
Long Live Physics!

// Unexpected Consiliences Between Nietzsche's Philosophy and the Sciences

Zachary R.J. Strong, B.Eng.Mgt (McMaster University, '14)

Website: zacharystrong.net

YouTube: @zacharyrjstrong

Contact Email: zachary@zacharystrong.net

Contents – February 2024

I've patched together some elements of my books and papers that pertain to Nietzsche's writings. Enjoy!

- Language as Lasers: Explaining the Power of the Gay Science
- Upward and Downward Spirals: The Übermensch and Untermensch in Neuroscience
- Necessary Iconoclasm: Idolatry as a Thermodynamic Force in Social Systems
- Appendix: Relevant Works

===

From "The Gay Science (335)" – Friedrich Nietzsche

We, however, want to become who we are - human beings who are new, unique, incomparable, who give themselves laws, who create themselves! To that end we must become the best students and discoverers of everything lawful and necessary in the world: we must become physicists in order to be creators in this sense - while hitherto all valuations and ideals have been built on ignorance of physics or in contradiction to it. So, long live physics! And even more long live what compels us to it - our honesty!

From "Natural Science" – Rush

The most endangered species –

The honest man

Will still survive annihilation

Forming a world –

State of integrity

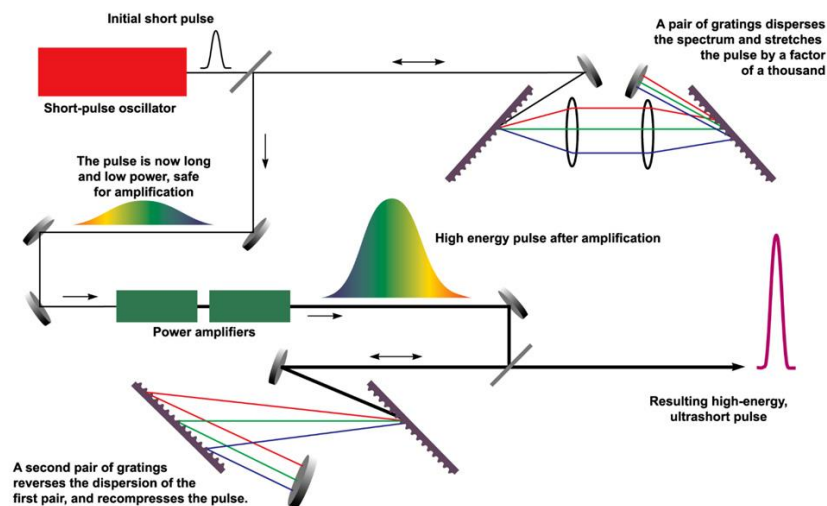
Sensitive, open and strong.

Language as Lasers

// Explaining the Power of the Gay Science

Although she may not know it, Dr. Donna Strickland is not only the winner of the 2018 Nobel Prize in Physics, she is also a brilliant poet. Indeed, Dr. Strickland's commendation in physics was received for her development of Chirped Pulse Amplification for lasers, which is essentially the stretching and compression of light across time:

"The technique Strickland developed uses gratings in the laser system to separate the original laser pulse into its individual wavelength components. As a result, due to the differing optical paths for the spectrally separated beams, a temporal separation takes place. The high-frequency component of ultrashort laser pulses lags behind the low-frequency component – causing the pulse to be 'positively chirped'. The stretching of the pulses in time then reduces the intensity, making it possible to amplify the pulses in the laser cavity without damaging the optics in the system. For the output, the amplified pulses are recompressed to their original length." (Scientifica.uk.com)



What Dr. Strickland has done here is develop poetic techniques for light. Thinking somewhat abstractly, poetry is the compression of meaning-information-energy into very few syllables which can be read in a shorter time, and Chirped Pulse Amplification for lasers is the compression of light-energy into smaller timeframe-packages. Therefore, a novel is less "focused" than a blog post, and a poem or aphorism is even more focused – thus making it more powerful across a shorter timeframe.

In the poetic equivalent to the optical system, the relevant limiting factor of compression in this situation would be comprehension ability. This means that simple aphorisms like "an apple a day keeps the doctor away" take entire papers on nutrition and compress them into something that even a five-year-old can remember. It also explains why the aphorisms contained in Nietzsche's *Gay Science* are so... powerful.

A corollary of this is that TikTok shorts and Instagram Reels represent the highest-potency information available in a 60-second timeframe, and have thus become the stimuli of choice for an illiterate generation.

Upward and Downward Spirals

// *The Übermensch and Untermensch in Neuroscience*

First developed in Zarathustra and framed as the next logical step in man's evolution, Nietzsche's *Übermensch* is a person of self-made values, pursuing their own goals without regard for criticism from the rest of society. The *Übermensch*, in Nietzsche's writings, has full agency and incredible self-control, constantly seeking to exert their will and become the best that they can be:

"I teach you the overman. Man is something that shall be overcome. What have you done to overcome him? All beings so far have created something beyond themselves; and do you want to be the ebb of this great flood and even go back to the beasts rather than overcome man?"

What is the ape to man? A laughingstock or a painful embarrassment. And man shall be just that for the overman: a laughingstock or a painful embarrassment... Behold, I teach you the overman. The overman is the meaning of the earth. Let your will say: the overman shall be the meaning of the earth!"

Perhaps unsurprisingly, this concept was appropriated by the Nazi regime to instill a sense of national pride in a beleaguered German populace, tainting the idea of the *Übermensch* with an association to narcissistic tyranny and unrestrained self-interest. The same is true for the *Will to Power*, originally framed by Nietzsche as the desire to overcome obstacles in the world and oneself, also co-opted by Nazi propagandists to energize a broken nation.

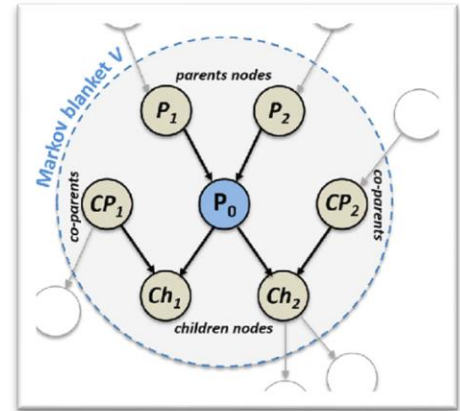
Although many consider the *Übermensch* an abstract philosophical concept, or perhaps the mad fantasies of an intelligent dreamer, modern neuroscience and psychology have revealed that Nietzsche's emphasis on overcoming obstacles, on down-goings and over-goings, and his emphasis on the optimization of the human species are reflected in the laws of nature.

Puzzle Piece 1 – Karl Friston's Free Energy Principle

Karl J. Friston is a member of the Royal Society, a recipient of the Golden Brain Award, and hailed by some as the "genius neuroscientist" whose theories may transform artificial intelligence. Among his many achievements is the provocative, insightful, and surprisingly simple Free Energy Principle, which Friston has proposed as a kind of unified brain theory.

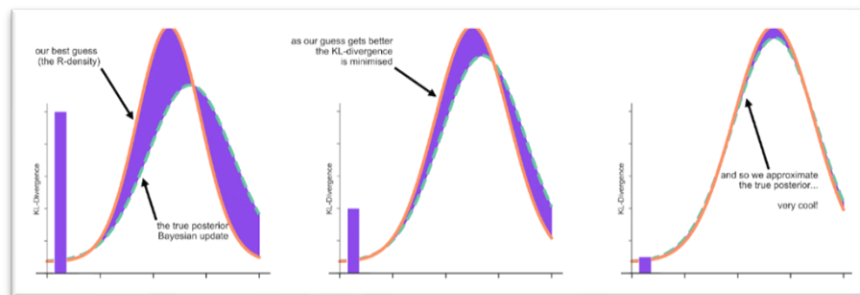
Much in the same way that Rene Descartes' *cogito ergo sum* postulated that the only thing we can be totally sure of is that we think and therefore exist, Friston's Free Energy Principle begins with the problem that the brain is a separate system from the world – at least to some extent. Put more simply, there is information that exists "out there" in the world, as well as information contained within the brain's memory, which remain separate from each other. The senses, which provide information about the external world to the brain by way of electrical signals, are the intermediary by which the brain updates its understanding of what is happening "out there".

Although some lazy philosophers assert that nothing can be known outside of one's own mind, physicists and mathematicians represent the brain-environment-senses system using a concept called the Markov Blanket. This concept, although considered tautological by some and a sneaky trick by others, is simply a mathematical formulation of the underlying physical realities governing the brain that also reconciles with common sense. The implications of the Markov Blanket, however, suggest that the brain must be involved in some kind of *iterative* or *cyclical* process to match its impression of the external world with the information it gets from its senses.



While this arrangement is theoretically elegant, some difficulties arise when applying it to real-world systems like brains and computers, as they have limited memory and limited time to process information. The brilliance of the Free Energy Principle, and the reason it has proven to be so exciting for neuroscience and psychology, is because several pre-existing constructs in mathematics and physics exist that simplify these computations to such a degree that the proposed computations could be plausibly handled by a human brain.

Put simply, instead of making calculations across all possible environmental states, including extremely unlikely ones like unexpected meteor strikes or ghost apparitions, the human brain instead makes a series of guesses or hypotheses, and then calculates the *amount of surprise generated by its sensory inputs*.



Thus, through a cyclical process of guessing and updating, a conscious mind *minimizes the surprise from its sensory inputs* while growing in both the accuracy and sophistication of its predictions. The cyclical nature of this process is also reflected in educational theory, where scholars like David Kolb and Jack Mezirow developed circular models of learning and growth. Even the famous *Hero's Journey* reflected in many myths and stories has been characterized as a cycle, notably with an “underworld” moment where all is lost – the down-going. Indeed, many angles of analysis point to human learning being *cyclical* and *constant*.

But what does this mean for the *Übermensch*? These assembled insights demonstrate that *openness to new experiences* and a *willingness to grow* are core aspects of a healthy psychology. The nature of the human mental experience is such that mistakes will be inevitably made and corrected; old perspectives will eventually be abandoned for new ones; new information will become more salient than old assumptions; the mental model will always grow and develop. The ever-present reality of down-going and over-going, of despising old shores and reaching for new ones, is a core element of human neuroscience as well as a partial vindication of Nietzsche's writings.

Puzzle Piece 2 – Lifespan Development Literature

One of the earliest, and most famous, developmental psychologists was Jean Piaget, whose work on the stages of development that children progress through on their way to adolescence has become a mainstay in education and childrearing. As previously discussed, one of his primary findings was that children appear to develop the capacities for “formal logic” and “rationality” at a gradual pace, spending much of their childhood subject to fantasies and a capacity for fantastical imagination.

As was discovered by psychological researchers following Piaget, however, the growth and development of a human being’s mental model does not stop with adolescence. Indeed, the works of Lawrence Kohlberg, who studied moral reasoning abilities, as well as intelligence researchers like Alfred Binet, indicate that there were measurable differences in the mental capacities of individual humans, that these differences were linked to real-world outcomes, and that these differences could be ordered along stable patterns and trajectories of development.

For example, Kohlberg’s work on moral reasoning, based on Piaget’s work with children, centered largely around providing people with case studies involving ethical dilemmas and recording their responses. By focusing on the reasoning for the responses rather than the responses themselves, Kohlberg uncovered that people generally progress through three stages of moral reasoning capability, each with unique motivating factors that drive “ethical” behavior.

Among Kohlberg’s findings is the fact that until about age nine, children operate under what he calls “preconventional morality”, a self-centered paradigm focused largely on avoiding punishment and gaining reward. Through early puberty, however, Kohlberg found that children begin internalizing the ethical systems that they were taught by their parents and teachers, and when providing their reasoning for responses to ethical dilemmas, tended to cite external rule systems as existential constraints rather than arbitrary systems. This, he called “conventional morality”.

The final stage of moral development, as identified by Kohlberg, was possessed generally by adults only and was called “postconventional morality”. At this stage, it was found that people offered unique thinking on the ethical issues that were tied to more universal moral principles such as charity and fairness – or at least their personal understanding of these principles.

One very intriguing finding from Kohlberg’s work is that the adult population is distributed along these three different stages, implying that not all people are equally developed. In particular, he found that only ten to fifteen percent of adults operate at the postconventional stage and make appeals to universal principles in their reasoning. Most of the population, he found, operates according to conventional morality by behaving how an average person in their society is expected to behave. This suggests that the adult population is significantly less autonomous than one would believe from observing Western cultures, and that the prevailing culture is a more powerful driving force than many would like to believe.

Even more interestingly, over the past seven decades, developmental psychologists have been studying the relationships between language and cognition, particularly as they pertain to the sophistication of someone’s thinking, problem-solving, and relationship-building abilities. Following a tremendous effort in statistical psychology, Jane Loevinger and her colleagues found that human beings exist on a continuum marked by increasing sophistication of mental models, and that accelerated development along this continuum is possible if not inevitable in response to life’s challenges.

Much like Kohlberg’s analysis of qualitative responses, which indicated people operated according to preconventional, conventional, or postconventional moral reasoning frameworks, Loevinger used a statistical approach combined with language analysis to demonstrate that this stage model represented the general trajectory of human lifespan development. By having respondents complete question stems such as “I am...” or “My biggest problem is...”, Loevinger showed that the *syntax* and *structure* of these responses, and not necessarily the content, revealed a great deal about how the respondent processed information and how they approached life:

NAME OF STAGE (Group Level)	%AGE OF ADULT POP.	CHARACTERISTICS
SYMBIOTIC (Preconventional)	~0%	- Infant, no ego differentiation from parental figures
IMPULSIVE (Preconventional)	~0%	- Toddler, very limited sense of self or ego differentiation
SELF-PROTECTIVE (Preconventional)	4.3%	- Gains at the expense of others, wins any way possible - Self-oriented, “might makes right” attitude - Relationships primarily based on power
CONFORMIST (Conventional)	11.3%	- Accepts traditions, inherited values, and orders from authority - Gains meaning from belonging to a group or “tribe” - Avoids and soothes group conflict
EXPERT (Conventional)	36.5%	- Differentiates self from group based on skill or talent - Prioritizes “doing things right” as defined by them, their data - Excellent individual contributor, causes friction on teams
ACHIEVER (Conventional)	29.7%	- Finds success within the system, achieves goals through teams - Can “step into a role” or “wear a hat” as situations demand - Often entrepreneurial, intrapreneurial, or leaders of some kind
INDIVIDUALIST (Postconventional)	11.3%	- Questions one’s own beliefs, assumptions, inherited values - Steps outside of convention to propose unique ideas - Can hold and appreciate multiple perspectives simultaneously
STRATEGIST (Postconventional)	4.9%	- Breaks convention and standard procedure... strategically - Sees change as an iterative and emergent process - Minimum level required to reliably lead organizational change
ALCHEMIST (Postconventional)	1.5%	- Able to reinvent and transform self and others - Finds a “third solution” to paradoxes and conflicts - Capable of leading societal change through visionary action
UNITIVE (Postconventional)	0.5%	- Can appreciate the need for the ego while taking perspective on it - Taking part in the ongoing process of humanity - Aware of the language habit and the potential for play therein

What is found in the works of Loevinger, Cook-Greuter, and other ego development researchers like Harvard’s Robert Kegan and the workplace-focused Bill Torbert, is indeed a trajectory of increased capacity for sophistication and nuance. For example, earlier stages like the conformist tend to accept inherited traditions unquestioningly and have trouble when placed in situations that require pluralistic stances, such as cross-cultural interactions or political discussions involving many different points of view. They also have difficulty thinking outside pre-existing traditions to develop solutions for their lives.

However, postconventional stages can find elegant and nontraditional solutions to paradoxes and conflicts, much like how Nelson Mandela famously wore a sports jersey associated with apartheid during a key moment in South Africa’s reconciliation. This trend towards sophistication is also a feature of Friston’s work.

Puzzle Piece 3 – Peterson’s Hero and Villain

Aside from his many insights into the fantastical and wondrous worlds of children, Jean Piaget contributed a very important sense of the hard limits and boundaries encountered by humans in their youth, some of which can be directly traced back to biology. A self-styled genetic epistemologist, Piaget saw himself as someone who searched for the origins of human knowledge in human biology, and his work with children could be seen as investigations into how our most fundamental knowledge structures, untouched by culture or even language, are acquired. Piaget’s early investigations continue to be valuable for parents, educators, and researchers today, and constitute one of the primary influences behind Jordan B. Peterson’s now-famous *Maps of Meaning*.

However, the plentiful ranks of lesser-known psychologists include many brilliant Soviet behaviorists, skilled surgeons and neuroscientists who were contemporaries and intellectual descendants of luminaries like Ivan Pavlov. Although their work under the Soviet regime was subject to existential limitations on publishing and dissemination, as well as a strong bias towards atheist materialism, their concern with observable behavior and related brain or body activity yielded some key discoveries that support Friston’s work while predating it by several decades.

Perhaps as a result of their distance from Western thought during the twentieth century, the works of E.N Sokolov, O. Vinogradova, and A.R Luria remained relatively unknown by the Western public until the popularization of Jordan B. Peterson and his keystone work *Maps of Meaning* brought their research on the human response to novelty to the attention of many thousands of readers. One of the foundational insights of Peterson’s whole academic career, in fact, is derived from the Soviet literature on what they called the orienting reflex; the near-instantaneous reflex of living creatures, both human and animal, to pay attention to things in the environment that don’t belong.

One of the most striking aspects of the orienting reflex are that it happens faster than conscious thought, usually between two hundred and five hundred milliseconds. This makes it an important survival mechanism in the event of a falling toddler, a car veering out of control, or a physical confrontation, where things are happening faster than one can think through them. Another notable thing about this neurological mechanism is that it is involuntary, meaning that the orienting reflex is about as deep as the fight-or-flight response, if not deeper. When this is placed within context of Friston’s theories, the Soviets’ work indicates that the brain is indeed wired to attend to things that are *surprising* as a matter of basic survival.

Among many other memorable aspects of Peterson’s work is the juxtaposition of mythological elements and archetypes with psychological phenomena, a consilience-based demonstration of the fact that many of the things now considered folklore by the West are expressions of deeply wired biological and psychological instincts. One of the most famous of these juxtapositions is the “dragon of chaos”, alternatively described by Peterson as the devouring aspect of Mother Nature, the evil witch queens in Disney films, the monster under the bed, and other highly variable and dangerous unknowns that pose threats to human life.

Contrasted with the dragon of chaos and the evil witch queen is the “walled garden”, characterized throughout Peterson’s work as “known territory”. Unlike situations that present significant amounts of new information, known territory is the domain of culture, of rules, of predictability. From the perspective of expertise researchers and neuroscientists, it could be said that this represents situations where someone has high situation awareness or a well-developed mental model.

While Peterson's characterization of anomalous information as a "dragon of chaos" has received ridicule from some skeptics of his work, upon a deeper investigation of the psychological phenomena at play, it would indeed seem that human beings often display a strong tendency to ignore or rationalize novelty. This leads to stagnation, generally defined as a failure to grow, which Peterson associates with tyranny, a rejection of the unknown, and an out-of-date mental model.

"The liar cannot tolerate anomaly, because it provokes anxiety – and the liar does not believe that he can or should withstand anxiety. This means that he is motivated to first avoid and then to actively suppress any behavioral pattern or experience of world that does not fit comfortably into his culturally-determined system of affect-regulating moral presuppositions. Avoidance means that anomalous experience is kept "unconscious," so to speak – which means incompletely realized. The implications of the dangerous thought remain unconsidered; the presence of the threatening fantasy remains unadmitted; the existence of the unacceptable personal action remains unrecognized. Active suppression does not mean intrapsychic "repression," in the classic sense, but aggressive action undertaken in the world, to forcibly eliminate evidence of error. This may mean treachery, spiritual cruelty, or the outright application of power: may mean application of whatever maneuver is necessary, to destroy all indication of insufficiency."

Based on his own work with patients and research subjects, Erik Erikson also identified stagnation as a failure to progress fully through adulthood, and associated it with self-centered neuroticism, a lack of self-improvement, and hedonistic concerns. Abraham Maslow, for his part, identified a human "growth motivation" that he associated with the pursuit of personal ideals, social goals, and a "higher pleasure of production", also connected to productivity in adulthood.

However, despite the necessity of growth and the many pleasures associated with it, the costs seem too great for many – only fifteen percent of the adult population is operating in a postformal worldview, which means they genuinely struggle to appreciate other cultural paradigms, many difficult social problems, and even parts of their own personality.

Moreover, several social problems that characterize the modern West, such as extreme political tribalism, can be understood as failures to develop as individuals and as a society, resulting in breakdowns of communication, better understood as the exchange of new information. This failure to develop has resulted in the rise of xenophobic behavior between social groups that are otherwise undifferentiated demographically, as well as the development of fringe conspiracies like QAnon.

Puzzle Pieces Assembled – Spirals of Growth and Stagnation

Therefore, from the assembled literature, we can surmise the following:

1. Human beings are wired to notice surprises and minimize surprise;
2. This minimization of surprise creates a psychological trend towards growth and sophistication;
3. The known stages of growth have been largely mapped using statistics and language syntax;
4. It is possible to refuse growth opportunities, often by changing or denying one's environment.

While most researchers have been focused on the positive aspects of development, particularly as they apply to corporate and social leadership, only a few thinkers have "stared into the abyss" of serial killer manifestos, psychopathology, and truly villainous behavior.

Thankfully, one of the most prominent focus areas in *Maps of Meaning* is Peterson's grappling with the depths of human evil – the Holocaust, the USSR, and other dark malfunctions of social systems. When his insights are applied to this literature, what we find is that human beings and social systems can progress, through cyclical learning processes, either “upward” towards positive sophistication or “downward” towards negative sophistication.

Negative sophistication is what gives us the Unabomber Manifesto or Jack the Ripper's letters. It represents an inverted and narcissistic version of human growth which is often the case of failures to grow. For example, Ted Kaczynski could have easily taken a Toastmasters course and hired a marketing professional on contract to help share his message; he could have joined some groups; but he did what he did for whatever reasons he felt justified to do so. Positive sophistication, on the other hand, gives us “I Have a Dream”.

The Down-Going and Over-Going

Properly contextualized within the assembled neuroscientific and developmental literature, Nietzsche's emphasis on what he called “down-going” can be seen as a recognition of the profound importance of openness to experience, willingness to learn from failure, and an acceptance of one's limited-yet-growing abilities. These are all things that the literature points to as fundamental aspects of human experience.

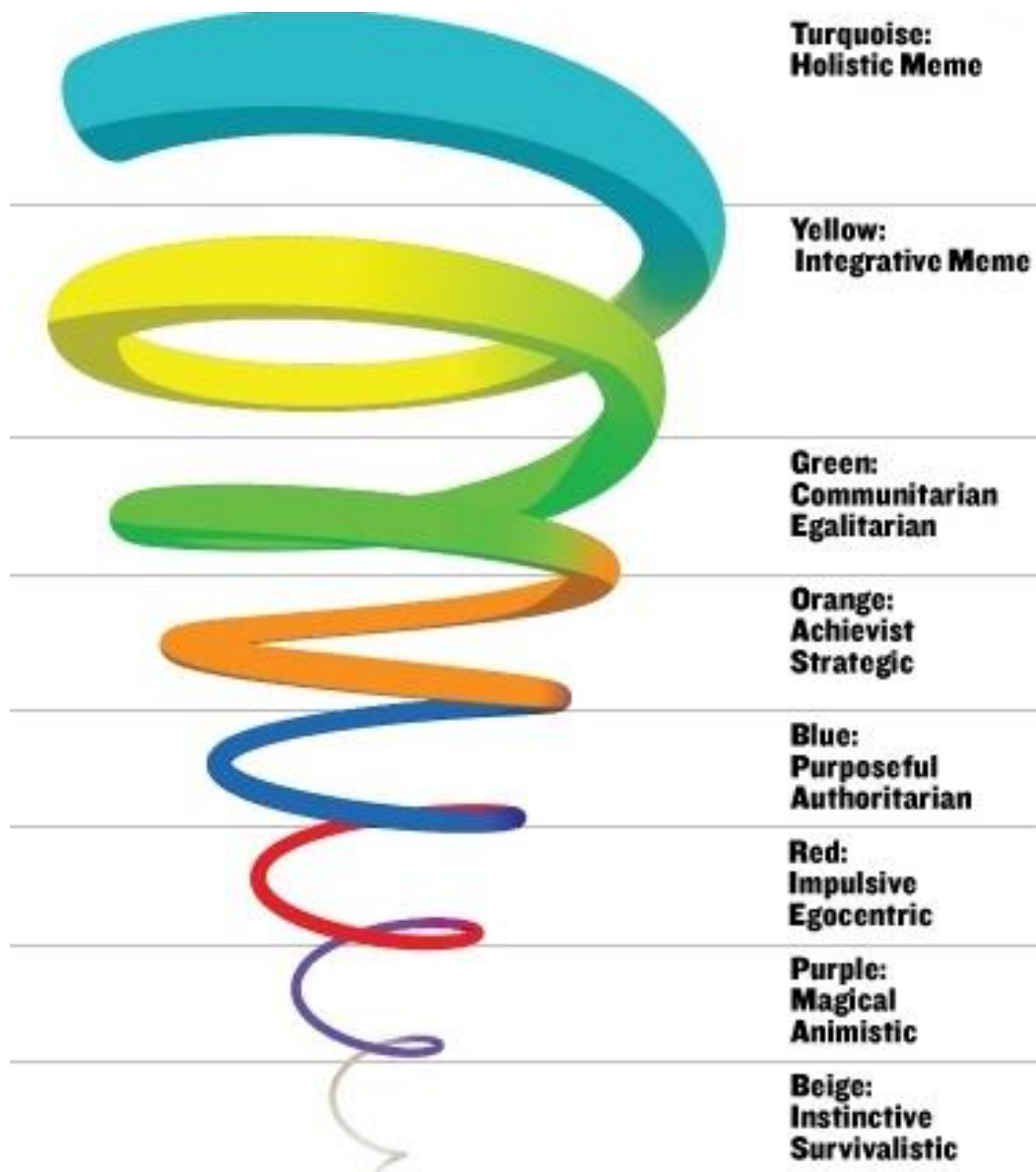
The opposite and partner of the down-going, Nietzsche's “over-going”, represents the fruition of the cyclical learning processes at play in the human experience – the transformative changes that can occur within the human psyche as documented by Loevinger and Cook-Greuter, most notably. Indeed, the kinds of development and growth represented by a shift from a *Conformist* stage to a *Strategist* stage involves the acquisition and mastery of mental processes, and a dramatically different way of seeing oneself and the world. In this way, the *Übermensch* can be seen as not just a process, but a trajectory – if not a goal for all humans to strive for.

The *Übermensch* as Affirmation of Process

In his works, Nietzsche often expressed admiration for the heroic qualities of various people, cultures, or ideas. It is undeniable that he saw a willingness to risk failure or defeat as a positive quality and a virtue, something that dovetails perfectly with the insights from neuroscience, therapeutic practice, and developmental psychology which indicate that *acceptance* is a key part of both growth and recovery.

The *Untermensch* as Stagnation

As can be seen in the writings and ramblings of more literate serial killers, a long series of growth failures can lead to a sophisticated, yet tyrannical, human being. In this way, Nietzsche's *Untermensch*, characterized as “deviant and inferior” in *Gay Science (143)*, closely reflects the kind of profound deviances from reality and morality that one finds in the records of psychopathology cases.



“Overall, worldviews evolve from simple to complex, from static to dynamic, and from egocentric to socio-centric to world-centric. People’s stage of development influences what they notice and can become aware of, and therefore, what they can describe, articulate, cultivate, influence, and change. A person who has reached a later stage can understand earlier worldviews, but a person at an earlier stage cannot understand the later ones.”

// Susanne R. Cook-Greuter, from “Nine Levels of Increasing Ego Embrace”

“What is great in man is that he is a bridge and not a goal; what is lovable in man is that he is an over-going and a down-going. I love those that know not how to live except as down-goers, for they are the over-goers... I love the great despisers, because they are the great adorers...” (Nietzsche)

Necessary Iconoclasm

// *Idolatry as a Thermodynamic Force in Social Systems*

Friedrich Nietzsche's aggressive style, bombastic claims, and prescient analysis have made his intellectual legacy one of the most compelling in the Western canon. Writing in the second half of the nineteenth century, Nietzsche's scathing critiques of traditional European value systems, and grave concern at what would come to replace them, represent one of the most insightful diagnoses of Western metaphysical ailments ever to be produced.

In a remarkable point of consilience with the Biblical scriptures he despised, Nietzsche correctly intuited that the West's faulty belief systems were *idols*, something that he made explicit in the title of one of his more famous works. In a Biblical sense, an idol is commonly associated with a statue of an alleged divine entity that receives veneration or offerings in return for blessing.

Strictly speaking, this classification would include everything from Buddha statues that receive token veneration to the statues of Mary popular within Catholicism. However, in ancient times, and particularly in the Near East, some of the idols were venerated through gruesome forms of child sacrifice:

"And to the children of Israel, you shall say: Any man of the children of Israel or of the strangers who sojourn among Israel, who gives any of his offspring to Molech, shall surely be put to death; the people of the land shall pelt him with stones." (Lev. 20:2)

Although it may seem difficult to believe given the natural bonds that exist between parents and their offspring, the slaughter of children, virgins, and other blameless group members was a feature of ancient civilizations. Indeed, monuments to Aztec bloodshed serve as tourist attractions in Central America, uncovered burial pits in Carthage provide similar memories of darker times, and evidence even exists to corroborate Biblical accounts of pagan child sacrifice in the Levant.

An important thread within the tapestry of idolatry comes from two secular Jewish thinkers working in different times and contexts. Ayn Rand, the philosopher-queen of conservative thought, was not shy in framing both collectivist ideas and false religious doctrines as parasitic – indeed, much of *Atlas Shrugged*, her most prominent work, is devoted to a dramatization of society's hardest workers rebelling against ideologies too destructive to collaborate with.

Working within the contexts of marketing and evolutionary biology, and himself a founder of a hybrid discipline, Professor Gad Saad framed collectivist ideas as "pathogens" spread throughout universities, a perspective that is also reflected in the work of digital marketing pioneer and futurist Seth Godin. In his works, Godin also compares ideas to viruses, and certain forms of marketing as ways of infecting minds and spreading messages organically. These concepts build conceptually on work by Richard Dawkin on *memes* ideas with gene-like properties subject to evolutionary pressures like selection and replication.

Accumulation of Social Disorder

A second thread to consider regarding idolatry and its effects comes from the accumulated work on charity, social unrest, and the thermodynamic concept of disorder, or entropy. Consider that from the secular literature, a general principle known as Gini's Coefficient states that greater wealth disparities in a region or nation is correlated with higher levels of social unrest. Additionally, over the past several decades, some thinkers within the social sciences literature have made strides to reconcile observed social forces with

general physical laws, including thermodynamic concepts like entropy and the phenomena of intra- and inter-species collaboration prevalent in the natural world.

At a very abstract level, the increase of entropy in a system represents the distribution of a concentrated quality into its surroundings. For example, the heat from a cup of tea dissipating into the surrounding air, or ink dissolving into water. From this, it can be deduced that things like the distribution of wealth from richer to poorer, as documented by Gini, represent a kind of thermodynamic interaction related to entropy.

Understanding “Social Entropy”

In a 2005 work on the relationship between thermodynamics and the social sciences, a trio of Croatian scholars found that the literature on the topic, which was still unformed at that time, seemed to converge on the idea that thermodynamic free energy, inversely related to entropy, represented the surplus of resources within a social system. This “surplus” represents the resources available to do “work”, and could mean anything from having food available, to having money in the bank, to having a mode of transportation.

Somewhat abstractly, this is almost precisely the definition of Gibbs Free Energy in a thermodynamic system, or the quantity of energy available to do work. Crucially, this would suggest that the amount of social entropy in a system represents the resources that are unavailable for work – perhaps because they are being consumed or have been consumed for work already, or are unusable junk.

$$\text{Total Energy} = \text{Free Energy} + \text{Entropy}$$

Parasitic Ideas and Mind-Viruses

Given that thinkers in different fields have converged on the idea that certain ideas, or ideologies, can be compared to viruses or parasites, it is worth examining the essence of the metaphor to glean some insight.

Perhaps most obviously, one feature of the virus or parasite, or even the garden weed, is its tendency to appropriate resources from its host environment. A similar essence can be found in the metaphor of cancers sometimes used to describe destructive forces within society.

This is easily applicable to the notion of parasitic ideologies, as mental effort spent on idolatry or nonsense is effort that could have been spent on more productive things, like new skills or self-reflection. But, it is also relevant to the idea of free energy being related to available resources in a society.

Because destructive ideas like ideologies require resources to maintain them within their society – such as things like propaganda and police forces – they can be seen to be inversely-related to free energy in much the same way that entropy is.

But here, there is a slight paradox – if something like charity is entropic and represents the distribution of resources and information within a society, then how can idols and ideologies also be entropic?

Moloch as Hidden Thermodynamic Force

With the understanding that idols and ideologies are also thermodynamic forces that feed from sacrifices gained from social environments, it would seem that a central thermodynamic equation – at least as it applies to social systems – requires a slight amendment to account for idolatry. Thus, Moloch becomes M^* :

$$\text{Total Resources} = \text{Free Resources} + \text{Entropy} + M^*$$

An alternate expression of this equation, which is more common in thermodynamics, expresses these quantities in relationship to the Gibbs Free Energy or “free resources” in a society:

$$\text{Free Resources} = \text{Total Resources} - \text{Entropy} - M^*$$

Here, the deleterious effects of Moloch, or idolatry more broadly, can be more clearly seen. Given that idols and ideologies directly compete with more wholesome priorities, while contributing nothing to the overall system, it seems perfectly reasonable to at least identify them as a subset of the entropic force.

The Allure (and Cost) of a Lie

The relationship between ancient Canaanite sacrifices to Moloch and modern instantiations of sacrificial practices can be better understood by attempting to empathize with the parent of a child being sacrificed to Moloch in an ancient context.

“The priests would say that he is offering the greatest sacrifice...Other opinions, however, say that the child was actually scarred physically or even burned to death! The priests would bang and clap to drown the noise from the child’s screams so that the father would not regret his decision.”

From the Sages’ teachings, as well as some basic empathy, it can be easily understood that child sacrifice was not necessarily a pleasant procedure. In the same way that World War One required a great deal of propaganda to bring men into the trenches, burning or mutilating your own child requires a tremendous amount of social pressure, as well as some kind of social reward system and metaphysical lie to make possible. Masking the effects of sacrificial practices, by confusing the senses with noise, is also a core feature of these practices in the modern day.

The sages also teach that worshipping and serving these idols, at least back in ancient times when magic was more prevalent, provided people with immense physical and spiritual highs comparable to party drugs. Modern-day cults that emphasize physical practices for high-like effects, like the Rajneeshis or excessive devotees of breathing expert Wim Hof, can be seen as cousins of this phenomenon, as can the intellectual pleasures enjoyed by cerebrally-inclined narcissists.

Nietzsche’s Intuition Validated Again

From all of this, it would seem that Nietzsche’s choice of title for *Twilight of the Idols*, as well as his preference for philosophizing with hammers, was a reflection of his intuitive understanding that both feudal Christian Europe and pre-WW2 Europe were both profoundly wasteful enterprises. The urgency with which he wrote his works, as well as his letters to various European figures, indicate how seriously he took the issue and how desperately he was hoping for alternative outcomes.

Appendix: Some Relevant Works

// Useful for “Language as Lasers”

- Shannon, C.E, Weaver, W., “A Mathematical Theory of Communication”
- Strickland, D., Mourou, G., “Compression of amplified chirped optical pulses”

// Useful for “Upward & Downward Spirals”

- David A. Kolb, “Experiential Learning: Experience as the Source of Learning and Development”
- Jack Mezirow, “Transformative Dimensions of Adult Learning”
- Susanne R. Cook-Greuter, “Nine Levels of Increasing Ego Embrace”
- William Torbert, “Action Inquiry” & “Seven Transformations of Leadership” (HBR)
- Frederic Laloux, “Reinventing Organizations”
- YT @zacharyrjstrong, “Explaining Nietzsche’s Übermensch- and Proving it Exists with Physics!”

// Useful for “Necessary Iconoclasm”

- Stepanić, J., Sabol, G., Žebec, M.S., “Describing social systems using social free energy and social entropy”, *Kybernetes* (2005)
- Saad, G., “The Parasitic Mind: How Infectious Ideas Are Killing Common Sense”, Regnery (2020)
- YT @zacharyrjstrong, “The Physics of Nietzsche’s “Idols” and Biblical Idolatry (Live Science!)”