number of truth values would make every truth function into a probability function. These are all distinct but possible ways that propositions can be anchored to truth values.

However, propositions must also be anchored to existence. When they are true, it must be because we interpret them as references to matters-of-fact in the universe. That is what we mean by semantics: the interpretation of our propositions as referents to our existent universe.

## Definition of a Sound Message

Only multi-propositional messages can be sound. A multi-propositional message is sound if it is both

syntactically valid (it is a tautological, well-formed formula) and its premises are all true given our semantic interpretation.

I have left some explanation out (mostly about rules of inference) but the lacunae are well understood and well explained by others.

### A Sound, Compelling, and Controversial Objection

I object to American class blindness. I object to the part of that blindness that is intentional and I object to the part that is due to inattention. I object to it because it is a form of ignorance and because that ignorance has very grave effects on the common future of global humanity. When intellectuals fail to focus on the unintentional part of that ignorance, they are complicit with those whose ignorance is intentional. I refuse to be complicit in that silent support and I know that others--especially the independent, global, intellectual community--joins me in that refusal.

Clearly, my objection is controversial. It is controversial with those who are intentionally ignorant because it opposes their intent. It is controversial with those who are unintentionally ignorant because the propaganda against discussing class has been so effective.

Is my objection compelling? Why should anyone care about American ignorance with respect to class?

Every topic has a class aspect and practically all of our discourse ignores that aspect of the topic. Of course, as long as class is not the topic of the discussion, it can remain the invisible gorilla in the scene. If the class aspect of topics were inconsequential, it might be appropriate to ignore it. However, the class aspect of topics is very consequential. In fact, it might be the most consequential aspect of the topic. We will give many examples of this in the next paragraphs.

Every system that is unable to sustain itself disappears.

Every system that sustains itself uses matter and energy to do so.

Matter and energy are physical entities.

Every system that is unable to reproduce itself disappears.

Every system that reproduces must sustain itself at least until the act of reproduction.

Every society is a system of economically interacting members.

Every society requires the physical means to sustain and reproduce itself.

Every member of society must possess sufficient physical means to sustain itself until reproduction if the society is to sustain and reproduce itself.

Every society reproduces itself continuously as its members reproduce themselves.

Possession is a fact, not a right.

Property is a legal right to disposition an existent as you see fit.

Possessive use is more careful than propertarian use.

Sustainability is the law of possessive use.

Living things possessed physical things long before humans invented property as a legal right.

Property is a usurpation from the physical commons of living things.

Labor is not a form of property.

Money is an abstract form of property.

Capital is a form of property.

A corporation is an abstract form of capital.

A means of production is a concrete form of capital.

Capitalism is an economic system.

A capitalist society is a society that relies on a capitalist economic system.

Every capitalist society allocates each of its members to only one of two classes: capitalist class or working class.

Every capitalist owns capital: they are propertarians.

No working class person owns capital: they are dispossessed.

Every capitalist society reproduces itself by reproducing the capitalist/working class division that depends on property relations.

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[1] In addition, a proposition must be a well-formed formula (WFF) in a formal deductive system. This requirement is too technical for this context.

# On History

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930 Wages Way, Orlando, Fl. 17-Dec-2016 06:08

We are now in a position to define what we mean by history—in a formal way—before we embark on the telling of the history that we believe to be objective. We will approach this a step at a time by posing and evaluating a series of implications.

If every **history** is a kind of **story** and if every story has a **protagonist**, then every history has an **historic protagonist**.

If every story that has a **single person** as a protagonist is **not** a history, then every history has a multiplicity of people—**a people**—as its historic protagonist.

Every **people** is like every other **people** because each is a partition of the whole. Only the whole—**humanity**—is unique.

If every story that has an **immortal** protagonist is **not** a history, then every history has a **material protagonist**.

In this book, we focus on the unique, material, historic protagonist that is humanity. We begin by asking why humanity is not—and has never been—the agent of its own history. To answer that question fully, we will have to analyze all of the existents that our argument has presumed: persons, people, protagonists, stories, histories, and finally human history itself. However, even without those analyses, some notions seem plausible as components of an answer.

The agents of history have been peoples—partitions of humanity—that have been **communicatively integrated** across space and time in a way that constituted a system of governance. Their system of governance has enabled them to act in unison. [provide examples]

Humanity, on the other hand, has been **communicatively disintegrated** across space and time so that it has never been able to govern itself or act in unison. If we accept this statement as a tentative answer to our first question, then we are immediately confronted with several other important questions:

- Is it possible for humanity itself to be communicatively integrated across space and time?
- If so, is it possible for humanity to govern itself?
- Independent of the question of the possibility of self-governance, is it possible for humanity to act in unison?
- Why is it important, necessary, or even urgently necessary for humanity to be communicatively integrated, capable of self-governance, and capable of action in unison? Why should humanity become the protagonist of history? Why should this happen now?

The Communist Manifesto of 1848 was euro-centric. That was likely a consequence of the historical and technological limits of communication in that age. From 1837, when Cooke and Wheatstone patented the first commercial telegraph system, to 1844, when Samuel Morse sent his famous “WHAT HATH GOD WROUGHT” message from Washington to Baltimore, the telegraph technology was just beginning to establish the age of instantaneous communication. However, it was not until 1861 that it was widespread enough to replace the pony express. Consequently, when Marx wrote the Communist

Manifesto, it still would have taken from 10 days (at pony express rates) to a month (at commercial rail service rates) for a message to travel the length of Europe from Punta de Tarifa in southern Spain to Finnmark county in northern Norway<sup>34</sup>. Even if the message could have been transferred using Stephenson's Rocket steam engine (30 mph), it would have taken more than 3.5 days. In 2016, messages worldwide are instantaneous. We need a new world-centric formulation of the premise.

A ghost is haunting our world—the ghost of humanity. All the propertarian powers of the material world have entered into an alliance to exclude humanity from the game of world power by keeping it dispossessed, disintegrated and therefore immaterial: a ghost.

Some of us—we call ourselves humanitarian protagonists—are discontented with the forces that maintain the disintegration and dispossession of humanity. We want humanity to materialize, take possession of the commons, and take its rightful place at the head of the world power game table.

## Extras

If a history form is possible, a story form is necessary

If history is possible, a protagonist of history is necessary.

History is always the history of an historical agent.

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<sup>34</sup> We are engaging in a thought experiment about the upper bounds of the time message communication would require in that age. We are not asserting the practical possibility of any of the methods of communication we discuss being used between those two points of Europe at that time.

# On Division and Conquest

by [gat@cooperation.com](mailto:gat@cooperation.com)

Some humans set out to conquer others and some do not. Some attitudes glorify those who conquer and others vilify them. For our purposes, we will call the conquerors **predators**. Our only justification is that this descriptive category helps us with our goal of distinguishing between kinds of human divisions.

Because there are human predators, not all divisions among humans have the same significance. Some divisions are **necessary** for the maintenance of the conditions of predation and some are not. The reasons for the necessary divisions are easily explained. This essay is an attempt to use the distinction between the necessary and unnecessary divisions to explain the unnecessary ones.

Unlike most animal predators, humans use **tools** to amplify their predatory abilities. When those tools are turned against other humans, we call them **weapons**. Typically, we think of weapons as concrete objects: knives, guns, tanks, airplanes, bombs, etc. However, those **concrete weapons** are technological adaptations that support an **abstract weapon: productive property**. Predators use weapons to conquer—or defend—their productive property.

In the simplest prototypical case, predatory humans use violence or the threat of violence—with or without weapons—to coerce other humans to produce for the predator. So, the female body is conceived as the property of her male mate to produce offspring. The male body is conceived as the property of his owner to produce wealth. Marriage and slavery both represent relations between predators and productive property.

Consequently, **ownership of productive property** is the primary foundation for predation. Without such ownership as motivation, we see predation as an irrational mental illness. So, with the exception of the mentally ill, all predators are propertarians and all propertarians are predators. Of course, some would argue—and we are among them—that **all predation is mental illness**. The socially-sanctioned forms of predation practiced by the propertarians are not generally considered to be forms of mental illness because of the success of propertarian propaganda.

So, whether or not you own productive property is a **necessary and distinct foundation** for predation. We all know that those who own productive property are few and those who don't are many. Being outnumbered has prompted propertarians to use two complementary strategies to maintain their privileged position.

The first strategy is to employ weapons—in the hands of those called police and military—to **defeat** the many who take their dispossession as an injury<sup>35</sup>. The second strategy is to employ a divide-and-conquer tactic—one form of propaganda—to **diffuse opposition** to that necessary dispossession. This second strategy is to **distract** the dispossessed from the necessary injury so that the size of the enforcement effort is limited.

The explanation for the unnecessary divisions among the dispossessed is their utility as a distraction from the **necessary and injurious** division between the propertarians and the dispossessed.

## Basis for Disintegrating Divisions

It is beyond the scope of this essay to enumerate every divisive distraction of the dispossessed. However, it is worth it to enumerate the **kinds** of distractions and to say just a few words about why

<sup>35</sup> The State, in this case, is also an abstract weapon for the propertarians. Rarely do propertarians find it necessary to hire their own enforcers. Instead, they burden the dispossessed with the costs of enforcement.

each is so effective.

There are economic, emotional, and cognitive reasons for the divisions that disintegrate the dispossessed:

- **Economic basis:** zero-sum or constant-sum game definition
- **Emotional basis:** repulsiveness of fellow dispossessed (a reflection of self-hatred)
- **Cognitive basis:** irrationality through ignorance of or rejection of rational methods

The game definition is primary. It ensures that the gains of one dispossessed are at the expense of another dispossessed.

Then, all of the emotional repulsions act as justification for ruthless competition among the dispossessed.

Finally, the irrational basis of cognition is forced on the dispossessed to ensure that reason provides no escape from this game and its emotional hooks. Resistance must appear to be futile.

## Inventory of Division Types

There may be an infinite number of ways that humans might find to divide themselves from each other. However, in practice, there are a finite number. The divisions use our **biology**, our **love**, our **appearance**, our **languages**, our **space-time data** (birth and residence), and our **allegiances** (political, religious, family, and sports team) to divide us against each other.

### Biology

Reproduction is a necessary biological function. As a species that depends on sexual reproduction, we instinctively recognize the differences between the sexes. Since the predatory propertarians make every distinction into a divisive distraction—a distraction from the class distinction—the oppression of one sex by the other was an obvious way to do that. The fact that it was the males rather than the females that became the oppressors was not **necessary**. That one would dominate **was** necessary.

There is a problem, from the predators point of view, with a distinction that divides the species so evenly. Solidarity among the oppressed could pit a significant segment of the population against the oppressors. So, the oppression of women is not a sufficient distractor. Consequently, every propertarian society will use one or more of the other distinctions to ensure that any solidarity among the oppressed will amount to only a fraction of the overall population. In addition, it will ensure that each modestly advantaged sub-group will act as a mini-oppressor against the most disadvantaged of all. The predators set each sub-group against each other sub-group. That ensures that the necessary injury to all that sustains the predatory class is invisible and thereby passes unopposed.

### Appearance

### Language

### Space-Time Data

## ***Allegiances***

There are many kinds of allegiances:

- Love
- Nation
- God, Gods, or No God
- Union
- Friends and Family

## **Love**

# **On the Technical Requirements for the Historical Agency of Humanity**

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If we agree that humanity is not an agent of human history at this point in our social evolution, then those of us who believe that humanity should be the primary agent of human history need to ask and answer the questions that arise regarding how it is so and how it could be otherwise. This essay is an attempt to begin that discourse.

# On the Origin of Rights

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What is a right, how do we know a right, and in what conditions do rights originate?

## Introduction

If the being of a right overflows the possibility of our knowledge of it, then our discourse about it should recognize our necessary ignorance. We could signal that ignorance by ensuring that each statement we make about any right (or rights in general) includes a conditional premise that references that ignorance. Such a strategy would be accurate and appropriate but probably boring.

It is not a forgone conclusion that rights (any or all of them) overflow what we can know about them. For example, if the existence of a right depends on our knowledge of it, then it is limited by that knowledge.

Let's explore that idea. Let's say that I have a right to private property. Does it make sense to say that I have that right if I do not know that I have it? What if my neighbor, Yaretzi Hancock, knows that she has a right to private property. I go to what she considers her property and begin to remove a tree there. She comes to me and patiently explains that this is her property and that I do not have the right to remove the tree.

Since I do not know that I have a right to private property, it is plausible that I will be sceptical of Yaretzi's claim to that right. This is especially so because of the fact that I want to possess and use the tree which she claims is hers.

This thought experiment raises a few issues. Are we to imagine that Yaretzi does and I do not have the right of private property just because she does and I do not know it? If I deny that I—or anyone—has a right to private property, who will resolve this conflict?

There appear to be only two possible solutions to this problem. All variations are just children of these two solutions: either I recognize the legitimacy of her claim to the right of private property or I don't.

## The Objectivity of the Legitimacy of the Claim to a Right

So, the question of the relation of knowledge to the existence of a right involves the recognition—by those who **do not** benefit from the right—of the *legitimacy* of the *claim* to that *right* by those who **do** benefit from it. When I recognize the legitimacy of Yaretzi's claim to the rights of private property, is that recognition based on a matter of fact that I—and everyone else—can know? We will refer to this as **the objectivity of the legitimacy of the claim to a right**. There are really several different items to consider:

1. The claim to a right
2. The legitimacy of that claim
3. The objectivity of that legitimacy

As difficult as it may be to verify these things, doing so is necessary if we are to avoid the other branch of the dilemma between the solutions we set out above. If I do not recognize the legitimacy of Yaretzi's claim—for whatever reason—we have a very different foundation for the social relations that

ground our society. If rights—such as the right to private property—are illegitimate, then the whole social structure is grounded on illusion backed merely by power.

## Rights Require Language

The proposal of this essay is that the foundation of any right is the ability to **express the claim** to that right<sup>36</sup>. In short, **rights require language**. The most robust confirmation of the necessity of language to rights is the history of our treatment of all those that can not speak or who we cannot understand. The examples of this are numerous from animals, to speechless humans, to indigenous people, to whole ecosystems. Based on human history, those people and things that are unable to express a claim to a right have no rights. In fact, the only way that they are granted rights is by some articulate human acting as intermediary by expressing claims on their behalf.

However, we do not make this proposal in the hopes of a renewed and invigorated push for human rights. On the contrary, we believe that, if the argument is successful, it undermines the whole edifice of rights that human social organization presumes.

The root of the problem of human survival is precisely the systematic indifference to the balance of the global ecosystem that such a presumption permits. The right of private property, in particular, has economic and therefore ecological consequences that are no longer compatible with human—let alone non-human—life on this planet. The rest of this essay will articulate the details of that argument.

## Objectivity and Legitimacy

It is a principle of philosophy, since David Hume, that you cannot derive an ought from an is. Recently, some philosophers have disputed that assertion. That disputation must succeed if the objectivity of legitimacy has any hope of survival.

It appears patently obvious that legitimacy is a matter of opinion, not of fact. This is true even if, by allocating the issue to convention, we succeed in establishing grounds for valid reasoning about legitimacy. This attempt to reduce the objectivity of legitimacy to the validity of a conventional argument does not delude the clear-eyed reasoners among us. To them, it is just an illusion that such validity is evidence of objectivity. Conventions are adopted by human groups and can be contested by other humans that adopt distinctly different conventions. Languages themselves are an example of conventions that are adopted by different peoples. An Italian may argue convincingly—in English—that the proper way to express something in Italian is, for example, to refer to the sea with the masculine article (*il mare*) or a shoe with the feminine article (*la scarpa*). However, that valid argument does not speak to whether the Italian way to associate gender to things is the way it should be expressed, internationally, by anyone speaking any language! Spaniards, in most contexts, use the feminine article (*la mar*) for the sea and the masculine article (*el zapato*) for a shoe. An agreement among a group of humans to consider an issue in a particular context with agreed upon methods for resolving conflicts of opinion within that context doesn't change the fact that the group has simply agreed to take one side in an issue that requires an opinion (in this case the gender of particular nouns). A group opinion is still an opinion, not a fact.

The issue of legitimacy in the realm of rights is similar to the issue of the gender of nouns in the realm of linguistics. Legal systems in the realm of rights play the role of languages in the realm of linguistics. Both are conventional systems that provide grounds for valid reasoning but neither can magically change opinions about values into matters of fact.

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<sup>36</sup> Hopefully the reader will not assume that we are making the moral claim that rights should depend on language. We are merely observing that as a matter of fact, only the rights of the expressive have been granted or upheld in human history.

To avoid relegating the legitimacy of rights to mere opinion about values, thinkers have had recourse to a few unconventional groundings of the legitimacy of rights. Two such unconventional groundings are prominent: nature and God. From these groundings we have the natural rights of man and the divine rights of kings, for example.

From the admittedly existentialist perspective that we are taking, these avoidance strategems seem motivated, in part, by the fear of responsibility for choosing and implementing rights. If we acknowledge that rights are conventional and normative rather than objective then we realize the collective responsibility we bear for their choice, implementation, and consequences. Those who benefit from the historical implementation of rights are unlikely to own up, in the 21<sup>st</sup> century, to the new need for a rational and democratic justification for rights including trans-human rights.

## Appendix On the Dimensionality of a Right

To reason about rights, we ought to define what we mean by a right. One important aspect of the definition of a right is what type of entity it is. Let's begin there.

One important aspect of objective things is their dimensionality. Elsewhere, I have proposed a dimensional qualification notation that allows us to specify the dimensionality of the referents of our variables in the predicate calculus. That notation allows us to be specific about the degree of abstraction of any objective entity we are discussing.

What dimensional type of being is a right? Let's be systematic about our investigation with respect to the dimensionality of rights. Let's begin with the most concrete and work toward the most abstract.

### 3.1

Do rights have spatio-temporal addresses? Obviously, they do not. We will assert this as follows:

$$1. \quad \neg \exists_{3.1} (x) : R(x)$$

However, it is possible for a right to be recognized among sentient beings that inhabit some spatio-temporal region. This observation leads us to conclude that rights have mediated **projections** into spatio-temporal regions. Sentient beings are the medium through which rights are projected into spatio-temporal regions.

For the time being, let's leave the definition of a sentient being undefined (axiomatic) except insofar as each sentient being is a discrete concrete entity. Let's define a **community** as a set of sentient beings. Must a community exist for a right to exist?

$$(\exists(x) : R(x) \rightarrow \exists(y) : y \in C) ?$$

# From Disillusionment to Resistance

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Ok. So, we have chosen to be disillusioned and we recognize that we are each the protagonist in our own life story.

Now, what? Does this disillusioned protagonism lead us all in the same direction or even toward the same goal?

Well, we have different stories. So, in that sense, our goals are likely to be different. However, our shared disillusionment places us all on the same epistemological playing field: the **objective field**.

## The Intelligibility Axiom

The first, most urgent, question that arises is the question about the **intelligibility** of the objective field.

Is every matter-of-fact intelligible? In other words, is the human intelligibility of the universe a matter of fact?

Although, in some ultimate sense, the intelligibility of the universe may be a matter of fact, we can't know it **as fact** until the end of science. That time is not yet (if ever) So, we must accept or reject that intelligibility as an **axiom**.

## The Unity Axiom

The second, most urgent question that arises is the question about the **unity** of that objective field. Is every objective entity related—in some way—to every other objective entity?

Is it possible that there are two or more absolutely unrelated objective fields both of which are, in principle, humanly intelligible? One requirement of such a state of affairs is that no single human being could know anything about both. If there were such a person, the two or more unrelated fields would be related by sharing a single common observer. We can extend this argument to any shared entity or, even further, to any shared physics. The inside of a black hole may be an example of such an unrelated objective field.

By definition, then, we cannot know if there is some other unrelated objective field. So, we must accept or reject that unity as an **axiom**.

## The Freedom Axiom

The final urgent question is the question of **freedom**.

The very existence of possibility depends on the freedom of sentience. What is the value of possibility? Without it, the future was already determined by the beginning.

Are we free to choose from among the possible options? Unless we embrace some such conception of freedom of choice, moral agency is lost. What is the value of moral agency? Without it, nothing

matters.

We may not be able to know whether or not the freedom that is requisite for moral agency and possibility is a fact but we can know that if they are not real, intelligibility and unity are meaningless.

So, we must accept our freedom as an axiom.

## Progress and Disinformation

If we—the disillusioned protagonists—accept the axioms of intelligibility, unity, and freedom, what implications are there for human progress? Is there such a thing as progress and, if so, what are its objective criteria?

Human progress as an objective entity has several obvious requirements:

- An objectively described and quantified current state of humanity. In modeling vocabulary, we would describe this as a quantified ontology of the state variables of humanity.
- A preferred destination that can be objectively described and quantified. This must be in the same form as the current description. In other words, it is the quantified ontology with variables set in accordance with the preferences.
- A method for detecting and storing the current state of humanity at any time.
- Finally, there must be history. History, in this context, is the continuous change of the state of humanity over time.

A corollary to this is that the objective entity being modeled must be amenable to such modeling. In particular, it must be capable of a history (the foundation of progress) and that history must be some function of human choice.

Fortunately, these requirements have at least one solution: a Global Game. The mathematics of game theory provide a well-understood method for modeling a socio-economic system whose state changes ultimately depend on human choices. If we could agree about the nature of the Global Game and how humanity can win it, then we would be able to identify, at any time, whether we have made or are making progress during any designated historical period.

Unfortunately, we still have a hurdle to overcome before we can begin measuring our progress. There are some that will deny the existence of a Global Game of this nature, not because there is no such game but precisely because that is their role in that game. Obviously, unless the current state of the game is perfect (which everyone admits isn't the case), progress may mean that some will lose and some will gain. If, for example, one aspect of human progress is increasing equality of power and property, then progress in the game will involve a subordinate zero-sum game in which some that have much power or property will lose to some that have little power or property.

This is an impediment because those that are playing this obstructionist role in the Global Game are powerful indeed.

We will call those that currently have global power and property the Establishment. The rest we will call the Global Public. The Establishment, by definition, is in a position to lose power or property if the Global Public is able to make choices (by selective spending and voting, for example) that moves the Global Game toward greater equality. To avoid this, the Establishment will use its power and property (typically in the form of money) to influence (possibly to suppress) any research, writing, or dissemination of such research or writing that might provide the basis for action by the Global Public.

The research, expression, and dissemination of the model of the Global Game is precisely the kind of information that might provide the basis for action by the Global Public. If such a Global Game exists, we can expect the development and dissemination of its model to be opposed by the Establishment for purely strategic reasons<sup>37</sup>. By *purely strategic reasons*, we mean reasons that have nothing to do with truth. The evaluation of the truth value of an expression is independent of the evaluation of its strategic value.

## Strategic Disinformation by the Establishment

Let's conduct an analysis of the generic ways that a well-funded Establishment might prevent a model of the Global Game from ever influencing the Global Public. Let's itemize those ways to see if we can discover evidence of the use of that strategy. Here are the acts of disinformation that we might expect from our strategic foes:

1. Deny the Axiom of Intelligibility
2. Deny the Axiom of Unity
3. Deny the Possibility of Progress
4. Deny the efficacy of human choices
5. Suppress funding for the research and development of the model of the Global Game
6. Suppress funding for the publication of the model of the Global Game
7. Fund disinformation efforts aimed at every necessary assumption of the Global Game model.

To those, like us, that embrace the intelligibility axiom, saying that the Global Game is unintelligible is to deny its existence. Our argument for that conclusion is as follows:

- The intelligibility axiom asserts that any matter of fact is intelligible.
- Whatever exists is a matter of fact.
- Therefore, if the Global Game can't be understood, it must not exist.<sup>38</sup>

## Freedom, Intelligibility, Unity, and the Nature of History

Those choices on our part—combined with the choices of every other human protagonist—constitute history. However, history—as the series of outcomes of the choices of humans—is one thing if it is a consequence of the possibility of rationally justified actions. It is a completely different thing if it is a consequence of rationally unjustifiable actions or inevitable actions.

By accepting the axiom of intelligibility, we choose the nature of history. We choose a kind of history that consists of rationally justified actions of human beings.

If, in addition, we accept the axiom of unity, then there is a unity to the rational justification of global human history.

The nature of history is different for those that reject the axiom of intelligibility or the axiom of unity.

Those that reject the intelligibility axiom are left with a history without rational justification. We may

<sup>37</sup> It appears that, in 1995, just such an attempt to muddy the waters was made by an author who was supported by the Cato group: *The State of Humanity* by Julian L. Simon. I have not read any work by this author prior to writing this essay. I will however, use it after the fact, to validate or refute the assertions I make regarding the likely strategic attacks on a model of the Global Game.

<sup>38</sup> If, on the other hand, we assume that the universe is unintelligible, then there may be a single global game that is beyond our comprehension.

fairly characterize those that take this perspective as **historical irrationalists**. They are free to dispute any rational justification for historical events because, in the end, they don't believe there is any rational justification.

Those that reject the unity axiom are left with a history that is geographically and possibly chronologically discontinuous. The historical events in one area of the world are unrelated to the historical events in another area of the world or of the events at another time in the same area. We may fairly characterize those that take this perspective as **historical disintegrationists**. They are free to dispute any historical continuity argument because, in the end, they don't believe there is such historical continuity.

These historical irrationalists and disintegrationists still accept human freedom as the basis of history. The **historical determinists** do not. While history, for them, is still the unfolding of human choices, those choices themselves are not free. They were determined by the initial conditions in the universe and the laws of physics.

## A Motivation for the Rejection of the Intelligibility Axiom

Rejecting the axiom of intelligibility is equivalent to accepting what we might call our rational disability. The acceptance of our rational disability with respect to the global game<sup>39</sup> undermines the rational justification for our socioeconomic activism. So, if your goal were to disable rational socioeconomic activism, a rejection of the axiom of intelligibility would be a good strategy.

Certainly, rejecting the axiom of intelligibility means that all theory becomes just personal conjecture or opinion. In addition, under that framework, there are no objective grounds for opposition to any profitable enterprise. That would certainly be a good thing for those who own profitable enterprises or who aspire to such ownership.

Such submission to economic interests, however, is not the only consequence of a rejection of the axiom of intelligibility. Obedience to command-and-control hierarchies is another.

## Snippets

Does it also reveal to all of us that there is only one global game?

This, too, may be a matter of choice. The intelligibility of the global game—if there is one—is the issue. Is the global game an objective fact or is it a consequence of our determination to make sense of the context of our story?

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<sup>39</sup> So, whether the global game is unintelligible because the universe of which it is a part is unintelligible or simply because it is, itself, unintelligible is irrelevant to the consequences of our acceptance of our rational disability with respect to our most fundamental social context.

# On the 50<sup>th</sup> Anniversary of the War Against Poverty

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Why haven't we won the war against poverty? The answer is actually quite simple and it has nothing to do with the success of Medicare or Medicaid or Food Stamps or Welfare or any government program. The fact is, those are all just stop-gap measures.

Isn't it clear that the reason we have poverty is because **the job creators aren't creating enough good jobs?** They just seek profits and that is a different goal. Let's face it, in the for-profit part of the economy, the corporations are not job creators, they are **profiteers**. This shouldn't surprise us, really. It's a simple, unemotional legal and mathematical problem. They are legally obligated to seek profits for their shareholders and their greatest return on investment is **not** in creating more jobs. How can we question their moral compass when it is simply a matter of mathematics? If, as a society, we wanted to change their behavior we probably need to change their legal obligations and financial incentives. Right?

There is poverty in America because there aren't enough jobs and the jobs there are don't pay enough. This is so primarily because there is **no institution that is dedicated to creating jobs for citizens!** At the risk of stating the obvious, the reason we should have such an institution is just because it is good for everyone for everyone to have a job. In the Constitution, we used to call that the "General welfare".

Now, part of the reason why there is no such dedicated job creating institution is because people that call themselves conservatives have taken a fancy to what they call "small" government. These fiscal conservatives have no problem funding a Military at a rate that is higher than the next 10 largest national militaries in the world<sup>40</sup> and who have never seen a weapons system that they don't like regardless of the cost.

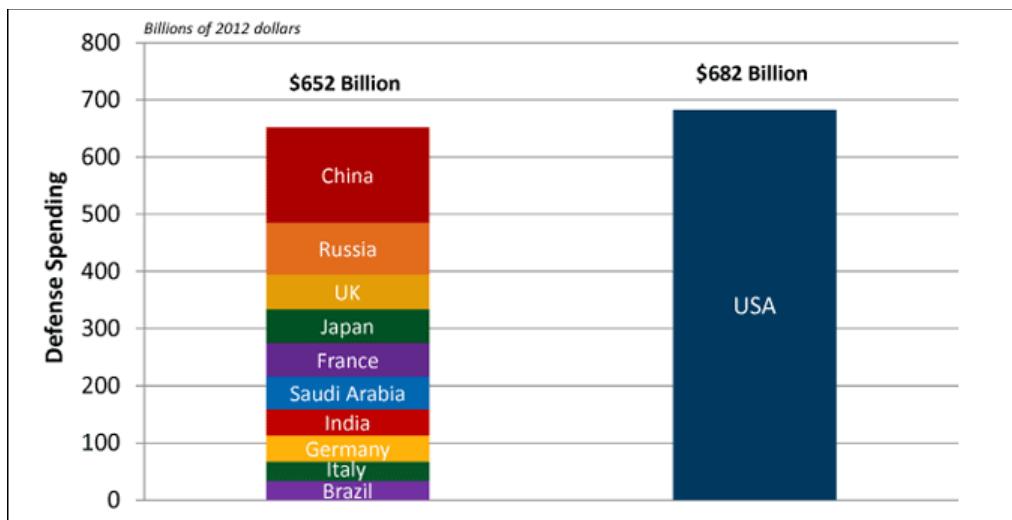


Illustration 14: US Defense Spending Relative to Next Largest Military Budgets

40 [http://pgpf.org/Chart-Archive/0053\\_defense-comparison](http://pgpf.org/Chart-Archive/0053_defense-comparison)

However, they are particularly incensed by any non-military government jobs. Their dogmatic opposition to this is so ingrained that even in a near-depression like economy where unemployment is unusually high for an unusually long time, they say that government jobs are not real jobs! As a consequence of this dogmatic ignorance, government is not even permitted to be the job creator of last resort. Conservatives would rather have people die of cold in their unheated homes because they ran out of money to pay their heating or electricity bills—because their unemployment checks stopped coming—than to extend the unemployment benefits until the spring.

Clearly, these conservatives are obviously Christians, not humanitarians.

However, as I said, the programs that are put in place by governments are just stop-gap measures. What is needed is government-backed loans to those who are willing to start businesses that employ a certain number of workers and are employee-owned and employee-run. Instead of the Fed giving the big banks loans that are virtually interest free, they could use that same money to provide 2-year loans to such employee-owned startups.

In addition, the government could set up a national job registry. Any company anywhere in the United States that wanted to hire anyone would be required to list the job in the job registry. In addition, whenever they fill a position, they would be required to report that fact the same day. The primary purpose of the national job registry is to end the nepotism and prejudice that is rampant among employers.

Eventually, every job should have objective criteria by which workers can qualify. And, every school should have educational programs that provide certifications for having met those objective criteria. In that way, the matching of jobs to job-seekers can be done by a computer algorithm that considers only the match between the job requirements and the certified skills, the distance from the job site (for those that require on-site work), and the order in which the applicants applied. The best qualified, that is nearest, and first to apply, gets the job. The employer has no right to refuse to hire that person.

The national job registry is an instance of a natural monopoly that should be run by the governance of the polity. Having hundreds or thousands of job brokers is wasteful and inefficient. In addition, it makes it impossible for the government to know exactly what the current rate of unemployment is. Isn't that insane?

With these two modest interventions for the General welfare, the government could know the magnitude of the unemployment problem and allow the startup of worker-owned enterprises aided by the national job registry to find the best way to provide good jobs to those who are seeking them wherever they are.

# On the Game of Life and Death

A.T. Gaynor

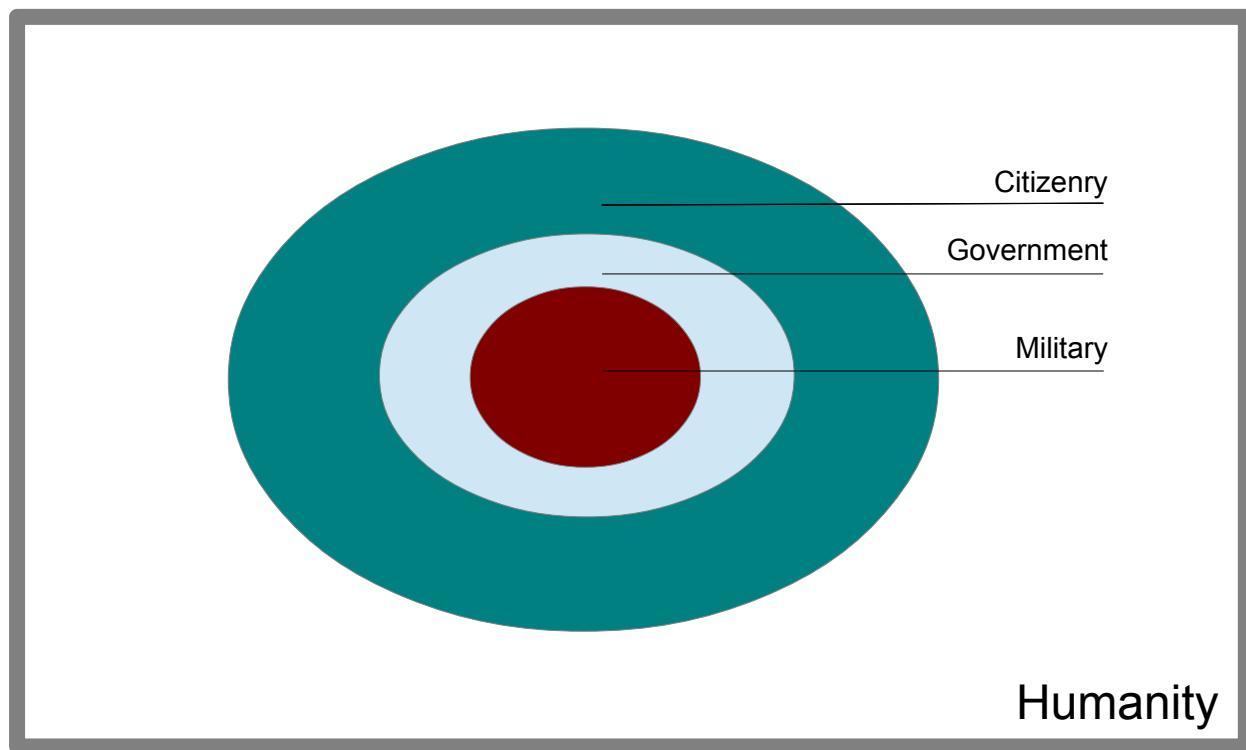
11/16/13

If we value life and reason, we ought to use the most advanced tools of reason to figure out the game whose payoffs are life and death<sup>41</sup>. That is what I will set out to do in this essay.

I believe—and therefore assume—that mathematical game theory is the most advanced tool of reason that we have for understanding situations where we are faced with choices and consequences. If there is a more advanced tool—or if there is some deficiency in this tool relative to some other tool—I hope my audience will inform me.

Let's identify the fewest necessary players in this game. Here is my first hypothesis:

- Humanity (H)  
This is the set of all individuals that play the game.
- The citizenry (C)  
This is the set of all individuals that are citizens of government G.
- The military (M)  
This is the subset of citizens that join the military.
- The government (G)  
This is the subset of individuals that have jobs in the government. All elected officials are included in this subset as are all of their employees. The military individuals are also part of the government.



<sup>41</sup> Disillusionment consists of a clear understanding of the game of life and death.

A game, in mathematical game theory, consists of a set of players ( $X_1, X_2, \dots, X_n$ ), a set of strategies for each player ( $S_1, S_2, \dots, S_n$ ), and a payoff matrix. In the game of life and death, those are the payoffs. Once we have determined for a player ( $X_i$ ) a strategy ( $S_i$ ), the payoff matrix determines the payoff ( $p_i$ ) for that player and, by extension, every player<sup>42</sup>.

$$p_i = (X_i, S_i)$$

We can state these relations formally as follows:

1.  $\exists (H, G, C, M, N) : (M \subset G \subset C \subset H) \wedge N \equiv \bar{C}$
2.  $\exists (h, c, g, m, n) : h \in H \wedge c \in C \wedge g \in G \wedge m \in M \wedge n \in N$

At any point in time, every human is in one of two states:

- alive ( $a = L(h_i, \tau_i)$ )
- dead ( $d = L(h_i, \tau_i)$ )

There is a function called work ( $w$ ) that has various inputs and outputs but one of those outputs is value ( $v$ ). That value has two distinct aspects: exchange value (\$) and use value ( $u$ ). Every output has a fixed use value but variable exchange value. Every individual ( $h_i$ ) requires a minimal use value per unit of time to survive<sup>43</sup>:

$$\exists (\tau, h_i, w_i, n, \$_{\tau}^{\tau+n}) : (\$_{\tau}^{\tau+n} = w_i(h_i, \tau, \tau+n) \wedge n > 0) \rightarrow \exists (\tau_j) : \tau_j = \tau + 2n \wedge a = L(h_i, \tau_j)$$

The government collects exchange value taxes (\$) from the citizenry to pay government employees, including the military.

Clearly, there must be a  $\bar{G} \subset C$  for whom the exchange value of the work of the members provides a surplus that they can pay in taxes and which can be divided in some way to satisfy the minimum needs of all  $g \in G$ . In short, the members of  $G$  are parasites of the members of  $\bar{G} \cap C$ . In fact, there is another set of parasites. They are the members of  $C$  that don't work. In fact, there are two parts to the subset of  $C$  that doesn't work:

- those who can't find a job
  - supported by all citizens (via government coercion)
  - supported by some humans (via the charity of others)
- those who don't need a job
  - supported by their own property (via use value or exchange value)
  - supported by some humans (via the charity of others)

Finally, the history of this latter subset is very important. That history cannot be understood without understanding the origin of the **right** of property. We can't understand those who don't need a job unless we understand the right of property because **most everyone that doesn't need a job has property**. Some of them have property that has intrinsic use value (food, water, etc.) and some of them have property that has *only* exchange value: **capital**. Those few who have no property yet do exactly what they want (i.e., have no job) and survive on the charity of others are interesting but not the focus of the current analysis. The history that interests us is the one that answers the questions about the kind of property these humans have and how they got it.

We need to define a few social classes. There seem to be only two true classes: those who must work and those who need not work. Those who must work (the **unfree**) are either **slaves** or **robots**. Those who need not work (the **free**) are either **rich** or **capitalists**. These all seem to be mutually

42 “[T]he strategic form of an n-person game is given by the 2n-tuple, ( $X_1, X_2, \dots, X_n, u_1, u_2, \dots, u_n$ )...”, Ferguson, Thomas S, ‘PART IV . Games in Coalitional Form’ <[http://www.math.ucla.edu/~tom/Game\\_Theory/coal.pdf](http://www.math.ucla.edu/~tom/Game_Theory/coal.pdf)>

43 We express that use value in exchange value terms because that is the reality of the economic coercion of the market in market-based economies.

exclusive and comprehensive partitions on H.

A robot is a person that follows orders unquestioningly and never seeks to escape. A slave is a person that follows orders questioningly and is constantly seeking to escape. The existence of these two classes of people implies a third that we will call the **commanders**. Commanders come in all types: slaves, robots, rich, and capitalists.

There is one more pertinent parameter: the ability to **hire** or **fire**. Some commanders can hire or fire and others cannot.

Before we do a complete analysis of the relations among the sets we have introduced, let's step back to be sure that we are clear about a life and death issue. **Those that choose to seek to continue to live are susceptible to coercion.** The game of life and death is all about coercion. Coercion is when one person has the power of life and death over another person and demands certain behavior on pain of death. We will consider only two forms of coercion:

- economic
- physical

Economic coercion is when a commander that has the plausible ability (enforceable claim of jurisdiction) to hire or fire me, threatens to fire me unless I behave in a certain way. The power of economic coercion depends on my prospects for finding another job before I die of deprivation (food, water, shelter, etc.).

Physical coercion is when anyone that is sufficiently proximate to me in time and place has the means to kill me at the given spatio-temporal proximity and threatens to do so depending on my behavior.

Now, let's turn our attention to a complete ontology of sets and subsets that we have identified. What form should that take? It should take the form of a table whose cells have notional counts that

Count by Role	Military	Government	Citizenry	Humanity	%Military	%Government	%Citizenry
Capitalists	0	0	12	25	N/A	N/A	48.0%
Rich	0	0	25	50	N/A	N/A	50.0%
Robot	18	6	325	750	5.5%	1.8%	43.3%
Slave	2	4	80	175	2.5%	5.0%	45.7%
<b>Total</b>	<b>20</b>	<b>10</b>	<b>442</b>	<b>1000</b>	<b>4.5%</b>	<b>2.3%</b>	<b>44.2%</b>
<b>% Citizenry</b>	<b>4.5%</b>	<b>2.3%</b>	<b>N/A</b>				
<b>%Humanity</b>	<b>2.0%</b>	<b>1.0%</b>	<b>44.2%</b>				

I have constructed what I believe is a valid and cogent argument with respect to the assertion that I ought to be grateful to all veterans.

The justification to any veteran's claim on my gratitude must be based either on their initial surrender of their moral agency to the chain of command or to their subsequent laudable behavior after that surrender. (Certainly, that surrender is not complete but it is substantial because the cost for disobedience after it is substantially higher than before it. Let's enter into that argument later.)

- If the justification is based on the initial surrender of moral agency, then it seems to me my

gratitude ought to be based on my evaluation of the morality of every link in the chain of command. Tracing and evaluating every command seems *prima facie* impractical.

- If, on the other hand, the justification is based on their subsequent laudable behavior, it seems to me that I ought to be allowed to evaluate the morality of that behavior. Often however, veterans do not want to talk about their behavior during war. In addition, when they are willing to talk about their behavior, one wonders how to independently verify the merit of their behavior or the completeness of their descriptions. Finally, how is such behavior, even if it is laudable, attributable to them when they have chosen to obey the chain of command?

In both cases, the appeal for my gratitude is founded on my trust of the military chain of command without any ability to know about or to independently verify the commands of that chain. That seems suspiciously like the kind of trust that prompted the veteran to enlist in the first place. I didn't have that trust when I could have enlisted and I certainly don't have that trust now. Based solely on such reasoning, I believe I have no good reasons to grant my gratitude to veterans and many (Hiroshima, Korea, Vietnam, Iraq, ...) not to.

Even if you don't care to enter into the content of this argument, I would be interested in your evaluation of the validity and cogency of it.

## **5.7 The Monsterous Machine**

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# Woodstock Nation Stillborn

*Alan T. Gaynor*

In her song *Woodstock*, Joni Mitchell penned the following admission:

*I feel to be a cog in something turning*

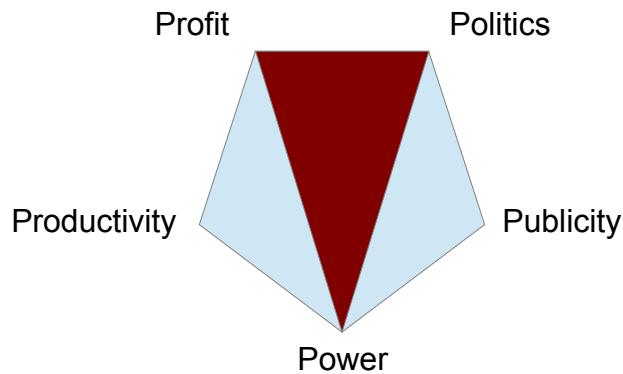
That, in essence, is the feeling behind the analysis of the Machine that we will develop here. We use the Machine as a proper noun because there is only one Machine. That is so because there is precisely one Earth and only one Humanity.

Of course, although we feel like we are cogs in the Machine, we are not. Cogs cannot, of their own volition, unseat themselves and escape, go on strike, or sacrifice themselves to clog the Machine and stop it from working. We can.

However, we have not. In 1967-68, and perhaps even in 1969 as the astronauts were landing on the moon, the hope for a Woodstock Nation had not yet dissipated.

# The Plague of the Machine

by Alan T. Gaynor



*Illustration 15: The Machine*

The paradoxical power of the Machine is its insidious dimensionality. On the largest scale, it is global in its scope because its extensions touch every part of our world. On the smallest scale, it is global because it infects every one of us like a microscopic, practically undetectable, virus. The good news is that there is an antidote. The bad news is that the Machine has methods to immunize us against that antidote. The mission of the discontents is to destroy the immunity to the antidote and distribute the antidote widely but only where it will be most effective. We have no time or energy to waste. The Machine grows stronger by the second.

# **On the Immorality of Capitalism**

*Alan Gaynor 2013*

Is capitalism immoral? We can not conduct a rational discourse on this topic unless we have formal definitions of capitalism and morality that we can all accept for the purposes of this discussion.

Capitalism is one kind of economic system. I think we can all agree with that. The formal definition of an economic system then, provides our starting point.

## Economic System: A Formal Definition

The simplest model of an economic system is the Robinson Caruso (RC) model where Manna is his only product and it serves all of his needs. During each time period, he produces a unit of Manna and a unit of waste.

In addition, let's assume he is capable of self-reproduction every year after he reaches the age of 25. Let's also say that he has a life span of 100 years unless he runs out of Manna to grow and starves or the accumulation of waste on the island poisons him. This is a relatively austere but informative scenario.

The island consists of 100 plots of land, each of which can support one person's need for Manna for 10 years and his need for waste disposal for the same time period. RC arrives on the island at the age of 20.

Given such assumptions (Scenario 1), you can set up a spreadsheet that produces the following graphs.

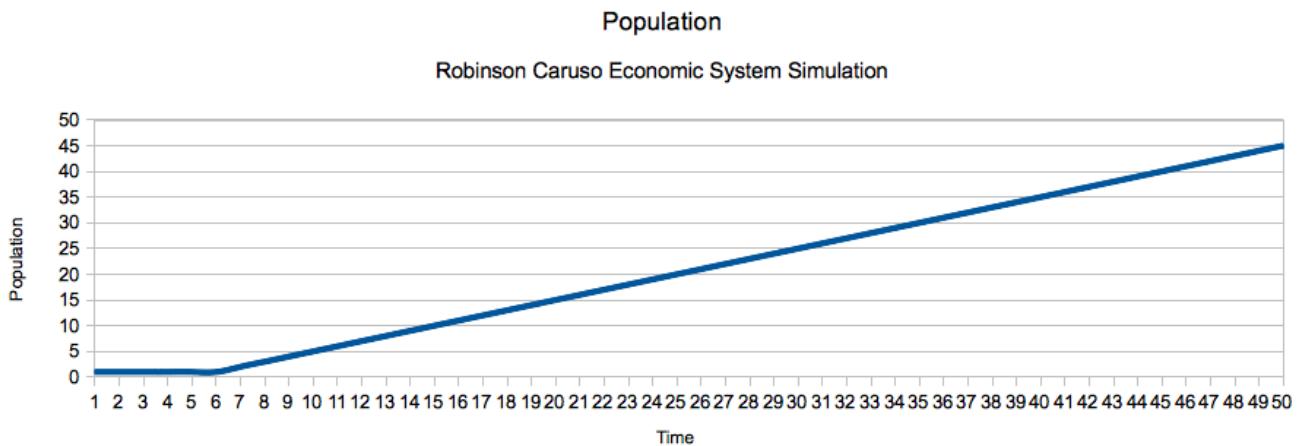
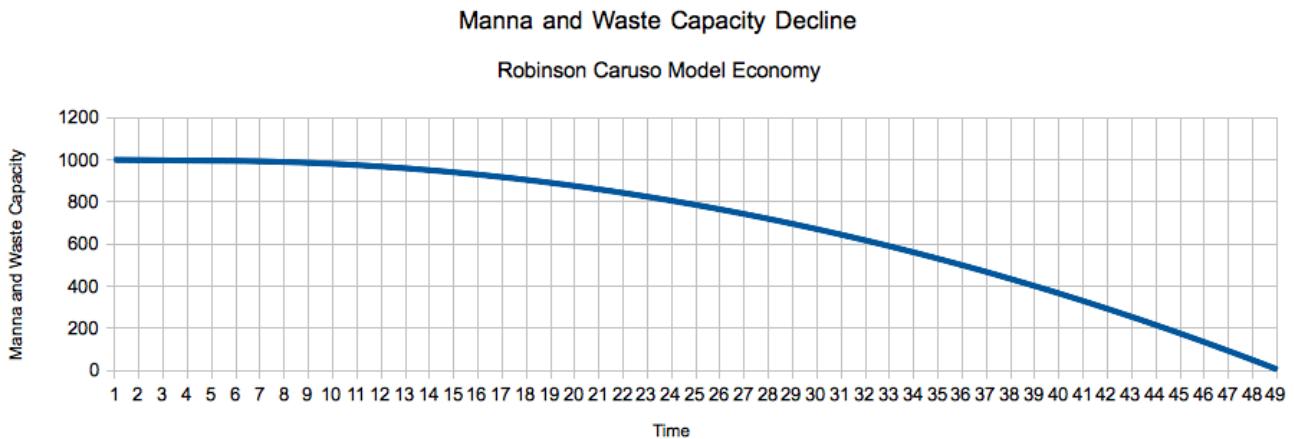


Illustration 16: Population Growth in Scenario 1

After the first 5 years, RC reproduces. This reproduction continues each year thereafter and the constant increase in the population that is shown in the graph (Illustration 15) is the result.



*Illustration 17: Decline of Manna and Waste Capacity in Scenario 1*

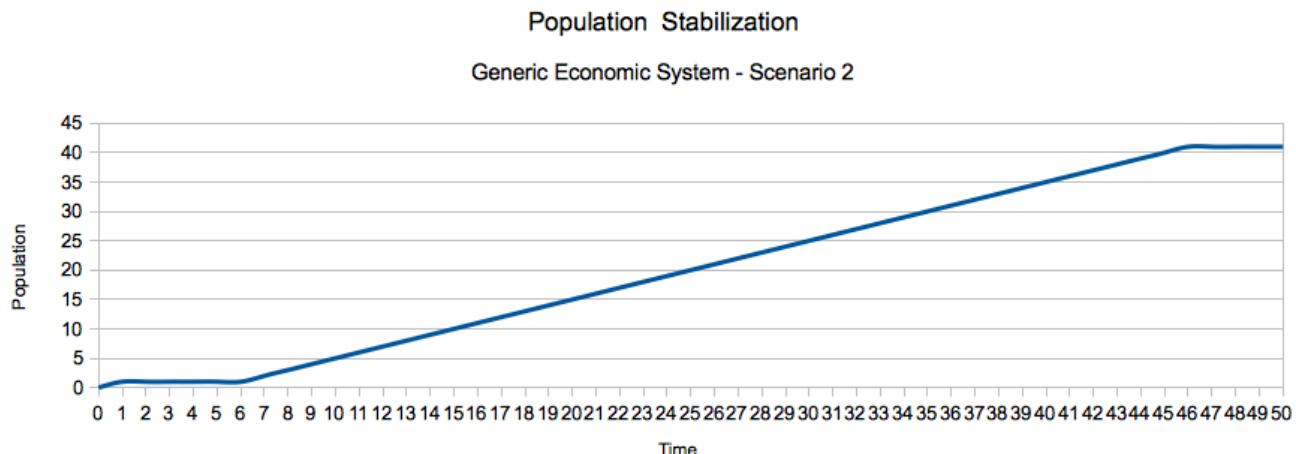
As the population increases, it uses up the available Manna and waste capacity at an ever increasing annual rate. The Manna and waste capacity in the first year that RC arrived on the island would have lasted for 1000 years, 10 times his lifetime. However, because of the constant increase in the population, there was no Manna or waste capacity left for anyone after the 49<sup>th</sup> year. All 45 people died of starvation or poisoning in year 50.

The simple conclusions from this simulation are the following:

- There are limits to growth in any finite system.
- For any economy to be sustainable, the following assertions must be true:
  - Only renewable inputs must be necessary.
  - All waste must be recyclable.
  - The per capita consumption of renewable inputs must not exceed the per capita rate of renovation of those inputs. If the population is growing, so too must the quantity of renovation. In all finite systems a limit will be reached at which further population growth will *reduce* the renovation by reducing land dedicated to renovation. At that point (when the best description of the relation between the variables is a zero-sum game), **population growth must cease**. This relation must be enforced by a feedback loop.
  - The per capita production of waste must not exceed the per capita rate of recycling of that waste. If the population is growing, so too must the quantity of recycling. In all finite systems a limit will be reached at which further population growth will *reduce* the recycling by reducing land dedicated to recycling. At that point (when the best description of the relation between the variables is a zero-sum game), **population growth must cease**. This relation must be enforced by a feedback loop.

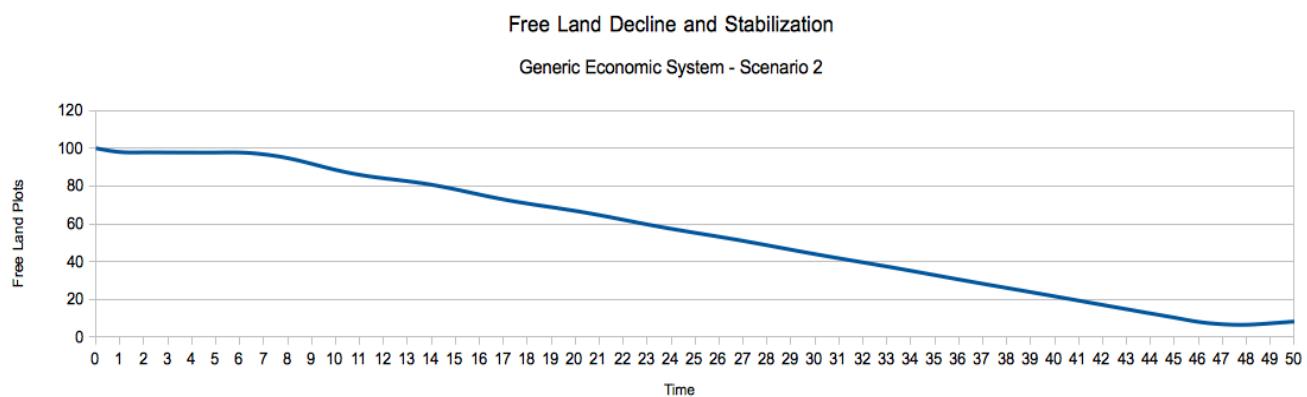
In scenario 2, we change Manna from a non-renewable to a renewable resource, we change the waste capacity from a finite sink to a compost heap, and we add those required feedback loops.

As a consequence of these changes, instead of increasing until land for food and waste is exhausted as was the case in scenario 1, the population in scenario 2 rises to a sustainable level (41) and then stays there as shown in Illustration 17.



*Illustration 18: Population Stabilization - Scenario 2*

Since free land is calculated as what is left after the land under cultivation and the land reserved for recycling is subtracted from the total land on the island, free land in scenario 2 declines as the population increases. However, when the population stabilizes, so does the free land, Illustration 16.

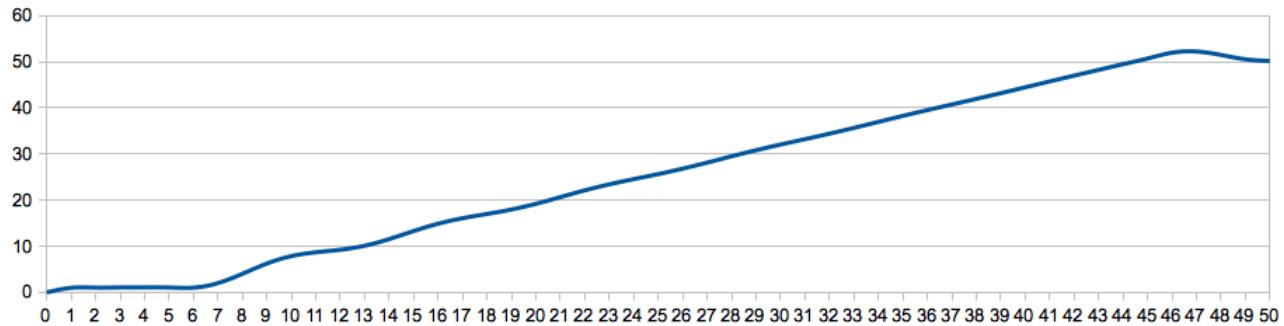


*Illustration 19: Free Land Stabilization*

As we can see from Illustration 21, waste accumulation also stabilizes with the stabilization of population.

### Waste Accumulation Growth and Stabilization

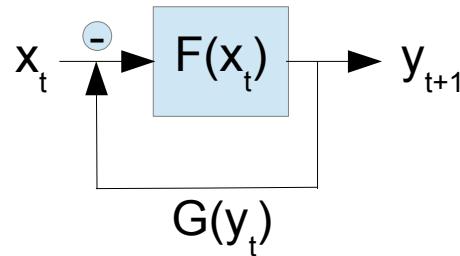
#### Generic Economic System - Scenario 2



#### *Illustration 20: Waste Accumulation Stabilization*

From these musings, we can conclude that an economic system can be designed in such a way that it is sustainable. We might go one step further and argue that an economic system that is not designed to be sustainable probably won't be because the feedback loops that ensure sustainability are not naturally occurring.<sup>44</sup>

How can we formalize these results?



*Drawing 1: Simple System with Feedback*

What we have described is a simple system with feedback as illustrated in Drawing 1. This diagram shows a negative feedback loop so we can use the following equation to capture it formally:

$$y_{t+1} = F(x_t - G(y_t))$$

Of course, to use that formal definition we need to define the inputs, outputs, and feedback variables more clearly. Perhaps the inputs are multiple as are the outputs. We may need to understand, carefully, the exact nature of the feedback loop, its units of measure and its function.

Nevertheless, we will have to then go inside the  $F$  function and analyze the internals of the system to understand how the structure determines its function. When we have done all of this, we will have a discrete-time model of an economic system that is sustainable.

---

<sup>44</sup> This is our first glimpse into the relation between the design of an economic system and the morality of that design.

What is the moral value of the design of an economic system that is unsustainable? Perhaps more to the point is the question of the morality of a sub-culture that opposes the design of sustainable economic systems. When that sub-culture is a global power elite that benefits from the inequalities in the currently evolved system (which is on a path of exponential growth and impending collapse like in scenario 1), the question becomes somewhat more urgent.

## Capitalism: A Formal Definition

## Morality: A Formal Definition

Clearly, actual capitalist societies differ with respect to state regulation of and participation in markets. As a thought experiment, we begin with simplifying assumptions which may be relaxed after we construct our proofs to determine how important those relaxations are to the validity of the proof.

We will have to define some key terms in a formal way:

- capital
- capitalist
- laborer
- means of production
- market
- wages
- necessities of life
- unnecessary things of life
- wastes
- living conditions
- relations of competition (allies, economic competitors, social competitors, warring parties)

Even without formalizing the definitions, it seems possible to guess at some of the conclusions of the proofs:

- The profits of the capitalists can be raised in the short-term by reducing the wages of labor below the necessities of life. The death of unskilled workers by starvation, accidents, or poisoning (for example) is no different—from the capitalist's point of view—than any other reason that the employee might have for seeking employment elsewhere. The only consideration for the capitalist is whether he has the unskilled labor he needs for that short-term. When there is high unemployment among the unskilled labor force, he simply replaces the starved, accidentally killed, or poisoned workers from the ranks of the unemployed during that short-term period **regardless of the wages paid by other firms**. Consequently, there is no competition among capitalists to pay higher wages to unskilled workers when the unemployment rate is high.
- This gives such a firm a competitive advantage and encourages other firms to do the same while the labor glut persists. Since being unemployed in an unregulated capitalist system is an express ticket to starvation, getting a job for such unskilled laborers is a transfer to the local. Unemployment insurance is a denial of the capitalist's right to pay starvation wages or to poison or fail to protect its workers (at work or where they live). It is a reprieve from starvation for the unemployed and thereby forces capitalists to pay wages that are higher than unemployment insurance to replace their unskilled laborers.
- Financial sector capitalists are only rationally concerned with their return on short-term investment. All else being equal, they can get a higher return on investment from firms that pay their labor less. Consequently, when there is a scarcity of capital that is coincident with an oversupply of labor (high unemployment), capital will be invested in firms that pay their labor less than the necessities of life or expose their workers to environmental hazards that would be

expensive to protect them against.

- Laws against abortion and contraception as well as poorly funded public educational systems combined with well-capitalized private, for-profit educational systems are actually merely mechanisms to ensure:
  - high unemployment which increases the downward pressure on wages
  - increases in the gap between the wealth and income of the owners of the means of production and capital on the one hand and the wealth and income of those who have only their labor to sell on the other hand.

These social consequences are part and parcel of unregulated capitalism and not just coincidences. Clearly, the consequences of high unemployment in a purely capitalist world is an increase in deaths by starvation, accidents, and poisoning. In addition, there is good reason for the social system of a purely capitalist world to ensure that there is high unemployment because it ensures a higher rate of return—all else being equal—to the owners of capital and the means of production.

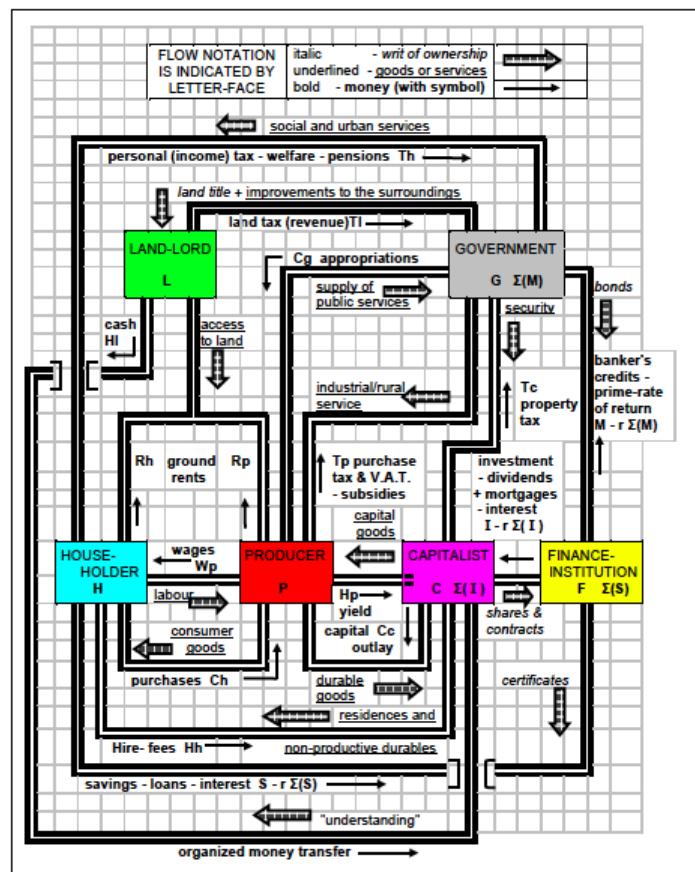
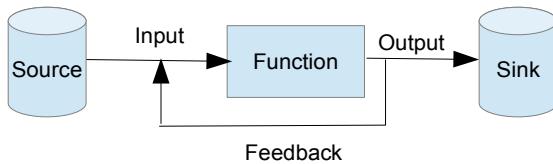


Illustration 21:  
<http://en.wikipedia.org/wiki/File:DiagFuncMacroSyst.pdf>

## Appendix A: A Perl Implementation of a Structure of Temporal Function Simulators

Every time-based input-output function with feedback operates in essentially the same way, Illustration 22. It takes inputs from some source and some feedback mechanism (which depends on the function's output at a previous point in time [ $t-x$ ]). The function transforms those inputs into outputs that it sends to some sink.



*Illustration 22: Generic Input-Output Function with Feedback*

The source and sink may be other functions.

Every source, as a data structure, is simply a table with a time index. The same can be said for the output of any function. In short, inputs and outputs are hashes with time as their keys.

In this way, the feedback mechanism is simply a function that operates on the output hash. That means that each input-output function must write its output to a history hash that persists across calls to that function. That history can be stored globally for the simulation by having a hash of hashes where the key at the top-level hash is the name of the function and the key of each second level hash is the time index.

An instant of simulation time reduces a hash to an array of size 2 where element 0 is the time key and element 1 is its value.

### **TimeFunc Sub**

This subroutine must be configured by its input. That input is a hash with the following keys:

1. Name [string]
2. Program [hash]
3. Data [hash]
4. Feedback [string]

## **6.0 Conclusions**

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# On Protagonism

*Alan T. Gaynor*

September 2010 – January 2012

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# Introduction

I have no religion. However, I do have a creed. I call my creed Protagonism. Protagonism is not listed as a creed or a religion in the typical places that a 21<sup>st</sup> century intellectual would look for it. Despite this, I do not believe it is my personal creation, my whim. Rather, it is an objective structure of assertions that anyone can discover by using the *standard epistemology* and the *axioms of moral minimalism*.

This essay is an informal attempt to present Protagonism.

## Assumptions

I would like to make explicit some of my assumptions about myself and about my creed. In particular, I would like to describe, briefly, the standard epistemology, the role of a primal story in our attempts to make sense of our lives, the distinction between rationalists and irrationalists, and my mental model of the typology of Protagonists.

### ***The Standard Epistemology: Truth, Falsehood, and Learning***

Everyone believes falsehoods at some time or another. Learning is the process of identifying and eliminating our beliefs in falsehoods. Some people are better equipped to identify and eliminate beliefs in falsehoods than others. That is because although there is a standard toolkit for identifying and eliminating false beliefs—let's call it the **standard epistemology**—not everyone is given (or acquires on their own) the tools in that toolkit. In fact, many of us, according to several scientific studies that are reported in the book *The Science of Fear* by Daniel Gardner, use cognitive shortcuts that often lead to erroneous conclusions because they are not valid forms of reasoning. To adopt the standard epistemology, we must identify and resist using—uncritically—those cognitive shortcuts. Appendix B: Inventory of Rules of False Inference summarizes those shortcuts.

In addition, there are some adults that deny the very existence of the standard epistemology. Typically, that denial takes the form of a rejection of objectivity by the embrace of relativism of one sort or another. The unfortunate effect of this denial is a permanent condemnation to ignorance since they have no way to identify the falsity of any of their beliefs. That inability to systematically identify the falsity of one's own beliefs is the essence of dogmatism.

### ***A Primal Story***

Everyone understands stories. Belief in a story—if we have a place in it—provides each of us with the feeling that our life makes sense. There is no more aversive treatment than to be cast into a meaningless maelstrom of disconnected events. Consequently, each of us feels a powerful need to create or accept a story that is our story—a **primal story** that explains our place in the universe.

### ***Rationalists and Irrationalists***

Finally, some people—let's call them **rationalists**—believe that the standard epistemology can be personal so that it even works on the primal stories that we create or accept to make our lives meaningful. Some people—let's call them **irrationalists**—do not believe this either because they do

not believe that the standard epistemology can be made personal or because they do not believe that the standard epistemology has any value whatsoever.

If we generalize this distinction (abstracting from the focus on the understanding of stories), rationalists believe in the human intelligibility of the universe. They believe that **nothing** in the universe is beyond comprehension *in principle*. Irrationalists believe there is at least **one thing** and possibly **more things** that are beyond human comprehension *in principle*. Typically, irrationalists hold that God is beyond human comprehension.

## Protagonists All

Every story has a protagonist. Since every life can be told as a story, each of us is the protagonist of our own story. Those who create stories to make sense of their lives—let's call them **creative protagonists**—may or may not put themselves in the role of protagonist in the primal story that they create. Those who accept their primal story from another author—let's call them **receptive protagonists**—may or may not believe in the divinity of that author.

## Typology of Protagonists

Let's step back and look at the typology—the cast of types of characters—that we have expressed or implied so far.

	Rationalist		Irrationalist	
Creative	Creative-Rational Protagonist		Creative-Irrational Protagonist	
Receptive	Receptive-Rational Protagonist		Receptive-Irrational Protagonist	
	Self-Centric	Other-Centric	Self-Centric	Other-Centric
	Primal Story	Primal Story	Primal Story	Primal Story
	Divine Author of	Ordinary Author of	Divine Author of	Ordinary Author of
	Primal Story	Primal Story	Primal Story	Primal Story

Illustration 23: Typology of Protagonists

## Perspective

“To everything there is a season and a time to every purpose under heaven.”  
Turn, Turn, Turn by Pete Seeger (adapted from the book of Ecclesiastes)

## Conclusions

“Sometimes the cards aren't worth a dime, if you don't lay 'em down.”  
Truckin' by the Grateful Dead

There comes a point in one's life when conclusions seem timely, if not inevitable. I have lived my life pretending to believe in illusions and suspending disbeliefs. Now, it is time for my **disillusionment** and for my ontological, epistemological, and ethical **commitment**. That disillusionment consists in acknowledging what is certain and uncertain as well as what is possible and impossible. That

commitment consists in acknowledging the prerequisites for ethical responsibility and moral agency and acting accordingly. By now, such a committed disillusionment is, for me, the only path left toward a future with hope.

Proofs end in conclusions. The conclusions of proofs are not dogmatic because they depend on the assumptions of the proof and on the rules of inference that permit the construction of the proof. If the assumptions are true and the rules of inference are sound though, the conclusions are certain.

The rest of this document is divided between a discussion of Disillusionment and Commitment.

In the section on Disillusionment, I discuss and prove various aspects of the following topics: objectivity, contradictions, dogmatism, determinism, materialism and metamonomism (my term), relations, and science.

In the section on Commitment, I discuss the axioms of moral minimalism in two parts: preconditions of moral agency and grounds of an objective ethics.

## ***Disillusionment***

If it were possible to know what is possible and what is impossible, if we could be certain about what is certain and what is uncertain, disillusionment would certainly be possible.

Archimedes is reputed to have said: Give me a lever long enough and a place to stand, and I will move the earth. We are in a similar situation. We have our levers (logics and mathematics, etc.) but thinkers who aspire to right action—Protagonists—need terra firma, a solid place to stand.

In fact, we need a place for our tripod: Ontology, Epistemology, and Ethics. That necessity comes from these observations:

- Without the ability to know something, how can we know what exists or what is good?
- Unless we exist, how can we know or act in accordance with the good?
- Unless there is good, what difference does it make whether we exist or can know anything?

In Euclidean geometry, three points establish a plane. That metaphorical plane is the foundation we seek. Since three points are sufficient, we do not focus on Esthetics. Let no one say, however, that it is because we disdain esthetics. On the contrary, we hold esthetics in the highest esteem. We do not believe that esthetics can take the place of any of our other supports precisely because it is quintessentially subjective. For these reasons, we set it aside for the purposes at hand.

Whereas Descartes sought to establish the existence of consciousness based on the subjective certainty of thought, we seek to assure ourselves of the possibility of knowledge. The possibility of knowledge is the precondition for a relationship between the knowing subject and objectivity.

## ***On Objectivity***

Objectivity is a bad word now. In this 21<sup>st</sup> century world that is rife with individual and institutional tyrants, objectivity is an impediment to money and power. If objectivity were impossible, then there would be no terra firma upon which any Protagonist could oppose any tyranny—whether that of an individual or a group—in the name of truth. As a consequence, in the 20<sup>th</sup> and 21<sup>st</sup> centuries we have seen and continue to see tyrants, large and small, expend significant sums of money to buy the intellectual effort that is necessary to discredit objectivity. For tyrants, objectivity is a double-edged

sword. To deny it for themselves would be tyrannicide because it would deprive them of all of the benefits of science and rational strategy. However, to affirm it for the others—their subjects and their enemies—would be to deprive themselves of the noble lies so essential to the maintenance of power.

As a consequence of this, the strategy of the power elites of the 20<sup>th</sup> and 21<sup>st</sup> centuries has been to pay intellectuals to produce research and analyses that are the secrets of the tyrants, and to pay spokespeople and executives to deny truths and to lie—even under oath in public—to protect the tyrant's markets, revenue streams, or influence over people. The prototypical case of this was the appearance of the executives from the tobacco industry as they testified to the United States Congress by denying the conclusions of their own internal scientific studies that asserted the addictiveness and carcinogenicity of their tobacco products. Certainly they were merely prototypical in this regard, just the tip of the iceberg.

Protagonists believe in objectivity because—like all assertions worthy of belief—they are able to prove the existence of objective truth. The beauty of a proof—if I may be permitted this esthetic turn of phrase—is that its conclusions are conditional on premises and rules of inference. Now, all of the controversy in rational discourse regarding a proof should be about the truth of the premises and the proper invocation of the rules of inference in the conduct of the proof. The rules of inference themselves should not be controversial and are the guarantors of the objectivity of the proof.

So, to prove the existence of objective truth, we must be able to agree about the rules of inference that can guarantee the conservation of truth in the conduct of a proof. If we can do that among ourselves, we will have established the rule of rational law.

### ***Proof by Truth Tables***

There are many methods for constructing a proof. We want to present a method that makes clear that any proof we offer really does prove its conclusions. The method of truth tables shows that quite effectively.

To describe rules of inference, we must—temporarily—assume that there is such a thing as a true proposition. However we are assuming this only for the purpose of convincing ourselves that our rules of inference conserve that truth. Later, once we have confidence in our method, we will use our method to test the hypothesis that nothing is true.

Let's begin by introducing a way to represent a proposition with a variable, just as mathematicians represent numbers with variables to gain generality.

Let  $p$ ,  $q$ ,  $r$ , and  $s$  represent any propositions.

Now, in bivalent<sup>45</sup> logics, these logical variables can have one of two truth values.

Let  $T$  represent true and  $F$  represent false.

The simplest truth table for a proposition is that of logical identity which simply lists **all** of the possible truth values for the proposition. We can calculate how many rows are needed with a simple equation:

$$R = V^n$$

Where:

$R$  is the number of rows in the complete truth table.

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<sup>45</sup> Bivalent logics have only two truth values, typically **true** and **false**. Other logics—called polyvalent logics—may have three or more truth values. We will consider a trivalent logic (one with three truth values) presently.

$V$  is the number of truth values.

$n$  is the number of independent propositional variables.

For a bivalent logic,  $V$  is 2. When we have only one propositional variable,  $n$  is 1. So,  $R$  is  $2^1$  which is 2. When we have two propositional variables,  $n$  is 2. So  $R$  is  $2^2$  which is 4, and so on.

The truth table that defines the logical identity operator—which is just the unadorned variable—for the proposition  $p$  is shown below:

Table 31: Identity (no logical operator)

	$p$	$p$
1	T	T
2	F	F

In this form, the first column of the table simply provides a number to **identify the row** of the table. We will use this number in proofs to refer to this line in this definition table.

The second column identifies the **independent variable** in the first row, and all of its possible values in subsequent rows in that column.

The subsequent columns—there is only one in this instance—identify **the operator and the dependent proposition** in the first row. Each of the truth values of that dependent proposition—as determined by the independent variable—appear in subsequent rows.

In the case of logical identity, the dependent proposition is the same as the independent variable and—by convention—there is no Identity operator.

The simplicity of this table is a consequence of the fact that identity is a **monadic operator**. It works on a single input.

Another very important monadic operator is **negation**. The truth table for Negation is shown below:

Table 32: Negation ( $\neg$ )

	$p$	$\neg p$
1	T	F
2	F	T

With this truth table we can see how truth tables generally provide us with certainty that all possible values of the independent variable and the dependent proposition are evident.

1. Because this is a bivalent logic, we know that there are two values for every logical variable ( $V=2$ ).
2. There is only one variable in this table ( $n=1$ ).
3. Since  $R=V^n$ , there should be  $2=2^1$  rows in the complete table and we can see that there are two **numbered** rows in the table. The first **unnumbered** row contains only headings.
4. We can convince ourselves—by inspecting the value in each row—that the value of the

dependent proposition has been correctly noted. So, when  $p$  is true, we observe that the table correctly notes that  $\text{not-}p$  is false.

These 4 steps are the ones we perform to assure ourselves that a truth table is complete and correct.

Let's look at one truth table for a dyadic operator: Conjunction:

Table 33: Conjunction (&)

	$p$	$q$	$p \& q$
1	T	T	T
2	F	T	F
3	T	F	F
4	F	F	F

We know how conjunction works. Both of the conjuncts must be true to make the conjunction true. In fact, as we observe the values in each row we notice that the only time that the conjunction is true is when **both**  $p$  and  $q$  are true, in row 1.

### Implication

A short way to express the goal of a proof is to say that the assumptions *imply* the conclusions. Let's use the truth table method to define the Implication operator.

Table 34: Implication ( $\rightarrow$ )

	$p$	$q$	$p \rightarrow q$
1	T	T	T
2	T	F	F
3	F	T	T
4	F	F	T

Now, we know how to assure ourselves that the truth table is complete and correct. Let's use those 4 steps:

1.  $V=2$  because this is a two-valued logical proof.
2.  $n=2$  because we have two independent variables:  $p$  and  $q$ .
3.  $R=2^2=4$  rows in a complete truth table. Table 34 has 4 numbered rows and no two rows have the same values for the independent variables so the table is complete.
4. Informally, we say that “ $p$  implies  $q$  is true except when  **$p$  is true and  $q$  is false**”. When you examine the  $p \rightarrow q$  column of Table 34, you notice that it has a T everywhere except for row 2. That is the row where  **$p$  is true and  $q$  is false**.

## Proof of Objective Truth

Now, let's use the tools we have constructed to prove that objective truth exists.

All we need to prove is that the proposition “Some proposition is objectively true.” is **necessarily** true. The logic of necessity and possibility is called modal logic. The logic of existence (some  $x$  is such-and-such) is called the predicate calculus. These logics are ideally suited to express and prove the contention that “Some proposition is objectively true.” However, we do not yet have these tools at our disposal so we will argue in natural language for the premises we need to use the tools we have for the construction of the proof.

So, let  $p$  stand for “Some proposition is objectively true.”

Our strategy is to assume that our proposition  $p$  is false. If we can deduce a contradiction from that assumption, we will conclude that the assumption is false. If  $\neg p$  is false,  $p$  must be true. That is how we conduct our proof. Let's begin.

I hope you will agree—just because you understand English—that the negation of  $p$  is “No proposition is objectively true.” Let's represent that by  $\neg p$ .

Finally, I hope you will also agree that both  $\neg p$  and  $p$  are propositions. Now, if  $\neg p$  is true, then, since it is a proposition and no propositions are true (by its own assertion),  $\neg p$  must be false! We can represent this symbolically as follows:  $\neg p \rightarrow \neg \neg p$

We can rewrite that as  $\neg p \rightarrow p$  because we can substitute  $p$  for  $\neg \neg p$ . Let's see what the truth table of  $\neg p \rightarrow p$  is.

Table 35: Truth Table of  $\neg p \rightarrow p$

	$\neg p$	$p$	$\neg p \rightarrow p$	$J$
1	F	T	T	$\rightarrow 3$
2	T	F	F	$\rightarrow 2$

We can see from this truth table that the only condition under which  $\neg p \rightarrow p$  is true is when  $\neg p$  is false and  $p$  is true. That proves  $p$ , that some proposition is objectively true.

Let's express that proof in plain English.

1. Either “Some proposition is objectively true.” or “No proposition is objectively true.”
2. Assume that “No proposition is objectively true.” and see if it leads to a contradiction.
3. If “No proposition is objectively true.” is a proposition, then, if it is true, it must be false. That is a contradiction.
4. Since our assumption that “No proposition is objectively true.” has led to a contradiction, its negation “Some proposition is objectively true.” must be true.

Based on this proof, we can be certain that objective truth exists. That just means that some propositions—not all—are true.

Also note that we have added a  $J$  column to our proof table. The  $J$  column contains a reference to the table and row of our definitions that justify the conclusion. For example, in the last cell of row 1 of the table above, we see the following expression:

$\rightarrow 3$

The  $\rightarrow$  symbol refers to the implication definition table (Table 34). The 3 refers to row 3 of that table.

## On Contradictions

Perhaps the most fundamental proof in all of logic is the proof that—from a contradiction—you can prove anything. What is this magical thing that will allow us to prove anything? It is a formula that is always and necessarily **false**. Logicians say it is a formula that is false no matter what values its variables take.

If we let the variable  $p$  represent the proposition “2 is greater than 1”, then an example is easily offered:

$$p \ \& \ \neg p$$

This formula means “2 is greater than 1 **and** 2 is **not** greater than 1”.

This is clearly a **conjunction of opposites**. In common parlance, we say to this: you can't have it both ways. Either  $p$  is true or it is false. Saying it is **both** true **and** false is just **false!** **That** is a contradiction.

In general—for bivalent logics—every conjunction of opposites is a contradiction.

Now, we can use our truth-table proof method and the definition of the Implication operator (Table 34) to see how a contradiction allows us to prove anything.

### The Proof

Now, we are ready to present the proof of our contention that anything follows from a contradiction.

Let  $p$  and  $q$  represent arbitrary propositions. Then, using the notation in the truth tables above, we can assert the goal of our proof using the Implication operator:

$$(p \& \neg p) \rightarrow q$$

Here is the proof in the form of a truth table:

Table 36: Proof of Anything from a Contradiction

	$p$	$\neg p$	$p \& \neg p$	$q$	$(p \& \neg p) \rightarrow q$	$J$
1	T	F	F	T	T	$\rightarrow 3$
2	T	F	F	F	T	$\rightarrow 4$
3	F	T	F	T	T	$\rightarrow 3$
4	F	T	F	F	T	$\rightarrow 4$

Just for reference, below is a summary of the truth table for Implication:

*Table 37: Summary of Implication*

	<i>p</i>	<i>q</i>	<i>p→q</i>
1	T	T	T
2	T	F	F
3	F	T	T
4	F	F	T

So, looking at the **last three shaded columns** (excluding the J column) of Table 32, we see:

- In row 1, F and T implies T.  
That corresponds to row 3 in Table 36. We see this reference in the J column as →3.
- In row 2, F and F implies T.  
That corresponds to row 4 in Table 36. We see this reference in the J column as →4.
- Rows 3 and 4 of the proof are easy because they are duplicates of the first two rows.

Let's do our 4 step check:

1. V=2 because this is a two-valued logical proof.
2. n=2 because we have two independent variables: p and q.
3. R=2<sup>2</sup>=4 rows in a complete truth table. Table 32 has 4 rows and no two rows have the same values for the independent variables so the table is complete.
4. The proof is successful because every value in every row of the (p&¬p)→q column of Table 32 has the value of T.

This is our first axiom which we will state as follows:

Axiom 1: From a contradiction, anything follows.

$$(p \wedge \neg p) \rightarrow q$$

*Axiom 1*

Bivalent Propositional Calculus

### Consequences

Once we have convinced ourselves that we can prove anything from a contradiction, we will immediately see how necessary it is for us to purge contradictions from our belief system, our creed. If our creed harbors a contradiction, then every “proof” we offer is merely a justification for—or a rationalization of—any of our conclusions. **We could just as easily have proven the contrary.** Having such a creed compromises our trustworthiness and opens us to the accusation of hypocrisy.

The alternative to this purge of contradictions from our creed is the surrender to irrationalism because reason can make no claim to objectivity and is defenseless without the shield of proofs. There is an irrationalist creed called Perspectivism which is happy to destroy any possibility of proof precisely to escape from the constraints of objectivity. Naturally, one can hardly construct a proof of the futility of proof so proponents of Perspectivism use ridicule to get their points across.

Here is a snippet of one such diatribe which attacks Kant and Spinoza (and any philosophers like them) because they use the tools of rationality and proof to assert an objective morality that is independent of God:

That which causes philosophers to be regarded half-distrustfully and half-mockingly, is not the oft-repeated discovery how innocent they are--how often and easily they make mistakes and lose their way, in short, how childish and childlike they are,--but that there is not enough honest dealing with them, whereas they all raise a loud and virtuous outcry when the problem of truthfulness is even hinted at in the remotest manner. They all pose as though their real opinions had been discovered and attained through the self-evolving of a cold, pure, divinely indifferent dialectic (in contrast to all sorts of mystics, who, fairer and foolisher, talk of "inspiration"), whereas, in fact, a prejudiced proposition, idea, or "suggestion," which is generally their heart's desire abstracted and refined, is defended by them with arguments sought out after the event. They are all advocates who do not wish to be regarded as such, generally astute defenders, also, of their prejudices, which they dub "truths,"-- and VERY far from having the conscience which bravely admits this to itself, very far from having the good taste of the courage which goes so far as to let this be understood, perhaps to warn friend or foe, or in cheerful confidence and self-ridicule. The spectacle of the Tartuffery of old Kant, equally stiff and decent, with which he entices us into the dialectic by-ways that lead (more correctly mislead) to his "categorical imperative"-- makes us fastidious ones smile, we who find no small amusement in spying out the subtle tricks of old moralists and ethical preachers. Or, still more so, the hocus-pocus in mathematical form, by means of which Spinoza has, as it were, clad his philosophy in mail and mask--in fact, the "love of HIS wisdom," to translate the term fairly and squarely--in order thereby to strike terror at once into the heart of the assailant who should dare to cast a glance on that invincible maiden, that Pallas Athene:--how much of personal timidity and vulnerability does this masquerade of a sickly recluse betray!

Friedrich Nietzsche from *Beyond Good and Evil*

Here, the great Nietzsche is guilty, first, of **over-generalization**: "They **all** pose as though their real opinions had been discovered and attained through the self-evolving of a cold, pure, divinely indifferent dialectic.." (emphasis added). Do they **all** pose? Does that mean that it is not possible to arrive at "opinions" methodically? Well, I do not pose. I assert that it is indeed possible to conduct our rational affairs methodically and that there are objective facts that can be known and expressed. My existence is evidence that this position is possible and if it is possible now then it was possible in Nietzsche's time, too.<sup>46</sup>

But who needs such methods just to arrive at an opinion? Opinions—they say—are like assholes. Everybody has one. Here, he is guilty of **assuming his conclusion**. That conclusion is that **only** opinions exist. According to him, objective fact—an objective truth that can be expressed in a proposition—doesn't even exist! But that assertion is so paradoxical that he simply insults and humiliates anyone that would assert otherwise. He accuses these philosophers of being: mistaken (because of their innocence), childish, dishonest, hypocritical (Tartuffery), lacking in conscience and good taste, without concern for accuracy and detail (as compared to his fastidiousness), using

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<sup>46</sup> Of course, whether we arrive at our conclusions before or after the fact doesn't matter. What matters is whether and how we justify our conclusions!

mathematical magic (hocus-pocus in mathematical form), and conducting this masquerade because they are sickly recluses! But those of us that arrive at knowledge through a cold, pure, self-evolving, rational dialectic—also known as the scientific method—see through his antics because even if all of these attributions were true, they are beside the point. These **ad hominem attacks** don't dissuade us.

The burden of proof is not on those that assert the existence of matters of fact, it is on those that deny their existence. Conveniently, a clever part of their strategy is the denial of the viability of proofs which allows them to plausibly escape this burden. Clearly, the irrationalists and perspectivists don't have the intellectual maturity to accept the burden of proof or the intellectual discipline to provide a viable proof<sup>47</sup>. Protagonists accept the viability of proof and we have presented a disproof of their assertion in Proof of Objective Truth above.

The assertion that **nothing is true** is false if it is true and true **only** if it is false. In short, it is an example of a paradox. Like the conjunction of opposites that we observed earlier, if we accept this into our creed—as he apparently does—then its falsity infects everything and none of our assertions can be taken seriously because they are not trustworthy. He can dispense with proof because his ability to assert truths is compromised by his assertion that no assertions are true. This denial of truth at the heart of his creed makes him a nihilist. Nihilism is a special kind of Perspectivism, one that doesn't even demand any intellectual discipline.

## On Dogmatism

Nihilists—who deny the existence of any truth—and Perspectivists—who make truth relative—both deny objective truth. That denial makes it difficult for Protagonists to engage in rational discourse with Nihilists and Perspectivists because they grant neither premises nor conclusions of proofs.

However, they also both deny the validity of any rules of inference. The distinction between denying premises and denying rules of inference is an important one with respect to rational discourse. Disputes over premises are productive because they prompt the disputants to find premises they can agree on which permits rational discourse to proceed to mutually acceptable conclusions.

The denial of the validity of any rules of inference, on the other hand, prevents rational discourse from proceeding to conclusions even if the disputants agree on premises! We have shown above how it is possible to construct proofs using the rules of inference of bivalent logic. We have also raised the issue of polyvalent logics. Clearly, since the number of underlying truth values is different and the definitions of the logical operators are different, the rules of inference in polyvalent logics are different than the rules of inference in bivalent logics. Protagonists do not insist on any one set of rules of inference, they insist on **some** rules of inference.

Rational discourse is like chess or any other game in the sense that they are all ruled activities. Those that don't know the rules or refuse to follow them during the conduct of the activity are not really participating in the activity. Yet their conduct is not irrational because their goal is to **avoid defeat**. By refusing to accept the discipline of the rules, they attain their goal of avoiding defeat. However, in the activity of rational discourse, they also deprive themselves of the **occasion to learn**.

Dogmatism is not really about the assertion or denial of some set of premises or conclusions, it is about the refusal to accept any rules of inference. That refusal is what protects the dogma from change. It is dogmatism in this sense that is shared by Nihilists, Perspectivists, and fundamentalists of all religions.

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<sup>47</sup> Careful now! Aren't you falling into the very same kind of ad hominem attack that you just criticised?

Protagonists are not dogmatists because they accept rules of inference. They will even negotiate about those rules to establish a mutually acceptable universe of discourse for rational interactions.

## On Determinism

The following contentions—the first of which is a cornerstone of the Protagonism that I am describing—are often regarded as implying the philosophical position called determinism:

- Propositions can express objective truth.
- Every proposition is either true or false.

I would like to present the reasoning that supports that implication and to show that **only** bivalent logics succumb to that critique. I will argue that the implication of determinism from the choice of a bivalent logic is a good reason for ethical humanists to prefer a trivalent logic for the purposes of discourse about ethics.

Determinism is the contention that everything is determined. Regardless of whether or not everything is determined, to assume determinism is to deny the efficacy of moral agency and the significance of moral responsibility. No one can be said to be a moral agent or to have moral responsibility if he or she could not have acted differently.

### ***The Problem of Future Contingents***

We need one more definition for our next proof. Here is the definition of the bivalent Alternative operator.

*Table 38: Definition of Alternative Operator ( $\vee$ )*

	$p$	$q$	$p \vee q$
1	T	T	T
2	T	F	T
3	F	T	T
4	F	F	F

In bivalent logic, we can prove the law of the excluded middle as follows:

*Table 39: The Bivalent Law of the Excluded Middle*

	$p$	$\neg p$	$p \vee \neg p$	J
1	T	F	T	v2
2	F	T	T	v3

The reasoning that supports the implication of determinism from the law of the excluded middle proceeds as follows:

*Informal Proof 1: The Law of the Excluded Middle and Bivalent Logic Imply Determinism*

1. Since propositions can express objective truth, then the proposition “There will be a sea battle tomorrow.” can express an objective truth.
2. In every bivalent logic, the proposition “There will be a sea battle tomorrow.” is either true or false (see Table 31 above).
  - a) If it is true, then the sea battle tomorrow is **necessary**.
  - b) If it is false, then the sea battle tomorrow is **impossible**.
3. In either case, the future is determined by the truth or falsity of the proposition now.
4. By extension, the set of all possible true and all possible false propositions determine the future completely and there is no possibility of moral agency or moral responsibility.

### **The Solution of Trivalent Logics**

Between 1917<sup>48</sup> and 1945<sup>49</sup> polyvalent logics were discovered and elaborated. Here, I will show how one of those logics—trivalent propositional calculus—can solve the problem of future contingents that we described above.

The idea behind trivalent logic is simple. Instead of just true and false, we entertain the possibility of a third value. Regardless of whether we interpret that value as **unknown** or as **indeterminate**, its rendition in truth tables is identical. The difference between these two interpretations is that the interpretation as unknown, is implied by the interpretation as indeterminate. However, the interpretation as indeterminate is **not** implied by the interpretation as unknown. For the purpose of evaluating the possibility of moral agency, the interpretation as indeterminate is required.

We will present the balanced trivalent logic that uses -1 for false, 0 for indeterminate, and +1 for true. We will further abbreviate true and false to + and -.

*Table 40: Trivalent Truth Table for Alternative, Conjunction, and Negation Operators*

	$p$	$q$	$p \vee q$	$p \& q$	$\neg p$
1	+	+	+	+	-
2	+	0	+	0	-
3	+	-	+	-	-
4	0	+	+	0	0
5	0	0	0	0	0
6	0	-	0	-	0
7	-	+	+	-	+
8	-	0	0	-	+
9	-	-	-	-	+

48 Jan Łukasiewicz introduced his three-valued propositional calculus.

49 The axiomatic algebraic form was extended to n-valued logics.



Here is the trivalent truth table for the law of the excluded middle  $\neg(p \& \neg p)$ .

*Table 41: Trivalent Truth Table for the Law of the Excluded Middle*

	$p$	$\neg p$	$\neg(p \& \neg p)$	J
1	+	-	+	&3
2	0	0	0	&5
3	-	+	+	&7

Trivalent logic solves the problem of future contingents by invalidating the bivalent proof of the Law of the Excluded Middle (Table 31 above). Table 33: Conjunction ( $\&$ ) shows that when the value of the proposition is indeterminate—which is clearly the case with respect to future contingents—the “law” does not hold (see row 2). So, the proof of determinism fails because the law of the excluded middle doesn't hold. Without it, instead of being only either necessary or impossible, it is indeterminate.

This is a proof that the future is not yet determined. We do not yet have the proper tools to express this informal proof explicitly. For now, we will use a few special symbols and conventions to express the conclusion and we will present the proof when we have developed the tools properly.

The conventions and symbols we will use are:

- $\overset{tri}{P}$  will represent a trivalent predicate.
- $\square$  will represent “necessary”

We will express this as our 2<sup>nd</sup> axiom as follows:

Axiom 2: It is not the case that for all x, a trivalent predicate is necessarily either true or false of x.

$$\neg \square \forall (x) : (\overset{tri}{P}(x) \vee \neg \overset{tri}{P}(x))$$

*Axiom 2*

### Trivalent Modal Predicate Calculus

There are special cases<sup>50</sup> when bivalent logic holds and has its advantages. In general<sup>51</sup>, however, the safest course of action is to employ a trivalent logic.

This is an example of how our epistemology interacts with our ontology. Our logic—or aspects of our logic such as the number of truth values—can affect our ontological commitments. Choosing a logical framework that is ontologically parsimonious, even agnostic, is a particularly important application of Ockham's razor.

## On Materialism and Metamonism

Protagonists make different ontological commitments than materialists do. Strict materialists—those that only admit the existence of material things—consider time and space to be unreal. Protagonists assert the existence of time and space but they do so in the context of a metamonistic ontology. I will explain metamonism presently.

Protagonists assert the existence of relations and relata. These are not independent existents but rather interrelated existents which are distinguishable. To indicate this interrelated nature, we prefer to use the term relation-relata for an object. Here are some of the ontological assumptions that Protagonists make:

- 1) Some existents consist of a relation among relata.  
A corollary to this is the assertion that no existent is isolated, unrelated to some other existent.
- 2) The same relata may participate in multiple relations.
- 3) What appears as a relata in one relation may be the result of a relation among other relata.

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<sup>50</sup> We will discuss these special cases as relation-relata of zero dimensions below.

<sup>51</sup> That is to say in all cases of non-zero dimensional relation-relata.

Let's formalize these assumptions as axioms.

$$\exists(x)\exists(y_1\dots y_n):E(x)\rightarrow R(x,y_1\dots y_n)$$

*Axiom 3: Some existents consist of a relation among relata.*

Bivalent Predicate Calculus

$$\forall(x)\forall(y)\exists(z):(E(x)\rightarrow R(x,z\dots))\wedge(E(y)\rightarrow \diamond R(y,z\dots))$$

*Axiom 4: The same relata may participate in multiple relations.*

Bivalent Predicate Calculus

$$\forall(x)\exists(y_1\dots y_n)\exists(z_1\dots z_n):(E(x)\rightarrow R(x,y_1\dots y_n))\rightarrow \diamond(E(y_1)\rightarrow R(y_1,z_1\dots z_n))$$

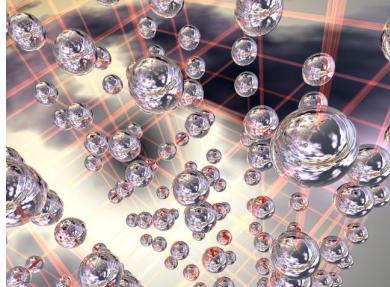
*Axiom 5: What appears as a relata in one relation may be the result of a relation among other relata.*

Bivalent Predicate Calculus

The consequence of these assumptions is captured in two images: the yin-yang and Indra's net.



The yin-yang image of a relation-relata shows that the whole is composed of interpenetrating relata.



The image of Indra's net captures the multiplicity of relations that each relata participates in. In any relata, we can detect the reflections of all other relata.

Metamonism is the credo that although no single substance (neither air, nor fire, nor earth, nor water, etc.) is the foundation of all existents (that would be monism), every existent is a particular relata within some set of relations and also stands in a particular relation to some set of relata.

From this Protagonist point of view, materialists are reductionists: they attempt to reduce the relation-relata to a thing that is independent of space-time as well as independent of all of the other relations it participates in. Protagonists insist that there are no such independent things. Every material thing exists in a nexus of relations and is, itself, a nexus of relations.

If there is such a thing as an atom—and Protagonists do not deny the possible existence of atoms—we have not yet found them. Each indivisible material entity that has been hypothesized to be such an indivisible entity has been discovered to be a relation among relata. Even if one or more indivisible fundamental entities are discovered, they will not be independent because they will participate in compositions of less elemental relation-relata.

Currently, there are questions among physicists regarding the dimensionality of our universe. What we can say is that physical relation-relata are at least 4-dimensional entities. Protagonist ontology accepts the existence of 4-dimensional entities as objective. That acceptance might qualify it as materialist. However, it also accepts the objectivity of zero-dimensional and other non-zero-dimensional entities. Protagonists consider all **objective** entities to exist for the purposes of its quantified predicate logic and knowledge acquisition in general.

## On Relations

To discuss relations articulately, we need to introduce the predicate calculus. However, let's make a connection first. Any well-formed predicate calculus expression can be considered a proposition and represented by a propositional variable as we have done so far.

The advantage of the predicate calculus is that it permits us to prove assertions that we could not prove by using only the propositional calculus. For example, the famous syllogism:

All men are mortal.  
Socrates is a man.  
Therefore, Socrates is mortal.

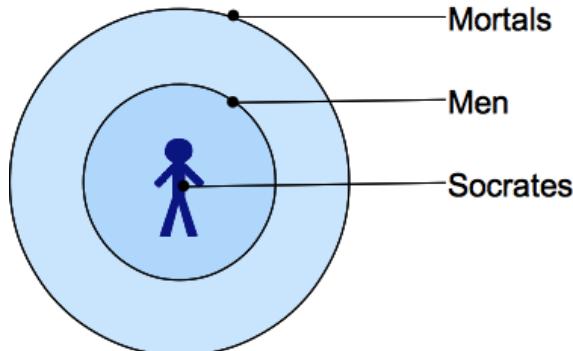
In the propositional calculus this appears as:

$$p \& q \rightarrow r$$

Since the propositional calculus does not permit us to see “inside” the propositions, we are essentially notationally blind to the internal relations that propositions assert.

With the predicate calculus, we have x-ray vision.

Let's introduce predicates by way of diagrams.



*Illustration 24: The Mortal Human Socrates*

In Illustration 23 above, we see that the category of *Mortals* has a sub-category of *Men*. We also see that the category of *Men* has a member called *Socrates*. As we look at this diagram, we see clearly that it represents the statement:

*All Men are Mortal.*

That is because the sub-category of *Men* is wholly contained within the category of *Mortal Things*.

For the same reason, it is just as clear that the diagram also represents the statement:

*Socrates is a Man.*

Because of these relations of inclusion, it is clear that the diagram also represents the following statement:

*Socrates is Mortal.*

We can make these categories and sub-categories into **predicates** by changing the nouns into verbs:

*Mortals becomes is mortal.*

*Men becomes is a man.*

Now, if we ask the question:

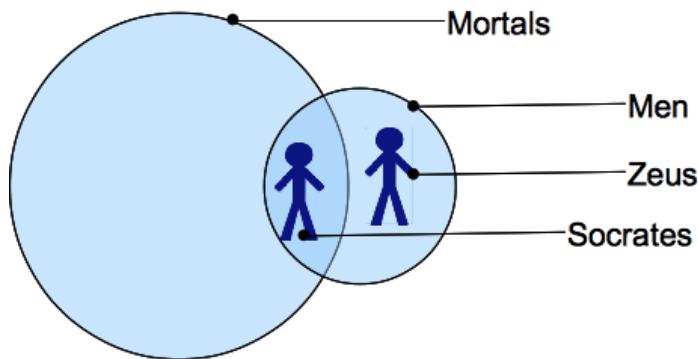
*How many men are mortal?*

The diagram shows us that the answer is **All Men**. Words like *all*, *some*, and *ten* are **quantifiers**.

All we need to complete the predicate calculus are **variables**. Variables in the predicate calculus represent individuals.

Let's explore the predicate calculus by extending the predicate *is a man* beyond the predicate *is mortal*.

If all men were **not** mortal, then the inner circle would overlap the outer circle only partially in such a way that they would be independent but would share an intersection (see Drawing 2 below).



Drawing 2: The Intersection

We might put Zeus in the section of the diagram that is labeled Men but outside of the section of the diagram that is labeled Mortal Things because Zeus is an immortal man<sup>52</sup>.

### **Symbolizing the Predicate Calculus**

These diagrams—called Venn diagrams—are very good at helping us think about simple relations. However, when we are considering many relations, the diagrams become an impediment rather than an aid.

One way around this problem is to use symbols to represent *quantifiers*, *predicates*, and *variables*. Doing so is quick and easy because it requires recognizing only a few new symbols and a few rules of inference. Each of these is described in Table 35 above.

Table 42: Predicate Calculus Symbols and Rules of Inference

Entity	Description	Type
$\forall$	<b>Universal Quantifier:</b> we use this symbol when we are referring to all things of given predicates.	Symbol
$\exists$	<b>Existential Quantifier:</b> we use this symbol to assert the existence of individuals that do or do not conform to given predicates.	Symbol
$\circ \dots \times$	<b>Predicate Constants:</b> we use capital letters to represent relations. Predicates allow us to assert relations of all types. Monadic relations—like <i>is red</i> —require only one variable. However, polyadic relations—like <i>is greater than</i> —require many variables.	Symbol
$a \dots z$	<b>Individual Constants:</b> we use <b>bold</b> lower-case letters to represent particular (named) individuals.	Symbol
$\Delta\Theta\Phi\Psi\Omega$	<b>Predicate Variables:</b> we use these	Symbol

52 Are you crazy? Zeus is a God! That's why he is immortal. Change this example.

Entity	Description	Type
$a \dots z$	particular Greek letters to represent any relational predicate when we need that level of generality. For example, we use these letters instead of the predicate letters in this table to state the rules of inference that apply to all predicates.	
$\forall(x): \Phi(x) \equiv \neg \exists(x): \neg \Phi(x)$	<b>Individual Variables:</b> we use lower-case <i>italic</i> letters to represent any individuals. Individual variables allow us to assert facts about any individuals that conform to given predicates.	Symbol
$\exists(x): \Phi(x) \equiv \neg \forall(x): \neg \Phi(x)$	<b>Quantifier Negation Universal (QNU):</b> we can convert a universal assertion to an existential denial.	Rule of Inference
$\forall(x): \Phi(x) \rightarrow \Phi(a)$	<b>Quantifier Negation Existential (QNE):</b> we can convert an existential assertion to a universal denial.	Rule of Inference
$\Phi(a) \rightarrow \exists(x): \Phi(x)$	<b>Universal Instantiation (UI):</b> we can infer a singular statement—one that asserts something about a particular individual—from a universally quantified expression that asserts something about all individuals.	Rule of Inference
$\Phi(x) \equiv \neg \neg \Phi(x)$	<b>Existential Generalization (EG):</b> we can infer an existentially quantified expression from a singular statement.	Rule of Inference
	<b>Double Negation (DN):</b> we can replace any formula with the double negation of that formula.	

In proofs, we will refer to the rules of inference by their abbreviations (shown in parentheses in the table).

### Symbolic Example

Let's render that famous syllogism about Socrates in the predicate calculus.

Let's let the following letters represent predicates:

- $M(x)$  stands for *x is mortal*.
- $H(x)$  stands for *x is human*<sup>53</sup>.

Our first proposition is a premise:

---

<sup>53</sup> Human is a synonym for man.

1.  $\forall(x): H(x) \rightarrow M(x)$  For all x, if x is human then x is mortal.

If we let  $s$  represent Socrates, we can express our second proposition—which is also a premise—as follows:

2.  $H(s)$  Socrates is human.

Our conclusion follows from these premisses by a rule known as Universal Instantiation:

3.  $M(s)$  Socrates is mortal.

This conclusion is justified by two steps. First we use the UI rule on step 1. Then we use the definition of implication on the result. That results in the following propositions:

- a.  $H(s) \rightarrow M(s)$  1, UI
- b.  $M(s)$  2,a, Implication

### **The Format of a Predicate Calculus Proof**

We will use tables to present our predicate calculus proofs. Here is the proof we just gave above in the standard format we will use.

*Table 43: Predicate Calculus Proof that Socrates is Mortal*

#	Expression	Steps	Justification
1	$\forall(x): H(x) \rightarrow M(x)$		Premise
2	$H(s)$		Premise
3	$H(s) \rightarrow M(s)$	1,2	UI
4	$\therefore M(s)$	2,3	Implication
	QED		

### **Proof of Quantifier Negation Universal with Doubly Negated Predicate**

We will prove the following rule of inference:

$$\neg\forall(x): \neg\Psi(x) \equiv \neg\exists(x): \Psi(x)$$

*Table 44: Predicate Calculus Proof of Doubly Negated Quantifier Negation Universal (DNQNU)*

#	Expression	Steps	Justification
1	$\Psi \equiv \neg\Phi$		Definition
2	$\forall(x): \Phi(x) \equiv \neg\exists(x): \neg\Phi(x)$		QNU
3	$\therefore \forall(x): \neg\Psi(x) \equiv \neg\exists(x): \Psi(x)$	1,2	DN, Substitution
	QED		

### **Proof of Indra's Net**

Indra's net asserts that everything is interrelated. Some Westerners might think that this is Eastern mysticism. Here we will use the tools of Western logic as we have gathered them above to prove the assertion that everything is related. Here is the assertion in pseudo predicate calculus:

For any x and any y, there exists a relation that holds between x and y.

We can derive this expression with the addition of the following premises of metamorphism:

$$\forall(x): P(u, x)$$

*Axiom 6:*

*Everything is part  
(P) of the universe  
(u).*

Bivalent Predicate Calculus

$$\forall(x): C(x) \vee A(x)$$

*Axiom 7: Everything is  
either an atom (A) or  
a composition (C).*

Bivalent Predicate Calculus

$$\forall(x) \neg \exists(y): A(x) \wedge P(x, y)$$

*Axiom 8: Atoms have no parts.*

Bivalent Predicate Calculus

$$\forall(x) \exists(y): C(x) \wedge P(x, y)$$

*Axiom 9: Compositions have parts.*

Bivalent Predicate Calculus

Let's prove the existence of Indra's net.

Table 45: Predicate Calculus Proof of Indra's Net

#	Expression	Steps	Justification
1.	$\forall(x): P(u, x)$		Axiom 6
2.	$\forall(x): A(x) \vee C(x)$		Axiom 7
3.	$\forall(x) \neg \exists(y): A(x) \wedge P(x, y)$		Axiom 8
4.	$\forall(x) \exists(y): C(x) \wedge P(x, y)$		Axiom 9
5.	$\neg \prod(\Phi): \Phi(a, b)$		Assumption
6.	$P(u, a)$	1	UI
7.	$P(u, b)$	1	UI
8.	$A(a) \vee C(a)$	2	UI
9.	$A(b) \vee C(b)$	2	UI
10.	• $A(a) \wedge A(b)$	8, 9	Sub-assumption (case 1 of 4)
11.	• $\neg \exists(y): A(a) \wedge P(a, y)$	3	UI
12.	• $\forall(y): A(a) \wedge \neg P(a, y)$	11.	DNQNU
13.	• $\neg P(a, b)$	12.	UI
14.	• $\prod(\Phi): \Phi(a, b)$	13.	EG
15.	• $\prod(\Phi): \Phi(a, b) \wedge \neg \prod(\Phi): \Phi(a, b)$	5, 14.	Contradiction
16.	• $A(a) \wedge C(b)$	8, 9	Sub-assumption (case 2 of 4)

#	<i>Expression</i>	<i>Steps</i>	<i>Justification</i>
17.	• $\neg\exists(y): A(a) \& P(a,y)$	3	UI
18.	• $\forall(y): A(a) \& \neg P(a,y)$	17.	DNQNU
19.	• $\neg P(a,b)$	18.	UI
20.	• $\prod(\Phi): \Phi(a,b)$	19.	EG
21.	• $\prod(\Phi): \Phi(a,b) \& \neg\prod(\Phi): \Phi(a,b)$	5, 20.	Contradiction
22.	• $C(a) \& A(b)$	8, 9	Sub-assumption (case 3 of 4)
23.	• $\neg\exists(y): A(b) \& P(b,y)$	3	UI
24.	• $\forall(y): A(b) \& \neg P(b,y)$	23.	DNQNU
25.	• $\neg P(b,a)$	24.	UI
26.	• $\prod(\Phi): \Phi(b,a)$	25.	EG
27.	• $\prod(\Phi): \Phi(b,a) \& \neg\prod(\Phi): \Phi(b,a)$	5, 26.	Contradiction
28.	• $C(a) \& C(b)$	8, 9	Sub-assumption (case 4 of 4)
29.	• $\exists(y): C(a) \& P(a,y)$	4	UI
30.	• $\neg P(a,b) \vee P(a,b)$	28., 29.	Tautology
31.	• $\prod(\Phi): \Phi(a,b)$	30.	EG
32.	• $\prod(\Phi): \Phi(a,b) \& \neg\prod(\Phi): \Phi(a,b)$	5, 31.	Contradiction
33.	$\therefore \prod(\Phi): \Phi(a,b)$	5, 15, 21, 27, 32	DN

QED

Let's discuss this proof briefly. Steps 1-4 introduce the premisses of metamonism. Step 5. introduces the hypothesis we are testing. Our strategy is to assume the opposite of what we are trying to prove and to show that doing so—in every case—leads to a contradiction. In steps 6. and 7., we establish that the individuals introduced in step 5.—as is true of every individual—are parts of the Universe. In steps 8. and 9., we assert that each individual is either an atom or a composition.

In essence, the proof is a composition of 4 parts. If we assume each of these as sub-assumptions of 5. and if we follow each to a contradiction, we will have proven our assertion.

Here are the alternatives we will have to explore to ensure that our considerations are complete:

1.  $A(a) \& A(b)$  Since they are both atoms, we can prove that neither is part of the other which is a relation.
2.  $A(a) \& C(b)$  Since one is an atom, we can prove that the other cannot be part of it which is a relation.
3.  $C(a) \& A(b)$  Since one is an atom, we can prove that the other cannot be part of it which is a relation.
4.  $C(a) \& C(b)$  Since neither is an atom, there are two possibilities:
  - a is part of b That's a relation.
  - a is not part of b That's a relation.

So, in every case, we can prove a contradiction arises because there is always a relation between the entities whether they are compositions or atoms. Consequently, the assumption that leads to these contradictions must be false. That proves that for any two arbitrary parts of the universe, we can find a relation between them. That is Indra's net without mysticism.

The existence of Indra's net is a corollary of the axioms of metamonism.

## On The Predicate Calculus Proof of Objective Truth

Now that we have the tools we need, we can present an even more convincing proof that truth exists.

Our goal remains the same, to prove that “Some proposition is objectively true.” Let's express that in the predicate calculus:

$$\exists(\alpha)\exists(x):( \alpha = (P(x) \vee \neg P(x))) \wedge (P(x) \vee \neg P(x))$$

*Axiom 1*

Bivalent Predicate Calculus

To paraphrase: There exists an alpha and there exists an x such that alpha equals the expression that x is a P or x is not a P and **it is true that** x is a P or x is not a P.

So, our strategy is to prove Axiom 1 by assuming its negation and showing that it leads to a contradiction. Here is the negation of our Axiom 1:

$$\forall(\alpha)\neg\exists(x):( \alpha = (P(x) \vee \neg P(x))) \wedge (P(x) \vee \neg P(x))$$

Naturally, we have stacked the deck, in a way, because we have chosen to set alpha equal to a tautology. But the whole gist of the argument that there is no truth is that tautologies don't exist. In addition, since the assertion is true for any alpha ( $\forall(\alpha)$ ) we are free to choose any expression and we choose a tautology.

In a certain sense, the crux of the issue is the expression that alpha represents. Let's construct the truth table of that expression:

*Table 46: Proof of a Tautology*

	$P(x)$	$\neg P(x)$	$P(x) \vee \neg P(x)$	$J$
1	F	T	T	v2
2	T	F	T	v3

As long as we are in the domain of binary logic, Table 38 asserts that—*regardless of the object that x represents*—the expression to which we set alpha is always true. In short, *if anything exists and if the law of the excluded middle holds*, then alpha is true. The doctrine that there is no truth depends on there being nothing! As soon as we acknowledge existence, we acknowledge truth.

We need one more proof to use in our predicate calculus proof that objective truth exists. In English the assertion to prove is: “The negation of the alternatives is equivalent to the conjunction of the negations.” More memorably, “Not either means neither”.

*Table 47: Proof that Not Either Means Neither ( $\neg v \equiv \neg p \& \neg q$ )*

	$p$	$q$	$p \vee q$	$\neg(p \vee q)$	$\neg p \& \neg q$	$J$
1	T	T	T	F	F	&4
2	T	F	T	F	F	&2
3	F	T	T	F	F	&3
4	F	F	F	T	T	&1

Table 48: Predicate Calculus Proof of the Existence of Truth

#	Expression	Steps	Justification
1	$\neg\exists(x): P(x) \vee \neg P(x)$		Premise
2	$\neg\neg\forall(x): \neg(P(x) \vee \neg P(x))$	1	QNE
3	$\forall(x): \neg(P(x) \vee \neg P(x))$	2	DN
4	$\forall(x): P(x) \wedge \neg P(x)$	3	Table 39 Contradiction
5	$\therefore \exists(x): P(x) \vee \neg P(x)$	1	Negation
	QED		

## On Dimensional Quantification Notation

The Dimensional Quantification Notation (described in Table 37 above) uses the first order predicate calculus to provide an ontologically agnostic method for expressing ontological theories and refutations of ontological assertions. It replaces each of the two standard predicate calculus quantifiers with eight dimensionally qualified predicate calculus quantifiers.

Table 49: Dimensional Quantification Notation

Subscripted Quantifier	Description	Examples
$\exists_{0.0}$ and $\forall_{0.0}$	<b>Synchronicity:</b> Variables quantified in this way refer to entities that are independent of space and time. They may be considered to be everywhere and forever or nowhere and never. These entities are called eternals or universals.	Geometric points, temporal instants, propositions, truth values, relations, formal systems, games, numbers, and languages.
$\exists_{0.1}$ and $\forall_{0.1}$	<b>Diachronicity:</b> Variables quantified in this way refer to entities that are independent of space but participate in time.	Consciousness, algorithms, the referents of temporal logics (durations, etc.) and change itself
$\exists_{1.0}$ and $\forall_{1.0}$	<b>Extensionality:</b> Variables quantified in this way refer to entities that participate in one spatial dimension and are independent of time.	Geometric lines.
$\exists_{1.1}$ and $\forall_{1.1}$	<b>Motion:</b> Variables quantified in this way refer to entities that participate in one spatial dimension and time.	A point moving along a line.
$\exists_{2.0}$ and $\forall_{2.0}$	<b>Orthogonality:</b> Variables quantified in this way refer to entities that participate in two spatial dimensions and are independent of time.	Figures of plane geometry.
$\exists_{2.1}$ and $\forall_{2.1}$	<b>Motion Squared:</b> Variables quantified in this way refer to entities that participate in two spatial dimensions and time.	Rotating lines on a plane describing circles, polygons moving on a plane.
$\exists_{3.0}$ and $\forall_{3.0}$	<b>Orthogonality Squared:</b> Variables quantified in this way refer to entities that participate in three spatial dimensions and are independent of time.	Figures of solid geometry.
$\exists_{3.1}$ and $\forall_{3.1}$	<b>Space-Time:</b> Variables quantified in this way refer to entities that participate in Einsteinian 4-dimensional space-time.	The material world.

### Key

The dimensional qualifier consists of a centered subscript for the quantifier that resembles a decimal number and is intended to be interpreted as follows:

- The integer part of the dimensional qualifier indicates the number of orthogonal symmetrical (spatial) dimensions.
- The decimal part of the dimensional qualifier indicates the number of assymetrical (temporal) dimensions.

The use of an unqualified quantifier implies that the variables within its scope can be of any dimensionality.

$\exists_{0.0}(w)E(w)$ : **0-Dimensional Synchronic Entities**

Theory requires 0-dimensional entities such as numbers, symmetrical and asymmetrical relations, and logical operators. Theories themselves are 0-dimensional entities. Pretending that such objective 0-dimensional entities don't exist only inhibits the progress of science.

$\exists_{1.0}(x)\exists_{0.1}(\tau):E(x)\wedge E(\tau)$  **1-Dimensional Synchronic and Diachronic Entities**

Length  $\exists_{1.0}(x)$  and time  $\exists_{0.1}(\tau)$  are both 1-dimensional entities. Points and lines as well as instants and histories are not figments of our imaginations. They are objective limits that are essential to such mathematical techniques as calculus.

$\exists_{2.0}(y)\exists_{1.1}(x\tau):E(y)\wedge E(x\tau)$  **2-Dimensional Synchronic and Diachronic Entities**

Circles  $\exists_{2.0}(y)$  and vectors  $\exists_{1.1}(x\tau)$  are examples of objective 2-dimensional entities. They are extremely useful in theories such as geometry and physics.

$\exists_{3.0}(z)\exists_{2.1}(y\tau):E(z)\wedge E(y\tau)$  **3-Dimensional Synchronic and Diachronic Entities**

Spheres, pyramids, and geodesic domes  $\exists_{3.0}(z)$  as well as moving circles and triangles  $\exists_{2.1}(yt)$  are 3-dimensional entities that guide our architects and engineers everyday.

$\exists_{3.1}(z\tau):E(z\tau)$  **4-Dimensional Diachronic Entities**

Empirical science theorizes about 4-dimensional diachronic entities. These are the entities that we perceive with our senses and that make up the worlds we inhabit.

## On Science

Empirical science is necessarily theoretical. Scientific knowledge advances when an experiment tests a theory and the predictions of the theory are contradicted by the observations of the experiment. The fact that enters the scientific body of knowledge is an implication: If you test theory t using experimental protocol e, predictions p will be contradicted by observations o. That's it.

Symbolically:

1.  $t \rightarrow p$
2.  $e \rightarrow o$
3.  $o \rightarrow \neg p$
4.  $\neg p \rightarrow \neg t$
5.  $\therefore \neg t$

To capture the history of science—which is synonymous with the progress of scientific knowledge—we can write the series with subscripts:

$$(t_0 \rightarrow p_0) \& (e_0 \rightarrow o_0) \& (o_0 \rightarrow \neg p_0) \& (\neg p_0 \rightarrow \neg t_0) \rightarrow \neg t_0 \\ (t_1 \rightarrow p_1) \& (e_1 \rightarrow o_1) \& (o_1 \rightarrow \neg p_1) \& (\neg p_1 \rightarrow \neg t_1) \rightarrow \neg t_1$$

...

$$(t_n \rightarrow p_n) \& (e_n \rightarrow o_n) \& (o_n \rightarrow \neg p_n) \& (\neg p_n \rightarrow \neg t_n) \rightarrow \neg t_n$$

This sort of history of the falsification of scientific theories is the only **conclusive** body of facts of science.

The corroboration of a theory is **inconclusive**. We don't know from a corroboration whether that theory is true. Another experiment may falsify it.

Let's use the dimensional quantification notation that we developed above to express this axiomatically.

A theory (T)—which is a 0-dimensional synchronic entity—is only as good as its testable predictions (P) which, in turn, consist of ordered pairs of conditions (C)—which are 4-dimensional diachronic entities—and observations (O)—which are 0-dimensional synchronic entities.

$$\forall_{0.0} (x) \exists_{3.1} (y_0, \dots, y_n) \exists_{0.0} (z_0, \dots, z_n) : T(x) \rightarrow P((C(y_0), O(z_0)), \dots, (C(y_n), O(z_n)))$$

Now, an experiment consists of creating a series of conditions—under controlled circumstances—that correspond to a selection of the conditions that occur in the ordered pairs that constitute some of the testable predictions of the theory.

$$\exists_{0.0} (w) \exists_{0.0} (x) \exists_{3.1} (y_l \dots y_m) : (T(x) \wedge E(w)) \rightarrow C(y_l \dots y_m)$$

After the experiments are conducted, one of two states obtains:

- No contradictory observation was made.
- At least one contradictory observation was made.

We are only interested in this second state when the observations of the prediction (P) are different than the observations of the results (R) for the same condition. That is a falsification of the theory.

$$\exists_{0.0} (x) \exists_{3.1} (y) \exists_{0.0} (z_1, z_2) : (T(x) \rightarrow P(C(y), O(z_1)) \wedge R(C(y), O(z_2)) \wedge \neg(z_1 \equiv z_2)) \rightarrow \neg T(x)$$

As science progresses, it accumulates a history of falsifications of this kind. That history(H)—at any point in time—represents the scientific knowledge (SK) of the time. This is what is called Lona Tradu in my novel *Language Bound*.

$$\exists_{0.1} (\tau_1 \dots \tau_n) \exists_{0.0} (x_1 \dots x_n) : SK(H((\neg T(x_1), \tau_1), \dots, (\neg T(x_n), \tau_n)))$$

*Axiom 10: Scientific Knowledge of a Time*

Bivalent Predicate Calculus with Dimensional Quantification

## On Evolution

Evolution is a scientific theory that has not been falsified. The theory has been so successful that there are no other scientific theories that can compete with its explanatory power. However, asserting that evolution is—for this reason or any other reason—a **fact** is an intellectually cowardly degradation of theory.

## On Scientific Education

If the popular imagination confuses theories with wild speculations, then they do not understand science and it is time for the scientific and educational communities to ensure that every adult understands the role of theory in science. Pretending that a scientific theory is—like some tawdry observation—a fact is merely a reinforcement of an ignorance we can ill afford.

A democracy in which a majority of citizens don't understand the distinction between a theory and a fact—and the necessity of both for scientific and social progress—is sure to be ruled by ignorance. Powerful authoritarian elites without conscience can manipulate the emotions of the masses without any effective interference from the knowledgeable because the ignorant cannot understand the language of knowledge. Those elites cynically portray the knowledgeable as the elite! We are through the looking glass!

## On God and Good Governance

The monotheistic religions share the story of Adam and Eve. That story asserts the **right** of the monotheistic god **alone** to determine right and wrong. On the foundation of that determination is built the assertion that **god should rule mankind**. However, that claim needs the support of the assertion that **mankind is incapable of self-governance**. Otherwise, the monotheistic god is unnecessary.

Possibility and necessity are the domains of the modal logic. Let me introduce the modal logic so that we can express this most important assertion explicitly and in a way that will allow us to perform truth-conserving transformations on its symbolic expression.

The modal logic is a symbolic addendum to the propositional and predicate logics. The modal operators can be used as modifiers for propositions or predicate expressions. There are only two equivalence axioms for the modal logic.

Here are the modal operators:

**Possible:**       $\Diamond$

**Necessary:**       $\Box$

Here are the modal equivalence axioms:

$$\Diamond \equiv \neg \Box \neg$$

$$\Box \equiv \neg \Diamond \neg$$

Now, we can symbolize the assertion:

If God should rule mankind then humanity is incapable of self-governance.

Let the following letters stand for the indicated propositions:

$p$  = Humanity governs itself successfully.

$q$  = God rules mankind.

Symbolically we have:

$$\Box q \rightarrow \neg \Diamond p$$

In Appendix C: Modus Tollens on page 265 you will find the proof that allows us to perform the following transformation:

$$1. \square q \rightarrow \neg \diamond p \equiv \diamond p \rightarrow \neg \square q$$

Which says:

If it is possible for humanity to govern itself successfully, then it is not necessary for god to rule mankind.

This assertion explains so much of the contemporary political turmoil in the United States. Successful self-governance threatens the religious organizations that insist that god is the only hope. The reaction to the threat of successful self-governance motivates two groups on the religious right:

- **The Abstentionists**—these include the Jehovah's Witnesses who refrain from participation in the mechanisms of governance.
- **The Saboteurs**—these include the activists that seek office precisely to undermine the effectiveness of governance.

There is one other group that plays a role here. The **Predators** are individuals—and increasingly corporations—that have economic interests in hobbling democratic government. Often inspired by writers like Ayn Rand, these Predators are Machiavellian opportunists who use the gullible religious right for their own purposes. The Predators are happy with the Abstentionists because the fewer people that participate in the democratic process of governance the closer the democracy approaches rule by minority—**Oligarchy**. If it is the right minority—the rich and powerful and their henchmen—then it approaches **Plutocracy**, which is what they want. They are even happier with the Saboteurs because they can guide them to act in such a way that the Predators benefit directly and immediately.

When the Saboteurs and Abstentionists debase Democracy by making it more like Oligarchy and Plutocracy, they defeat the proof by exhaustive attempts that their god set up. If true Democracy is never tried, god will be deprived of his proof. The Predators don't care about that proof they only care about immediate material benefits.

Only the utopians oppose Oligarchy and Plutocracy by advocating direct Democracy as a fundamentally more legitimate form of governance. However, the utopians have one fundamental flaw: no consensual utopia. Without a consensus about the nature of the utopia they seek, each utopian appears to the electorate as another “politician” out for their own gain.

So, utopians really have two problems to address:

- **The Design Problem:** Is there at least one design for self-governance that works as a model?
- **The Implementation Problem:** Is it possible to implement any such design in the real world?

This leads me to conclude that we need to write the requirements for utopia and then divide ourselves into competing design teams to address those requirements. Then, in the context of the **Grand Simulator**, the competition would begin. At the end, the surviving design should be supported by all rational agents as a global alternative to the status quo.

## ***Commitment***

As we approach the end of the age of oil, there is an increasing urgency about our ethical commitments. As non-renewable resources are consumed, we will enter an age of post-plenty opportunism. What we do now, while we still have abundant—if diminishing—energy supplies, will determine the kind of world our children and grandchildren inhabit.

## The Axioms of Moral Minimalism

With the refutation of perspectivism, nihilism, and other forms of relativism, with the adoption of a trivalent logical foundation, the adoption of ontological metamorphism, and an understanding of science, we again inhabit a universe in which human beings can know and the questions of moral responsibility and moral agency reemerge.

### ***Preconditions of Moral Agency***

For a human being, as a moral agent, to act in a morally responsible way, the following conditions must be true:

1. **No Pre-Determination:** The act of the moral agent must not be pre-determined by the existing state of the universe.
2. **Objective Ethics:** Objective grounds for ethical preferences must exist.
3. **Ethical Knowledge:** The moral agent must be able to know the objective grounds for ethical preferences. It is this knowledge that gives the individual ethical authority.
4. **Ethical Alternatives:** Morally-relevant alternatives must exist in the present situation.
5. **Ethical Perception:** The moral agent must be able to discern the morally-relevant alternatives in the present situation.
6. **Freedom:** The moral agent must be able to choose one course of action from among the morally-relevant alternatives.
7. **Liberty:** The moral agent must be spatio-temporally able to perform the chosen course of action.

### ***Grounds of an Objective Ethics***

As a consequence of the necessity of these preconditions, the grounds of an objective ethics, independent of any deity, emerge.

Unless the moral agent has the liberty described in the seventh condition, the agent cannot act morally. As a consequence, every ethics must take that liberty and all of its preconditions as objective ethical values. For the moral agent to have that liberty, the following conditions must hold and must be counted as necessary ethical values:

- **Life:** To act ethically, I must be alive.  
Life becomes an ethical value.
- **Logic:** To avoid the hypocrisy that an inconsistent creed enables, I must also understand logic.  
Logical competence becomes an ethical value.
- **Language:** To learn about logic, to understand the objective grounds for ethical preferences, to discern morally relevant alternatives in a situation, and to know anything at all, I must have language.  
Linguistic competence becomes an ethical value.
- **Ethical Governance:** To act ethically, I need the help of others to stop those that would interfere with my ethical acts. Ethical governance must be the guarantor of my right to act

ethically. In addition, I need the help of others to accomplish ethical tasks that I could not do alone. Ethical governance must be the catalyst for ethical community action. Ethical governance becomes an ethical value.

- **Ethical Education:** To learn about the values of life, logic, language, and ethical governance and to benefit from the primal stories of others who have tried to live ethically, I need ethical education.

Ethical education becomes an ethical value.

Protagonism begins with the creation or acceptance of a primal story—possibly one's own autobiography—and proceeds by the elaboration of a consistent personal ethical creed. It recognizes that all authority resides in such ethical individuals by virtue of their demonstrated understanding of the values of life, logic, language, and ethical governance.

The scope of ethical governance is not over those that reject governance. It is over those that embrace ethical governance in the context of an acknowledgment of ethical knowledge as the foundation of authority. The exercise of this authority is primarily with respect to self-discipline. One protagonist may yield to another protagonist on the field of action because that one recognizes that the proof that the other has given is sound and relevant. Such ethically enlightened communities will rarely need to exert force against enlightened protagonists.

In general, protagonists avoid coercive relations. However, ethical education must address the details of the issues that arise in the context of the appropriate use of force for self defense and in defense of the innocent. Protagonists are engaged in the world. If Protagonism—like altruism generally—is to survive, we know that altruistic Protagonists must be able to recognize other altruistic Protagonists and reserve their energy and altruism for those that deserve it.

Anyone that would consider him or herself a Protagonist in this sense should expect a struggle. A personal study program that includes one or more languages and the fundamentals of logic is essential but everything else you must create out of your own spirit. I hope you will offer what you discover to a world that is badly in need of it.

## Appendix A: The Structure of a Protagonist

Our ability to be protagonists in stories and to author stories is a consequence of our internal structure and—for rationalists that subscribe to the theory of evolution—that structure must have evolved from origins in pre-linguistic animals.

Self-awareness is a necessary condition for knowing participation in a story. However, it is not a sufficient condition. Our primate relatives have been shown to have self-awareness in experiments with mirrors. However, their lack of syntax-based tools for expression constrains their lives and their societies to exist within prehistoric boundaries.

There are good reasons to suppose that human history began well before the invention of writing. Oral traditions—and the individuals and societies that participated in and conserved them—predate written records. As a consequence, many evolutionists hypothesize a mutation (or a set of mutations) that gave human beings the ability to understand and express syntactically-structured propositions. Before that, humans—like their primate relatives—were ahistorical beings. After that, we brought history, stories, and protagonists into the world.

We can look to our own experience for support for this hypothesis. If our prehistoric forebears were self-aware but pre-linguistic sentient beings, then we should still be able to experience the world in that prelinguistic way. In particular, we should still have pre-linguistic **intentions** just as our predecessors did. However, in addition to that system of pre-linguistic intentions, we also have a system of post-linguistic **intentions**. It is this structure of distinct systems of **intention**—the original one coexisting with the recently evolved one—that I believe prompted Pascal to declare that “The heart has reasons that the reason knows not.”

Many years ago, I observed in my diaries the distinction—in myself—between these intentionalities which I called Silent and Verbal. Below is my attempt to flesh out this Silent-Verbal hypothesis to make it testable.

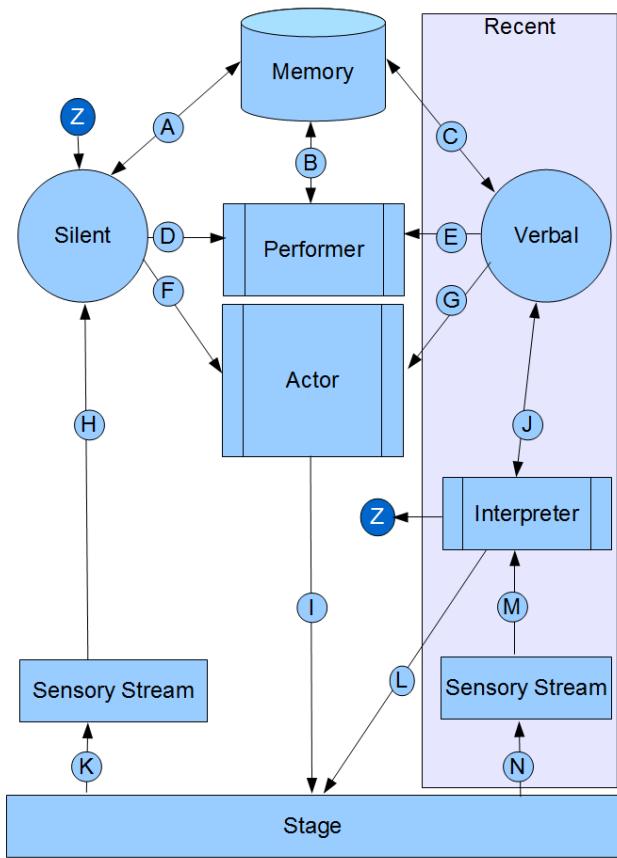
### Glossary of Terms

The table below defines some key terms.

Term	Definition
<b>Intentional</b>	As used here, an intentional subsystem is one that is capable of intention. An intention is not a goal but rather the state of consciousness as it acts to attain a goal. A non-intentional subsystem is one that has no goal but simply performs a function at the behest of an intentional subsystem.
<b>Interpreter</b>	A non-intentional subsystem that can be trained to perform the following functions (better or worse): <ul style="list-style-type: none"><li>• Convert speech of others into propositions that Verbal can understand</li><li>• Convert propositions from Verbal into a speech stream to communicate with others</li><li>• Convert written expressions into propositions that Verbal can understand</li><li>• Convert propositional thoughts into written expressions to communicate</li></ul>

	<ul style="list-style-type: none"> <li>with others</li> <li>Convert all of these oral and written symbols into a communication stream that Silent can understand</li> </ul>
<b>Memory</b>	A non-intentional subsystem that stores and recalls the following kinds of information: <ul style="list-style-type: none"> <li>emotion-laden scenes, melodies, rhythms, and events</li> <li>learned performances</li> <li>syntactic constructions and abstract relations</li> </ul>
<b>Performer</b>	A non-intentional subsystem that is capable of learning standardized behaviors such as playing a song on the piano, reciting a poem, or swinging a golf club.
<b>Sensory Stream</b>	The consequence of presenting the world to our senses.
<b>Silent</b>	An intentional subsystem that is the original prehistoric source of intentional behavior. It is intuitive and can be spontaneous or can teach itself and reenact standardized performances via Performer.
<b>Verbal</b>	An intentional subsystem that performs all symbolic acts related to syntax-based expression and understanding.

## The Augmented Silent-Verbal Hypothesis



The Silent-Verbal hypothesis is a model for subsystems of consciousness as a whole. It is not a hypothesis of an unconscious, which it explicitly rejects. The problems arise when we try to model the communication links among the subsystems and between the subsystems and consciousness as a whole.

Let's discuss this diagram in the order of the labeling of the relations among its parts:

- A →** There is a bidirectional relation between *Silent* and *Memory*. *Silent* stores and retrieves emotion-laden scenes, melodies, rhythms, and events<sup>54</sup>.
- B →** There is a bidirectional relation between *Performer* and *Memory*. *Performer* stores and retrieves learned performances.
- C →** There is a bidirectional relation between *Verbal* and *Memory*. *Verbal* stores and retrieves syntactic constructions and abstract relations.
- D & E →** Both *Silent* and *Verbal* are able to teach *Performer* what to perform.
- F →** Without rehearsal, *Silent* spontaneously commands *Actor* to act in accordance with *Silent*'s intentions.
- G →** Without rehearsal, *Verbal* *Verbal*'s intentions.

Illustration 25: Consciousness of a Protagonist

**spontaneously** commands *Actor* to act in accordance with *Silent* intentions.

**H →** *Silent* receives a *Sensory Stream* from the *Stage*.

**I →** *Actor* uses the body to engage and act upon the *Stage*.

**J →** There is a bidirectional relation between *Verbal* and *Interpreter*.

**K,N →** All the world is a stage.

**L →** *Interpreter* renders *Verbal*'s propositions as speech or writing.

**M →** *Interpreter* receives a *Sensory Stream* from the *Stage* which it renders as propositions for *Verbal*.

**Z →** *Interpreter* renders the parsable content of the *Sensory Stream* and the content of *Verbal*'s propositional expressions into the form that *Silent* can understand.

<sup>54</sup> That *Silent* has the ability to store and retrieve the elements of song (melody and rhythm) is a hypothesis that implies that humans were capable of song **before** they were capable of syntax-based communication. This is merely a plausible hypothesis.

## **Discussion**

Even if we assume—temporarily—that Verbal and Silent exist as subsystems of consciousness, we are immediately compelled to deduce that consciousness as a whole exists. What is the nature of this whole? The least this whole could be is the collection of links—let's call them **relations**—among the subsystems. Could it be more than that? If our model made of the whole a part that interacts with these subsystems, the whole would then have to be both its own whole and a part of itself, which is a contradiction. So, our model assumes that the whole is the system of subsystems and the relations among those subsystems **and nothing more**. Consequently, our sense of self arises from the relations among these subsystems.

So, let's restate the problem with the Verbal-Silent hypothesis in light of this clarification of the nature of the whole of consciousness. We experience the opacity of Silent. Verbal is not privileged with respect to the inner workings of Silent. Just as an outside observer must speculate about the intentions of Silent, so must Verbal.

However, an outside observer is not plausibly responsible for my behavior, I am. Yet, I sometimes behave in ways that Verbal can't explain. Other times, I behave in accordance with what Verbal believes. It is as if there were another subsystem—let's call it Actor—that controls my overt behavior. Sometimes Verbal is Actor and Sometimes Silent is Actor. Actor is not a subsystem with respect to intention. Rather, Actor is the control panel—the strings of the puppet—which is passed back and forth between the intentional subsystems.

There is one more piece of evidence that even this Actor-augmented Verbal-Silent hypothesis can't account for. That evidence is the parsing of syntactic expressions and their rendition as propositions. As you read or hear a sentence, there are subsystems that convert that series of symbols or series of sounds into propositions that Verbal can understand. Clearly, Verbal does not have this competence or we would not have to study the grammar of the languages we speak and write. So, this subsystem is translucent to Verbal. Neither does Silent have this competence or we would not consider Silent to be non-verbal! Let's call this subsystem the Interpreter.

It is possible that the Interpreter plays the same role for Silent that it plays for Verbal but by converting the sense impressions we have into the non-verbal language that Silent understands. It may also convert propositions that Verbal understands into the non-verbal language that Silent understands. This would explain how a radio report of some atrocity saddens or angers us.

Finally, we have one more aspect of learning that our model should account for. When we practice piano--or any other such skill—how is it that our performance improves over time? The Performer subsystem takes training orders from Verbal and provides smooth behaviors whose controls are incorporated into the control panel of Actor. Silent can also give training orders to Performer, we think.

## **Appendix B: Inventory of Rules of False Inference**

In the standard epistemology, rules of inference are the rules that permit us to deduce true conclusions from true premisses. Any rule of inference that is not among those that permit us to deduce true conclusions from true premisses is a rule of false inference. These rules are also known as formal fallacies. Aristotle identified 13 standard **formal** fallacies over 2300 years ago. Wikipedia lists 9 [material fallacies](http://en.wikipedia.org/wiki/Fallacy#Material_fallacies) ([http://en.wikipedia.org/wiki/Fallacy#Material\\_fallacies](http://en.wikipedia.org/wiki/Fallacy#Material_fallacies)) that it claims are “widely adopted by modern logicians”. I am puzzled by the lack of a definitive list of **formal** fallacies but I do not have time, now, to compile one. Nevertheless, I believe there is an objective list of rules of false

inference for each kind of formal logic (propositional, predicate, modal, temporal, and spacial). Recently (2008), Daniel Gardner collected a list of rules of false inference (without regard to the formal-informal criteria) that have been tested under laboratory conditions and published in peer reviewed studies.

*Table 50: Rules of False Inference*

Name	Description	Reference
<i>Anchoring and Adjustment Heuristic</i>	<i>A cognitive bias that occurs in decision making.</i>	<i>Judgment Under Uncertainty: Heuristics and Biases; Kahneman and Tversky; 1974</i>
<i>Availability Heuristic</i>	<i>A phenomenon (which can result in a cognitive bias) in which people predict the frequency of an event, or a proportion within a population, based on how easily an example can be brought to mind.</i>	<i>Tversky, A., &amp; Kahneman, D. (1973). Availability: a heuristic for judging frequency and probability. Cognitive Psychology 5, 207-232.</i>
<i>Confirmation Bias</i>	<i>A tendency for people to favor information that confirms their preconceptions or hypotheses regardless of whether the information is true.</i>	<i>Mahoney, Michael J. (1977), "Publication prejudices: an experimental study of confirmatory bias in the peer review system", Cognitive Therapy and Research 1: 161–175</i>
<i>Law of Similarity</i>	<i>The mind groups similar elements into collective entities or totalities.</i>	<a href="http://en.wikipedia.org/wiki/Gestalt_psychology">http://en.wikipedia.org/wiki/Gestalt_psychology</a>
<i>Rule of Typical Things</i>	<i>A psychological term wherein people judge the probability or frequency of a hypothesis by considering how much the hypothesis resembles available data as opposed to using a Bayesian calculation.</i>	<i>Judgment Under Uncertainty: Heuristics and Biases; Kahneman and Tversky; 1974</i>
<i>Von Restorff Effect</i>	<i>The Von Restorff effect (named after Hedwig von Restorff), also called the isolation effect, predicts that an item that "stands out like a sore thumb"</i>	<i>Von Restorff, H. (1933). Über die Wirkung von Bereichsbildungen im Spurenfeld (The effects of field formation in the trace field).</i>

Name	Description	Reference
	(called distinctive encoding) is more likely to be remembered than other items.	<i>Psychologie Forschung</i> , 18, 299-342.

## Appendix C: Modus Tollens

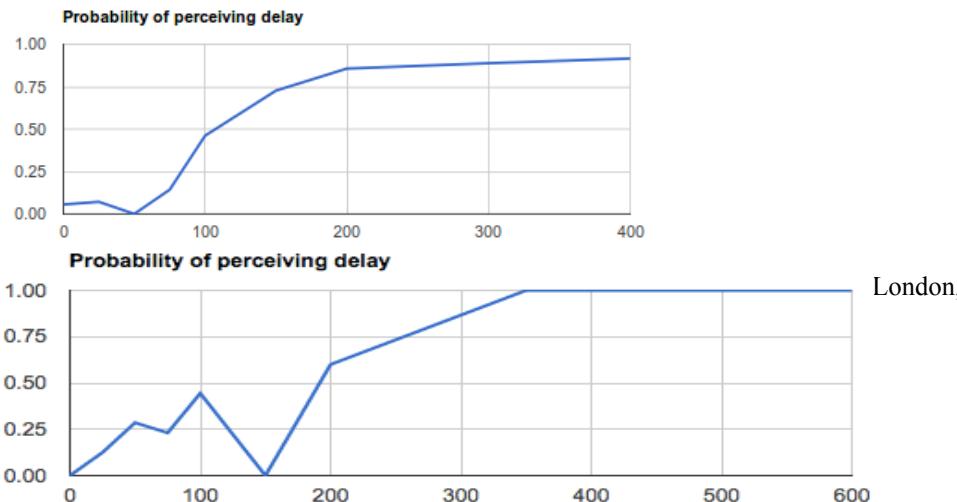
The validity of *modus tollens* can be clearly demonstrated through a [truth table](#).

p	q	$p \rightarrow q$
T	T	T
T	F	F
F	T	T
F	F	T

In instances of *modus tollens* we assume as premises that  $p \rightarrow q$  is true and q is false. There is only one line of the truth table - the fourth line - which satisfies these two conditions. In this line, p is false. Therefore, in every instance in which  $p \rightarrow q$  is true and q is false, p must also be false.

From [Wikipedia](#)

- i Linking open data cloud diagram 2014, by Max Schmachtenberg, Christian Bizer, Anja Jentzsch and Richard Cyganiak. <http://lod-cloud.net/>
- ii [https://www.wikiwand.com/en/Real\\_number](https://www.wikiwand.com/en/Real_number)
- iii Mendelson, Elliott (1997). Introduction to Mathematical Logic (4th ed.). London: Chapman & Hall. pp. 297–304. ISBN 978-0412808302. Retrieved 17 September 2012.
- iv *Jensen, Ronald Björn* (December 1968). "On the Consistency of a Slight (?) Modification of Quine's 'New Foundations'". *Synthese*. Springer. 19 (1/2): 250–264. doi:10.1007/bf00568059. ISSN 0039-7857. JSTOR 20114640.
- v Holmes, Randall, 1998. Elementary Set Theory with a Universal Set. Academia-Bruylant.
- vi **rarpai** (n) <all parts>[B-F] are the constituents/component parts of whole...
- vii Or possible appearance—more on the modal logic later.
- viii We may need to prove the following or state it as an axiom: It is not the case that every concrete existent appears.
- ix We hope that it is obvious that an immaterial **objective** appearance (IOK ) is not possible. Appearances are intrinsically **subjective** (ISK).
- x <https://www.wikiwand.com/en/Sleep>
- xii "The discoverers claimed that *S. tchadensis* is the oldest known human ancestor after the split of the human line from that of chimpanzees.[[Michel Brunet](#), Alain Beauvilain, [Yves Coppens](#), Émile Heintz, Aladji H.E. Moutaye et [David Pilbeam](#) (1995) - [The first australopithecine 2,500 kilometres west of the Rift Valley \(Chad\)](#), [Nature](#), 378, pp. 273-275.]" cited from <https://www.wikiwand.com/en/Sahelanthropus>
- xii In 2000, [Martin Pickford](#) and Brigitte Senut discovered, in the [Tugen Hills](#) of [Kenya](#), a 6-million-year-old bipedal hominin which they named [Orrorin tugenensis](#). And in 2001, a team led by [Michel Brunet](#) discovered the skull of [Sahelanthropus tchadensis](#) which was dated as [7.2](#) million years ago, and which Brunet argued was a bipedal, and therefore a hominid—that is, a hominin (cf Hominidae; terms "hominids" and hominins). from [https://www.wikiwand.com/en/Human\\_evolution](https://www.wikiwand.com/en/Human_evolution)
- xiii [https://www.wikiwand.com/en/Origin\\_of\\_language](https://www.wikiwand.com/en/Origin_of_language)
- xiv Some studies indicated that the discrete infinity mutation that started the evolution of language may have happened even before the 200 kya boundary we have indicated. [http://www.nytimes.com/2016/09/22/science/ancient-dna-human-history.html?\\_r=0](http://www.nytimes.com/2016/09/22/science/ancient-dna-human-history.html?_r=0)
- xv Moreover, recent archaeological research done by the anthropologist and archaeologist Steven Kuhn from the University of Arizona suggests that the sexual division of labor did not exist prior to the Upper Paleolithic (50,000 and 10,000 years ago) and developed relatively recently in human history. The sexual division of labor may have arisen to allow humans to acquire food and other resources more efficiently.[8] [https://www.wikiwand.com/en/Sexual\\_division\\_of\\_labour](https://www.wikiwand.com/en/Sexual_division_of_labour)
- xvi [https://www.wikiwand.com/en/Subliminal\\_stimuli](https://www.wikiwand.com/en/Subliminal_stimuli)
- xvii "In mathematics, an ordered pair (a, b) is a pair of objects. The order in which the objects appear in the pair is significant: the ordered pair (a, b) is different from the ordered pair (b, a) unless a = b. (In contrast, the unordered pair {a, b} equals the unordered pair {b, a}.)" [https://www.wikiwand.com/en/Ordered\\_pair](https://www.wikiwand.com/en/Ordered_pair)
- xviii [https://cogsci.stackexchange.com/questions/1664/what-is-the-threshold-where-actions-are-perceived-as-instant#comment4203\\_1680](https://cogsci.stackexchange.com/questions/1664/what-is-the-threshold-where-actions-are-perceived-as-instant#comment4203_1680)
- by using the group name "instant" you can take a cognitive test and get your results as a probability graph like this:



- xix Chomsky, Noam 1988. *L* London, England: MIT Press (Curri