



Noesis

The Journal of the Mega Society

Issue #209, March 2022

About the Mega Society

The Mega Society was founded by Dr. Ronald K. Hoeflin in 1982. The 606 Society (6 in 10⁶), founded by Christopher Harding, was incorporated into the new society and those with IQ scores on the Langdon Adult Intelligence Test (LAIT) of 173 or more were also invited to join. (The LAIT qualifying score was subsequently raised to 175; official scoring of the LAIT terminated at the end of 1993, after the test was compromised.) A number of different tests were accepted by 606 and during the first few years of the Mega Society's existence. Later, the LAIT and Dr. Hoeflin's Mega Test became the sole official entrance tests, by majority vote of the membership. After that, Dr. Hoeflin's Titan Test was added. (The Mega Test and Titan Test were also compromised, so Mega Test scores after 1994 and Titan Test scores after August 31st, 2020 are currently not accepted; the Mega and Titan cutoff is 43 - but either the LAIT cutoff or the cutoff on Dr. Hoeflin's tests will need to be changed, as they are not equivalent.) The Mega Society now accepts qualifying scores on The Hoeflin Power Test and on The Ultra Test. Both tests are still being scored. The Mega Society publishes this irregularly-timed journal. The society also has a (low-traffic) members-only email list. Mega members, please contact one of the Mega Society officers to be added to the list.

For more background on Mega, please refer to Darryl Miyaguchi's "A Short (and Bloody) History of the High-IQ Societies" —

<http://miyaguchi.4sigma.org/BloodyHistory/history.html>

—and the official Mega Society page,

<http://www.megasociety.org/>

Noesis is the journal of the Mega Society, an organization whose members are selected by means of high-range intelligence tests.

Brian Wiksell (P.O. Box 366, Solana Beach, CA 92075) is the Administrator of the Mega Society. Inquiries regarding membership should be directed to him at the aforementioned P.O. box or the following email address: bwiksell@megasociety.org

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Editorial

Richard May, Ken Shea

The current issue of *Noesis* will be considered a triumph for the reader eager for discussions, interviews, book segments, and essays centered around intelligence testing and metaphysics.

Dedicated readers will cheer to learn that Chris Cole, Richard May, and Rick Rosner kick off the current issue with a roundtable-style discussion, moderated by Scott Douglas Jacobsen.

The following topics are considered: the nature of IQ, the *g* factor, the difference between a 'high-end' and 'regular-range' IQ test, the features of a solid (i.e., reliable and valid) intelligence test, and the advantages of a computer-adaptive test.

On the last item, Chris Cole says, 'The Adaptive Test, which is a work in progress, is the cutting edge.' Stay tuned.

The next contribution is an interview of Bob Williams, conducted by Scott Douglas Jacobsen. Astute readers may recall Bob Williams had a two-part interview published in *Noesis* #207. The current issue features Parts 3 & 4 of the running interview with retired physicist Bob Williams.

Bob Williams discusses the following topics: the challenges of measuring creativity, distinctions between creativity and intelligence (personal favorites: researchers Richard Haier and Rex Jung), the possible connection between creativity and drug use, definitions of genius proffered by Hans Eysenck and Arthur Jensen, responses to high-IQ societies and apparent membership idiosyncrasies, and the contrast between the unity of *g* at the psychometric level with the observed disunity of *g* at the neurological level.

Next, Richard May, a.k.a., May-Tzu, likewise returns from a multi-part *Noesis* #207 interview for two more rounds (viz., Parts 6 & 7 below) with Scott Douglas Jacobsen.

Richard May *ponders* the following topics: the merits of freethinking, the persisting inscrutability of George Gurdjieff, awakening versus conditioning, possible *satori* experiences swirled around 'running by the Charles River in Boston', peculiar online chat groups, 'Roast Pigeon', and the potential ineffability of existence.

Transitioning the current *Noesis* issue more explicitly to metaphysics, the founder of the Mega Society, Dr. Ronald K. Hoeflin, wrote and completed a 15-chapter book, *A Metaphysical Map of Reality (Fitting Fifteen Primary Academic Disciplines Around the Feedback Loop by Which We Stay in Touch with Reality, Plus Subordinate Factors Organized Around the Same Loop)*, last year. A Table of Contents for the entire 15 chapters is presented below. A pair of introductions, viz., "Introduction: Metaphysics, Maps, and Reality" and "Introduction: Mapping Academic Disciplines to Reality Metaphysically", will be discovered below, as well.

(Thank you for your hard work and generosity, Dr. Hoeflin.)

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Partly because of the book's organization, the Editors have decided to publish the first five chapters ('The Natural Sciences') here in *Noesis* #209, the second batch of five chapters ('The Social Sciences') in *Noesis* #210, and the last five chapters ('The Humanities') in *Noesis* #211.

The first five chapters of Dr. Ronald K. Hoeflin's *A Metaphysical Map of Reality*:

Chapter 1. The Metaphysics of Physics - e.g., Newton's Laws of Motion, Olbers' Paradox, and Heisenberg's Uncertainty Principle

Chapter 2. The Metaphysics of Chemistry - e.g., birth control, dissatisfaction, and organic chemistry versus biochemistry

Chapter 3. The Metaphysics of Biology - e.g., aging, cell theory, and pathology

Chapter 4. The Metaphysics of Mathematics - e.g., Gödel's Incompleteness Theorem, Pythagorean Theorem, and Zermelo's Axioms for Set Theory

Chapter 5. The Metaphysics of Medicine - e.g., history of medicine, art of medicine, and cure for life and death

After that, Ken Shea appreciates a posthumously-published book by Richard Rorty (1931-2007) in a contribution titled, "A 'Review' of *Pragmatism as Anti-Authoritarianism* (Or: 'The Romance of Democracy')". Eduardo Mendieta justifiably says the lectures which the book is based around 'constitute Rorty's most comprehensive presentation of his own version of pragmatism'.

In any case, in two back-to-back contributions, "Physical Theory and Phenomenalism" and "The Dialectic of Spirit: A Triumphant Harmony", Ken Shea wonders, in part, whether phenomenism or 'immaterialism' might actually be a superior conceptual scheme, metaphysically, in the twilight of scientific materialism. Why did Hilary Putnam open *Realism with a Human Face* by invoking Friedrich Nietzsche: 'As the circle of science grows larger, it touches paradox at more places'? Could the answer have something to do with Ken Wilber's description of 'Flatland'?

Richard May, then, contextualizes notions like 'natural' and 'supernatural' - studying history, dusting off his crystal ball, and leaning in to look at the hard problem of consciousness - in a special *Noesis* contribution titled "The Nature of Consciousness, "a Rose is a Rose is a Rose" ".

Readers intrigued by "Type 4 and Type 5 Kardashev-Scale IQ Societies", published in *Noesis* #207, will, also, do well to listen up: May-Tzu journeys to infinity and beyond in an unbelievable voyage to the crème de la crème "Plurality IQ Society"!

Finally, May-Tzu closes the curtains on this issue of *Noesis* with "Intersubjective Testability" and "Shadow & Light". *Noesis* #210 is tentatively planned for October 2022 publication.

'I have learned that I cannot dispose of other people's facts; but I possess such a key to my own as persuades me' -Ralph Waldo Emerson

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Debunking I.Q. Test Claims Discussion

Chris Cole, Richard May, Rick Rosner & Scott Douglas Jacobsen

Scott Douglas Jacobsen: Today, as this is a group discussion with three longstanding members of the Mega Society, the focus is Intelligence Quotient or I.Q., particularly debunking claims. What is I.Q. truly a measure of, at this point?

Chris Cole: I.Q. is an attempt to measure general intelligence, which is analogous to the power of a computer. There is an enormous literature on this subject. I'm going to take it as a given. It will be embarrassing if when we understand more about how the mind works it turns out to be a chimera.

Richard May: *g*, the general factor of intelligence, i.e., cognitive ability.

Rick Rosner: IQ as measured by a high-end test is somewhat different from IQ as measured by a regular-range, usually group-administered, test. Regular-range tests measure intelligence, the ability to focus for 45 minutes, and cultural literacy.

High-end tests can measure obsessiveness and attention to detail, a love of puzzle-solving, and in some cases desperation for validation.

Intelligence has changed over the past 20 years to include skill at using tech to get answers.

Scott Douglas Jacobsen: What differentiates a fake I.Q. score claim from a real one, e.g., signals of a fraud or claims far above the norms of a test, etc.?

Chris Cole: Since it is difficult to define, it is difficult to measure. There is a desire to claim intelligence which creates a motivation for "vanity" tests. In science we try to overcome such tendencies using experiments to disprove theories. It is a sign of trouble if a test is not carefully normed.

Richard May: You can perhaps find examples on Facebook and social media generally.

Rick Rosner: Concerted efforts to lie are fairly rare – claiming a high IQ is not very helpful in life and may even hurt – there's Stephen Hawking's quote that "People who brag about their IQ are losers." There are casual claims – BSers at parties, movie stars trying to seem smart. Geena Davis's PR team used to mention that she's Mensa. Sharon Stone is said to have a 150 IQ. James Woods 180. And these might be legit. But that's to address a specific issue of not being considered a bimbo.

One big tell for IQ fraud is people claiming to have completed and gotten a high score on the Mega or Titan in 10 or 12 hours. Back in 1985, I spent more than 100 hours on the Mega. Now with the internet (and coding skills which I don't have), I could've cut that time by 80%. But the internet has also invalidated the Mega – not only with all of the answers floating around out there but also with instantly solving the verbal analogies just by plugging them into Google.

Scott Douglas Jacobsen: What ranges for I.Q. scores have the highest reliability and validity, typically?

Chris Cole: The Langdon and Hoeflin tests are on the cutting edge of reliability and validity. The Mega Test, for example, has been normed several different ways. A group of us are working on a new test that is cheat resistant.

Richard May: Scores with the highest reliability and validity are those closest to the mean on standard IQ tests. Hoeflin and Langdon's tests are untimed power tests more suitable for measuring above average intelligence.

Scott Douglas Jacobsen: What tests are considered the most robust, legitimate?

Chris Cole: We have a problem now that several of the most carefully normed, such as the Langdon Adult Intelligence Test, the Mega Test, the Titan Test, the Ultra Test, and the Power Test have been spoiled.

Richard May: Those of Hoeflin, Langdon and Wechsler.

Rick Rosner: Hoeflin's tests have been the most thoroughly revised and normed. His Mega Test was normed on more than 4,000 test takers. His test items are excellent. But his tests have been voided by the internet – too many easily found answers. The Mega was published in Omni magazine in 1985, I think, a decade before most people had the internet. You had to use actual physical dictionaries.

Today, I think Paul Cooijmans' tests are the most legit high-end tests. Paul takes pleasure in bursting the bubbles of people who claim high IQs by offering stringent scoring and norming. Doing well on his tests takes much time and what he calls "associative horizon" – being able to come up with dozens of ideas to crack a tough item.

Scott Douglas Jacobsen: What is the status of measuring I.Q. scores above 4-sigma – experimental high-range testing, in other words?

Chris Cole: The Adaptive Test, which is a work in progress, is the cutting edge. Contact me if you want to work on it.

Richard May: Apparently measurement at the far-right tail of intelligence has improved astronomically. I mistakenly thought that determining and measuring IQ was quite difficult even at the 4 sigma level. The Mega Society used to have a statement either at the beginning of Noesis or on our website or both, I think, indicating that we attempted to select members at the 4.75 sigma level, but selecting this rarity was experimental and quite difficult for many reasons. (Not exact wording.)

Today there is an IQ group which has apparently identified the 3 most intelligent individuals on planet Earth! This is quite an achievement in my view.

Since it is well known that the actual distribution of IQ-scores at the far-right tail does not conform to a Gaussian distribution, one has to assume that even if the ceiling of the IQ tests employed was sufficient (not exceeding that intended by the test developers) and the intercorrelation of the various tests at the highest levels was known and that the correct Kuder-Richardson (?) formulas were applied to concatenate the valid IQ scores, that the entire population of planet Earth was actually tested by or on behalf of this group. Since various planetary subgroups of different sizes could have differing means, standard deviations and distribution shapes, a weighted average would need to be taken in order to determine the statistical properties of the global IQ distribution for planet Earth.

This is an unparalleled achievement in psychometric history. I personally don't know anyone tested for this project in order to determine the actual shape of the global distribution of IQ-scores at the far-right tail, but I assume this is just a minor sampling error. Presumably you and your friends and neighbors have all been tested. Since the three most intelligent individuals on planet Earth have now been identified in fact, the correct protocols were undoubtedly used. If only Lewis Terman were alive now! — [LINK here](#).

Bob Williams Interview (Parts 3 & 4)

Bob Williams (& Scott Douglas Jacobsen)

Abstract

Bob Williams is a Member of the Triple Nine Society, Mensa International, and the International Society for Philosophical Enquiry. He discusses: the more evidenced theories of creativity similar to *g* or general intelligence as the majority position of researchers in the field of general intelligence; theories of genius; the main figures in these areas of creativity and genius connected to the research on *g*; personality differences between scientists and artists; conscientiousness; the ability to think; the expected probability of genius at higher and higher cognitive rarities; Howard Gardner; Robert Sternberg; the works of Arthur Jensen building on Charles Spearman; and the questions remaining about genius.

Keywords: Arthur Jensen, Bob Williams, Charles Spearman, creativity, Davide Piffer, Francis Galton, *g*, general intelligence, genius, Hans Eysenck, Howard Gardner, Rex Jung, Richard Haier, Robert Sternberg.

Scott Douglas Jacobsen: Now, I want to touch on another orbiting topic to intelligence research, which comes from this notion of genius. What are some of the more evidenced theories of creativity similar to *g* or general intelligence as the majority position of researchers in the field of general intelligence?

Bob Williams: The evidence lies primarily in neurology. Creativity measurements are not as informative as intelligence measures. We understand *g* well and have a massive amount of research to support the structure of intelligence, *g*, the underlying neurology, and finally the genetics picture is coming together. Even in personality, there is a general factor, but if a general factor has emerged from studies of creativity, I have not seen it. Davide Piffer wrote a paper that specifically addressed the question of a general factor of creativity. He made a convincing argument that aspects of creativity were distinct at the descriptive and neurological levels and would, therefore, be unlikely to yield a general factor. Piffer also presented good criticisms of various past studies, particularly with regard to the construct validity of various creativity tests.

Part of the problem is that much of the literature relating creativity and intelligence preceded latent variable analysis. Another part is that creativity is inherently more difficult to measure than intelligence. In intelligence research, we can easily test for the *g* loading of a category of test items and see if the loading is high enough to justify its use in a battery of test items, such as an IQ test. In creativity measures, the things being measured are sometimes quite removed from the thing we implicitly understand as creativity.

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The other aspect of creativity measures is that people do not have the same degree of agreement as to how a creative response should be graded. For example, one common test of creativity is the alternate uses test, in which a person is asked to list as many alternate uses for a common object (brick, paperclip, etc.) as possible in a short period of time. This is essentially a test of fluency (for example, list words beginning with the letter H). Even when used directly (without grading of individual responses) there is a claimed connection between fluency and creativity. When the responses are graded by judges, according to the level of creativity, the results are claimed to be better. It is obvious that this sort of test is not a close match with the things we expect are happening when a person is exhibiting creative output.

The neurology of creativity is where I see real explanatory results. For example, creative brains should show these:

- The inhibitory function is low or can be made low by the executive function. When the brain has a low inhibitory function, it rejects fewer stimuli, creating opportunities for remote associations. While this is good for creative output, it is the opposite of the best function for problem solving.
- Some brains presumably have direct connectivity between parts that are usually combined only by passing through multiple nodes. This also increases the opportunity for unrelated ideas or knowledge to become associated.
- The brain is able to enter the default mode network (DMN) and generate ideas there. This is the network most associated with creativity.
- Leaky attention (the opposite of maintaining focus) relates to the inhibitory function.
- The ability to create remote associations relates to all of the creativity factors.

These brain characteristics tell us that, like intelligence, creativity depends on special properties of the brain. Curiously, these properties seem to sometimes be opposite to those we associate with high intelligence. While we do not have a parallel between intelligence and creativity, in the general factor sense, we do have a set of brain features that have a direct impact on creative output.

Jacobsen: Similarly, creative achievement at the highest levels seems to more often than not earn the title of “genius,” wherein minor creative acts and high intelligence do not. In that, a true act of genius appears to require extremes of creativity and of general intelligence. Both of these are rare alone, even rarer together at the same levels. What theories of genius appear the most substantiated now?

Williams: Yes. The enigma is how these traits can sometimes all happen in one brain. The various models of genius that I have seen seem to be relatively unchanged over time, suggesting to me that we have not found measurements that lead us to any one over the others. The various models, however, are not that different and are qualitatively in agreement with the things that are seen in Genius. We have good descriptions of geniuses from the distant past that

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seem consistent with more recent observations, but we do not have much, if anything, in the way of brain studies because the technology to image brains has only been available for a few decades.

Sir Francis Galton listed intelligence, zeal, and persistence. Another component is probably creativity.

Hans Eysenck believed that both traits Neurosis and Psychoticism had to be elevated in true genius. Obviously if either trait is overly expressed, the individual will be destroyed and not achieve enormous feats of creative genius. When N and P are somewhat elevated they positively impact the individual—at least if he is really a genius. For example, P may cause a person to be seen as aggressive, cold, egocentric, impersonal, impulsive, antisocial, unempathic, tough-minded, and creative... not a pretty picture in terms of attractive personality. This, however, is precisely what we read in the descriptions of the great geniuses of all time.

Arthur Jensen believed that genius is the product of high ability x high productivity x high creativity.

ability = g = efficiency of information processing

productivity = endogenous cortical stimulation

creativity = trait psychoticism

Jacobsen: Who are the main figures in these areas of creativity and genius connected to the research on g ?

Williams: The three above (Galton, Eysenck, and Jensen) wrote a good bit about genius and some about creativity. Dean Keith Simonton edited the *Handbook of Genius and Scientific genius: A psychology of science*. I would classify him as more of an author than researcher.

Much of what we have in the literature on genius is descriptive, due to the scarcity of people to study and their distribution over hundreds of years. In *Human Accomplishment: The Pursuit of Excellence in the Arts and Sciences 800 B.C. to 1950*, Charles Murray identified 4002 people as having extraordinary eminence. This is a very reasonable list of genius over the long time range he covered. We are left with a better understanding of what they accomplished than of how they did it. Needless to say, we have no neurological studies of these people.

Today we have researchers who study both intelligence and creativity. The two at the top of my list are neurologists Richard Haier and Rex Jung. Their work resulted in the P-FIT model (described in my second set of questions) and has expanded into a wide range of intelligence and creativity topics. It is my belief that neurological research is most likely to shed additional light on the understanding of what rare conditions produce genius. In the more distant future, geneticists may find ways to understand the underlying genetic traits in true genius.

The neurological characteristics that have been associated with high creativity (see previous answer) include a lowered inhibitory function and long mean path length (networks). Both of

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these are opposite to the desirable traits for high intelligence. The inhibitory function can be dulled by alcohol or other drugs, precisely not what you want to do before taking a calculus test. Long mean path length is associated with poor network connectivity, possibly related to low tissue integrity (measured by fractional anisotropy) or with lower numbers of connections to hubs. I have not seen anything that attempts to explain how genius incorporates both high intelligence and high creativity. There is, however, the possibility that these rare people have an ability to achieve divergent thinking and remote associations, without the biological factors just mentioned. Piffer has also argued that the focus on divergent thinking may be overemphasized and the association of creativity with intelligence underappreciated.

Jacobsen: What explains some of these personality differences between scientists and artists mentioned in (1)?

Williams: There seems to be numerous domain specific traits, including personality, at work. I doubt that anyone would confuse an artist with an engineer when first meeting them. One personality trait that relates to creativity is Conscientiousness—low for artists and higher for scientists. Trait Openness is the only Big Five trait that relates to intelligence, but this trait also correlates positively with creativity. This suggests that intelligence is not the minor factor claimed by some researchers.

One aspect of creative professions is that they show elevated levels of alcoholism, impacting from 20% to 60% of each. The highest is for actors.

[Big 5 stands for the following personality traits:

O - Openness

C - Conscientiousness

E - Extraversion

A - Agreeableness

N - Neuroticism

-Ed. Note]

Openness is positively correlated with creative achievement in the arts, but curiously does not predict working memory capacity. Among scientists, intellect is predictive of WMC and achievement (as I would expect). In the long and detailed book *The Cambridge Handbook of the Neuroscience of Creativity* (2018) Rex E. Jung (Editor), Oshin Vartanian (Editor), there is a discussion of how openness and intellect relate to brain regions. As with the many studies of intelligence factors in the brain structure (and properties), neuroscience has produced similar findings for creativity. There are large numbers of structures and measures to consider, but the thing that is impressive is the frequency with which the results are opposite for creativity and intelligence; tissue integrity is one example (high integrity for intelligence, low integrity for

creativity). [Tissue integrity is measured by fractional anisotropy. A high FA indicates less radial diffusivity (loss).]

Jacobsen: Does conscientiousness, whether artists or scientists, remain one of the most important traits for the achievement of a true act of genius – to follow-through despite seemingly impossible odds in the moment?

Williams: There is a big story hidden in follow-through and it seems to me to be a flaw in some of the more traditional discussions about creativity. When researchers administer a test, such as a divergent thinking exercise, they are often measuring fluency and then arguing that fluency is related to creativity. The problem is that this measure is about quantity and is completely disconnected from achievement, production, and end result. We see Michelangelo as a genius, not because he imagined the Sistine Chapel ceiling, but because it imagined AND produced it and not that he imagined the David, but because he sculpted the statue. This illustrates the difficulty of dealing with discussions and measures of creativity... the definitions are messy and can be misleading and the measures are often distant from the construct we want to measure.

Yes, Conscientiousness measured as a trait applies to acts of creativity, but in opposite directions for intelligence and creativity. We can see this without measuring creativity directly by simply measuring personality for artists and scientists. Despite the finding that it is low for artists. [I take the finding to be correct from Jung and Vartanian previously cited.]

Jacobsen: Between Mensa International, Intertel, the Triple Nine Society, the Prometheus Society, and the Mega Society, or between the escalating claimed cognitive rarities, what should one expect in regards to the ability to think of the cognitive floor of the membership?

Williams: Since these groups are self-selected, they tend to be atypical of the entry thresholds they represent. One big difference between membership in these is that people who have not been successful in education, profession, and personal relationships seem to be more attracted to them, possibly as a means of signaling their worth, despite failures. My observation from my in-person participation in the groups is that the majority of members are about what you would expect from a random sampling of people above the admission levels, but there remains a disproportionate number of people who have not shown life success and developed appropriate interpersonal skills. In Mensa, and only that group, I noticed a significant number of morbidly obese members.

Jensen wrote:

I received a letter from someone I had never met, though I knew he was an eminent professor of biophysics. He had read something I wrote concerning IQ as a predictor of achievement, but he was totally unaware of the present work. The coincidence is that my correspondent posed the very question that is central to my theme. He wrote:

“I have felt for a long time that IQ , however defined, is only loosely related to mental achievement. Over the years I have bumped into a fair number of MENSA people. As a group, they seem to be dilettantes seeking titillation but seem unable to think critically or deeply. They

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have a lot of motivation for intellectual play but little for doing anything worthwhile. One gets the feeling that brains were wasted on them. So, what is it that makes an intelligently productive person?"

This is not an uncommon observation, and I have even heard it expressed by members of MENSA. It is one of their self-perceived problems, one for which some have offered theories or rationalizations. The most typical is that they are so gifted that too many subjects attract their intellectual interest and they can never commit themselves to any particular interest. It could also be that individuals drawn toward membership in MENSA are a selective subset of the gifted population, individuals lacking in focus. After all, most highly gifted individuals do not join MENSA. [*Intellectual Talent : Psychometric and Social Issues* (1997), edited by Camilla Persson Benbow & David Lubinski] {My underline added.}

I only belonged to Intertel for 3-4 years, but I went to their annual gatherings every year until I gave up on them (simply due to inactivity in the journal, which lost contributions of new material). I did notice that when I was with the group, in person, there was a much greater maturity of discussion and sobriety than found in Mensa.

As the entrance requirement increases, I have found that there are more people who are interesting, competent in technical fields, and who have become long-term friends.

Unfortunately, that increase is accompanied by the subset of obnoxious members setting new records for repulsiveness. I have not seen this same distribution of personalities in my work. As I explained in my first questions, my career was spent with mostly technical people (physics, engineering, and a few miscellaneous science fields). It may happen that the demands of both education and work in the nuclear reactor business acts as a personality filter, producing a different mix of people from those found in high IQ clubs.

Jensen responded to a few text interviews from high IQ groups. His comments are worth reading, not only because of his prominence, but also for his style-choice of words:

Discussions on Genius and Intelligence Interview with Dr. Arthur Jensen. Mega Press, Eastport, New York

Arthur Jensen: "It's hard to imagine how a group of high-IQ people with little else in common besides their IQ and probably differing in many other ways perhaps even more than a random sample of the population can do much to effect social change or carry out any large project with a unified aim."

An interview with Dr. Arthur Jensen by Steve Coy

Dr. Arthur Jensen: "The interaction of ability level with interests and lifestyle confounds selection. I daresay you will find few Mensa or Mega members with few or no intellectual interests, for example, although there may be people out there in the population who are very bright but have few such interests. There is also self-selection at the top end. How many Nobel Prize winners, or members of the National Academy of Sciences are in any of the high IQ

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societies? I was struck by the fact that the Berkeley chapter of Mensa, with its many members, had only one member who was on the faculty of UC Berkeley, although I'm sure some large percentage of them could qualify if they wished to join. And I know a Nobel Prize winner who was invited to join Mensa, but he had no interest in it and declined the invitation. It has been my (untested) impression that if IQ and achievement could be correlated in the whole population, members of HI-IQ societies would be among those who tend to lower the correlation, falling below the regression line (of achievement regressed on IQ). Most conventional IQ tests have a general knowledge-achievement component which makes the test an amalgam of both ability and achievement and particularly skews the high end of the IQ distribution."

Jacobsen: Have there been efforts to calculate the expected probability of genius at higher and higher cognitive rarities?

Williams: In the numerous articles I have read about genius, I have not encountered an estimate of the probability of a person being born with the rare combination of genes that lead to genius. There are some obvious problems. One is defining where to draw the line between genius and not genius. As long as you are dealing with the most distinguished individuals (at the level of Einstein, Bach, and Picasso) there is no problem. But when you want to count, who do you count and who do you skip? Perhaps the 4002 listed in *Human Accomplishment* is about as good as one can do, largely because they were identified by an objective and quantifiable method. [The worldwide number comes out to fewer than 1.5 per year.] Then things become quite muddy... we might argue that the production of genius has been a variable over time. There is reason to believe that mean intelligence (at least in developed nations) has been a variable. Dutton and Woodley discussed this in *At Our Wits' End: Why We're Becoming Less Intelligent*. They also speculated that we are producing fewer and fewer geniuses, due mostly to the decline in mean intelligence, and that this will have a profound impact on the progression of mankind as it relates to innovation. My personal feeling is that this analysis may be overstated because we have entered a new paradigm, based on powerful computer resources and artificial intelligence that will undoubtedly change how people innovate and carry out cognitive tasks.

In the distant future, geneticists may be able to calculate the probability of a rare set of genetic variants appearing in a population. As of today, they have finally found 1,200 single nucleotide polymorphisms associated with intelligence, but these account for only about a 10% effect size. It may be even more difficult to find the variants necessary for the other traits, making the problem overwhelming until a powerful new approach becomes available.

Jacobsen: Now, the next triplet ties to ideas proposed about intelligence (covered a bit in the previous two sessions) and genius as laid out above, how do the works of Howard Gardner attempt to address genius? How do these efforts succeed? How do they fail?

Williams: Gardner was interested in creativity and occasionally mentioned creativity in connection with genius. He may have produced significant works relating to genius, but they have not come to my attention. He did discuss the aspects of personality that are often associated with genius and which are well known to relate to the typical non-social and sometimes abrasive behaviors of the people we all know for their monumental works. He also

wrote *Creating Minds* (1993) in which he did a detailed description of seven geniuses, each selected to exemplify one of his multiple intelligences. The irony of this is that his model is based on individual examples of what he claimed were each a different kind of intelligence, but he based his model on people well outside of the range of “normal,” while appealing to those normal people to accept his abnormal model. [The seven people selected: T. S. Eliot, Albert Einstein, Pablo Picasso, Igor Stravinsky, Martha Graham, Mahatma Gandhi, and Sigmund Freud.]

Gardner is in a category that is highly regarded by the general public and not by many serious intelligence researchers. The multiple intelligences model is apparently loved by those who see it as “fair.” Researchers know that there is nothing fair about Mother Nature.

Jacobsen: How do the works of Robert Sternberg attempt to address genius? How do these efforts succeed? How do they fail?

Williams: Unlike Gardner, Sternberg was more involved in matters relating to genius. He was, for example, the editor of the *Handbook of Creativity* (Cambridge), which included some discussion of genius. The problem is that, like Gardner, Sternberg had a personal invention on the line and was inclined to make that (the Triarchic Theory) the centerpiece of whatever he wrote. The theory was not sound, as demonstrated by Linda Gottfredson, so that carries over to how I see his comments. Per my prior comments, the net observations of genius from all sources remain descriptive and do not tell us much about the underlying genetics and neurology of genius. It's a case of *we know it when we see it*, but we can't explain it from the biological perspective.

Jacobsen: How do the works of Arthur Jensen building on Charles Spearman attempt to address genius? How do these efforts succeed? How do they fail?

Williams: Jensen's comments on genius strike me as being as good as any that can be found. He believed that the *necessary, but not sufficient* traits combine in genius at maximum values and that they have a multiplicative effect. I bought the book *Intellectual Talent : Psychometric and Social Issues* (1997), edited by Camilla Persson Benbow & David Lubinski, just to read the last chapter by Jensen. He described genius as ability at the upper end of a J-curve, which can be thought of as a logarithmic increase. In *Human Accomplishment*, Murray also addressed the extreme nature of genius but called it the Lotka Curve. Both signify that almost all points relating to high achievement group together, while a few are so far from the rest that they exist in a stratospheric space.

Jacobsen: What are the questions remaining about genius? In particular, what are the unknown, though potentially somewhat known, relations between intelligence, personality, and creativity, and genius?

Williams: We cannot describe or even effectively study the genius brain or genome. There simply are not enough such brains to find and explore. There also seems to be a lack of interest in this among neurologists who have the technology to probe a brain. The only person I know who has imaged various atypical high achievers is Roberto Colom. But the instances I am

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aware of relate to sports figures and some creative artists. I would most like to see someone do a comprehensive study of David Lynch, as an example of the most creative level of the arts (cinema). There are various Nobel laureates (physics and chemistry) who would seem to me to be examples of the top minds in science, but I don't think they are being studied. One thing that concerns me about such a project is the age of the person being studied. I would think the best age would be in the 25 to 35 year old range because the brain is typically functioning at its best then. Would Lynch be too old? Most likely the effort that would be required for such a project would be unattractive to many researchers.

The limited information that we have about Einstein's brain at least tells us that his brain was highly atypical, as compared to the brains that have been studied in modern times. It would be interesting to see if any of his special properties (brain width, elevated glial cell fraction, and a few Brodmann Area size anomalies) can be found in other people and whether they show special cognitive abilities.

The other thing that I consider to be not fully resolved is the relationship between intelligence and creativity. The measurements that produce small correlations were done by correlating such things as the alternate uses test against IQ. Related to the appropriateness of the measures is whether there is a difference between artistic creativity and scientific creativity. Both allow for exploration (try this, then that) but I think that scientific creativity has to be significantly related to knowledge and understanding of the thing being studied.

[End of Part 3 of Bob Williams's interview]

Abstract

Bob Williams is a Member of the Triple Nine Society, Mensa International, and the International Society for Philosophical Enquiry. He discusses: the more evidenced theories of creativity similar to *g* or general intelligence as the majority position of researchers in the field of general intelligence; theories of genius; the main figures in these areas of creativity and genius connected to the research on *g*; personality differences between scientists and artists; conscientiousness; the ability to think; the expected probability of genius at higher and higher cognitive rarities; Howard Gardner; Robert Sternberg; the works of Arthur Jensen building on Charles Spearman; and the questions remaining about genius.

Keywords: alcoholism, Arthur Jensen, Bob Williams, Booze, Camilla Persson Benbow, Charles Murray, creativity, David Becker, David Lubinski, David Piffer, Dean Keith Simonton, Default Mode Network, Executive Function, Flynn Effect, *g* Factor, genius, Hans Eysenck, Ian Deary, Latent Variable Analysis, Leonardo da Vinci, Linda Gottfredson, Michael Woodley, Nyborg, Promiscuity, Richard Haier, Richard Lynn, Richard Sternberg, sex drive, The Wechsler Adult Intelligence Scale.

Scott Douglas Jacobsen: After a hiatus, round four, what would make a general test of creativity valid? Has David Piffer proposed anything?

Bob Williams: Piffer has done a good bit of work related to creativity and published several papers on it. To avoid congestion with my answer, I will append references to some of these papers. One of his particularly interesting observations: "There is some evidence that schizotypal traits and temperament are associated with creativity. Schizotypal traits as measured by the O-LIFE questionnaire were related to creative thinking styles and a subscale (but not the other three scales) ImpNon (Impulsive Nonconformity) was positively correlated to Divergent Thinking tasks in a sample of British students."

Among the things he mentions in his papers are that Openness and low Conscientiousness are predictors of creativity. This has high face value and indirectly links creativity to intelligence (via Openness). He found a correlation of 0.54 between scientific and artistic creativity that was 70% genetic. Piffer suggested that the best measure of creativity is the impact of a work on its creative field. I like that definition more than the usual one of *something novel and useful*.

From my perspective, measuring creativity is difficult. It is not like intelligence in that we don't have a positive manifold and we don't have good ways to check the measurement instruments. One of the problems I see is the lack of importance in creativity below the level that we see in great composers, directors, writers, etc. If a person has a very low level of creativity, or even no realistically detectable level, he will not suffer in the way that the same low standing would cause problems relative to intelligence. Piffer referred to two kinds of creativity: Big-C (as in true genius) and Pro-C (someone at a level where he can work professionally in a creative

discipline). If we add one more category, Little C, we have a group where there is a range of creativity, but where it has little impact.

People actually try to measure creativity over a full range. I'm not sure why or whether they have paid much attention to how the Little-C people are affected by their level of creativity.

Tests have a construct validity and an external validity. The construct (internal) validity is simply an indication that the test is measuring the thing it is supposed to measure—in this case, creativity. The treatment of construct validity is less rigorous than a test of external (predictive) validity. One way it is done is by comparison to tests or other means of making the measurement. If it matches conventional expectations, it is showing internal validity. In the case of intelligence, the usual method is to factor analyze the test and compare the resulting factors to those found in other tests that are believed to show construct validity.

If we consider validity to mean accuracy, the question is one of how well the test predicts creative output. If we have people at two significantly different levels of creativity, can we use their output to validate the measure, as we do in intelligence testing? I don't know the answer; I see the whole approach to creativity measurement as fuzzy, even when compared to other life sciences.

The more important validity is external or predictive validity, which tells us that the test is measuring things that can be predicted and verified. If the test shows that someone is in the 90th percentile of creativity, we expect that the person will display high levels of creativity in his job and life. For example, he may be a successful screenwriter or composer. Predictive validity is central to the whole notion of being able to meaningfully test for creativity. If we are measuring things that actually predict real world outcomes, the test is useful. If it fails this, the test is of questionable value.

Jacobsen: Why is the reliance on latent variable analysis important for the study of creativity?

Williams: Latent traits are found in multifaceted constructs, including creativity. The use of latent traits allows the researcher to show how multiple variables interact and form a structure. Remote association tests are used in creativity research with good results. The difficulty level of making specific connections (item level in the test) can be determined using latent trait models. This is similar to Item Response Theory as used in intelligence tests.

Jacobsen: Why is the reliance on latent variable analysis important for the study of intelligence?

Williams: The often displayed hierarchical structure of intelligence is a representation of latent traits. These identify narrow and broad abilities and g. All of these are latent traits and are essential to the understanding of intelligence. It is difficult to overstate the importance of g in the study of intelligence. It translates directly to the study of the brain, is remarkably stable over lifespan, and explains life outcomes better than any other single parameter.

Jacobsen: What five items or tasks in formal intelligence tests have the highest correlation with the *g* factor?

Williams: The *g* loadings of various factors are test dependent. For example, vocabulary is a well known factor that usually shows a very high *g* loading. But its specific loading depends on the structure of the test and the number of test items that correspond to each factor. If you add more test items, it tends to skew the loadings upwards. Some tests are designed to use only a single category of test items. The best known of these is the Raven's Progressive Matrices. It can be factor analyzed to show that it has factors other than *g*, but those factors are usually ignored because they are not the traditional ones seen in comprehensive tests, such as the WAIS.

The WISC-IV has only 5 Stratum II factors. Here are the *g* loadings for those:

Comprehension-Knowledge (Gc) _____ .80

Fluid reasoning (Gf) _____ .95

Short-Term Memory (Gsm) _____ .62

Visual Processing (Gv) _____ .67

Processing Speed (Gs) _____ .27

Timothy Salthouse created a factor structure from 33 of his studies (about 7,000 people, ages 18 through 95) and also found 5 Stratum II factors. The *g* loadings he found:

Reasoning _____ .95

Spatial ability _____ .91

Memory _____ .66

Processing speed _____ .60

Vocabulary _____ .73

Johnson and Bouchard found a natural structure of intelligence by using the 15 test Hawaii Battery, the Comprehensive Ability Battery, and the The Wechsler Adult Intelligence Scale. They eliminated some subtests to avoid duplication. When they factor analyzed the massive test, a four stratum structure emerged. I consider this to be the best fully analyzed study of the structure of intelligence. The top 5 *g* loadings:

Verbal _____ .96

Stratum III factor Perceptual _____ .99

Stratum III factor Image rotation _____ .97

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Stratum III factor Scholastic _____ .88

Stratum II factor

Fluency _____ .83 Stratum II factor

The point of presenting these different results is to show how different tests cause different factors and different loadings. The very high loadings, in the last set, are the result of the large number of diverse test items used. This causes most non-*g* factors to cancel out.

Jacobsen: What do these five tasks or sub-tests tell us about the structure of general intelligence and the human brain?

Williams: If you look at the three sets of factors, you see that they are similar. Tests are generally designed to either fit the three stratum Cattell-Horn-Carroll model, or are forced to produce another three stratum structure. All tests show one general factor, that may appear at stratum II, III, or IV. Ergo, we have accepted and repeatedly confirmed Spearman's early findings. I am always amazed by how much he reported over a century ago and how dead-on accurate his findings were.

Richard Haier formulated the Efficiency Hypothesis based on positron emission tomography studies he did, starting in 1988. These showed high glucose uptake in low IQ cohorts and lower glucose uptake in high IQ testees. It meant that, when trying to resolve the same mental task, the low IQ group required high mental effort, while the bright group required less mental effort. Some MRI work was available with Jensen wrote *The g Factor* (1998), but it has only been in the 21st century that we have had large MRI based studies. It has only been possible to look for *g* in the brain by using advanced imaging technologies. Among the most important are structural MRI, functional MRI, and diffusion tensor imaging. The latter two have provided the ability to study white matter and brain networks.

The above comments are a necessary introduction to what has been learned about the general factor within the brain. We already knew that *g* was unitary at the psychometric level. Now we know that it is not unitary at the neurological level. Richard Haier and Rex Jung found 14 Brodmann Areas that are strongly related to intelligence and problem solving. They created a model known as P-FIT (parieto-frontal integration theory) [described in detail in Haier, R. J. (2017); *The Neuroscience of Intelligence*, Cambridge University Press]. The model involves a sequential transfer of information between the cognitive centers, ending in the frontal lobes where the integrated information is evaluated.

The distributed nature of *g* within the brain has been confirmed by various studies, including focal lesion studies (using the Vietnam Head Injury Study). An important finding from this and other studies of networks is that damage to critical white matter areas causes lowered *g*. These areas are concentrated networks that link the P-FIT regions. Since the important cognitive centers work by information exchange, we have to think of *g* in the brain as the areas that are being linked as well as the efficiency of the connecting networks.

Most of the P-FIT Brodmann Areas (BA) share their associations with *g* and other non-*g* traits. BA-10, however, is only associated with *g*. This area appears to function as a control mechanism that is critical to the distributed processing nature of *g*.

Jacobsen: What do current tests of general intelligence miss?

Williams: As you would expect, different tests miss different things. While researchers today recommend comprehensive tests (WAIS and Woodcock-Johnson, etc.) other tests that are not diverse still work well for most purposes. This is because of Spearman's *indifference of the indicator*. We are ultimately trying to measure *g* and can do that by a variety of seemingly unrelated tests. Each of the different tests (consider vocabulary and block design) is *g* loaded and is measuring the same *g*.

But, we know from the structure of intelligence that there are factors, particularly at the broad abilities level (Stratum II) that are particularly important to some tasks. Arguably the most important of these is spatial ability. In this paper: [Spatial Ability for STEM Domains: Aligning Over 50 Years of Cumulative Psychological Knowledge; Jonathan Wai, David Lubinski, and Camilla P. Benbow; 2009, *Journal of Educational Psychology* Vol. 101, No. 4, 817–835.] the authors show that spatial ability is high in people who pursue engineering and sciences and its magnitude increases as the degrees held go from Bachelors, to Masters, to PhD. These fields are heavily dominated by males. At least part of the reason is that there is a sex difference in spatial ability favoring males. Some tests do not have any spatial ability test items, so they would certainly miss this ability. We know that various test designers try to force their tests to show invariance by sex, which may be why they do not include spatial ability test items.

Jacobsen: How much can an individual train and change the degree of executive function in adult life? Is it a trainable skill or something more innate as with the *g* factor?

Williams: I haven't seen any research showing that the executive function can be enhanced by training. It seems, however, that some people can increase things such as Attention and the inhibitory function (both are components of the executive function) when needed and decrease them when that is appropriate. When we see people focused to a degree that blocks out virtually everything around them, they are using the executive function in conjunction with the inhibitory function to stay on task and to block external stimuli. All of this is strongly related to working memory. High WMC enhances the executive function and other factors such as rate of learning, the formation of long term memories, and fluid intelligence.

Jacobsen: With someone like Leonardo Da Vinci, what would the structure of such a creative genius mind look like in real-time at peak performance?

Williams: I don't think we have any data that relates directly to brain imaging of true genius. If we did have it, I would expect that those in different fields (art versus science) would show behaviors that are similar to their colleagues and quite different from those in other disciplines.

The issue of artistic and scientific creativity is interesting to me; I see it as unresolved. I once asked Rex Jung if the two forms were the same and he said that they were. Jensen, on the

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other hand, expressed a belief that intelligence was a larger factor in scientific creativity as compared to artistic creativity. To me, this has more face value. I think that Jung was considering how tests of creativity work over a wide range of ability and was not focused on the rare true genius brains.

Neurologists have done measurements of some people while doing a creative task, such as music improvisation. Their findings are certainly related to real-time creativity, but I do not see this as relating to the brains of Leonardo or Beethoven. The task of learning what is going on in their brains is so difficult that I think it will not be resolved for a long time. The starting problem is to find people who are actually at that level of creativity. Then we have to be able to make meaningful measurements at the moment they are inspired to create. I think that director David Lynch is at that level of creative genius, but I doubt that we can monitor him constantly and figure out when and how his brain comes up with the huge number of elements that go into the finished film. My guess is that it is a series of creative flashes, spaced by tasks that require either different kinds of thought or those that do not demand creativity.

I would also expect that if we were lucky enough to be able to examine several creative geniuses, we would find different approaches. Some would probably go into long, deep, creative sessions and some would have multiple sudden insights that they combine to produce their works. And we might find some who do both over the course of a project.

In the specific case of Leonardo we have the most extreme example of a polymath I can imagine. His brain would be a neurological treasure today, now that we finally have the technology to really study it. In such extreme cases of genius it is difficult to imagine what biological factors were combined to produce the end results that were so profound. One would have to assume that his brain was an extreme case of factors that simply do not exist together in others. From the little we were able to learn about Einstein's brain, we know that his too was bizarrely different.

Jacobsen: What is the DMN, default mode network?

Williams: The DMN is the network that we use during mind-wandering, spontaneous cognition, imagination and divergent thinking. It is detectable by the presence of increased alpha-power. As is always true, things are messy. While the DMN is clearly linked to these things, the production of novel ideas seems to arise from the interaction of the DMN and various other networks. When the brain stops mind-wandering and focuses on a specific task, the DMN disengages and switches to other networks. We now know that the brain doesn't lock in on a specific network for a prolonged period; it switches between networks. One of the things that emerged from the focal brain injury studies was the identification of the regulatory role of Brodmann Area 10 as I previously mentioned. I am unsure if this includes network switching, but I think it is likely.

I once asked Richard Haier if it was known whether solutions to problems (the kind that happen after study and then hit us unexpectedly as we are doing something unrelated) are actually made in real-time while we are in the DMN or if the answers were made subconsciously and then revealed using the DMN as a vehicle. He said we don't know yet.

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Jacobsen: Odd question, incoming: How would a universal definition of genius expand into other species? So, we see certain traits consistent across species with some conscious cognitive capacity, so as to consider them – exceptional minds in individual species – geniuses. This would seem an enlarged consideration, biologically, of genius with potential insight into the nature of human genius, so the quality of genius itself.

Williams: The only definitions I believe are appropriate to true human genius are those that relate to a constellation of traits, expressed at a high level. In the case of animal studies, it is difficult to measure as many behavioral traits as we see in humans. For example, researchers have found a general factor of intelligence in some animals, but that factor is based on a rather small group of different categories of problem solving. It may be possible to measure factors such as zeal and persistence in animals, but we have to see that these things are actually productive. For example, I recall a study of wolves and dogs in which there was a barrier between them and food. The wolves continued to repeat the same efforts to go directly to the food. The dogs figured out that they needed help and tried to get it from humans. The point here is that, while persistence tends to be a genius trait, it is so because the genius does not repeat the same failed effort endlessly. We have seen a lot more animal studies in recent years and they are becoming more sophisticated. It is likely that they will eventually have a wider spectrum of tests and measures of animal behavior and that may lead us to identify exceptional individuals. Related to this, much of the animal kingdom is organized around male physical strength and fighting over mates, which creates a situation where the things we see as genius in humans may not show up at all.

Jacobsen: Why do creative people tend to drink so much?

Williams: In the book *The Cambridge Handbook of the Neuroscience of Creativity* (2018) Rex E. Jung (Editor), Oshin Vartanian (Editor), there is a mention of creative professions showing twice the rate of alcoholism as found in the general population. Some of the people in these professions have creativity expectations associated with the use of alcohol. In general they seem to be right, at least for the insight stage of creativity, but as the amount of alcohol they consume increases, their creative output declines. As we know, at least from modern history, creative people tend to use other drugs as well.

Jacobsen: Why are actors the biggest drinkers?

Williams: The book cited above confirms that actors (60%) use alcohol at a level beyond the norm for the general public. It mentions writers as being particularly likely to have serious problems with booze. This makes sense in that writers have to constantly create new material and their “writers’ block” is often mentioned in various media.

Jacobsen: Could those without high levels of executive function, but latent creativity, help themselves with exogenous agents such as alcohol to perform creative functions? However, this leads to the deleterious lives exhibited in high-performing creatives who have to rely on alcohol and other substances to accomplish incredible creative feats.

Williams: I haven't seen studies that directly address this situation. It falls into a category of research that is likely to be regarded as too dangerous unless conducted from natural data. I believe that it is a case of "a little helps, but too much hurts." It follows the distribution that is sometimes called the inverted U curve. We see this in psychosis and neurosis, both contributing positively to genius results, but only when the level is "elevated" and not substantial. Various substances, that are used to enhance creativity, appear to work this way. The problem is that the use of the substances can become a drive and cause the user to not moderate his intake.

Jacobsen: Is there a correlation between sex drive/promiscuity and genius?

Williams: I can only guess, as I haven't seen a specific study relating to it. What we often see in true genius is isolation and often no children. But I expect we can find rather extreme cases of sexual behavior, depending on the specific personalities and possibly on the category of work they do. One discussion that relates to this: Who are the "Clever Sillies"? The intelligence, personality, and motives of clever silly originators and those who follow them; Edward Dutton, Dimitri van der Linden; *Intelligence* 49 (2015) 57–65. The title of the paper is somewhat misleading. From the paper: "... creative, original, uncooperative, and impulsive risk-takers. These kinds of characteristics permit them, like artists, to conceive of an original idea, thus showcasing their intelligence and creativity, and take the risks necessary – short term ostracism – to achieve their long term goal of high socioeconomic status. The fact that some of those whom we have assessed achieved high social status but not high economic status can thus be seen as the risks only partially paying off. In addition, the lack of sexual success among some of these figures is congruous with many geniuses not having children. But their actions can be interpreted as advantageous at the group level."

Jacobsen: If taking one moral perspective on it, is there a correlation between perversion or various forms and genius?

Williams: That one falls outside of my knowledge base. I can imagine that there may be various forms of perversion, but I haven't seen anything that explores the relationship.

Jacobsen: When does conscientiousness become a negative trait? What contexts? I do not mean simply statements on specific professions.

Williams: Low conscientiousness is found in artistic people and high conscientiousness is characteristic of people more likely to be found in STEM. Conscientiousness is less likely among people who use drugs (per our discussion) and who have random life patterns, consisting of no schedule or traditional jobs. The extent of problems relating to low conscientiousness is probably related to specific professions. There are lots of stories of actors who were difficult to work with, inclined to walk out, or get drunk. The most extreme cases of near-zero conscientiousness are those from the world of rock music, where performers have written the book on bad behavior and short lifespans. The "27 Club" was the subject of a documentary [27: *Gone Too Soon*] of at least 6 high level performers, but the total toll for young deaths is much larger. Low conscientiousness was one of many things that are obvious in the world of idol worshiped musicians.

Jacobsen: Following from the previous question, when does conscientiousness become a positive trait? What contexts?

Williams: In most employment situations, where a person has responsibilities that relate to an entire group, conscientiousness is valuable. You want to have the person who, when given a job, can be counted on to get it done, even if there is a tight deadline. The performers we discussed would not be a good choice for this kind of business.

Jacobsen: How much is productivity a measure of genius?

Williams: The magnitude of output of true geniuses is high. We see massive quantities of output from composers, painters, and writers, even from those who died very young. Part of this may be related to the speed with which some art is created. I once watched a documentary of Picasso, showing him painting. He was fast and changed the painting frequently by painting over parts of the painting repeatedly. I seriously doubt that a sculptor could chisel his way through a piece of marble quickly. The task is at least partly related to productivity, in the sense of output rate.

Jacobsen: Are there any substances that temporarily or artificially increase tissue functionality? Or, more generally, what about substances going in either direction of high FA and low FA temporarily due to their intake? What would be the expected effects and productive outputs from such intake, when heading into artificial high FA and artificial low FA? Perhaps, the wording isn't sufficiently precise in the questions, but, I think, the curiosity for the idea is there.

Williams: That is a thought provoking question. For the benefit of readers who are not familiar with FA, in this context, it means fractional anisotropy. This is a measure of diffusivity. If FA is zero, the medium is isotropic; if it is at the other extreme, 1, it means that the diffusion is along one axis and there is no loss to radial diffusion. In brain imaging, we see high FA as desirable; this means high tissue integrity.

In the cases I have seen reported, FA is discussed as a tissue property that does not fluctuate. If it goes down, it stays down. But there may be studies showing that there are agents that can reduce FA temporarily and that it would return to normal when the agent is no longer present. Alcohol or drugs associated with hallucination might have some impact on FA (guessing). During the past week, we had the annual conference of the International Society for Intelligence Research. One factor that was discussed during an open session was the impact of anesthesia on the brain. I was unaware that it is believed to be damaging to intelligence. Unfortunately, the discussion was in the context of a one-way trip down.

The reason this could relate to creativity (assuming that it happens) is that low FA can result in the brain following longer paths to join information. This presumably causes brain regions that are not related to the task at hand to be activated and may result in the formation of remote associations of the type associated with creativity. This would happen if a network has broken connections, thereby causing the brain to follow longer paths to complete tasks that recruit information from different parts of the brain.

Jacobsen: For Mensa International, Intertel, the Triple Nine Society, the Prometheus Society, and the Mega Society, you observed a trend or pattern – non-absolute – of individuals who may not succeed in “education, profession, and personal relationships.” They seem more prone to becoming a part of them. Jensen mentioned in the Mega Press interview the dilettantish nature of the interactions and a void in deep, critical evaluation. Yet, the qualifications of the societies ground themselves in higher, sometimes abnormally, higher than normal IQs. Which leads to an associated, but somewhat distant, question, what is IQ missing regarding critical intelligence if that’s the case? The stereotype with some truth to it: A genius-level IQ without a sense of the mechanics of the social and professional world, or the right question to probe an intellectual problem appropriately.

Williams: It is certainly true and easily observable that these groups are statistically more attractive to people who have failed to establish meaningful careers, despite having high intelligence. Jensen mentioned that he was personally able to form satisfying relationships with his work colleagues and that, while all were bright, none belonged to Mensa (the only example he mentioned). Part of the answer may lie in the nature of personality. Of the Big Five, only Openness is significantly correlated with intelligence. That leaves a lot of room for other factors, as well as those that only appear in other personality test batteries, to cause problems. In fact, if you look at the four other traits, all of them can be expressed in a direction that could be poisonous to careers. I would expect that two traits would be particularly damaging: low conscientiousness and high neuroticism.

Jacobsen: Does Charles Murray account for global population growth with the 1.5 times per year number in genius emergence? In short, is this number larger in more recent history with vastly more people living at the same time compared to the past, e.g. 0.75 times per year at some point in the past and 3 times per year at a time closer to the present? This is taking into account the speculation of a decline in mean national intelligence.

Williams: No. Murray simply identified 4,002 people of extreme eminence over the period 800 B.C. to 1950 and limited his study to arts and sciences. The problem of computing the rate of genius birth is complicated because of the decline in real intelligence that is largely driven by the negative correlation between intelligence and fertility rate. [See *At Our Wits’ End: Why We’re Becoming Less Intelligent and What It Means for the Future*, by E. A. Dutton & M. A. Woodley of Menie. Exeter, UK: Imprint Academic.] Dutton and Woodley express concern that the births of geniuses will become increasingly rare, despite many births among low intelligence groups. They fear that this will or already has led to a reduction in innovation and discovery rates.

Jacobsen: What are the difficulties in estimation of mean national intelligence?

Williams: We approach the study of national intelligence (the comparison of mean IQs by nation) by gathering as many datasets as possible for the nation in question, then converting them to a single standard. The conversion is parallel in principle to what we would do in a national economic comparison. In the latter case, we would convert all currencies to a single reference, such as the dollar or Euro. The standard we use for intelligence is white British. This standard is sometimes called the Greenwich IQ Standard. The details of conversion are

discussed in Richard Lynn & David Becker (2019). *The Intelligence of Nations*. Ulster Institute for Social Research, London GB ISBN 9780993000157.

For the most part, the difficulties are simply that it takes a large amount of work to deal with the full set of nations for which we have IQ data. There are lots of studies available for developed nations and most emerging nations, but some poorly developed nations have limited data available. When *The Bell Curve* was written, there were only a few reports of intelligence for sub-Saharan Africa. But since 1994, we have had data pouring in from around the world. Today we have so much data for many nations that we can map intelligence within the nation by states or provinces. These data have resulted in within-nation studies that have shown patterns that seem to largely reflect migration and economic factors. A rather large number of nations exhibit a higher mean IQ in the northern regions and a decrease at lower latitudes. The opposite is seen in Britain, where the brightest region is in the south and the dullest in the north.

Researchers have explained this as the result of the decline in the coal mining industry and its impact on migration. In India, Intelligence is higher in the South and in states with a coastline (indicating economic factors relating to trade). When Richard Lynn first reported the intelligence gradient for Italy (higher in the North) he explained it by noting that mean local intelligence reflects the fraction of the population that immigrated from the Near East and North Africa. In that study regional IQs predict income at $r = 0.937$. This resulted in papers objecting to his findings and that resulted in an exchange of published papers. It appears that Lynn was (as I would have guessed) right. [The title of the initial paper is a good summary of what was found. In Italy, north–south differences in IQ predict differences in income, education, infant mortality, stature, and literacy; Richard Lynn; *Intelligence* 38 (2010) 93–100.]

Jacobsen: What is the validity of the measurements done globally now? Some areas must be more reliable than others because of the finances and expertise to do it properly.

Williams: I haven't seen any reports of reliability for the IQ scores used in the national level studies. When *IQ and the Wealth of Nations* appeared, two things were triggered. The first was that researchers began to try different curve fits and concluded that a log scale works best and that nations with IQs below 90 were either in poverty or had valuable natural resources (usually oil). Some researchers attacked Lynn as usual. They claimed that his numbers were wrong; that they were based on too few data; that the nations where he used neighboring scores to estimate means could not be true; and that his entire study was politically incorrect and could not be trusted. But, the data, as mentioned above, kept coming in from sources around the world. Now we can say that Lynn was right on every point and that even the estimated mean scores were very close to measured scores that are now available. The validity of this work is shown in the many things that national mean IQ predicts: At the national level, mean national IQ correlates positively with per capita GDP, economic growth, economic freedom, rule of law, democratization, adult literacy, savings, national test scores on science and math, enrollment in higher education, life expectancy, and negatively with HIV infection, employment, violent crime, poverty, % agricultural economy, corruption, fertility rate, polygyny, and religiosity. These are the kinds of things used to establish the predictive validity of IQ tests. Naturally, there are confounds, such as the presence of natural resources in some low IQ nations, but the statistical predictions remain powerful.

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Jacobsen: Who else, other than Gardner, are individuals qualifying as individuals who are “in a category that is highly regarded by the general public and not by many serious intelligence researchers”?

Williams: The first who comes to mind is Robert Sternberg. His triarchic theory was shredded by Linda Gottfredson and is not something other researchers have accepted. He has been criticized for grossly over citing his own work. In general, the public has embraced such things as emotional intelligence, grit, mindset, and other tabloid worthy inventions. In his book, *In the Know: 35 Myths about Human Intelligence*, Russell Warne goes through his list of things that the public loves to love but which are not science. I think the single most disliked person (from the perspective of researchers) is the late Stephen Jay Gould. His book, *The Mismeasure of Man* was an intentional distortion of facts and is loved by the public because politically left people wanted to hear his false message. He attacked *g* and other factors, such as brain size, using outrageous comparisons to what researchers were doing in the distant past. It was almost as extreme as claiming that chemistry is worthless because alchemists were unsuccessful.

Jacobsen: Who are the most serious researchers and commentators on genius, on IQ, and on the *g* factor? I take those as three related, but separate, questions in one.

Williams: Genius – Jensen wrote a good piece on genius in the last chapter of *Intellectual Talent: Psychometric and Social Issues* by Camilla Persson Benbow & David Lubinski; The Johns Hopkins University Press (January 22, 1997). Dean Keith Simonton has written numerous articles on genius. His work impresses me as biased and inaccurate. Eysenck wrote about genius and the personalities of genius. Some of this can be found in H. Nyborg, Editor, *The Scientific Study of Human Nature: a Tribute to Hans J. Eysenck at Eighty*, Pergamon, Oxford (1997). Eysenck believed that true genius required elevated neuroticism and psychoticism. Overall, the material we have about genius is based on observations of various eminent historical figures. Statistical studies are not seen because there is no satisfactory way to find and test a statistically meaningful group of such rare people.

IQ – The most prolific and brilliant commentator on intelligence was Arthur Jensen. His lifetime output of 7 books and over 400 papers is huge and remains influential. I think that Richard Haier is probably the most important living commentator. With only 1 book and one DVD lecture set, he is nonetheless a major factor in our understanding of IQ from the neurological perspective. While Charles Murray is accurately described as an author, he is one of the most knowledgeable intelligence scholars alive. Like Jensen, he has been willing to take the heat from the Left and calmly discuss the realities of IQ. Ian Deary has been a high profile researcher and department head. Two young researchers have shown themselves to be bright, competent, and broadly focused. Michael Woodley has authored or co-authored half a dozen books, covering a wide range of topics. His work has been at the forefront of new understandings of such topics as the Flynn Effect and the decline of intelligence. Like Woodley, Stuart Ritchie has rapidly become a serious contributor to the understanding of intelligence. I have read his books and find that his writing style is particularly appealing. His most recent book, *Science Fictions*, is a detailed account of abuses of the scientific process of doing research and reporting it.

Psychometric *g* – Jensen almost single-handedly convinced researchers worldwide that intelligence is about *g* and that their work should be focused on *g*. His book *The g factor: The Science of Mental Ability* is the most cited in all of intelligence research. Linda Gottfredson has been a prolific writer of *g* related papers and articles. She has devoted much of her energy to explaining *g* and its consequences to non-experts and has made her entire output available to the public on her website. Today, intelligence research is *g* research, so it is fair to say that we have lots of people writing about *g* and studying how it relates to the neurology of the brain.

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Richard May Interview (Parts 6 & 7)

Richard May (& Scott Douglas Jacobsen)

Abstract

Richard May (“May-Tzu”/“MayTzu”/“Mayzi”) is a Member of the Mega Society based on a qualifying score on the Mega Test (before 1995) prior to the compromise of the Mega Test and Co-Editor of *Noesis: The Journal of the Mega Society*. In self-description, May states: “Not even forgotten in the cosmic microwave background (CMB), I’m an Amish yuppie, born near the rarified regions of Laputa, then and often, above suburban Boston. I’ve done occasional consulting and frequent Sisyphean shlepping. Kafka and Munch have been my therapists and allies. Occasionally I’ve strived to descend from the mists to attain the mythic orientation known as having one’s feet upon the Earth. An ailurophile and a cerebrotonic ectomorph, I write for beings which do not, and never will, exist—writings for no one. I’ve been awarded an M.A. degree, mirabile dictu, in the humanities/philosophy, and U.S. patent for a board game of possible interest to extraterrestrials. I’m a member of the Mega Society, the Omega Society and formerly of Mensa. I’m the founder of the Exa Society, the transfinite Aleph-3 Society and of the renowned Laputans Manqué. I’m a biographee in Who’s Who in the Brane World. My interests include the realization of the idea of humans as incomplete beings with the capacity to complete their own evolution by effecting a change in their being and consciousness. In a moment of presence to myself in inner silence, when I see Richard May’s non-being, ‘I’ am. You can meet me if you go to an empty room.” Some other resources include [Stains Upon the Silence: something for no one](#), [McGinnis Genealogy of Crown Point, New York: Hiram Porter McGinnis](#), [Swines List](#), [Solipsist Soliloquies](#), [Board Game](#), [Lulu blog](#), [Memoir of a Non-Irish Non-Jew](#), and [May-Tzu’s posterous](#). He discusses: “Picking One’s Own Pocket”; “Did Gurdjieff understand his own teaching?”; “What is the work?”; “Truth”; the meaning of truth in “Truth”; “Good and Evil”; so few being awake; “Is this what the work has become?”; the work, and play; identification with the work; identification with the work considered sleeping rather than waking; and Gurdjieff and Wittgenstein.

Scott Douglas Jacobsen: “Picking One’s Own Pocket” describes a context in which the truth, to an individual, gets posed as forever-incomplete, while the truth, itself, can be complete. How is this playing off the poly-agnosticism regarding different levels of knowledge in other braindroppings in *Something for No One*?

Richard May: To me picking one’s own pocket meant simply that one cannot abrogate one’s own authority in choosing what or whom to believe, if anyone. It’s your judgement.

Jacobsen: “Did Gurdjieff understand his own teaching?” posits, based on Blavatsky’s and Gurdjieff’s overlap in writings, Gurdjieff taking from other sources without full knowledge of the implications of the knowledge or parts of the systems lifted from other sources. Who was *Noesis* #209, March 2022

Gurdjieff? Why was he important? Is he well-regarded in general or more as a fringe loon, or an excommunicated enlightened figure found, more or less, in obscurity? Same questions on Blavatsky, too, please. (These are not Zen koans.)

May: There are hundreds of books on the topic of who Gurdjieff was. No one knows who Gurdjieff was.

Gurdjieff was important only to his pupils.

He is generally regarded as an obscure fringe loon, as you suggest, except by his pupils, and Blavatsky could only aspire to be regarded as a fringe loon.

Jacobsen: “What is the work?” describes a stick with two ends, but inverts North American Judeo-Christian theological foundations. How does the devil lead to paradise and God to hell?

May: The devil may lead to paradise and God lead to hell? I do not know that there is a devil or a God. This is something Gurdjieff seemed to claim. But Gurdjieff said ‘can lead’ to paradise, not ‘does lead’ with certainty.

Jacobsen: “Truth” describes the where the lies of truth lie. Side questions, what was the importance of Ouspensky? What is the importance of Blavatsky? What was the importance of Gurdjieff? Because... they seem neither well-known nor well-understood.

May: Ouspensky is generally regarded as Gurdjieff’s most important pupil. Otherwise Ouspensky had no importance. Ouspensky wrote coherent English. Blavatsky and Gurdjieff had no importance except to their pupils. Blavatsky and Gurdjieff were neither well-known nor well-understood.

Jacobsen: What is “truth,” in that sense,” as stated in “Truth”? What is truth and falsehood in that sense? What does this state about human nature with defilement of truth as necessary for truth to come forth and be heard properly?

May: Gurdjieff seemed to be saying that humans as they were could not understand truth. Truth could only be understood by most humans if presented as a lie.

Jacobsen: “Good and Evil” explains the nature of good and evil as first requiring a realization of them. How do good and evil only exist for a few?

May: That good and evil only exist for a few was a claim made by Gurdjieff. I don’t know how this is true, or if the claim even has any meaning.

Jacobsen: Why are so few awake? What is “awake” in this sense? Is it akin to enlightenment in some philosophies of Buddhism?

May: Why are so few awake? What is the biological utility in an evolutionary context of awakening? Maybe awakening has no biological utility. I think awake may be equivalent to enlightenment in some Buddhist philosophical schools. But I may be incorrect.

Jacobsen: “Is this what the work has become?” talks about the work. First, what is the work?

May: The work is Gurdjieff’s system for awakening humans from the condition of being what he called sleeping machines or unconscious automata.

Jacobsen: Second, why does it have to be work? Why not play?

May: Referring to Gurdjieff’s system as work rather than play suggests that it may be difficult to awaken. But I did not choose the terminology of work or play. Supposedly the sheep in the folk tale of the magician illustrate the illusions of hypnotic sleep.

Jacobsen: The magician sounds sadistic and cruel. What is the identification with the work?

May: Supposedly the sheep in the folk tale of the magician illustrate the illusions of hypnotic sleep.

Jacobsen: How is this identification with the work considered sleeping rather than waking?

May: Identification in any form is considered to be sleep.

Jacobsen: Is the act of identifying the work akin to the universe seeing its own back, so as to mess with the still waters of the awakened—so to speak? By act of observation, the work is broken. One is no longer awake but asleep with an even deeper illusion.

May: I don’t understand your question regarding “the universe seeing its own back.”

Gurdjieff may have taught that one could sometimes awaken if only for a moment.

Ludwig Wittgenstein also noted this changing quality of human attention. He wrote that we may occasionally awaken for a moment sufficiently to realize that we have been asleep and dreaming.

[End Part 6 of interview]

Scott Douglas Jacobsen: “Identification: to Wake Perchance to Dream” is a woeful story, sort of. What is “satori”?

Richard May: I speak with no official authority about the Gurdjieff work, you should know. None...

I’m not sure that I’ve ever experienced satori. Maybe ... But if I have, then I cannot describe it in any case.

But off the top of my head it is an altered state of consciousness (the term satori comes from Zen Buddhism, of course) in which everything is directly seen to be just the way it is in the present moment — When running by the Charles River in Boston once or twice after long 40-minute runs everything looked like it was just the way it should be! The chattering mind had stopped. I just saw ... it was somewhat ineffable ... “Suchness,” tathata in Sanskrit. The Buddha is called tathagata, “one who has thus gone.”

People in the online chat groups would kvetch endlessly that they were “identified.” In any spiritual practice the goal is the practice, period.

Jacobsen: What exactly is meant by an “attachment” in this non-philosophy philosophy?

May: Oh, I was talking about online chats in the Gurdjieff work. After 10 or 15 years of being in “the work,” intelligent people did not have a clue as to the meaning of “self-remembering,” a very important fundamental concept of G.I. Gurdjieff’s teaching. Gurdjieff had an injunction that recognized that everyone was going to die, so people must be helped along the way, “The Fifth Being Obligation.” But after 10 or 15 years “in the work” intelligent chat participants often did not have a clue what self-remembering meant!

Gurdjieff’s pupil, J.G. Bennet was recognized as brilliant and he knew both Gurdjieff and Ouspensky, his foremost pupil. He travelled to Gurdjieff’s home and even met Gurdjieff’s father. Bennet read All and Everything, Beelzebub’s Tales to his Grandson 11 times and did not understand it! Where does that leave a person lacking Bennett’s advantages?

In addition after many years the pupils in my chat group were told that the teacher’s teacher had said to his pupils “in the work” that we have a “life time of errors in Beelzebub’s Tales to correct.” How could one understand this writing, All and Everything, the Gurdjieffian Bible, without knowing what the innumerable errors are? This tome was translated and written by committee, not by one person, not directly by Gurdjieff, himself. Belatedly you are told that it is riddled with errors. But Gurdjieff himself had what he called the Fifth Being Obligation. Everyone is going to perish and we don’t know when, so there is an obligation to not waste people’s time.

I was satirically contrasting attachments in Buddhism with identification in the Gurdjieff work. There is a saying in Buddhism that “Original realization is marvelous practice.” The meaning is

that the practice is the goal. There is no Buddha, no path, no enlightenment. Just meditate. Follow the path.

Jacobsen: The distinction between a small “i” and a big “I” is implicit in the test with the smaller “i” in the identification and identity. Is this distinction purposeful, or am I seeing a ‘there’ that’s not there?

May: Test? Did you mean text?

We are all always seeing ‘a there that’s not there’! Was that a wave or a particle that just walked by? Often small i refers to the individual fictional ego-identity and big I to the ground of being, itself, the individual wave in the ocean and the ocean, itself.

Jacobsen: Why does intellectual analysis interrupt the potential attainment of satori or enlightenment?

May: Intellectual analysis is fine during cognition, but not so much during a meditation practice. (Often people have random thoughts, but do not actually think in any case.) Having thoughts is fine, just let them pass. Patanjali defines Yoga as the “Cessation of the modifications of the mind-stuff.” No or less internal mind-chatter is Yoga.

Jacobsen: What is meant by “But I Hunger and Thirst...for the taste of Vagueness”?

May: Gurdjieff wrote of individuals who “hunger and thirst after truth.” In the Gurdjieff chats there was a plethora of vague talk. Vague talk is not truth. I was mocking what generally occurred in the online chats.

And there seemed to be no evidence-based research on the practices of attempted self-remembering (i.e., being present to oneself in the body, emotions and intellectual mind simultaneously) or on “sitting,” one of the Gurdjieffian meditation practices. But the work was claimed to be scientific.

Jacobsen: There is a circularity, sort of, to the path from analysis to not really analyzing to more analysis. Is this reflective of our constant intellectual meanderings away – and away and away, again – from satori experiences?

May: Yes, more or less. I was satirizing the attempted use of analysis to understand why there was endless analyzing. — Just watch your mindstream of thoughts, your bodily sensations and emotions. The practice is the goal. There is no Buddha, no Dharma (law), no Sangha (community)!

Gautama Buddha was not a Buddhist; Abraham’s mother was not Jewish; Hence, Abraham wasn’t a born Jew; Jesus wasn’t a Christian; Gurdjieff was not a Gurdjieffian.

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Jacobsen: The final quote from “Dogen Practice” states, “Original realization is marvelous practice.” Why is there no definitive distinction between realization of awakening and its cultivation?

May: To have such a distinction would get in the way of realization, create an expectation, make awakening less likely!

Jacobsen: “Roast Pigeon” continues, a bit, with some of the same ideas from “Identification: to Wake Perchance to Dream” “taste” and “vagueness.” What is the association between the vague and the gustatory in these two publications?

May: Gurdjieff said something to the effect that one cannot expect a roast pigeon to fly into one’s mouth in the Gurdjieff work. By this he meant that one must make an effort, constant effort. Work takes effort. It’s not a sinecure.

Jacobsen: Why must the vagueness be stolen?

May: Nothing can be given; Nothing will be given, by the teacher or by Gurdjieff. In Yoga, the Yoga is the effort, not some position. One must steal the truth.

Jacobsen: There’s the circularity in this one, too, with “being in question of being in question” or “pondering pondering.” Are most of our thoughts circuitous-ish?

May: I was again just mocking the endless vague talk in chat groups about “pondering and being in question.” Must we ponder pondering? Can we question being in question? And ponder being in question? ... staining the fragments of silence ... “You are the space between your thoughts,” Jean Klein.

Jacobsen: At one point, the amorphous is juxtaposed with the precise in the phrase “certain vague talk.” A certainty in the vagueness, this seems paradoxical, so... traditionally May-Tzu – looking at the other side of the partition to apprehend the whole as with the silence between sounds, background & foreground. The fragments of silence are some of the “Stains Upon The Silence.” Glenn Gould talked about the silence between notes or the gaps in notes – and higher harmonics – as rites of passage in a way. He, so it seems with you, see ‘both sides’ if this can be conceptualized, as such. What do you see as “stains” in the silence?

May: By “certain vague talk” I mean a particular, characteristic vague talk in the online chats, not anything to do with probabilistic certainty.

Jacobsen: Also, what is the pigeon, and why roast it?

May: According to a Google search: “Roasted pigeons have been a well-known delicacy in France since the 16th century.” I didn’t know this, but it makes sense as a context for Gurdjieff’s saying. Truth and moksha (liberation) are not going to fly into your mouth effortlessly.

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After decades “in the work” there are individuals who cannot cease smoking or lose weight. Yet unification of one’s being is supposed to be a fruit of the Gurdjieff work. Gurdjieff himself was an obese cigarette smoker with chronic bronchitis for thirty years, according to sources.

Gurdjieff’s most excellent pupil, P.D. Ouspensky, at the end of his life was an alcoholic, or nearly so, and completely disillusioned with the system of the Gurdjieff work. He said that nothing can be achieved without the “higher emotional center” and we don’t know how to use the higher emotional center. The title of Ouspensky’s book *In Search of the Miraculous* was originally intended by Ouspensky to be *Fragments of an Unknown Teaching*. Fragments ... Unknown ... The publisher, however, chose the former title. Perhaps that tells us something. My teacher didn’t mention the fate of poor Ouspensky, for some peculiar reason.

Now some people remain “in the work” for more than fifty (50) years, which Gurdjieff would never have allowed. Some individuals today make a career out of “being in the work,” exactly as Ouspensky made a career out of the work, finally lecturing in London.

In *The Fourth Way* Ouspensky states that there are “no institutions associated with the Fourth Way,” Gurdjieff’s path. What then is the Gurdjieff Foundation, if not an institution? Ironically Gurdjieff’s own system predicts that this would happen. In the relative world everything turns into its opposite, a loose paraphrase of the relevant ideas.

By contrast Alfred Richard Orage left Gurdjieff and the work. After Orage died, Gurdjieff called Orage his friend, an epithet he rarely used, and implied that Orage had “created a ‘soul’” by saying that he hoped he went straight to ‘paradise’.

As someone said to me in a chat group, “The work doesn’t work, but I don’t know anything better.” He also said, “Human beings f*ck up everything they do and Gurdjieff did too.” I asked him what he meant by that and he replied, “You’ll have to figure that out yourself.” I already had. Gurdjieff said “Believe nothing, not even yourself.” — *The Harmonious Circle* by James Webb is an excellent book on the Gurdjieff work. Webb suicided.

Yet I think that there is much of value to be extracted from the traditional wisdom and psychological teachings of G.I. Gurdjieff, e.g., that humans are unconscious automata most of the time, rather than conscious unified beings with free will. We are incubators or wombs for the creation of a ‘soul’, which can survive bodily death. But the precious diamonds are often found lying deep in dung.

And “Most people can’t hear gray.” — May-Tzu

“To know means to know all. Not to know all means not to know. In order to know all, it is only necessary to know a little. But, in order to know this little, it is first necessary to know pretty much.” — G.I. Gurdjieff

A Metaphysical Map of Reality

(Fitting Fifteen Primary Academic Disciplines Around the Feedback Loop by Which We Stay in Touch with Reality, Plus Subordinate Factors Organized Around the Same Loop)

Ronald K. Hoeflin

(Written and completed in 2021)

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Mapping Academic Disciplines to Reality Metaphysically

Part A. Reality: The Domains of the Major Academic Disciplines

“Reality” we can take to refer to all the domains of knowledge that are investigated by the principal academic disciplines. There is no official list of such domains except for their generally accepted division into these three groups: natural sciences, social sciences, and humanities. Under each of these divisions I have listed five principal subdivisions as follows:

<u>Natural Sciences</u>	<u>Social Sciences</u>	<u>Humanities</u>
Physics	Psychology	Language
Chemistry	Political Science	Literature
Biology	Economics	Visual Arts
Mathematics	History	Music
Medicine	Law	Philosophy

Most other academic disciplines can be regarded as subsets or combinations of these, the following serving as illustrative examples:

Psychiatry can be regarded as a combination of Psychology and Medicine.

Theater arts can be regarded as a combination of Literature, Art, and Music, music because some plays have famous overtures such as Mendelssohn’s “Overture to a Midsummer Night’s Dream,” and since an entire genre of theatrical works are known as “musicals.”

Religion combines History, Literature, and Psychology. The mythological aspects, if taken figuratively, can be regarded as fiction and hence literature, but if taken literally can be regarded

as delusional, delusions being investigated by Psychiatry, hence as indicated above by Psychology and Medicine.

Anthropology can be regarded as a combination of Biology, Psychology, plus various other disciplines.

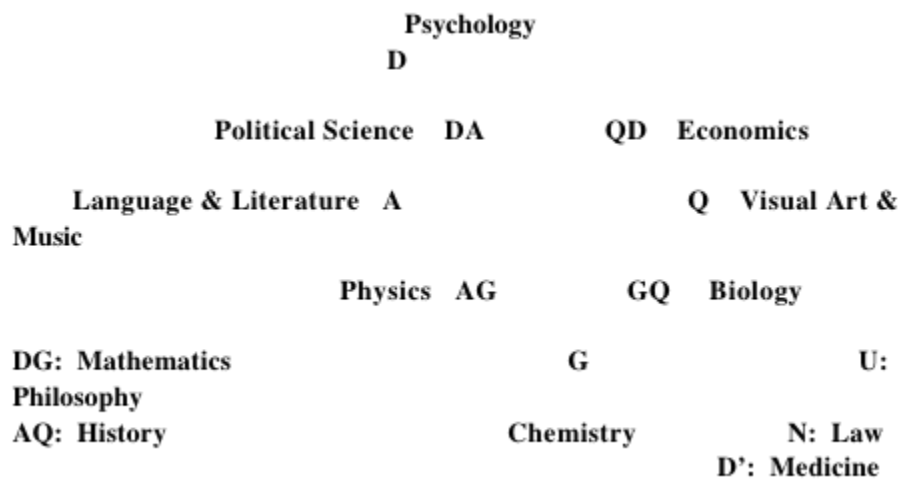
Education can be regarded as a combination of Psychology plus whatever other disciplines the educator wishes to teach.

Sports can be regarded as a combination of Biology, Psychology, Medicine, plus perhaps Law, to the extent that the rules of a sport are law-like.

Part B. The Map: Mapping the Disciplines to a Feedback Loop

The basic academic disciplines can be regarded as dealing with all the various aspects of reality. We constantly interact with reality through feedback loops, and the academic disciplines can be mapped onto the various portions of such loops, giving us essentially a metaphysical map of reality. A feedback loop can be divided into four basic factors or nodes: D for the drives that motivate an action; A for the anticipation of how actions may affect reality; G for the goal objects or chunks of reality that may be affected by actions; and Q for the quiescent perceptions or feelings by which reality informs us of how it has been affected. There are six binary connections of these four factors: DA, AG, GQ, and QD around the periphery of the loop, plus DG and AQ across its center. These ten factors are held together by an eleventh, symbolized by U for unity of a feedback loop, as in the successful completion of a task, while failure to complete a task can be classed in N for the negation of a completed loop. Finally, a thirteenth essential categorial niche is a subordinate (or superordinate) drive, D', as when a loop is repeated (as in taking several gulps of water) or another is begun (as in eating rather than drinking).

The academic disciplines can then be mapped around a feedback loop as follows:



This loop can be regarded as a square inscribed in a circle, the sides of the square and its two interior links representing the binary connections. I am reminded of what the famous Greek mathematician Archimedes is reported to have said to the Roman soldier who was about to slay him at the end of a 2-year siege of Syracuse by Rome in 212 B.C.: "Do not disturb my circles!" For details see the Wikipedia article titled "Noli turbare circulos meos," a Latin version adopted in the Middle Ages although Archimedes spoke in Greek.

Part C. Metaphysics: Justifying the Classifications

D: Psychology can be classed in D because it focuses on understanding the mind of an agent or drive-bearer, D.

DA: PoliSci (political science) can be classed in DA since it focuses on how agents or drive-bearers, D, find means (as of a political nature) anticipated, A, to resolve their drives.

A: Language and Literature can be classed in A since they both employ symbols (words, etc.) anticipated, A, to mean specific things by others who know the language in question.

AG: Physics can be classed in AG since it is the science of motion, as in the notion of a lever, where force applied to one end is anticipated, A, to lift a goal object, G, at the other end.

G: Chemistry can be classed in G since its emphasis is on material goal objects, G, notably atoms and molecules.

GQ: Biology can be classed in GQ since a living organism is a goal object, G, that must attain various quiescent satisfactions, Q, such as food, drink, and sexual reproduction.

Q: Art and Music can be classed in Q since their focus is on quiescent manifestations, Q, notably of sight or sound.

QD: Economics can be classed in QD since it concerns the values, meaning quiescent satisfactions, Q, that our drives, D, lead us to seek.

DG: Mathematics can be classed in DG since it focuses on the shapes or numbers of goal objects, G, from the perspective of observing agents or drive-bearers, D.

AQ: History can be classed in AQ since history can be regarded as the attempt to anticipate, A, what quiescent manifestations, Q, occurred at various times in the past, as through historical records.

U: Philosophy can be classed in U (= DAGQD) because it inspects all the other disciplines to assure oneself of their freedom from error or mutual contradiction.

N; Law can be classed in N (= not-DAGQD) because it focuses on rules that prohibit or negate, N, various actions as contrary to the common good or the good of individuals, typically by imposing various punishments for infractions.

D': Medicine can be classed in D' since it focuses on the doctor-patient relationship, where the patient is a subordinate agent or drive-bearer, D', to the doctor, or the doctor is a superordinate agent or drive-bearer, D', to the patient.

The Natural Sciences
(The Lower Portion of the Feedback Loop
that Focuses on G)

Chapter 1: Physics

Chapter 2: Chemistry

Chapter 3: Biology

Chapter 4: Mathematics

Chapter 5: Medicine

Chapter 1

The Metaphysics of Physics

Contents:

1. Newton's Laws of Motion
2. Olbers' Paradox
3. Einstein's Theory of Relativity
4. Heisenberg's Uncertainty Principle
5. Schrodinger Equation
6. Superstrings
7. Matter
8. Energy

1. Newton's Laws of Motion

Isaac Newton (1642-1727) listed three laws of motion in his *Principia* (Vol. I, p. 13, University of California Press ed., 1962). They are as follows (numberings in parentheses added for subsequent analytical purposes):

Axioms, or (1) Laws of Motion

Law I: (2) Every (3) object (4) continue (5) in its (6) state (7) of rest (8) or (5') state

(9) of motion in a right line, (8') unless (10) it is compelled to change that state by forces impressed upon it.

Law II: (11) The change of motion is proportional to the motive force impressed,

and in the direction of the right line in which that force is impressed.

Law III: To every action there is always opposed an equal reaction; or, (12) the

mutual actions of two bodies upon each other (13) are always equal and

directed to contrary parts.

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Suggested classification:

Law I:

A: (4) Continues

AG: (2) Every

G: (3) Object

GQ: (5) In its

Q: (6) State

QD: (8) Or; unless

D: (10) It is compelled to change that state by forces impressed upon it

DG: (7) Of rest

AQ: (9) Of motion in a right line

Law II:

DA: (11) The change of motion is proportional to the motive force
impressed, and in the direction of the right line in which the
force is impressed

Law III:

N: (13) Always equal and directed to contrary parts

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D': (12) The mutual actions of two bodies upon each other

Main heading:

U: (1) Laws of Motion

My justifications for the foregoing classifications:

Law I:

D: (4) Continues can be classed in A since what continues is anticipated, A, to maintain whatever aspects of motion are said to continue.

AG: (2) Every can be classed in AG since this word leads one to anticipate, A, that the objects that are mentioned next always have the properties that are subsequently imputed to them.

G: (3) Object can be classed in G since a physical object such as a cannonball amounts to what we call a goal object, G.

GQ: (5) In its can be classed in GQ since "its" refers to the object as goal object, G, while what it "continues in" is its "state" as quiescent manifesta-tion, Q, namey of rest or of motion.

Q: (6) State can be classed in Q since the state of an object, such as its being at rest or in motion, is an observable quiescent manifestation, Q.

QD: (8) Or; unless can be classed in QD since "or" links the quiescent manifestation, Q, of the stats of being at rest, followed by the drive, D, to mention an alternative steady state, namely uniform motion in a given direction; and "unless" links the first part of Law I, specifying as a quiescent manifestation, Q, that the object remains in its state of rest or motion, to the final part of Law I, specifying as a drive, D, that a force may change the object's steady state of rest or motion so that it accelerates in a straight line or changes direction.

D: (10) It is compelled to change that state by forces impressed upon it can be classed in D since such compulsion and such forces amount to a drive factor, D.

DG: (7) Of rest can be classed in DG since what is at rest is a goal object, G, that an agent or drive-bearer, D, can gaze at without moving the direction of his gaze or seeing the object diminish or increase in apparent size.

AQ: (9) Of motion in a right line can be classed in AQ since steady motion in a straight line would enable one to see the quiescent manifestation, Q, of the steady motion of an object in one direction without anticipating, A, any change in the direction of that motion or in its speed along the straight line.

Law II:

DA: (11) The change of motion is proportional to the motive force impressed, and in the direction of the line in which the force is impressed can be classed in DA since “motive force” amounts to a drive factor, D, while the motion’s being proportional and in the given direction enable one to anticipate, A, where the object will be after a given amount of time.

Law III:

N: (13) Always equal and directed to contrary parts can be classed in N since “contrary parts” implies a negation, N, in the direction and speed of one of the two bodies’ motion in relation to the other body’s direction and speed.

D’: (12) The mutual actions of two bodies upon each other can be classed in D’ since each body serves as a subordinate agent or drive-bearer, D’, in relation to the other, each body having a drive by virtue of its inertia or tendency to move at a uniform speed in a given direction or to remain at rest, and each body being subordinate to the other by virtue of moving in an equal but opposite direction.

Main heading:

U: (1) Laws of motion can be classed in U since these words encompass or unify, U, all the aspects of these laws mentioned under this heading.

2. Olbers' Paradox

This paradox was named for the German astronomer who formulated it, Heinrich Wilhelm Olbers (1758-1840). Wikipedia describes the paradox as follows (numberings given in parentheses added here for subsequent analytical purposes): “(1) Olbers' paradox...(2) the argument (3) that (4) the darkness (5) of (6) the night sky (7) conflicts with (8) THE assumption of (9) an infinite (10) and (11) eternal (12) static (13) universe,” due to the fact that every line of sight would end in the surface of a star, which would make the night sky look as bright as the surface of our sun. Suggested classification:

D: (2) The argument

DA: (3) That

A: (4) The darkness

AG: (5) Of

G: (6) The night sky

GQ: (7) Conflicts with

Q: (8) The assumption of

QD: (10) And

DG: (9) An infinite

AQ: (11) Eternal

U: (1) Olbers' paradox

N: (12) Static

D': (13) Universe

My justifications for these classifications:

D: (2) The argument can be classed in D since an argument involves a drive, D, to put forward a point of view favoring that argument.

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DA: (3) That can be classed in DA since in the expression “the argument that the darkness” the word “that” links the drive words “the argument,” D, and the anticipatory words “the darkness,” A.

A: (4) The darkness can be classed in A since this fact leads one to anticipate, A, that the universe is not uniformly filled with stars to an infinite distance and past time.

AG: (5) Of can be classed in AG since in the expression “the darkness of the night sky” the word “of” links the anticipatory words “the darkness,” A, and the goal-object words “the night sky,” G.

G: (6) The night sky can be classed in G since the night sky is filled with stars as its typical goal objects, G. (Even if there were intervening non-stellar objects such as planets, over an infinite time they would heat up to the brightness of a star.)

GQ: (7) Conflicts with can be classed in GQ since in the expression “the night sky conflicts with the assumption of” the words “conflicts with” link the goal-object words “the night sky,” G, and the quiescent words “the assumption of,” Q.

Q: (8) The assumption can be classed in Q since such an assumption leads to the imagining of the quiescent manifestation, Q, of stars so numerous and distributed so far both in space and time that they would make the sky entirely bright rather than dark.

QD: (10) And can be classed in QD since this word links the quiescent manifestation, Q, of a preceding word or words, followed by the drive, D, to add some subsequent word or words.

DG: (9) An infinite can be classed in DG since what is infinite in space would involve an agent or drive-bearer, D, looking at a stellar goal object, G, no matter how far in space and time it might be.

AQ: (11) Eternal can be classed in AQ since what is eternal is anticipated, A, to have presented its quiescent manifestation, Q, at some time in the past, no matter how far in the past.

U: (1) Olbers’ paradox can be classed in U since these words embrace the unity, U, of this paradox in all the foregoing facets.

N: (12) Static can be classed in N since this word expresses the negation, N, of being in motion.

D’: (13) Universe can be classed in D’ since this universe, described as infinite, eternal, and static, is purely hypothetical and hence might not be real, hence a subordinate agent or drive-bearer, D’, subordinate by virtue of being just one of many other hypothetical universes, and drive-like by virtue of revealing its nature in conformity with the assumptions Olbers has made on its behalf.

3. Einstein's Theory of Relativity

Albert Einstein (1880-1955) devised a special theory of relativity (1905) and expanded it to a general theory of relativity (1915), which are defined in *Merriam-Webster's Collegiate Dictionary*, 11th ed. (2003, 2009), as follows (numberings in brackets added here for subsequent analytical purposes): “[1] relativity...a theory which is based on the two postulates (1) that [2] the speed of light [3] in [4] a vacuum [5] is [6] constant and [7] independent of the source or observer and (2) that [8] the mathematical forms of the laws [9] of physics [10] are invariant in all inertial systems and which leads to the assertion of [11] the equivalence of mass and energy and of [12] change in mass, dimension, and time with increased velocity – called also special relativity, special theory of relativity; [13] an extension of this theory to include gravitation and other acceleration phenomena—called also general relativity, general theory of relativity.”

Suggested classification:

Special Theory of Relativity:

- A: (2) Speed of light
- AG: (3) In
- G: (4) A vacuum
- GQ: (5) Is
- Q: (6) Constant
- QD: (8) The mathematical forms of the laws
- D: (9) Of physics
- DA: (10) Are invariant in all inertial systems
- DG: (11) The equivalence of mass and energy
- AQ: (12) Change in mass, dimension, and time with increased velocity
- U: (1) Relativity
- N: (7) [The velocity of light is] independent of source or observer

General Theory of Relativity:

D': (13) Extension of this theory to gravitation and other acceleration

Phenomena

My justifications of these classifications:

Special Theory of Relativity:

A: (2) The speed of light can be classed in A since this speed is anticipated to be always the same in a vacuum.

AG: (3) In can be classed in AG since in the expression “the speed of light in a vacuum” the word “in” links the anticipatory words “the speed of light,” A, and the goal-object words “a vacuum,” G.

G: (4) A vacuum can be classed in G since a vacuum can be regarded as a goal object, G. (Perhaps nowadays we would substitute the word “along the superstrings” for “in a vacuum,” so that “superstrings would be the actual goal objects that Einstein had no inkling of.)

GQ: (5) Is can be classed in GQ since in the expression “a vacuum is constant” the word “is” links the goal-object words “a vacuum,” G, and the quiescent word “constant,” Q.

Q: (6) Constant can be classed in Q since to be constant can be regarded as an observable quiescent manifestation, Q.

QD: (8) The mathematical forms of the laws can be classed in QD since “forms” can be regarded as quiescent manifestations, Q, while “laws” can be regarded as akin to drives, since a law can be regarded as what the universe has a drive, D, for its components to conform to.

D: (9) Of physics can be classed in D since physics is what physicists investigate, and physicists are agents or drive-bearers with a drive, D, to investigate physical phenomena.

DA: (10) Are invariant in all inertia systems can be classed in DA since what is “invariant” is anticipated, A, not to change, while an “inertial system” can be regarded as having a drive, D, to maintain its inertial status, in particular a steady velocity.

DG: (11) The equivalence of mass and energy can be classed in DG since “energy” is what energizes drives, D, while “mass” is a primary characteristic of physical goal objects, G.

AQ: (12) Change in mass, dimension, and time with increased velocity can be classed in AQ since these words lead one to anticipate, A, the quiescent manifestation, Q, of these changes in mass, dimension, and time. (Mass increases, length in the direction of movement decreases, and time “dilates” with increasing speed—dilates so that at the speed of light time stands still. In one of his books Isaac Asimov says that if one could maintain an acceleration equivalent to one g (as if one were standing on the surface of the Earth) halfway to the Andromeda Galaxy and a deceleration of one g on the second half of the journey, one could reach the Andromeda Galaxy in just 28 years of subjective time for the passengers, and upon returning to Earth after 56 years of subjective time, 4 million years would have elapsed on Earth. Atomic clocks were put on board capsules that astronauts used to circle the Earth at 18,000 miles per hour and upon their return to Earth after several circumnavigations the clocks showed that the astronauts were a few ten-thousandths of a second younger than they would have been if they had remained on Earth. Also, it is known that cosmic rays would disintegrate before reaching the surface of the Earth, except for the Einsteinian time dilation effect that enables them to reach the Earth’s surface.)

U: (1) Relativity can be classed in U since it encompasses and unifies, U, all of the foregoing aspects of motion.

N: (7) [The velocity of light is] independent of source and observer can be classed in N since this independence amounts to a negation, N, of its dependence.

(Presumably photons “hitches a ride” on the ambient superstrings that are ubiquitous in a vacuum, which keep it at a steady 186,000 miler (or 299,000 kilometers) per second in a vacuum. Einstein admitted he could never fully understand photons despite a lifetime of studying them.)

General Theory of Relativity:

D’: (13) Extension of this theory to gravitation and other acceleration phenomena can be classed in D’ since these phenomena amount to additional drive phenomena subordinate, at least intellectually, to the more understandable non-acceleration phenomena. (The physicist Max Planck advised Einstein not to try to figure out these more exotic and difficult phenomena because they were too difficult and it would be hard to convince other physicists that he was right even if he succeeded in devising this more complex theory. But the new theory did successfully explain the changes in the planet Mercury’s perihelion, i.e., its closest point to the Sun, as it circled the Sun, which no previous theory had managed to explain. An article about the general theory of relativity in *Scientific America* about 50 years ago compared about 17 different general theories of relativity that various scientists had devised by that time, including one by Kurt Gödel, the famous logician, and found that only two of them were still viable, logically and empirically, one of which was Einstein’s.)

4. Heisenberg's Uncertainty Principle

Werner Heisenberg (1901-1976) proposed his uncertainty principle in a paper published in 1927. I found the summary of this principle given by Wikipedia more amenable to a clear analysis than the definition of “uncertainty principle” in *Merriam-Webster's Collegiate Dictionary*, 11th edition. The Wikipedia summary in its opening paragraph reads as follows (numberings added for subsequent analytical purposes): “In quantum mechanics, (1) the uncertainty principle (also known as Heisenberg's uncertainty principle) is (2) any of a variety of mathematical inequalities (3) asserting (4) a fundamental (5) limit (6) to (7) the accuracy with which the values for certain pairs of physical quantities of a particle, such as (8) position, x , (9) and (10) momentum, p , (11) can be (12) predicted (13) from initial conditions.”

Suggested classification:

- A: (3) Asserting
- AG: (4) A fundamental
- G: (5) Limit
- GQ: (6) To
- Q: (7) The accuracy with which the values for certain pairs of quantities
of a particle, such as
- QD: (9) And
- DG: (8) Position, x
- AQ: (10) momentum, p
- D: (11) Can be
- DA” (12) Predicted
- U: (1) Uncertainty principle
- N: (2) Any of a variety of mathematical inequalities
- D’ (13) From initial conditions

My justifications for the foregoing classifications are as follows:

A: (3) Asserting can be classed in A since such an assertion leads one to anticipate, A, that what is asserted can be anticipated, A, to be true.

AG: (4) A fundamental can be classed in AG since in the expression “asserting a fundamental limit” the words “a fundamental” link the anticipatory word “asserting,” A, and the goal-object word “limit,” G.

G: (5) Limit can be classed in G since this limit can be regarded as a goal object, G, the limit involving Planck’s constant, a fundamental constant in quantum mechanics.

GQ: (6) To can be classed in GQ since in the expression “limit to the accuracy with which” the word “to” links the goal-object expression “limit,” G, and the quiescent expression “accuracy with which,” Q.

Q: (7) The accuracy with which the values for certain pairs of quantities of a particle, such as can be classed in Q since accuracy is an observable quiescent manifestation, Q.

QD: (9) And can be classed in QD since in the expression “position, x, and momentum, p” the word “and” links the quiescent manifestation, Q, of the words “position, x,” and the drive, D, to add the words “momentum, p,”

DG: (8) The position, x can be classed in DG since in pinpointing the position of a particle, an agent or drive-bearer, D, observes the particle as goal object, G, in relation to other surrounding particles.

AQ: (10) Momentum, p can be classed in AQ since the momentum of, say, a particle as it heads toward a target enables one to anticipate, A, the force of the impact on the target as a quiescent manifestation, Q.

D: (11) Can be can be classed in D since these words can be elaborated to read “can by someone be,” where the someone is an agent or drive-bearer, D.

DA: (12) Predicted can be classed in DA since the one who makes such a prediction would be an agent or drive-bearer, D, while what is predicted would be an anticipation, A, of what would happen at a later point in time.

U: (1) Uncertainty principle can be classed in U since these words encompass or unify, U, all the foregoing aspects of this concept.

N: (2) Any of a variety of mathematical inequalities can be classed in N since an inequality is the negation, N, of an equality.

D’: (13) From initial conditions can be classed in D’ since these initial conditions amount to a subordinate agent or drive-bearer, D’, subordinate by virtue of being just one set of initial conditions versus an infinite variety of other initial conditions, and drive because they govern the relative uncertainty of the position momentum to be jointly measured.

5. Schrödinger's Equation

Erwin Schhrödinger (1887-1961) was an Austrian physicist whose famous equation is defined in *Merriam-Webster's Collegiate Dictionary*, 11th edition, as follows (numberings added for subsequent analytical purposes; the date in parentheses refers to the year when this phrase is said to have entered the English language): “(1) Schhrödinger equation...*n*...(1936): “(2) an equation (3) that (4) describes (5) the wave (6) nature (7) of (8) elementary particles (9) and (10) is fundamental (11) to the description of the properties (12) of all (13) matter.”

Suggested classification:

D: (2) An equation
DA: (3) That
A: (4) Describes
AG: (5) The wave
G: (6) Nature
GQ: (7) Of
Q: (8) Elementary particles
QD: (9) And
DG: (10) Is fundamental
AQ: (11) To the description of the properties
U: (1) Schhrödinger equation
N: (12) Of all
D': (13) Matter

My justification of these classifications is as follows:

D: (2) An equation can be classed in D since it is said to “describe” the wave nature of fundamental particles, which puts it in the role of an agent or drive-bearer, D.

DA: (3) That can be classed in DA since in the expression “an equation that describes” the word “that” links the drive words “an equation,” D, and the anticipatory word “describes,” A.

A: (4) Describes can be classed in A since a description enables one to anticipate, A, the appearance of whatever is described.

AG: (5) The wave can be classed in AG since in the expression “describes the wave nature” the word “wave” links the anticipatory word “describes,” A, and the goal-object word “nature,” G.

G: (6) Nature can be classed in G since to have a wave “nature” is to be a wave-like goal object, G.

GQ: (7) Of can be classed in GQ since in the expression “nature of elementary particles” the word “of” links the goal-object word “nature,” G, and the quiescent words “elementary particles,” Q.

Q: (8) Elementary particles can be classed in Q since they manifest themselves as elementary by virtue of their observable quiescent properties, Q.

QD: (9) And can be classed in QD since this word links the quiescent manifestation, Q, of preceding words, followed by the drive, D, to add subsequent words.

DG: (10) Is fundamental can be classed in DG since to say something is “fundamental” is to liken it to a foundation, as in the foundation of a house or other building, which is a goal object, G, while “is” expresses the drive, D, to refer people to what one deems to be basic or fundamental.

AQ: (11) To the description of the properties can be classed in AQ since we earlier classed the word “describes” as anticipatory, A, while the “properties” said to be described by the equation amount to quiescent manifestations, Q.

U: (1) Schrodinger equation can be classed in D since this phrase embodies or unifies, U, all the foregoing components of the definition of this phrase.

N: (12) Of all can be classed in N since these words negate, N, any omissions.

D': (13) Nature can be classed in D' since matter can be regarded as the various subordinate agents or drive-bearers, D', that the various elementary particles amount to, “subordinate” because they are the smallest pieces of matter we know of, and “drive-bearers” because the elementary particles exert drive-like force when they interact with other such particles.

6. Superstrings

In *Merriam-Webster's Collegiate Dictionary*, 11th edition, copyrighted in 2003 and again in 2009, we find the following definition (numberings added for subsequent analysis): “(1) superstring...(1982): (2) a hypothetical (3) string (4) observing (5) the rules (6) of (7) supersymmetry (8) whose (9) vibrations (10) manifest (11) themselves (12) as particles existing in ten dimensions (13) of which only four are evident.” In 1995 Edward Witten proposed eleven dimensions (ten spatial and one temporal) in his so-called M-theory as a possible future integration of the five known superstring theories, each with ten dimensions (nine spatial and one temporal), but as of the year 2021 no completely satisfactory M-theory, commonly known as a “theory of everything,” has been proposed. According to the Wikipedia article on Witten, “In 1990, he became the first physicist to be awarded a Fields Medal by the International Mathematical Union, awarded for his 1981 proof of the positive energy theorem in general relativity.” Usually four Fields Medals are awarded to top mathematicians each four years, an average of one per year, so it is an award analogous to a Nobel Prize, but in mathematics, for which there is no Nobel Prize. So by 1995 Witten was already a famous physicist and mathematician.

Suggested classification:

DA: (4) Observing

A: (5) The rules

AG: (6) Of

G: (7) Supersymmetry

GQ: (8) Whose

Q: (9) Vibrations

QD: (10) Manifest

D: (11) Themselves

DG: (12) As particles existing in ten dimensions

AQ: (13) Of which only four are evident

U: (1) Superstring

N: (2) A hypothetical

D': (3) String

My justifications of these classifications:

DA: (4) Observing can be classed in DA since what observes the rules of supersymmetry are the superstrings as agents or drive-bearers, D, while the rules they observes enable physicists to anticipate, A, various physical phenomena.

A: (5) The rules can be classed in A since rules in physics enable one to anticipate, A, the various physical phenomena.

AG: (6) Of can be classed in AG since in the expression “The rules of supersymmetry” the word “of” links the anticipatory words “the rules,” A, and the goal-object word “supersymmetry,” G.

G: (7) Supersymmetry can be classed in G since it is said to have vibrations, which puts it in the category of goal objects, G, like superstrings. (The definition of “supersymmetry” is analyzed in the next section this paper.)

GQ: (8) Whose can be classed in GQ since in the expression “supersymmetry whose vibrations” the word “whose” links the goal-object word “supersymmetry,” G, and the quiescent word “vibrations,” Q.

Q: (9) Vibrations can be classed in Q since vibrations amount to observable quiescent manifestations, Q, analogous to the pitches of notes in music manifesting the vibrations of musical instruments in an auditory fashion.

QD: (10) Manifest can be can be classed in QD since a quiescent property such as vibrations, Q, manifest themselves to onlooking agents or drive-bearers, D.

D: (11) Themselves can be classed in D since this word refers to how superstrings reveal themselves to observers as agents or drive-bearers, D, including other superstrings that manifest the effect of other superstrings by the reciprocal alterations in their own vibrations.

DG: (12) As particles existing in ten dimensions can be classed in DG since these particles can be regarded as agents or drive-bearers, D, as they can ush one another around, while the ten (or eleven) dimensions in which they exist can be regarded as goal objects, G, analogous to soup (particles) boiling in a pot (the dimensions).

AQ: (13) Of which only four are evident can be classed in AQ since these four dimensions are the ones we ordinarily observe without the aid of high-powered mathematical model, these ordinary observations or quiescent manifes-tations, Q, taking the form of length, breadth, width, and time in a rectangular coordinate system or latitude, longitude, altitude, and time in a spherical system.

U: (1) Superstrings can be classed in U since this word encompasses or unifies, U, all the other aspects of this definition of superstrings.

N: (2) A hypothetical can be classed in N since this word suggests that the existence of these numerous dimensions is possibly only an unreal projection of the human mind, hence a negation, N, of what is real.

D': (3) String can be classed in D' since a superstring is just one among many other sorts of strings, such as the ball of string that a kitten plays with, and hence can be regarded as a subordinate agent or drive-bearer, D', subordinate due to its existence among numerous other strings, and drive-bearer due to its ability to act on other parts of nature, chiefly other superstrings.

7. Matter

Merriam-Webster's Collegiate Dictionary, 11th edition, defines “matter” in the sense in which physicists use the word as follows (numberings added here for subsequent analytical purposes): “(1) matter...[definition] 2b: (2) material substance (3) that (4) occupies space, (5) has mass, and (6) is composed predominantly (7) of (8) atoms (9) consisting of (10) protons, neutrons and electrons, that (11) constitutes the observable (12) universe, and that (13) is interconvertible with energy.”

Suggested classification:

D: (2) Material substance
DA: (3) That
A: (6) Is composed predominantly
AG: (7) Of
G: (8) Atoms
GQ: (9) Consisting of
Q: (10) protons, neutrons, and electrons
QD: (13) Is interconvertible with energy
DG: (4) Occupies space
AQ: (5) Has mass
U: (1) Matter
N: (12) Constitutes the observable
D': (13) Universe

My justifications for these classifications:

D: (2) Material substance can be classed in D since we can think of a material substance as what underlies or “stands under” (sub- = under, -stance = stands) material things, pushing aside non-material things in order to constitute the core of matter, and this pushing aside amounts to a drive character, D.

DA: (3) That can be classed in DA since in the expression “material substance that has such-and-such roles” the word “that” links the drive factor “material substance,” D, and the anticipatory factor “has such-and-such roles,” A.

A: (6) Is composed predominantly of can be classed in A since these words lead one to anticipate, A, a list of what material substance is composed predominantly of.

AG: (7) Of can be classed in AG since in the expression “is composed predominantly of atoms” the word “of” links the anticipatory words “is composed predominantly,” A, and the goal-object word “atoms,” G.

G: (8) Atoms can be classed in G since atoms amount to goal objects, G, in physics.

GQ: (9) Consisting of can be classed in GQ since in the expression “atoms consisting of protons, neutrons, and electrons” the words “consisting of” link the goal-object word “atoms,” G, and the quiescent words “protons, neutrons, and electrons,” Q.

Q: (10) Protons, neutrons, and electrons can be classed in Q since they exhibit the quiescent manifestations, Q, that distinguish these three subatomic particles from one another and from other items in the universe.

QD: (13) Is interchangeable with energy can be classed in QD since energy is what enables a drive factor, D, to push other items around, while what is interchangeable with energy is matter as characterized by its various quiescent manifestations, Q, such as occupying space, having mass, etc.

DG: (4) Occupies space can be classed in DG since we can think of the space that matter occupies as a goal object, G, while its occupying that space involves its drive, D, to push other items out of that space in order to occupy it.

AQ: (5) Has mass can be classed in AQ since to have mass leads one to anticipate, A, whatever properties as quiescent manifestations, Q, mass can have, such as gravitational attraction towards itself, or momentum when moving at various speeds.

U: (1) Matter can be classed in U since this is the concept that underlies and unifies, U, all the other defining factors mentioned above.

N: (12) Constitutes the observable can be classed in N since what is “observable” negates, N, what is not observable.

D': (13) Universe can be classed in D' since the observable universe is just a portion of the entire universe and hence can be construed to be a subordinate agent or drive-bearer, D', subordinate by virtue of being just a portion of the universe, and drive-like by pushing other objects around in a drive-like manner.

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8. Energy

Merriam-Webster's Collegiate Dictionary, 11th edition, defines “energy” in the sense in which physicists use the word as follows (numberings added here for subsequent analytical purposes), “(1) energy...[definition] 3: (2) a fundamental (3) entity (4) of (5) nature (6) that is transferred between parts of a system (7) in the production of physical change within the system (8) and (9) usu[ally] (10) regarded (11) as (12) the capacity (13) for doing work.”

Suggested classification:

AG: (2) A fundamental

G: (3) Entity

GQ: (4) Of

Q: (5) Nature

DG: (6) That is transferred between parts of a system

AQ: (7) In the production of physical change

QD: (8) And

D: (10) Regarded

DA: (9) Usually

A: (11) As

U: (1) Energy

N: (12) The capacity

D': (13) For doing work

My justifications for the forgoing classifications:

AG: (2) A fundamental can be classed in AG since in the expression “a fundamental entity” the words “a fundamental” lead one to anticipate, A, the goal-object word “entity,” G.

G: (3) Entity can be classed in G since an entity is a thing or goal object, G.

GQ: (4) Of can be classed in GQ since in the expression “entity of nature” the word “of” links the goal-object word “entity,” G,. and the quiescent word “nature,” Q.

Q: (5) Nature can be classed in Q since nature, as in all the starry heavens, is characterized by an observable quiescent manifestation, Q.

DG: (6) That is transferred between parts of a system can be classed in DG since “that is transferred” involves a drive, D, to transfer, while “parts of a system” are goal objects, G.

AQ: (7) In the production of physical change can be classed in AQ since the “production” anticipates, A, the observable quiescent manifestation, Q, of the change.

QD: (8) And can be classed in QD since the quiescent manifestation, Q, of the words that precede it are followed by the drive, D, to add further words.

D: (10) Regarded can be classed in D since to regard something as something involves a drive, D, to do so.

DA: (9) Usually can be classed in DA since in the expression “regarded usually as” the word “usually” links the drive word “regarded,” D, and the anticipatory word “as,” A.

A: (11) As can be classed in A since this word leads one to anticipate, A, an explanation of what energy is usually regarded as, in this case the capacity for doing work.

U: (1) Energy can be classed in U since this is the concept that encompasses or unifies, U, all the other portions of this definition.

N: (12) The capacity can be classed in N since a capacity for doing something can be regarded as a preliminary negation, N, of actually doing it, as a gallon container has the capacity for holding a gallon of water because it is empty.

D': (13) For doing work can be classed in D' since these words can be regarded as referring to a subordinate agent or drive-bearer, D', doing work being the drive aspect, while “for” doing work implying that the work has not yet begun and such a prelude to or preparations for doing work is subordinate to actually doing it.

Chapter 2

The Metaphysics of Chemistry

Contents:

- 1. Birth Control, H. L. Mencken**
- 2. Bodybuilding, Camille Paglia**
- 3. Dissatisfaction, Eric Hoffer**
- 4. Love, Kahlil Gibran**
- 5. Organic Chemistry versus Biochemistry, Mike Adams**
- 6. Preparing for the Worst, Charles Dickens**
- 7. Success through “Mental Chemistry,” Napoleon Hill**
- 8. War, Edward Gibbon**

1. Birth Control, H. L. Mencken

In *Chemistry and Control: Webster's Quotations, Facts, and Phrases* (p. 1) H. L. Mencken is quoted as follows (numbers added for subsequent analytical purposes): "(1) It (2) is now (3) quite lawful (4) for (5) a Catholic woman (6) to avoid (7) pregnancy (8) through (9) mathematics, (10) though (11) she (12) is still forbid-den (13) to resort to physics and chemistry." Suggested classification:

D: (3) Quite lawful
DA: (8) Through
A: (10) Mathematics
AG: (4) For
G: (5) A Catholic woman
GQ: (6) To avoid
Q: (7) Pregnancy
QD: (10) Though
DG: (1) It
AQ: (2) Is now
U: (13) To resort to physics and chemistry
N: (12) Is still forbidden
D': (11) She

My justifications for these classifications are as follows:

D: (3) Quite lawful can be classed in D since these words mean that the law does not block a woman from exerting her drives to avoid pregnancy through mathematics.

DA; (8) Through can be classed in DA since in the expression “lawful through mathematics” the word “through” links the drive words “quite lawful,” D, and the anticipatory word “ mathematics,” A.

A: (9) Mathematics can be classed in A since mathematics is anticipated, A, to enable a woman to avoid pregnancy by calculating which days of the month she will be least fertile.

AG: (4) For can be classed in AG since in the expression “for a Catholic woman’ the word “for” leads one to anticipate, A, the goal-object words “a Catholic woman,” G.

G: (5) A Catholic woman can be classed in G since she can be regarded as a goal object, G, in this statement.

GQ: (6) To avoid can be classed in GQ since in the expression “a Catholic woman to avoid pregnancy” the words “to avoid” link the goal-object words “a Catholic woman,” G and the quiescent word “pregnancy,” Q.

Q: (7) Pregnancy can be classed in Q since a pregnancy is an observable quiescent manifestation, Q.

QD: (10) Though can be classed in QD since this conjunction links the quiescent manifestation, Q, of the preceding clause, and the drive, D, to add a subsequent clause.

DG: (1) It can be classed in DG since this word refers to an abstract goal object, G, from the standpoint of an observing agent or drive-bearer, D.

AQ: (2) Is now can be classed in AQ since this word can be interpreted as meaning “is now anticipated, A, that the quiescent manifestation, Q, of avoiding pregnancy through mathematics is lawful.

U: (13) To resort to physics and chemistry can be classed in U since such a resort, if permissible, would amount to a unified, U, means of successfully avoiding pregnancy.

N: (12) Is still forbidden can be classed in N since these word negate, N, the option of lawfully avoiding pregnancy, in this case through physics and chemistry.

D’: (11) She can be classed in D’ since this word refers to Catholic women as subordinate agents or drive-bearers, D’, subordinate by virtue of being subjected to evidently irrational legal restrictions on methods of avoiding pregnancy.

2. Bodybuilding, Camille Paglia

In *Chemistry and Control: Webster's Quotations, Facts and Phrases* (p. 1) Camille Paglia is quoted as follows (numbers added for subsequent analytical purposes): "(1) Modern bodybuilding (2) is (3) ritual, (4) religion, (5) sport, (6) art, and (7) science, (8) awash in (9) Western chemistry and (10) mathematics,. (11) Defying (12) nature, (13) it surpasses it."

Suggested classification:

D: (1) Modern bodybuilding

DA: (2) Is

A: (7) Science

AG: (8) Awash in

G: (9) Western chemistry

GQ: (5) Sport

Q: (6) Art

QD:L (4) Religion

DG: (10) Mathematics

AQ: (3) Ritual

U: (13) It surpasses it

N: (11) Defying

D': (12) Nature

My justifications for these classifications are as follows:

D: (1) Modern bodybuilding can be classed in D since it amounts to the drive, D, to build up one's body.

DA: (2) Is can be classed in DA since this word leads one to anticipate, A, what sorts of things modern bodybuilding as a drive, D, aims to be.

A: (7) Science can be classed in A since science aims to anticipate, A, what can be expected in a particular field of endeavor or inquiry.

AG: (8) Awash in can be classed in AG since in the expression "science, awash in Western chemistry" the words "awash in" link the anticipatory word "science," A, and the goal-object words "Western chemistry," G.

G: (9) Western chemistry can be classed in G since chemistry is the science of basic goal objects, G, such as atoms and molecules.

GQ: (5) Sport can be classed in GQ since sport involves play with a set of goal objects, G, such as balls or sticks or just the body itself, that one tries to maneuver into positions of quiescent satisfaction, Q, such as points in a game or, in this case, a body built well enough to win contests when compared to other bodies.

Q: (6) Art can be classed in Q since art focuses on creating quiescent satisfactions, Q, as in a musical composition or a painting.

QD: (4) Religion can be classed in QD since a religion generally exerts drives, A, to attain various ultimate quiescent satisfactions, Q, or to avoid quiescent dissatisfactions, as in heaven or hell, respectively, or a handsome, well-muscled body in the case of bodybuilding.

DG: (10) Mathematics can be classed in DG since math concerns the drive, D, to manipulate goal objects, G, with various shapes or numbers of elements in them, as in geometry or number theory, respectively.

AQ: (3) Ritual can be classed in AQ since a ritual tries to anticipate, A, quiescent satisfactions, Q, through repetitious actions.

U: (13) It surpasses it can be classed in U since the act of surpassing nature would involve a set of activities that achieve that unified, U, purposes.

N: (11) Defying can be classed in N since it aims to negate, N, what it defies.

D': (12) Nature can be classed in D' since nature in this case can be regarded as a set of subordinate agents or drive-bearers, D', subordinate because it is being defied by bodybuilding to achieve something that surpasses what nature normally produces.

3. Dissatisfaction, Eric Hoffer

In *Chemistry and Control: Webster's Quotations, Facts and Phrases* (p. 1) Eric Hoffer is quoted as follows (numbers added for subsequent analytical purposes): "(1) The chemistry (2) of dissatisfaction (3) is as the chemistry (4) of some (5) marvelously (6) potent (7) tar (8) In it (9) are (10) the building (11) stones (12) of (13) explosives, stimulants, poisons, opiates, perfumes and stench." Suggested classification:

QD: (6) Potent

D: (7) Tar

DA: (8) In it

A: (9) Are

AG: (10) The building

G: (11) Stones

GQ: (12) Of

Q: (13) Explosives, stimulants, poisons, opiates, perfumes, & stench

DG: (4) Of some

AQ: (5) Marvelously

U: (1) The chemistry

N: (2) Of dissatisfaction

D': (3) Is as the chemistry

My justifications for these classifications are as follows:

QD: (6) Potent can be classed in QD since in the expression “marvelously potent tar” the word “potent” links the (partially) quiescent word “marvelously,” Q, and the drive word “tar,” D.

D: (7) Tar can be classed in D since it is treated an agent or drive-bearer, D, since it is described as “potent,” which suggests something with the power to do something, like an agent or drive-bearer, D

DA: (8) In it can be classed in DA since in the expression “tar, in it are” the words “in it” link the drive word “tar,” D, and the anticipatory word “are,” A.

A: (9) Are can be classed in A since this word leads one to anticipate, A, what “are” in the tar.

AG: (10) The building can be classed in AG since in the expression “are the building stones” the words “the building” link the anticipatory word “are,” A, and the goal-object word “stones,” G.

G: (11) Stones can be classed in G since stones are typical goal objects, G.

GQ: (12) Of can be classed in GQ since in the expression “stones of explosives [etc.]” the word “of” links the goal-object word “stones,” G, and the quiescent words “explosives [et.],” Q.

Q: (13) Explosives, stimulants, poisons, opiates, and stenches can be classed in Q since these words describe observable quiescent manifestations, Q, namely those that can give rise to dissatisfactions.

DG: (4) Of some can be classed in DG since “some” can be regarded as referring to goal objects, G, from the standpoint of observing agents or drive-bearers, D.

AQ: (5) Marvelously can be classed in AQ since this word leads one to anticipate, A, quiescent manifestations, Q, that one would marvel at.

U: (1) The chemistry can be classed in U since chemistry covers the entire gamut of chemical compounding as a unified, U, science.

N: (2) Of dissatisfaction can be classed in N since dissatisfaction is the negation, N, of satisfaction.

D': (3) Is the chemistry can be classed in D' since this “chemistry” refers to a noxious sort of chemistry that reduces people to a state of dissatisfaction, which is characteristic of subordinate agents or drive-bearers, D'.

4. Love, Kahlil Gibran

In *Chemistry and Control: Webster's Quotations, Facts and Phrases* (p.1) Kahlil Gibran is quoted as follows (numbers added for subsequent analytical purposes): "(1) The chemist (2) who can extract from his heart's elements, (3) com-passion, (4) respect, (5) longing, (6) patience, (7) regret, (8) surprise, (9) and forgive-ness (10) and compound them into one (11) can create (12) that atom (13) which is called love." Suggested classification:

D: (1) The chemist

DA: (3) Compassion

A: (4) Respect

AG: (5) Longing

G: (6) Patience

GQ: (7) Regret

Q: (8) Surprise

QD: (9) And forgiveness

DG: (10) And compound them into one

AQ: (2) Who can extract from his heart's elements

U: (13) Which is called love

N: (11) Can create

D': (12) That atom

My justifications for these classifications are as follows:

D: (1) The chemist can be classed in D since a chemist is an agent or drive-bearer, D.

DA: (3) Compassion can be classed in DA since shared compassion for, say, one's family's hunger, would motivate the drive, D, to find what could be anticipated, A, to satisfy that hunger.

A: (4) Respect can be classed in A since one would respect, say, a leader who could be anticipated, A, to lead the tribe to food.

AG: (5) Longing can be classed in AG since while one is anticipating, A, a meal as goal object, G, one would be longing for the consumption of that meal.

G: (6) Patience can be classed in G since patience would be involved while a cook is preparing a meal as goal object, g, from the food on hand.

GQ: (7) Regret can be classed in GQ since the cook might regret that he or she did not have certain ingredients for the preparation of a meal as goal object, G, so that it would yield the best quiescent manifestations, Q, of taste.

Q: (8) Surprise can be classed in Q since the actual taste of the meal might be surprising as a quiescent manifestation, Q, that one had not quite expected.

QD: (9) Forgiveness can be classed in QD since one would try to forgive the cook if the meal did not have the optimum quiescent manifestations, Q, of taste that the ones consuming the meal as agents or drive-bearers, D, had hoped for.

DG: (10) And compound them into one can be classed in DG since the compounding is done based on a drive, D, by the cook, or in this case the chemist, while the compound itself would be the goal object, G, created by him or her.

AQ: (2) Who can extract from his heart's elements can be classed in AQ since these words lead one to anticipate, A, a quiescent manifestation, Q, from the compound created by the cook or the chemist.

U: (13) Which is called love can be classed in U since love is a word that signifies the unified while, U, that the chemist has created if he can create love.

N: (11) Can create can be classed in N since what is created negates, N, the absence of that thing prior to its creation.

D': (12) That atom can be classed in D' since this atom would be a superordinate agent or drive-bearer, D', since love is generally regarded as a superlative drive.

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5. Organic Chemistry versus Biochemistry, Mike Adams

In *Chemistry and Control: Webster's Quotations, Facts and Phrases* (p. 1) Mike Adams is quoted as follows (numbers added for subsequent analytical purposes; word in brackets added here): "(1) Organic chemistry (2) is (3) the chemistry (4) of carbon (5) compounds. [(6) But] (7) biochemistry (8) is (9) the study (10) of (11) carbon compounds (12) that (13) crawl." Suggested classification:

QD: (6) But

D: (7) Biochemistry

DA: (8) Is

A: (9) The study

AG: (10) Of

G: (11) Carbon compounds

GQ: (12) That

Q: (13) Crawl

DG: (1) Organic chemistry

AQ: (2) Is

U: (3) The chemistry

N: (4) Of carbon

D': (5) Compounds

My justifications for these classifications are as follows:

QD: (6) But can be classed in QD since this conjunction links the quiescent

Manifestation, Q, of a preceding clause, and the drive, D to add a subsequent clause.

D: (7) Biochemistry can be classed in D since this is a subject that biochem-ists have a drive, D, to study.

DA: (8) Is can be classed in DA since in the expression “biochemistry is the study” the word “is” links the drive word “biochemistry,” D, and the anticipatory

A: (9) The study can be classed in A since the study of something is anticipated, A, to uncover knowledge about that subject.

AG: (10) Of can be classed in AG since in the expression “the study of carbon compounds” the word “of” links the anticipatory words “the study,” A, and the goal-object words “carbon compounds,” G.

G: (11) Carbon compounds can be classed in G since such compounds can be regarded as goal objects, G.

GQ: (12) That can be classed in GQ since in the expression “carbon compounds that crawl” the word “that” links the goal-object words “carbon compounds,” G, and the quiescent word “crawl,” Q.

Q: (13) Crawl can be classed in Q since crawling is an observable quiescent manifestation, Q.

DG: (1) Organic chemistry can be classed in DG since it is a study of carbon compounds as goal objects, G, by organic chemists as agents or drive-bearers, D.

AQ; (2) Is can be classed in AQ since this word can be elaborated to mean “is anticipated, A, to be concerned with such-and-such quiescent manifestations, Q.”

U: (3) The chemistry can be classed in U since this chemistry amounts to a unified, U, study of carbon compounds.

N: (4) Of carbon can be classed in N since the word “carbon” negates, N any other element as central to this sort of chemistry.

D': (5) Compounds can be classed in D' since compounds can be regarded as what would be studied by any ordinary chemist as a subordinate agent or drive-bearer, D', rather than a specialist in organic chemistry.

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6. Preparing for the Worst, Charles Dickens

In *Chemistry and Control: Webster's Quotations, Facts and Phrases* (p. 13) Charles Dickens is quoted as follows from his book *The Pickwick Papers* (numbers added for subsequent analytical purposes): "(1)With this, (2) the tall (3) chemist (4) composed (5) himself (6) into (7) a comfortable (8) attitude, (2') and, (9) assum-ing a pleasant expression of countenance, (10) appeared to have (11) prepared (12) himself (13) for the worst."

Suggested classification:

Q: (1) With this

QD: (2) The tall; and

D: (3) Chemist

DA: (4) Composed

A: (5) Himself

AG: (6) Into

G: (8) Attitude

GQ: (7) A comfortable

DG: (9) Assuming a pleasant expression of countenance

AQ: (10) Appeared to have

U: (11) Prepared

N: (13) For the worst

D': (12) Himself

My justifications for these classifications are as follows:

Q: (1) With this can be classed in Q since “this” refers to some previous event that was presumably described as a foregoing quiescent manifestation, Q.

QD: (2) The tall can be classed in QD since in the expression “with this, the tall chemist” the words “the tall” link the quiescent words “with this,” Q, and the drive word “chemist,” D; and “and” links the quiescent manifestation, Q, of the clause that precedes this word, and the subsequent clause that there is a drive, D, to add.

D: (3) Chemist can be classed in D since a chemist is an agent or drive-bearer, D,

DA: (4) Composed can be classed in DA since in the expression “chemist composed himself” the word “composed” links the drive word “chemist,” D, and the anticipatory word “himself,” A.

A: (5) Himself can be classed in A since this word refers to the chemist as having adopted some attitude anticipated, A, to have prepared himself for the worst.

AG: (6) Into can be classed in AG since in the expression “himself into (a comfortable) attitude” the word “into” links the anticipatory word “himself,” A, and the goal-object word “attitude,” G.

G: (8) Attitude can be classed in G since an attitude can be regarded as a goal object, G, in this case a bodily position or stance.

GQ: (7) A comfortable can be classed in GQ since what is comfortable is the attitude as goal object, G, while its comfortableness amounts to an observable quiescent manifestation, Q.

DG: (9) Assuming a pleasant expression of countenance can be classed in DG since the “assuming” involves a drive, D, to assume, while the “pleasant expression of countenance” amounts to the goal object, G, that was thereby assumed.

AQ: (10) Appeared to have can be classed in AQ since these words lead one to anticipate, A, the quiescent manifestation, Q, that thereby “appeared,” Q.

U: (11) Prepared can be classed in U since what has been prepared amounts to a unified, U, act of preparation.

N: (13) For the worst can be classed in N since what is “worst” is something that one would prefer to have negated, N, from one’s life.

D’: (12) Himself can be classed in D’ since this word refers to the chemist as a subordinate agent or drive-bearer, D’, subordinate by virtue of anticipating some dire outcome described as “the worst.”

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7. Success through Mental Chemistry, Napoleon Hill

In *Chemistry and Control: Webster's Quotations, Facts and Phrases* (p. 1) self-help guru Napoleon Hill (1883-1970), best known for his book *Think and Grow Rich*, is quoted as follows (numbers added for subsequent analytical purposes): "(1) Through (2) some strange and powerful principle of 'mental chemistry (3) which she has never divulged, (4) nature (5) wraps up (6) in the impulse (7) of (8) strong desire (9) that (10) something (11) which recognizes (12) no such word as 'impossible' (13) and no such reality as failure."

Suggested classification:

D: (4) Nature

DA: (5) Wraps up

A: (6) In the impulse

AG: (7) Of

G: (8) Strong desire

GQ: (9) That

Q: (10) Something

QD: (1) Through

DG: (2) Some strange and powerful principle of 'mental chemistry'

AQ: (3) Which she has never divulged

U: (11) Which recognizes

N: (12) No such word as 'impossible'

D': (13) And no such reality as failure

My justifications for these classifications are as follows:

D: (4) Nature can be classed in D since here it is personified as an agent or drive-bearer, D.

DA: (5) Wraps up can be classed in DA since in the expression “nature wraps up in the impulse” the words “wraps up” link the drive word “nature,” D, and the anticipatory words “in the impulse,” A.

A: (6) In the impulse can be classed in A since an impulse is anticipated, A, to move affairs in a specific direction.

AG: (7) Of can be classed in AG since in the expression “in the impulse of strong desire” the word “of” links the anticipatory words “in the impulse,” A, and the goal-object words “strong desire,” G.

G: (8) Strong desire can be classed in G since strong desire can be regarded as a mental goal object, G.

GQ: (9) That can be classed in GQ since in the expression “strong desire that something” the word “that” links the goal-object words “strong desire,” G, and the quiescent word “something,” Q.

Q: (10) Something can be classed in Q since it is subsequently described as what “recognizes” no impossibility and no failure, where the something recognized is a quiescent manifestation, Q.

QD: (1) Through can be classed in QD since it links the quiescent manifestation, Q, of “mental chemistry” what nature as an agent or drive-bearer, D, has the power to achieve.

DG: (2) Some strange and powerful principle of “mental chemistry” can be classed in DG since “mental” refers to the domain of an agent or drive-bearer, D, while “chemistry” refers to the domain of goal objects, G, such as, figuratively speaking, atoms and molecules.

AQ: (3) Which she has never divulged can be classed in AQ since these words indicate that the anticipation, A, of the quiescent manifestation, Q, of a secret being divulged by nature is never to be satisfied.

U: (11) Which recognizes can be classed in U since a recognition involves a unified, U, mental achievement.

N: (12) No such word as “impossible” can be classed in N since this word is the negation, N, of what is possible.

D': (13) And no such reality as failure can be classed in D' since failure would be expected only for a subordinate agent or drive-bearer, D'.

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8. War, Edward Gibbon

In *Chemistry and Control: Webster's Quotations, Facts and Phrases* (p. 14) Edward Gibbon is quoted as follows from Volume 3 of his *Decline and Fall of the Roman Empire* (numbers added for subsequent analytical purposes): "(1) Mathematics, (2) chemistry, (3) mechanics, (4) architecture, (5) have been applied (6) to the service of (7) war, (8) and (9) the adverse parties (10) oppose to each other (11) the most elaborate modes (12) of attack (13) and defense." Suggested classification:

A: (1) Mathematics
AG: (3) Mechanics
G: (4) Architecture
GQ: (2) Chemistry
Q: (7) War
QD: (8) And
D: (9) The adverse parties
DA: (5) Have been applied
DG: (10) Oppose to each other
AQ: (6) To the service of
U: (12) Of attack
N: (11) The most elaborate modes
D': (13) And defense

A: (1) Mathematics can be classed in A since it can be used to anticipate, A, various quantities that may be needed for various projects, such as weapons for war.

AG: (3) Mechanics can be classed in AG since in the case of the simple lever a force applied at one end can be anticipated, A, to lift a certain number of goal objects, G, at the other end.

G: (4) Architecture can be classed in G since the architect builds various structures or goal objects, G, such as fortresses, bridges, etc.

GQ: (2) Chemistry can be classed in GQ since a certain combination of chemicals as goal objects, G, yield a certain quiescent effect, such as a fire or burn-ing acid, that would be disadvantageous to an enemy.

Q: (7) War can be classed in Q since war is an observable quiescent manifestation, Q, as in the destruction of large amounts of buildings and the populace that inhabit them.

QD: (8) And can be classed in QD since this conjunction links the quiescent manifestation, Q, or preceding words, followed by the drive, D, to add further words.

D: (9) The adverse parties can be classed in D since these parties each have a drive, D, to win the war, or at least see that it does not end in their own annihilation.

DA: (5) Have been applied can be classed in DA since the one who do the applying are agents or drive-bearers, D, while what they are applied to is anticipated, A, to be advantageous to the agent's side in a war.

DG: (10) Oppose to each other can be classed in DG since each party that opposes to the other side is an agent or drive-bearer, D, , while the other side to which the opposition is aimed amounts to a goal object, G.

AQ: (6) To the service of can be classed in AQ since these words lead one to anticipate, A, a "service" as advantageous quiescent manifestation, Q, in furtherance of a party's success in war.

U: (12) Of attack can be classed in U since an attack generally involves a unified, U, plan to achieve success in defeating an enemy.

N: (11) The most elaborate modes can be classed in N since "most elaborate" negates, N, a more moderate mode.

D': (13) And defense can be classed in D' since a defender is typically a subordinate agent or drive-bearer, D', by virtue of being on the defensive, which implies an inferior position in the battle or war.

Chapter 3

The Metaphysics of Biology

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- 8. Species, H. G. Wells**

1. Aging, Deepak Chopra

In *Biology: Webster's Quotations, Facts and Phrases* (p. 1) Deepak Chopra is quoted as follows (numbers added for subsequent analytical purposes): "(1) You (2) can (3) free (4, 5) yourself [= (4) your (5) self] (6) from aging (7) by reinterpreting (8) your (9) body (10) and (11) grasping (12) the link (13) between belief and biology."

Suggested classification:

D: (1) You
DA: (2) Can
A: (3) Free
AG: (4) Your
G: (5) Self
GQ: (11) Grasping
Q: (12) The link
QD: (10) And
DG: (13) Between belief and biology
AQ: (6) From aging
U: (8) Your
N: (7) By reinterpreting
D': (9) Body

My justifications for these classifications are as follows:

D: (1) You can be classed in D since this word refers to oneself as an agent or drive-bearer, D.

DA: (2) Can can be classed in DA since in the expression “you can free” the word “can” links the drive word “you,” D, and the anticipatory words “free,” A.

A: (3) Free can be classed in A since this word leads one to anticipate, A, an explanation of what one can set free.

AG: (4) Your can be classed in AG since in the expression “free yourself” the word “your” links the anticipatory word “free,” A, and the goal-object word “self,” G.

G: (5) Self can be classed in G since this word can be regarded as the goal object, G, that one can free.

GQ: (11) Grasping can be classed in GQ since in the expression “self grasping the link” the word “grasping” links the goal-object word “self,” G, and the quiescent words “the link,” Q.

Q: (12) The link can be classed in Q since this link can be regarded as an observable quiescent manifestation, Q.

QD: (10) And can be classed in QD since this conjunction links the quiescent manifestation, Q, of preceding words, and the drive, D, to add further words.

DG: (13) Between belief and biology can be classed in DG since a belief can be regarded as expressing the drive, D, of an agent or drive-bearer, D, while biology can be regarded as the bodily goal objects, G, that might be subject to aging.

AQ: (6) From aging can be classed in AQ since aging leads one to anticipate, A, the quiescent manifestation, Q, of subsequent signs of aging, such as wrinkled skin or graying hair.

U: (8) Your can be classed in U since this word unifies, U, the supposedly aging body and one’s belief that one is aging.

N: (7) By reinterpreting can be classed in N since this reinterpreting would involve a negation, N, of one’s former belief that one is aging.

D’: (9) Body can be classed in D’ since one’s body can be regarded as a subordinate agent or drive-bearer, D’, subordinate to one’s mind or beliefs, which can alter one’s perception of oneself as aging.

2. Cell Theory, T. H. Huxley

In *Biology: Webster's Quotations, Facts and Phrases* (p. 11) T. H. Huxley is quoted as follows in his book *Science and Education* (vol. 3 of his *Collected Works*) (numbers added for subsequent analytical purposes): "(1) Hence (2) the establish-ment (3) of (4) cell theory (5) in (6) normal biology (7) was (8) swiftly (9) followed (10) by a 'cellular pathology,' (11) as the logical (12, 13) counterpart [= (12) counter (13) part]."

Suggested classification:

QD: (1) Hence
D: (2) The establishment
DA: (3) Of
A: (4) Cell theory
AG: (5) In
G: (6) Normal biology
GQ: (7) Was
Q: (9) Followed
DG: (10) By a 'cellular pathology'
AQ: (8) Swiftly
U: (11) As the logical
N: (12) Counter
D': (13) Part

My justification for these classifications are as follows:

QD: (1) Hence can be classed in QD since this word leads one from some preceding unspecified quiescent manifestation, Q, to the drive words “the establishment,” D.

D: (2) The establishment can be classed in D since they involve the drive, D, to establish something.

DA: (3) Of can be classed in DA since in the expression “the establishment of the cell theory” the word “of” links the drive words “the establishment,” D, and the anticipatory words “the cell theory,” A.

A: (4) The cell theory can be classed in A since a theory leads one to anticipate, A, what goes on in the field that the theory is about, in this case the field that concerns cells.

AG: (5) In can be classed in AG since in the expression “the cell theory in normal biology” the word “in” links the anticipatory words “cell theory,” A, and the goal-object words “normal biology,” G

G: (6) Normal biology can be classed in G since it is the field of biology as a goal object, G.

GQ: (7) Was can be classed in GQ since in the expression “normal biology was (swiftly) followed” the word “was” links the goal-object words “normal biology,” G, and the quiescent word “followed,” Q.

Q: (9) Followed can be classed in Q since to be followed can be regarded as an observable quiescent manifestation, Q.

DG: (10) By a ‘cellular pathology’ can be classed in DG since such a field of study would be a goal object, G, from the standpoint of students, teachers, and others as observing agents or drive-bearers, D.

AQ: (8) Swiftly can be classed in AQ since this word leads one to anticipate, A, that the quiescent manifestation, Q, of being “followed” came about swiftly.

U: (11) As the logical can be classed in U since for cellular pathology to follow “logically” from cell theory makes this consequence

a unified, U, activity.

N: (12) Counter can be classed in N since this word reflects a negation, N, of what it is said to be counter to.

D’: (13) Part can be classed in D’ since each part of biology would be a field of study investigated by subordinate agents or drive-bearers, D’, subordinate because the parts are merely small patches of the overall study of biology.

3. Knowledge, T. H. Huxley

In *Biology: Webster's Quotations, Facts and Phrases* (p. 3) T. H. Huxley is quoted as follows (numbers added for subsequent analytical purposes): “(1) I think (2) it (3) is (4) one (5) of the grandest (6) features (7) of (8) biology (9) that (10) it (11) occupies (12) this central position (13) in human knowledge.”

Suggested classification:

AG: (1) I think
G: (4) One
GQ: (5) Of the grandest
Q: (6) Features
QD: (7) Of
D: (8) Biology
DA: (9) That
A: (10) It
DG: (2) If
AQ: (3) Is
U: (11) Occupies
N: (12) This central position
D': (13) In human knowledge

My justification for these classifications are as follows:

AG: (1) I think can be classed in AG since these words lead one to anticipate, A, what as goal object, G, one is thinking about.

G: (4) One can be classed in G since this word refers to the goal object, G, that Huxley is thinking about.

GQ: (5) Of the grandest can be classed in GQ since in the expression “one of the grandest features” the words “of the grandest:” link the goal-object word “one,” G, and the quiescent word “features,” Q.

Q: (6) Features can be classed in Q since features would be observable quies-cent manifestations, Q.

QD: (7) Of can be classed in QD since in the expression “features of biology” the word “of” links the quiescent word “features,” Q, and the drive word “biology,” D.

D: (8) Biology can be classed in D since biology is the subject that biologists have a drive, D, to investigate.

DA: (9) That can be classed in DA since in the expression “biology that it” the word “that” links the drive word “biology,” D, and the anticipatory word “it,” A.

A: (10) It can be classed in A since this word leads one to anticipate, A, an explanation of what is one of the grandest features of biology.

DA: (2) It can be classed in DA since this word refers to an abstract goal object, G, from the perspective of observing agents or drive-bearers, D.

AQ: (3) Is can be classed in AQ since this word can be expanded to read “is anticipated that such-and-such is anticipated, A, to be true.”

U: (11) Occupies can be classed in U since what biology occupies is a central and unified, U, position in human knowledge.

N: (12) This central position can be classed in N since this position negates, N, biology’s occupying some other position, e.g., a peripheral position.

D’: (13) In human knowledge can be classed in D’ since being a central feature of human knowledge amounts to knowledge possessed by superordinate, i.e., superior agents or drive-bearers, D’, compared to those who possess less central knowledge.

4. Man as Space Traveler

In *Biology: Webster's Quotations, Facts and Phrases* (p. 1) William Burroughs is quoted as follows (numbers added for subsequent analytical purposes): "(1) Man (2) is (3) an artifact (4) designed for (5) space (6) travel. (7) He (8) is not (9) designed (10) to remain in his present (11) biological state (12) any more than (13) a tadpole is designed to remain a tadpole."

Suggested classification:

D: (1) Man
DA: (2) Is
A: (3) An artifact
AG: (4) Designed for
G: (5) Space
GQ: (6) Travel
Q: (11) Biological state
QD: (12) Any more than
DG: (13) A tadpole is designed to remain a tadpole
AQ: (10) To remain in his present
U: (9) Designed
N: (8) Is not
D': (7) He

My justification for these classifications are as follows:

D: (1) Man can be classed in D since man can be regarded as primarily an agent or drive-bearer, D.

DA: (2) Is can be classed in DA since in the expression “man is an artifact” the word “is” links the drive word ‘man,’ D, and the anticipatory words “an artifact,” A.

A: (3) An artifact can be classed in A since these words lead one to anticipate, A, an explanation of what sort of artifact he is.

AG: (4) Designed for can be classed in AG since in the expression “an artifact designed for space” the words “designed for” link the anticipatory words “an artifact,” A, and the goal-object word “space,” G.

G: (5) Space can be classed in G since space can be regarded as a goal object, G, as a place for travel to or through.

GQ: (6) Travel can be classed in GQ since this word links the goal-object word “space,” G, and the quiescent manifestations, Q, of what observable vistas space travel would yield.

Q: (11) Biological state can be classed in Q since man’s present biological state involves certain observable quiescent manifestations, Q, such as two legs for locomotion.

QD; (12) Any more than can be classed in QD since these words link the quiescent manifestation, Q, of the preceding cause, and the drive, D, to add the next clause.

DG: (13) A tadpole is designed to remain a tadpole can be classed in DG since the tadpole is a goal object, G, while the design of the tadpole involves a drive or drive-like function, D, on the part of God or Nature.

AQ: (9) To remain in his present can be classed in AQ since these words lead one to anticipate, A, the present state of man as a quiescent manifestation, Q, that man is not designed to remain in.

U: (9) Designed can be classed in U since being designed suggests a unified, U, action to achieve some purpose.

N: (8) Is not can be classed in N since these words negate, N, the meaning that the rest of the sentence would otherwise have.

D’: (7) He can be classed in D’ since this word refers to man as a superordinate agent or drive-bearer, D’, superordinate by virtue of signifying an extra-ordinary design that makes man seem more unusual than any other species on earth.

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5. Observation and Experimentation, Edward L. Godkin

In *Biology: Webster's Quotations, Facts and Phrases* (p. 10) Edward L. Godkin in his *Reflections and comments 1865-1895* is quoted as follows (numbers added for subsequent analytical purposes): "(1) The sciences (2) of (3) geology, paleontology, and, to a certain extent, biology (4) are (5) sciences (6) of (7) observation, (8) and (9) but few (10) of their (11) conclusions (12) can be reached or tested (13) by experimentation."

Suggested classification:

D: (1) The sciences

DA: (2) Of

A: (3) Geology, paleontology, and, to a certain extent, biology

AG: (4) Are

G: (5) Sciences

GQ: (6) Of

Q: (7) Observation

QD: (8) And

DG: (13) By experimentation

AQ: (12) Can be reached or tested

U: (11) Conclusions

N: (9) But few

D': (10) Of their

My justifications for these classifications are as follows:

D: (1) The sciences can be classed in D since sciences are undertaken by scientists with drives, D, to understand the subject matter of the sciences.

DA: (2) Of can be classed in DA since in the expression “The sciences of geology [etc.]” the word “of” links the drive words “the sciences,” D, and the anticipatory words “geology [etc.],” A.

A: (3) Geology, paleontology, and, to a certain extent, biology can be classed in A since these subjects are anticipated, A, to arrive at various conclusions regarding their subject matters.

AG: (4) Are can be classed in AG since in the expression “geology [etc.] are sciences” the word “are” links the anticipatory words “geology [etc.],” A, and the goal-object word “sciences,” G.

G: (5) Sciences can be classed in G since sciences can be regarded as goal objects, G, for investigation.

GQ: (6) Of can be classed in GQ since in the expression “sciences of observation” the word “of” links the goal-object word “sciences,” G, and the quiescent word “observation,” Q.

Q: (7) Observation can be classed in Q since observation concerns the perception of quiescent manifestations, Q, such as colors, shapes, etc.

QD: (8) And can be classed in QD since this conjunction links the quiescent manifestation, Q, of preceding words, and subsequent words that there is a drive, D, to add.

DG: (13) By experimentation can be classed in DG since the one who experiments is an agent or drive-bearer, D, and what he or she experiments on is a goal object, G, of that experimentation.

AQ: (12) Can be reached or tested can be classed in AQ since these words lead one to anticipate, A, that the quiescent manifestations, Q, of these sciences can be reached or tested, in this case in but few cases by experimentation.

U: (11) Conclusions can be classed in U since a conclusion is a unified, U, result from a legitimate preceding procedure.

N: (9) But few can be classed in N since these words negate, N, most of the conclusions of these sciences as what can be reached by experimentation.

D': (10) Of their can be classed in D' since these words refer to the three sciences mentioned, which are investigated by subordinate agents or drive-bearers, D', subordinate due to their limited scopes compared to all sciences.

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6. Pathology, T. H. Huxley

In *Biology: Webster's Quotations, Facts and Phrases* (p. 9) T. H. Huxley in his *Science and Education* is quoted as follows (numbers added for subsequent analytical purposes): "(1) Hence it (2) is obvious that (3) pathology (4) is (5) a branch (6) (6) of biology; (7) it is (8) the morphology, (9) the physiology, (10) the distribution, (11) the aetiology (12) of abnormal (13) life."

Suggested classification:

QD: (11) The aetiology
D: (3) Pathology
DA: (10) The aetiology
A: (4) Is
AG (9) The physiology
G: (5) A branch
GQ: (8) The morphology
Q: (6) Of biology
DG: (1) Hence it
AQ: (2) Is obvious that
U: (7) It is
N: (12) Of abnormal
D': (13) Life

QD: (11) The aetiology can be classed in QD since these words refer to the source, cause, or origin of something, and QD provides a phase for that, where Q is the quiescent manifestation, Q, of previous conditions, while D is the drive, D, toward pathology that those conditions set in motion.

D: (3) Pathology can be classed in D since this is the study that pathologists have a drive, D, to investigate.

DA: (10) The distribution can be classed in DA since knowing a distribution involves anticipating, A, where the pathology is, as the pathologist has a drive, D, to know.

A: (4) Is can be classed in A since to know what pathology is, is to anticipate, A, what it is.

AG: (9) The physiology can be classed in AG since physiology involves anticipating, A, movement of the disease in various parts as goal objects, G, in the body.

G: (5) A branch can be classed in G since a branch of some discipline amounts to a goal object, G, for study.

GQ: (8) The morphology can be classed in GQ since morphology involves the shapes that a disease produces, as in a swelling, where a shape is the quiescent manifestation, Q, of a goal object, G.

Q: (6) Of biology can be classed in Q since biology involves the collection of observable characteristics or quiescent manifestations, Q, of living things.

DG: (1) Hence can be classed in DG since this word refers to an abstract goal object, G, from the standpoint of an observing agent or drive-bearer, D.

AQ: (2) Is obvious that can be classed in AQ since these words amount to “is obvious that we can anticipate, A, the observable quiescent manifestation, Q, that pathology is a branchy of biology..

U: (7) It is can be classed in U since these words refer to the unity, U, of morphology, physiology, etc.

N: (12) Of abnormal can be classed in N since what is “abnormal” in path-ology is what one would desire to negate, N.

D': (13) Life can be classed in D' since abnormal life consists of subordinate agents or drive-bearers, D', compared to normal life, which is able to function better (disregarding abnormalities such as genius, which are positive, not negative).

7. Religion, G. K. Chesterton

In *Biology: Webster's Quotations, Facts and Phrases* (p. 2) essayist G. K. Chesterton is quoted as follows (numberings added for subsequent analytical purposes): "(1) So that this first superficial reason for materialism (2) is, if anything, a reason for (3) its opposite; (4) it (5) is (6) exactly (7) where (8) biology (9) leaves off (10) that (11) all (12) religion (13) begins."

Suggested classification:

Q: (6) Exactly

QD: (7) Where

D: (8) Biology

DA: (9) Leaves off

A: (10) That

AG: (11) All

G: (12) Religion

GQ: (13) Begins

DG: (4) It

AQ: (5) Is

U: (2) Is, if anything, a reason for

N: (3) Its opposite

D': (1) So that this first superficial reason for materialism

My justifications for these classifications are as follows:

Q: (6) Exactly can be classed in Q since an exact point is an observable quiescent manifestation, Q.

QD: (7) Where can be classed in QD since in the expression “exactly where biology” the word “where” links the quiescent word “exactly,” Q, and the drive word “biology,” D.

D: (8) Biology can be classed in D since this is the subject that biologists have a drive, D, to explore.

DA: (9) Leaves off can be classed in DA since in the expression “biology leaves off that” the words “leaves off” link the drive word “biology,” D, and the anticipatory word “that,” A.

A: (10) That can be classed in A since this word leads one to anticipate, A, a consequence of biology’s leaving off somewhere.

AG: (11) All can be classed in AG since in the expression “that all religion” the word “all” links the anticipatory word “that,” A, and the goal-object word “religion,” G.

G: (12) Religion can be classed in G since it amounts to a goal object, G, in relation to biology, to which it is said to be opposite.

DG: (4) It can be classed in DG since this word refers to an abstract goal object, G, from the perspective of observing agents or drive-bearers, D.

AQ: (5) Is can be classed in AQ since this word can be elaborated to mean “is anticipated, A, to lead to the quiescent manifestation, Q, mentioned next, namely religion starting where biology leaves off.

U: (2) Is, if anything, a reason for can be classed in U since these words indicate a unified, U. reason for religion having a place in our thinking at the place where biology leaves off having explanations. (I once heard Nobel laureate physicist Richard Feynman say that we already have the word “mystery,” so why do we need additional words like “God” or “reigion”?)

N: (3) Its opposite can be classed in N since an opposite of biology would be a negation, N, of it or its explanations.

D’: (1) So that this first superficial reason for materialism can be classed in D’ since materialists, by virtue of using supposedly “superficial reasons,” are accordingly subordinate agents or drive-bearers, D’.

8. Species, H. G. Wells

In *Biology: Webster's Quotations, Facts and Phrases* (p. 1) sci-fi writer H. G. Wells is quoted as follows (numbers added for subsequent analytical purposes, words in brackets added here): "(1) Biologically (2) the species (3) is (4) the accumulation (5) of (6) the experiments (7) of (8) all (9) its (10) successful (11) individuals (12) since the beginning [(13) of life]."

Suggested classification:

AG: (1) Biologically

G: (2) The species

GQ: (3) Is

Q: (4) The accumulation

QD: (5) Of

D: (6) The experiments

DA: (7) Of

A: (8) All

DA: (13) Of life

AQ: (12) Since the beginning

U: (9) Its

N: (10) Successful

D': (11) Individuals

My justifications for these classifications are as follows:

AG: (1) Biologically can be classed in AG since in the expression “biologically the species” the word “biologically” leads one to anticipate, A, some consequence for the species as goal object, G.

G: (2) The species can be classed in G since a species can be regarded as a goal object, G, for biological study.

GQ: (3) Is can be classed in GQ since in the expression “the species is the accumulation” the word “is” links the goal-object words “the species,” G, and the quiescent words “the accumulation,” Q.

Q: (4) The accumulation can be classed in Q since an accumulation of successes would tend to preserve those underlying genetic factors that produce those successes, i.e., those quiescent satisfactions, Q, such as the ability to find food or a mate.

QD: (5) Of can be classed in QD since in the expression “the accumulation of the experiments” the word “of” links the quiescent words “the accumulation,” Q, and the drive words “the experiments,” D.

D: (6) The experiments can be classed in D since an experiment is undertaken by virtue of a drive, D, to undertake that experiment, such as trying a new food.

DA: (7) Of can be classed in DA since in the expression “the experiments of all” the word “of” links the drive words “the experiments,” D, and the anticipatory word “all,” A.

A: (8) All can be classed in A since this word anticipates, A, that no successful experiment is excluded from whatever contribution it might have made to the accumulation of whatever genetic traits make up the species.

DG: (13) Of life can be classed in DG since “life” can be regarded as referring to all the ancestors as goal objects, G, of the given species whose successful experiments as drives, D, generated the species.

AQ: (12) Since the beginning can be classed in AQ since these words lead one to anticipate, A, that the accumulation of quiescent trait, Q, that define a species have to be taken into account since the beginning of the lives of all of those ancestors.

U: (9) Its can be classed in U since this word refers to the species in question as a unified, U, set of genetically preserved characteristics that had a role in the continuing existence of that species.

N: (10) Successful can be classed in N since what is successful is a negation, N, of what is not successful.

D': (11) Individuals can be classed in D' since these individuals amount to the ancestors of the given species as subordinate agents or drive-bearers, D', subordinate by virtue of being single organisms leading up to the species, not the entire species.

Chapter 4

The Metaphysics of Mathematics

Contents:

- 1. Euclid's Postulates for Geometry**
- 2. Fermat's Last Theorem**
- 3. Four Color Theorem**
- 4. Gödel's Incompleteness Theorem**
- 5. Goldbach's Conjecture**
- 6. Mathematics, Dictionary Definition of**
- 7. Pythagorean Theorem**
- 8. Zermelo's Axioms for Set Theory**

1. Eudlid's Postulates for Geometry

Book One of *Euclid's Elements* contains his five postulates for geometry, and the following translation can be found on page 2 of Volume 10 of *The Great Books*. The numberings in brackets have been added here for purposes of subsequent analysis:

POSTULATES

Let the following be postulated:

1. [1] To draw a straight line [2] from any point to any point.
2. [3] To produce a finite straight line [2] continuously in a straight line.
3. (5) To describe a circle [6] with any center and distance.
4. [7] That all right angles [8] are equal to one another.
5. [9] That, if a straight line falling on two straight lines [10] make the interior angles on the same side less than two right angles, [11] the two straight lines [12] if produced indefinitely, [13] meet on that side on which are the angles less than the two right angles.

Suggested classification:

- D: [1] To draw a straight line
- DA: [2] From any point to any point.
- A: [3] To produce a finite straight line
- AG: [4] Continuously in a straight line
- G: [5] To describe a circle

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GQ: [6] With any center and distance
Q: [7] That all right angles
QD: [8] Are equal to one another
DG: [9] That if a straight line falling on two straight lines
AQ: [10] Make the interior angles on the same side less than two right angles
U: [13] Meet on that side on which are the angles less than two right angles
N: [12] If produced indefinitely
D': [11] The two straight lines

My justification of these classifications:

D: [1] To draw a straight line can be classed in D since these words indicate a drive, D, to draw a straight line.

DA: [2] From any point to any point can be classed in DA since these words indicate that the drive, D, to draw a straight line is anticipated, A, to go from any point to any other point.

A: [3] To produce a finite straight line can be classed in A since these words indicate the anticipation, A, of being able to draw a straight line of finite length.

AG: [4] Continuously in a straight line can be classed in AG since these words indicate that the finite straight line that is drawn would have no gaps in it.

G: [5] To describe a circle can be classed in G since a circle is a goal object, G, that one is to draw.

GQ: [6] With any center and distance can be classed in GQ since the “any center” indicates that any point can be used as the center of a circle as goal object, G, that one draws, while “any distance” indicates that the radius of the circle can be a straight line of any length.

Q: [7] That all right angles can be classed in Q since these words refer to any right angle as a quiescent manifestation, Q.

QD: [8] Are equal to one another can be classed in QD since “one another” refers to any two right angle as quiescent manifestations, Q, while their being “equal” to one another indicates that there is no obstacle to the drive, D, to show that any two right angles are equal.

DG: [9] That if a straight line falling on two straight lines can be classed in DG since “if a straight line *is made to* fall on two straight lines,” then the italicized words “is made to” that are implicit in the word “falling” refer to a drive, D, to make a straight line fall on two other straight lines, while these two other straight lines are the goal objects, G, of this drive.

AQ: [10] Make the interior angles on the same side less than two right angles can be classed in AQ since these words indicate the anticipation, A, that the two right angles on the same side, when combined, will add up *less than* two right angles, i.e., a straight line of 180° , as their quiescent manifestation, Q.

U: [13] Meet on that side on which are the angles less than two right angles can be classed in U since this meeting would amount to a unification, U, of the three straight lines in the shape of a triangle.

N: [12] If produced indefinitely can be classed in N since “indefinitely” indicates “without limit in their length,” which is a negation, N, of any limitation in their length.

D': [11] The two straight lines can be classed in D' since these lines as subordinate drive, D', since one exerts a drive, D, to extend them as far as necessary for them to meet., and these drives can be regarded as “subordinate” to the main drive of drawing the first straight line so that it intersects the two other straight lines.

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2. Fermat's Last Theorem

In the Wikipedia article "Fermat's Last Theorem" this theorem is said to have been first mentioned in 1637 by the French mathematician Pierre de Fermat (1607-1665) when he was probably just 29 years of age and hence probably not the last theorem he devised. He claimed to have a proof of the theorem that was too large to include in the margins of the book he mentioned the theorem in, but it took 358 years for a successful proof to be found, by Andrew Wiles, a proof first formally published in 1995. Wikipedia describes the theorem as follows (numberings added for subsequent analytical purposes): "(1) In number theory, Fermat's Last Theorem...states that (2) no (3) three (4) positive (5) integers (6) a, b, and c (7) satisfy (8) the equation (9) $a^n + b^n = c^n$ (10) for any integer value (11) of n (12) greater than (13) 2,"

Suggested classification :

D: (2) No

DA: (3) Three

A: (4) Positive

AG: (5) Integers

G: (6) a, b, and c

GQ: (7) Satisfy

Q: (8) The equation

QD: (9) $a^n + b^n = c^n$

DG: (11) Of n

AQ: (10) For any integer value

U: (1) Fermat's Last Theorem

N: (12) Greater than

D': (13) 2

My justifications of these classifications are as follows:

D: (2) No can be classed in D since this word can be elaborated to mean “one can find no,” where “one” refers to an agent or drive-bearer, D, who exerts a drive to find the subsequently specified numerical relationships.

DA: (3) Three can be classed in DA since in the expression “no three positive” the word “three” links the drive word “no,” D, and the anticipatory word “positive,” A.

A: (4) Positive can be classed in A since this word leads one to anticipate, A, that the numbers mentioned next must each be greater than 0.

AG: (5) Integers can be classed in AG since in the expression “positive integers a, b, and c” the word “integers” links the anticipatory word “positive,” A, and the goal-object words “a, b, and c,” G.

G: (6) a, b, and c can be classed in G since these letters refer to positive integers as goal objects, G, that one is to specify or find.

GQ: (7) Satisfy can be classed in GQ since in the expression “a, b, and c satisfy the equation” the word “satisfy” links the goal-object words “a, b, and c,” G, and the quiescent words “the equation,” Q.

Q: (8) The equation can be classed in Q since this equation indicates a quiescent manifestation, Q, that is to be satisfied by any three appropriate positive integers.

QD: (9) $a^n + b^n = c^n$ can be classed in QD since it specifies a numerical relationship that one is to exert the drive, D, to satisfy such that the quiescent manifestation, Q, of the equality holding true is satisfied.

DG: (11) Of n can be classed in DG since n refers to some positive integer as goal object, G, that one is to exert a drive, D, to find such that it satisfies the equation $a^n + b^n = c^n$.

AQ: (10) For any integer value can be classed in AQ since these words lead one to anticipate, A, being able to find such an integer value as quiescent manifestation, Q, such that all the other specified conditions are met.

U: (1) Fermat’s Last Theorem can be classed in U since these words unify, U, all the foregoing portions of the theorem.

N: (12) Greater than can be classed in N since a number that is “greater than” the specified number, in this case 2, negates, N, choosing any numerical value for n that is *not* greater than 2.

D’: (13) 2 can be classed in D’ since this number is intended to elicit the drive to find a number that is greater than 2, which is a *subordinate* drive, D’, because it is just one of various other drives that must be jointly satisfied in order to satisfy the overall conditions of this theorem.

3. Four Color Theorem

In the Wikipedia article “Four Color Theorem” this theorem is described as follows (numberings added for later analytical purposes): “(1) In mathematics, the four color theorem, on the four color map theorem, states that, (2) given (3) any (4) separation (5) of (6) a plane (7) into (8) contiguous regions, (9) producing a figure called a map, (10) no more than four colors are required (11) to color the regions of the map (12) so that no two (13) adjacent regions have the same color.” “Adjacent” means a boundary line, not a mere point. This theorem was first discovered on October 23, 1852, by Francis Guthrie while trying to color the map of counties of England, who brought the conjecture to the attention of the famous mathematician Augustus de Morgan. A proof that 5 colors are sufficient to color a map was found in the 1800s, but a proof that 4 colors are sufficient was not found until 1976 by Kenneth Appel and Wolfgang, who employed a computer to color all possible configurations. The computer proof met with resistance from the mathematical community because no human could check all the possible configurations by hand, , but most mathematicians now accept this sort of proof.

Suggested classification:

D: (2) Given

DA: (3) Any

A: (4) Separation

AG: (5) Of

G: (6) A plane

GQ: (7) Into

Q: (8) Contiguous regions

QD: (9) Producing a figure called a map

DG: (11) To color the regions of the map

AQ: (10) No more than four colors are required

U: (1) The four color theorem

N: (12) So that no two

D': (13) Adjacent regions have the same color

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My justifications for these classifications are as follows:

D: (2) Given can be classed in D since the one who gives exerts a drive, D, to give, while whoever takes what is given also exerts a drive, D, to take.

DA: (3) Any can be classed in DA since in the expression “given any separation” the word “any” links the drive word “given,” D, and the anticipatory word “separation,” A.

A: (4) Separation can be classed in A since a separation leads one to anticipate, A, separate regions formed by the separation.

AG: (5) Of can be classed in AG since in the expression “separation of a plane” the word “of” links the anticipatory word “separation,” A, and the goal-object words “a plane,” G.

G: (6) A plane can be classed in G since a plane can be regarded as a goal object, G, e.g., the flat surface of a sheet of paper.

GQ: (7) Into can be classed in GQ since in the expression “a plane into contiguous regions” the word “of” links the goal-object words “a plane,” G, and the quiescent words “contiguous regions,” Q.

Q: (8) Contiguous regions can be classed in Q since contiguous regions would be observable quiescent manifestations, Q, as in the 48 contiguous states of the United States.

QD: (9) Producing a figure called a map can be classed in QD since what is “called a map” would be an observable quiescent manifestation, Q, while “producing a figure” would involve a drive, D, to produce the figure.

DG: (11) To color the regions of the map can be classed in DG since “to color” can be regarded as involving a drive, D, to color the regions of the map, while “the regions of the map” refers to goal objects, G, such as the 48 contiguous U.S. states regarded as 48 goal objects on a map.

AQ: (10) No more than four colors are required can be classed in AQ since these words lead one to anticipate, A, that the quiescent manifestation, Q, that four colors would be sufficient to color a map such that no two adjacent regions would have the same color.

U: (1) The four color theorem can be classed in U since these words refer to a theorem that unifies, U, all the foregoing portions of the theorem’s description.

N: (12) So that no two can be classed in N since these words negates, N, the notion that two adjacent regions would have to have the same color if one were limited to just four colors in painting the map.

D’: (13) Adjacent regions have the same color can be classed in D’ since these words can be regarded as referring to the painting of such adjacent regions as involving subordinate drives, D’, since the failure to make two adjacent regions have different colors would represent an inadequate drive for creating a map within the constraints of this theorem. Up until 1976 this theorem would have been called a mere conjecture, like Goldbach’s conjecture.

4. Gödel's Incompleteness Theorem

Merriam-Webster's Collegiate Dictionary, 11th edition, defines "Godel's theorem (which it spells without the German umlaut over the "o") as follows (numberings added for purposes of later analysis here): "(1) Godel's theorem \gō-dəlz, gər-, gœ-\ n [Kurt *Gödel* [1906-]1978 Am[erican (Austrian-born)] mathemati—cian] (1933) a theorem in advanced logic: (2) in any logical system as complex as or more complex than the arithmetic of the integers (3) there (4) can (5) always (6) be found (7) either (8) a statement (9) which can be shown to be (10) both true and false (7') or (11) a statement whose truth or falsity (12) cannot be deduced (13) from other statements in the system—called also Godel's incompleteness theorem."

Suggested classification:

D: (3) There

DA: (4) Can

A: (5) Always

AG: (6) Be found

G: (8) A statement

GQ: (9) Which can be shown to be

Q: (10) Both true and false

QD: (7) Either...or

DG: (2) In any logical system as complex as or more complex than the
arithmetic of the integers

AQ: (11) Or a statement whose truth or falsity

U: (1) Godel's (incompleteness) theorem

N: (12) Cannot be deduced

D': (13) From other statements in the system

My justifications for the foregoing classifications:

D: (3) There can be classed in D since this word can be construed as meaning “one notices that there,” where “one” refers to an agent or drive-bearer, D, who does the noticing.

DA: (4) Can can be classed in DA since in the expression “there can always” the word “can” links the drive word “there,” D, and the anticipatory word “always,” A.

A: (5) Always can be classed in A since this word leads one to anticipate, A, that what is proposed next never fails to hold true.

AG: (6) Be found can be classed in AG since in the expression “always be found a statement” the words “be found” link the anticipatory word “always,” A, and the goal-object words “a statement,” G.

G: (8) A statement can be classed in G since such a statement can be regarded as a goal object, G.

GQ: (9) Which can be shown to be can be classed in GQ since in the expression “a statement which can be shown to be both true and false” the words “which can be shown to be” link the goal-object words “a statement,” G, and the quiescent words “both true and false,” Q.

Q: (10) Both true and false can be classed in Q since these words describe an observable intellectual quiescent manifestation, Q, analogous to saying that a rubber ball can be shown to be “both black and white,” where being “both black and white” is an observable visible quiescent manifestation, Q.

QD: (7) Either...or can be classed in QD since these words serve as conjunctions which link the quiescent manifestation, Q, of one statement’s truth or falsity in arithmetic, and the drive, D, to add an alternative assertion about the truth or falsity of a statement in arithmetic.

DG: (2) In any logical system as complex as or more complex than the arithmetic of the integers can be classed in DG since these words refer to a logical system as a goal object, G, concerning which one can exert the drive, D, to establish that it has the requisite complexity.

AQ: (11) Or a statement whose truth or falsity can be classed in AQ since here the “statement” is an anticipation, A, while its “truth or falsity” is a quiescent manifestation, Q.

U: (1) Godel’s (incompleteness) theorem can be classed in U since these words refer to a unified conception, U, of what is possible regarding the truth or falsity of statement in arithmetic.

N: (12) Cannot be deduced can be classed in N since these words refer to a negation, N, of what can be deduced.

D': (13) From other statements in the system can be classed in D' since these words can be regarded as referring to those other statements as subordinate agents or drive-bearers, D', subordinate because their status as axioms for the system from which all other true statements supposedly can be deduced is dubious and "drive-bearers" because one is expected to exert the drive to think of it as a basic truth or axiom of the system from which all other truths in the system can be deduced.

The system is "incomplete" in the sense that one can always add any statement whose truth or falsity cannot be deduced from the axioms of the system to the list of axioms, but this list would grow infinitely large, showing that one can never attain a list of axioms sufficient complete to be used to deduce the truth or falsity of every conceivable statement in the system. Somewhere in the 1967 *Encyclopedia of Philosophy* edited by Paul Edwards it is mentioned that a logician named Gerhard Gentzen showed that if one could have a set of axioms greater than aleph-null in size (the set of natural numbers), then the axioms would be complete enough to prove the truth or falsity of any statement in arithmetic, but as of 1967 no one seemed to know what such a huge set of axioms would look like. I will have to leave this problem to professional logicians to deal with, since it would be too time-consuming to delve into further here.

5. Goldbach's Conjecture

The Wikipedia article on Goldbach's conjecture, which was proposed by Christian Golabach to the famous mathematician Leonhard Euler in a letter dated June 7, 1742. The conjecture had various interpretations that the Wikipedia article goes through in agonizing detail, but at the beginning of the article the conjecture is presented in a crystal-clear form as follows (numberings added): "[(1) Goldbach's conjecture:] (2) every (3) even (4) whole (5) number (6) greater than (7) 2 (8) is (9) the sum (10) of (11) two (12) prime (13) numbers." A prime number, as every school child knows, is any integer (whole number) that is evenly divisible (i.e., divisible without any remainder) by itself or 1. An example would be the even number 8, which is the sum of the prime numbers 3 and 5. This conjecture has been checked by computer for every even number up to 4×10^{18} (i.e., up to 4,000,000,000,000,000, i.e. 4 quintillion). But a mathematical proof of this conjecture for all even numbers has not been found.

My suggested classification of the words of the conjecture as given by Wikipedia is as follows:

DA: (2) Every
A: (3) Even
AG: (4) Whole
G: (5) Number
GQ: (8) Is
Q: (9) The sum
QD: (10) Of
D: (11) Two
DG: (13) Numbers
AQ: (12) Prime
U: (1) Goldbach's conjecture
N: (6) Greater than
D': (7) 2

My justifications of these classifications are as follows:

DA: (2) Every can be classed in DA since if we formulate this as meaning “we as agents or drive-bearers, D, can legitimately anticipate, A, that every even number of the type described is covered by this conjecture.

A: (3) Even can be classed in A since what is even is anticipated, A, to be evenly divisible by 2, meaning there is no remainder after such a division.

AG: (4) Whole can be classed in AG since in the expression “even whole number” the word “whole” links the anticipatory word “even,” A, and the goal-object word “number,” G.

G: (5) Number can be classed in G since a number can be regarded as g mathematical goal object, G.

GQ: (8) It can be classed in GQ since in the expression “number is the sum” the word “is” links the goal-object word “number,” G, and the quiescent word “sum,” Q.

Q: (9) Sum can be classed in Q since a sum is the quiescent outcome or satisfaction, Q, of the addition described.

QD: (10) Of can be classed in QD since in the expression “sum of two” can be classed in QD since “is” links the quiescent word “sum,” Q, and the drive word “two,” D.

D: (11) Two can be classed in D since this word puts in place the drive, D, to add two numbers of the type described, namely that the two numbers are each prime numbers.

DG: (13) Numbers can be classed in DG since a number is a goal object, G, that is connected to the drive, D, to add just two of the numbers in question, namely prime numbers.

AQ: (12) Prime can be classed in AQ since this word leads one to anticipate, A, a number that has the quiescent manifestation, Q, of being evenly divisible only by itself or 1.

U: (1) Goldbach’s conjecture can be classed in U since this phrase encompasses or unifies, U, the entire proposal or conjecture that is being made.

N: (6) Greater than can be classed in N since these words negate, N, the notion that the two even whole numbers being added can be less than 3.

D’: (7) 2 can be classed in D’ since this number amounts to a subordinate agent or drive-bearer, D’, since it adds a restriction on the main drive, the restriction being that the even numbers under consideration must exclude the even whole numbers 2, 0, -2, -4, -6, -8, etc., and this restriction amounts to a subordinate drive.

6. Mathematics, Dictionary Definition of

Merriam-Webster's Collegiate Dictionary, 11th edition, defines "(1) mathe-matics" as follows (numberings added for purposes of subsequent analysis): "(2) the science of (3) numbers and (4) their operations, (5) interrelations, (6) combina-tions, (7) generalizations, and (8) abstractions and of (9) space configurations and their (10) structure, (11) measurement, (12) transformations, and (13) generaliza-tions." Suggested classification:

D: (3) Numbers

DA: (4) Operations

A: (5) Interrelations

AG: (6) Combinations

G: (9) Space configurations

GQ: (13) Generalizations (for space configurations)

Q: (7) Generalizations (for numbers)

QD: (8) Abstractions

DG: (10) Structure

AQ: (11) Measurement

U: (1) Mathematics

N: (12) Transformations

D': (2) The science

My justifications for the foregoing classifications are as follows:

D: (3) Numbers can be classed in D since they typically are derived from the natural numbers 1, 2, 3, etc., which themselves exhibit a sort of drive, D, to proceed consecutively through these numbers.

DA: (4) Operations can be classed in DA since operations are performed on numbers as drives, D, in anticipation, A, of yielding other numbers, as by the various arithmetical operations addition, subtraction, multiplication, and division.

A: (5) Interrelationships can be classed in A since these enable one to anticipate, A, numbers by virtue of their interrelationships with one another, as when we anticipate, A, the number 5 as the successor of the number 4, by virtue of their interrelationship among the natural numbers.

AG: (6) Combinations can be classed in AG as when we anticipate, A, the goal-object number 7 as the answer to the combination of $5 + 2$.

G: (9) Space configurations can be classed in G since they amount to goal objects, G, such as circles, squares, triangles, etc.

GQ: (13) Generalizations (for space configurations) can be classed in GQ since these generalizations amount to quiescent manifestations, Q, pertaining to space configurations as goal objects, G, as when we say the area of a circle is always anticipated, A, to be the quiescent outcome πr^2 .

Q: (7) Generalizations (for numbers) can be classed in Q since when we say that for every prime number there is a higher prime number (a prime number being defined as a number evenly divisible only by itself and 1).

QD: (8) Abstraction can be classed in QD since “to abstract” is defined in *Merriam-Webster’s Collegiate Dictionary*, 11th edition, as “to consider apart from application to or association with a particular instance” and we can say that a mathematical theorem such as the Pythagorean Theorem is typically arrived at by seeing that it holds in many particular instances and hence should hold in every instance, although this is not necessarily true and hence a proof is required to assure us of the truth of the theorem. So the quiescent manifestation, Q, of seeing that the Pythagorean Theorem holds in many instances leads to the drive, D, to try to prove that it should hold in every instance, even though one cannot examine all of the infinite number of instances to which it would pertain, hence its being ab-stracted from a need to examine every instance, which would be impossible.

DG: (10) Structure can be classed in DG since one can see the structure of something, such as the Eiffel Tower, by looking at it from a distance, where the Eiffel Tower is a goal object, G, while looking at it would involve a drive, D, to look at it.

AQ: (11) Measurement can be classed in AQ since a measurement, as of a person's waist, enables one to anticipate, A, what length a belt, say, as quiescent manifestation, Q, would be needed to fit the person in question.

U: (1) Mathematics can be classed in U since this word encompasses or unifies, U, all the foregoing portions of the definition of mathematics.

N: (12) Transformations can be classed in N since, for example, when the shape of a person is distorted by a curved mirror, the image in the mirror would be transformed or changed from what it normally looks like when the mirror is not curved, the transformation thus being at least a partial negation, N, of the normal look.

D': (2) The science can be classed in D' since mathematics is just one of many sciences and hence a subordinate agent or drive-bearer, D', compared to all the rest, since a science involves a drive to investigate the subject matter of that science, and it is subordinate by virtue of not providing us with all the answers we might desire to have to our questions about reality. A more radical example would be the transformation of a speaking human face to a speaking animal face using CGE technology (computer-generated imaging), where virtually the entire human face would be negated except for the simulation of human speech.

7. Pythagorean Theorem

Merriam-Webster's Collegiate Dictionary, 11th edition, defines the Pythagorean theorem as follows (numberings added for purposes of later analysis): “(1) Pythagorean theorem *n* (1743): a theorem in geometry: (2) the square (3) of (4) the length (5) of (6) the hypotenuse (7) of (8) a right triangle (9) equals (10) the sum (11) of the squares of the lengths (12) of the other (13) two sides.”

Suggested classification:

D: (2) The square
DA: (3) Of
A: (4) The length
AG: (5) Of
G: (6) The hypotenuse
GQ: (7) Of
Q: (8) A right triangle
QD: (9) Equals
DG: (10) The sum
AQ: (11) Of the squares
U: (1) Pythagorean theorem
N: (12) Of the other
D': (13) Two sides

My justifications of these classifications:

D: (2) The square can be classed in D since to square something indicates a drive, D, to square something (i.e., multiply it by itself).

DA: (3) Of can be classed in DA since in the expression “the square of the length” the word “of” links the drive words “the square,” D, and the anticipatory words “the length,” A.

A: (4) The length can be classed in A since these words indicate the quantity that one is anticipated, A, to square.

AG: (5) Of can be classed in AG since in the expression “the length of the hypotenuse” the word “of” links the anticipatory words “the length,” A, and the goal-object words “the hypotenuse,” G.

G: (6) The hypotenuse can be classed in G since this side of a right triangle can be regarded as a goal object, G.

GQ: (7) Of can be classed in GQ since in the expression “the hypotenuse of a right triangle” the word “of” links the goal-object words “the hypotenuse,” G, and the quiescent words “a right triangle,” Q.

Q: (8) A right triangle can be classed in Q since the words refer to the observable quiescent manifestation, Q, of a right triangle, i.e., a triangle one angle of which is a 90-degree angle.

QD: (9) Equals can be classed in QD since in the expression “x equals y” the word “equals” links the quiescent manifestation, Q, of the quantity x, while the confirmation of its equality with y involves a drive, D, to confirm such an equality.

DG: (10) The sum of the squares can be classed in DG since “the sum” involves a drive, D, to add quantities up to yield a sum, while “the squares” refers to the goal objects, G, that this sum is a drive to add up, while the word “of” links this drive with this pair of goal objects.

AQ: (11) Of the lengths can be classed in AQ since in the expression “(the squares) of the lengths” the lengths in question are anticipated, A, to be squared (i.e., multiplied by themselves) while the result of squaring these two lengths is a quiescent manifestation, Q.

U: (1) The Pythagorean theorem... can be classed in U since these words unify, U, the foregoing parts of the theorem.

N: (12) Of the other can be classed in N since these words negate, N, the notion that the length of the hypotenuse is one of the two sides to be squared.

D': (13) Two sides can be classed in D' since these other two sides amount to subordinate agents or drive-bearers, D', “subordinate” to the hypotenuse, and “drive-bearers” by virtue of involving the drive to square them and add them together.

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8. Zermelo's Axioms for Set Theory

In the late 1800s mathematicians tried to develop set theory as a basis for mathematics, but certain paradoxes for set theory were discovered. In 1908 Ernst Zermelo devised a set of seven axioms for set theory that were thought to evade the paradoxes. An eighth axiom was added in 1921 and 1922 by Fraenkel and Skolem, respectively, working independently, and a ninth axiom was added by John von Neumann in 1925. These axioms are spelled out in the article "Set theory" in *The Encyclopedia of Philosophy* (vol. 7, pp. 424-425). The numberings of the axioms are those given in the *EoP*, while the names for them are taken from the article "set theory" in *The Cambridge Dictionary of Philosophy* (pp. 837-838). The wordings for Axioms 1 through 6 are taken from the *EoP*, while (for the sake of greater clarity) the wordings for Axioms 7 through 9 are taken from the *CDP*. The symbol \emptyset stands for the null or empty set, and ε stands for "is a member of the set."

Axiom 1, the Axiom of Extensionality: "Two sets are equal if they contain the same members."

Axiom 2, the Axiom of Pairing: "For any two different objects (sets) a , b , there exists the set $\{a, b\}$ which contains just a and b ."

Axiom 3, the Axiom of Separation: "For a set s and a "definite" predicate P , there exists the set s_P which contains just those $x \varepsilon s$ which satisfies P ."

Axiom 4, the Axiom of Union: "For any set s there exists the union of the members of s —that is, the set containing just the members of the members of s ."

Axiom 5, the Power Set Axiom: "For any set s , there exists the power set of s —that is, the set whose members are just the subsets of s ."

Axiom 6, the Axiom of Infinity: "There exists the set Z with the properties (a) $\emptyset \varepsilon Z$, and (b) if $x \varepsilon Z$, then $\{x\} \varepsilon Z$."

Axiom 7, the Axiom of Choice: "For any set of non-empty sets, there is a set that contains exactly one member from each."

Axiom 8, the Axiom of Replacement: "If A is a set, and every member a of A is replaced by some b , then there is a set containing all the b 's."

Axiom 9, the Axiom of Foundation: "which guarantees that sets are formed in a series of stages called the *iterative hierarchy* (begin with some non-sets, then form all possible sets of these, then form all possible sets of the things formed so far, then form all possible sets of these, and so on)."

The author of the *Encyclopedia of Philosophy* article “Set Theory,” Abraham A. Fraenkel, who himself contributed one of the axioms, just prior to his summary of the axioms mentions that “the membership relation e serves as the primitive concept of the system, possibly in combination with equality” (vol. 7, p. 424). Taking a clue from my analysis of Peano’s axioms, I will assume that the nodes D, A, G, and Q are occupied by the primitive ideas \emptyset (the null or empty set, analogous to 0, zero, in Peano’s axioms), e (the membership relation, analogous to the successor relation for Peano’s axioms, ‘ $'$), $\{ \}$ (a set, analogous to number for Peano’s axioms), and R (or P) (relation, analogous to the primitive idea of property for Peano’s axioms, with P, a predicate, being used to designate a “one-term relation,” and R generally employed for two or more terms in a relation). What Fraenkel calls “equality,” $=$, would amount to a kind of two-term relation, along with $<$, for the left-hand term being “less than” the right-hand term, and $>$, for the left-hand term being “greater than” the right-hand term. I would suggest the following classification for each of the four primitive ideas and the dominant role or position for each of the nine axioms as follows:

- D: \emptyset , the null or empty set
- DA: Axiom 7, the Axiom of Choice
- A: e , the membership relation
- AG: Axiom 1, the Axiom of Extensionality
- G: $\{ \}$, a set
- GQ: Axiom 3, the Axiom of Separation
- Q: P, a predicate
- QD: Axiom 9, the Axiom of Foundation
- DG: Axiom 8, the Axiom of Replacement
- AQ: Axiom 2, the Axiom of Pairing
- U: Axiom 4, the Axiom of Union
- N: Axiom 5, the Power Set Axiom
- D': Axiom 6, the Axiom of Infinity

D: \emptyset , the null or empty set, can be classed in D because, as with 0 in Peano's axioms, it provides a starting point for the natural numbers, like the first domino in a row of falling dominoes. In the Axiom of Infinity it is correlated with the number 1, while $\{0\}$ is correlated with the number 2, $\{\{0\}\}$ correlates with the number 3, $\{\{\{0\}\}\}$ correlates with the number 4, etc.

DA: Axiom 7, the Axiom of Choice, can be classed in DA because to choose a member from each non-empty set is like an agent or drive-bearer, D, choosing a tool such as a weapon in anticipation, A, of accomplishing something with it, e.g., warding off trouble.

A: e , the membership relation, can be classed in A since, e.g., $x \in S$ means we can anticipate, A, that x is a member or element of set S .

AG: Axiom 1, the Axiom of Extensionality, can be classed in AG because it links the concept of being a member of, which we just classified in A, with the concept of a set, which we will classify in G below, namely by indicating that having the same members means we can anticipate, A, that two sets as goal objects, G, are equal to one another.

G: $\{ \}$, a set, can be classed in G since sets are the principal goal objects of set theory.

GQ: Axiom 3, the Axiom of Separation, can be classed in GQ because it links the concept of a set, which we classed in G, with the concept of a predicate P , which we can classify in Q since it holds that those members of the set that "satisfy" the predicate can be formed into a set of their own, where satisfaction is a quiescent concept, Q, as when water satisfies thirst for food satisfies hunger.

Q: P , a predicate, can be classed in Q since predicates "has fewer members than" provide quiescent information, Q, about the sets related to one another by the predicate.

QD: Axiom 9, the Axiom of Foundation, can be classed in QD because forming sets in iterative hierarchies involves a renewed drive, D, to construct the next hierarchy once the past one has reached a quiescent completion, Q.

DG: Axiom 8, the Axiom of Replacement, can be classed in DG since it involves constructing a new goal object, G, by replacing each of that set's members by another object, a task that is done by an agent or drive-bearer, D, in accordance with some desideratum or other, as when one switches from food goal objects to drink goal objects when the drive shifts from hunger to thirst.

AQ: Axiom 2, the Axiom of Pairing, can be classed in AQ because it refers to two "different" objects or sets such that there "exists" a set containing only the two of them, where being "different" seems to require a comparison to quiescently satisfy, Q, the claim that they are different, while the assertion that there "exists" a set with just these two different objects as members seems to amount to an anticipation, A., that we can invariably rely on.

U: Axiom 4, the Axiom of Union, can be classed in U because it unifies into a single coherent set all the elements of two diverse sets, just as we would like to consider the task of going around the cybernetic loop from D to A to G to Q to D again as a coherent task that can be fused into a meaningful whole.

N: Axiom 5, the Power Set Axiom, can be classed in N because it requires us to analyze a set into each of its fragments or “subsets,” if only temporarily, in order to unify those fragments into a power set.

D': Axiom 6, the Axiom of Infinity, can be classed in D' because it enables us to construct the sequence of sets $0, \{0\}, \{\{0\}\}, \{\{\{0\}\}\}$, etc., that amount to an infinite set that can be correlated with the infinite set of natural numbers 1, 2, 3, etc. We can construe each successive member of this sequence as like a next generation, a subordinate agent or drive-bearer, D', in relation to the prior parent generation.

Chapter 5

The Metaphysics of Medicine

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1. History of Medicine

In *Medicine: Webster's Quotations, Facts and Phrases* (p. 14) William Osler in his book *The Evolution of Modern Medicine* is quoted as follows (numbers added for subsequent analytical purposes): "(1) That progress (2) was at first slow (3) was due to the fact that (4) the leaders (5) were (6) too busy (7) scraping (8) the Arabian tarnish (9) from the pure gold (10) of Greek medicine (11) and correcting the anatomical mistakes (12) of Galen (13) to bother much with his physiology and pathology."

Suggested classification:

QD: (3) That

D: (4) The leaders

DA: (5) Were

A: (6) Too busy

AG: (7) Scraping

G: (8) The Arabian tarnish

GQ: (9) From the pure gold

Q: (10) Of Greek medicine

QD: (3) Was due to the fact that

DG: (1) That progress

AQ: (2) Was at first slow

U: (13) To bother much with his physiology and pathology

N: (11) And correcting the anatomical mistakes

D': (12) Of Galen

My justifications for these classifications are as follows:

QD: (3) Was due to the fact that can be classed in QD since in the expression “the fact that progress was at first slow was due to the fact that the leaders” the words “was due to the fact that” link the drive words “the leaders,” D, and the observable quiescent manifestation, Q, of their progress in medicine being slow.

D: (4) The leaders can be classed in D since these leaders were agents or drive-bearers, D.

DA: (5) Were can be classed in DA since in the expression “the leaders were too busy” the word “were” links the drive words “the leaders,” D, and the anticipatory words “too busy,” A.

A: (6) Too busy can be classed in A since these words lead one to anticipate, A, what the leaders were too busy with to do what.

AG: (7) Scraping can be classed in AG since in the expression “too busy scrap-ing the Arabian tarnish” the word “scraping” links the anticipatory words “too busy,” A, and the goal-object words “the Arabian tarnish,” G.

G: (8) The Arabian tarnish can be classed in G since these words refer to what as goal objects, G, the Arab world added to ancient Greek scholarship before it was translated into Latin for the Western Europeans following the Dark Ages, which spanned roughly 500 to 1,000 A.D., after the collapse of the Western Roman Empire.

GQ: (9) From the pure gold can be classed in GQ since this “gold” amounts to a metaphorical goal object, G, while its being “pure” refers to its unadulterated level of quiescent satisfactoriness, Q, of early Greek thought.

Q: (10) Of Greek medicine classed in Q since such medicine had a relatively high level of quiescent satisfactoriness, Q, compared to earlier or later thought.

DG: (1) That progress can be classed in DG since these words refer to progress as a goal object, G, from the standpoint of observing agents or drive-bearers, D.

AQ: (2) Was at first slow can be classed in AQ since this slowness would mean that one could anticipate, A, that the quiescent manifestation, Q, of medical progress would be slow in the early modern period.

U: (13) To bother much with his physiology and pathology can be classed in U since the physiology and pathology of Galen, a Greek physician who lived from 129 to about 199 A.D. (or 129-c.199 C.E. (= “Current Era” in modern parlance, so as not to offend non-Christians), amounted to a relatively unified, U, success, compared to, say, his anatomy.

N: (11) And correcting the anatomical mistakes can be classed in N since such corrections would amount to negations, N, in what Galen wrote about anatomy.

D’: (12) Of Galen can be classed in D’ since Galen can be regarded as a superordinate agent or drive-bearer, D’, in medicine, superordinate by virtue of being one of the preeminent authority on medicine prior to the modern era, Hippocrates being of comparable fame and status.

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2. Primitive Medicine Like Classic Literature, Stephen Leacock

In *Medicine: Webster's Quotations, Facts and Phrases* (p. 2) Canadian economist and humorist Stephen Leacock (1869-1944) is quoted as follows (numbers added for subsequent analytical purposes): "(1) The classics (2) are only (3) primitive (4) literature. (5) They (6) belong to (7) the same (8) class (10) as primitive (11) machinery, (10') primitive (12) music, and (10'') primitive (13) medicine."

Suggested classification:

D: (5) They

DA: (4) Literature

A: (6) Belong to

AG: (11) Machinery

G: (7) The same

GQ: (13) Medicine

Q: (8) Class

QD: (12) Music

DG: (9) As

AQ: (10) Primitive

U: (1) The classics

N: (2) Are only

D': (3) Primitive

My justifications for these classifications are as follows:

D: (5) They can be classed in D since this word refers to the classics of literature, which were the result of the drives, D, of various writers.

DA: (4) Literature can be classed in DA since the one who writes literature is an agent or drive-bearer, D, while what he or she writes is anticipated, A, to tell some story or offer some other message.

A: (6) Belong to can be classed in A since these words lead one to anticipate, A, an explanation of what the classics belong to.

AG: (11) Machinery can be classed in AG since machinery is anticipated, A, to move goal objects, G.

G: (7) The same can be classed in G since these words refer to goal objects, G, that are in the same class as the classics of literature.

GQ: (13) Medicine can be classed in GQ since medicine involves bringing the body of a person or other living organism as goal object, G, back to health as a quiescent satisfaction, Q.

Q: (8) Class can be classed in Q since belonging to the same class of goal objects involves having similar quiescent manifestations, Q.

QD: (12) Music can be classed in QD since music is the effect that sounds as audible quiescent manifestations, Q, have on people as agents or drive-bearers, D.

DG: (9) As can be classed in DG since this word means “like,” a concept that refers to various goal objects, G, that have similar characteristics from the standpoint of observing agents or drive-bearers, D.

AQ: (10) Primitive can be classed in AQ since this word leads one to anticipate, A, that observed quiescent manifestations, Q, are from an early period of development.

U: (1) The classics can be classed in U since the classics of literature amount to a relatively unified, U, set of literature of the past that is widely accepted as having high merit.

N: (2) Are only can be classed in N since these words exclude or negate, N, works of literature that are not primitive.

D': (3) Primitive can be classed in D' since any work of literature that is primitive is presumably written by subordinate agents or drive-bearers, D', since such works purportedly lack the sophistication of more modern works.

3. Gods as a Source of Medicines, Euripides

In *Medicine: Webster's Quotations, Facts and Phrases* (p. 1) the famous Greek playwright Euripides is quoted as follows (numbers added for subsequent analytical purposes): "(1) The gods (2) have sent (3) medicine (4) for (5) the venom (6) of (7) serpents, (8) but (9) there (10) is (11) no (12) medicine (13) for a bad woman." The given quote includes a sentence following the foregoing one (namely, "She is more noxious than the viper, or any fire itself"), but I have omitted an analysis of that sentence since the first one can be analyzed into all thirteen categories and hence needs no supplement for our purposes.

Suggested classification:

D: (1) The gods
DA: (2) Have sent
A: (3) Medicines
AG: (4) For
G (5) The venom
GQ: (6) Of
Q: (7) Serpents
QD: (8) But
DG: (9) There
AQ: (10) Is
U: (12) Medicine
N: (11) NBo
D': (13) For a bad woman

My justifications for these classifications are as follows:

D: (1) The gods can be classed in D since they were regarded as agents or drive-bearers, D.

DA: (2) Have sent can be classed in DA since in the expression “the gods have sent medicines” the words “have sent” link the drive words “the gods,” D, and the anticipatory word “medicines,” A.

A: (3) Medicines can be classed in A since medicines are anticipated, A, to cure medical problems.

AG: (4) For can be classed in AG since in the expression “medicines for the venom” the word “for” links the anticipatory word “medicines,” A, and the goal-object words “the venom,” G.

G: (5) The venom can be classed in G since venom can be regarded as a goal object, G, that some medicines can cure.

GQ: (6) Of can be classed in GQ since in the expression “the venom of serpents” the word “of” links the goal-object words “the venom,” G, and the quies-cent word “serpents,” Q.

Q: (7) Serpents can be classed in Q since they can be regarded as noxious quiescent manifestations, Q.

QD: (8) But can be classed in QD since this conjunction links the preceding word referring to a noxious quiescent manifestation, Q, and subsequent words that there is a drive, D, to add.

DG: (9) There can be classed in DG since this word refers to an abstract place as goal object, G, from the standpoint of observing agents or drive-bearers, D.

AQ: (10) Is can be classed in AQ since it can be construed as meaning “is to be anticipated, A, the quiescent manifestation, Q, mentioned next, namely “no medicine for a bad woman.”

U: (12) Medicine can be classed in U since a medicine can be regarded as a unified, U, and often successful treatment for a medical problem.

N: (11) No can be classed in N since this word negates, N, the notion that there is a successful medicine for a bad woman.

D': (13) For a bad woman can be classed in D' since a bad woman is a subordinate agent or drive-bearer, D', compared to a good woman.

4. Cures for Life and Death, George Santayana

In *Medicine: Webster's Quotations, Facts and Phrases* (p, 3) American (Spanish-born) philosopher George Santayana (1863-1952) is quoted as follows (umbers added for subsequent analytical purposes): "(1) There is no cure (2) for life and death (3) save to enjoy the interval. (4) The dark (5) background (6) which (7) death (8) supplies (9) brings out (10) the tender (11) colors (12) of life (13) in all their purity."

Suggested classification:

GQ: (4) The dark
Q: (5) Background
QD: (6) Which
D: (7) Death
DA: (8) Supplies
A: (9) Brings out
AG; (10) The tender
G: (11) Color
DG: (12) Of life
AQ: (13) In all their purity
U: (3) Save to enjoy the interval
N: (1) There is no cure
D': (2) For life and death

My justifications for the foregoing classifications are as follows:

GQ: (4) The dark can be classed in GQ since in the expression “(its) dark background” the words “the dark” link the tacitly understood goal-object word “its,” G, and the quiescent word “background,” Q, where “its” is a pronoun referring to death.

Q: (5) Background can be classed in Q since Q since the background supplied by death amounts to various quiescent moods, Q, such as unhappiness and despair.

QD: (6) Which can be classed in QD since in the expression “background which death” the word “which” links the quiescent word “background,” Q, and the drive word “death, D.

D: (7) Death can be classed in D since it can be regarded as a personification, so that death is treated as a metaphor for an agent or drive-bearer, D.

DA: (8) Supplies can be classed in DA since in the expression “death supplies brings out” the word “supplies” links the drive word “death,” D, and the anticipa-tory word “brings out,” A.

A: (9) Brings out can be classed in A since these words lead ne to anticipate, A, an explanation of what is brought out.

AG: (10) The tender can be classed in AG since in the expression “brings out the tender colors” the words “the tender” link the anticipatory words “brings out,” A, and the goal-object word “colors,” G.

G: (11) Colors can be classed in G since this word can be regarded as refer-ring to a goal object, G, namely the moods that death inspires in us.

DG: (12) Of life can be classed in DG since life can be regarded as a goal object, G, from the standpoint of observing agents or drive-bearers, D.

AQ: (13) In all its purity can be classed in AQ since “in all” is anticipatory, A, while “its purity” can be regarded as referring to quiescent manifestations, Q, such as th purity of moods.

U: (3) Save to enjoy the interval can be classed in U since such enjoyment provides a unified, U, agenda for life.

N: (1) There is no cure can be classed in N since these words negate, N, the notion that there is a cure for life and death, which suggests that Santayana rejects religion, if taken seriously, as a cure for worries about life and death. (I do not know if Santayana was an atheist. ---RKH)

D': (2) For life and death can be classed in D' since life and death are the affairs of mortal beings, who can be regarded as subordinate agents or drive-bearers, D', subordinate by virtue of being mortal rather than, say, immortal like the hypothetical gods.

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5. War as Medically Educational, Draper

In *Medicine: Webster's Quotations, Facts and Phrases* (p. 8) Draper in his book *History of the Conflict between Religion and Science* is quoted as follows (numbers added for subsequent analytical purposes): “(1) But (2) many of the incidents (3) of war (4) showed (5) plainly (6) that (7) medicines (8) may assuage (9) pain, (10) that skill may close wound, (11) that those (12z) who are incontestably dying (13) may be snatched from the grave.”

Suggested classification:

QD: (1) But
D: (2) Many of the incidents
DA: (4) Showed
A: (5) Plainly
AG: (6) That
G: (7) Medicines
GQ: (8) May assuage
Q: (9) Pain
DG: (3) Of war
AQ: (10) That skill may close wounds
U: (13) May be snatched from the grave
N: (12) Who are incontestably dying
D': (11) That those

My justifications for these classifications are as follows:

QD: (1) But can be classed in QD since this conjunction links the quiescent manifestation, Q, of preceding words, not given in this quote, and the drive, D, to add subsequent words.

D: (2) Many of the incidents can be classed in D since such incidents are analogous to educators, who are agents or drive-bearers, D.

DA: (4) Showed can be classed in DA since in the expression “many of the incidents showed plainly” the word “showed” links the drive words “many of the incidents,” D, and the anticipatory word “plainly,” A.

A: (5) Plainly can be classed in A since this word leads one to anticipate, A, an explanation of what such incidents of war showed plainly.

AG: (6) That can be classed in AG since in the expression “plainly that medicines” the word “that” links the anticipatory word “plainly,” A, and the goal-object word “medicines,” G.

G: (7) Medicines can be classed in G since medicine can be regarded as a goal object, G, sought by medical research.

GQ: (8) May assuage can be classed in GQ since in the expression “medicines may assuage pain” the words “may assuage” link the goal-object word “medicines,” G, and the quiescent word “pain,” Q.

Q: (9) Pain can be classed in Q since pain is a quiescent dissatisfaction, Q, that some medicines assuage.

DG: (3) Of war can be classed in DG since war is a goal object, G, from the standpoint of observing agents or drive-bearers, D.

AQ: (10) That skill may close wounds can be classed in AQ since what skill may do is anticipated, A, to close wounds as a quiescent satisfaction, Q.

U: (13) May be snatched from the grave can be classed in U since saving dying men from the grave would be a unified, U, success of medical practice.

N: (12) Who are incontestably dying can be classed in N since dying would be a negation, N, of life.

D': (11) That those can be classed in D' since the word “those” refers to dying warriors, who would be subordinate agents or drive-bearers, D', by virtue of being close to death and dependent on medical practitioners to save their lives.

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6. Art of Medicine, Voltaire

In *Medicine: Webster's Quotations, Facts and Phrases* (p. 2) the French sage and wit Voltaire is quoted as follows (numbers added for subsequent analytical purposes; words in brackets added here): "[(1) it (2) can be said that] (3) [t]he art (4) of (5) medicine (6) consists (7) of (8) amusing (9) the patient (10) while (11) nature (12) cures (13) the disease."

Suggested classification:

Q: (3) The art
QD: (4) Of
D: (5) Medicine
DA: (6) Consists
A: (7) Of
AG: (8) Amusing
G: (9) The patient
GQ: (10) While
DG: (1) It
AQ: (2) Can be said that
U: (11) Nature
N: (12) Cures
D' (13) The disease

My justifications of these classifications are as follows:

Q: (3) The art can be classed in Q since an art can be regarded as a set of observable quiescent manifestations, Q.

QD: (4) Of can be classed in QD since in the expression “the art of medicine” the word “of” links the quiescent words “the art,” Q, and the drive word “medicine,” D.

D: (5) Medicine can be classed in D since medicine involves the drive, D, to cure patients of their diseases.

DA: (6) Consists can be classed in DA since in the expression “medicine consists of” the word “consists” links the drive word “medicine,” D, and the anticipatory word “of,” A.

A: (7) Of can be classed in A since this word leads one to anticipate, A, an explanation of what the art of medicine consists of.

AG: (8) Amusing can be classed in AG since in the expression “of amusing the patient” the word “amusing” links the anticipatory word “of,” A, and the goal-object words “the patient,” G.

G: (9) The patient can be classed in G since a patient can be regarded as the primary goal object, G, in exercising the art of medicine.

GQ: (10) While can be classed in GQ since in the expression “(curing) the patient while nature (cures the disease)” the word “while” links the goal-object words “the patient,” G, and the quiescent word “nature,” Q, nature exercising natural activities that exhibit the quiescent manifestation, Q, of curing the patient.

DG: (1) It can be classed in DG since this word refers to an abstract goal object, G, that is described by the remainder of the sentence.

AQ: (2) Can be said that can be classed in AQ since these words lead one to anticipate, A, what quiescent manifestation, Q, can be said in this context.

U: (11) Nature can be classed in U since nature, in curing a disease, exerts the unified, U, activities that successfully result in a cure.

N: (2) Cures can be classed in N since a cure is the negation, N, of a disease.

D': (3) The disease can be classed in D' since a diseased patient amounts to a subordinate agent or drive-bearer, D', compared to a person without the disease.

7. Arts Discovered by Apollo, Plato

In *Medicine: Webster's Quotations, Facts and Phrases* (p. 22) Plato is quoted as follows from his dialogue, *Symposium* (numbers added for subsequent analytical purposes): "(1) The arts (2) of (3) medicine (4) and (5) archery (6) and (7) divination (8) were discovered (9) by Apollo (10) under the guidance of love and desire, (11) so that he too (12) is a disciple (13) of Love."

Suggested classification:

DA: (8) Were discovered
A: (7) Divination
AG: (6) And
G: (5) Archery
GQ: (4) And
Q: (3) Medicine
QD: (2) Of
D: (1) The arts
DG: (9) By Apollo
AQ: (10) Under the guidance of love and desire
U: (13) Of Love
N: (11) So that he too
D': (12) Is a disciple

My justifications for these classifications are as follows:

DA: (8) Were discovered can be classed in DA since the one who discovers something is an agent or drive-bearer, D, who can be said to have anticipated, A, the discoveries that he discovered.

A: (7) Divination can be classed in A since it is a sort of magical anticipation, A, typically with the purported help of some divinity, hence the word “divination.”

AG: (6) And can be classed in AG since in the expression “archery and divination” the word “and” links the goal-object word “archery,” G, and the anticipatory word “divination,” A.

G: (5) Archery can be classed in G since it aims at the ability to hit a target as goal object, G, with an arrow propelled from a bow.

GQ: (4) And can be classed in GQ since in the expression “medicine and archery” the word “and” links the goal-object word “archery,” G, and the quiescent word “medicine,” Q.

Q: (3) Medicine can be classed in Q since medicine aims at the quiescent restoration of health, Q, from injury or disease.

QD: (2) Of can be classed in QD since in the expression “the arts of medicine” the word “of” links the drive words “the arts,” D, and the quiescent word “medicine,” Q.

D: (1) The arts can be classed in D since they involve an agent or drive-bearer, D, who exerts the drive to accomplish things by means of whatever arts he has mastered.

DG: (9) By Apollo can be classed in DG since Apollo, the sun god of the ancient Greeks, can be regarded as a goal object, G, as seen from the perspective of observing agents or drive-bearers, D.

AQ: (10) Under the guidance of love can be classed in AQ since such guidance was anticipated, A, to yield the quiescent manifestation, Q, of the various art that were purportedly discovered.

U: (13) Of Love can be classed in U since “Love,” presumably meaning either the male god of love Eros, or the female goddess of love Aphrodite, or both combined, would guarantee the success of the unified, U, grasp or mastery of each of the arts.

N: (11) So that he too can be classed in N since these words imply that Apollo was not the only disciple of Love, hence a negation, N, of any claim that he was the only disciple of Love.

D': (12) Is a disciple can be classed in D' since a disciple is a subordinate agent or drive-bearer, D', in this case under the tutelage or guidance of Love.

8. Cure for Old Age, John Glenn

In *Medicine: Webster's Quotations, Facts and Phrases* (p. 3) John Glenn (1921-2016), the first American astronaut to orbit the Earth, is quoted as follows in 1997 as his reason for choosing to retire from the U. S. Senate at the end of his current term in office in 1999, as reported in the Wikipedia article on Glenn's life (numbers added for subsequent analytical purposes): "(1) For (2) all (3) the advances (4) in (5) medicine, (6) there (7) is (8) still (9) no (10) cure (11) for (12) the common (13) birthday."

Suggested classification:

D: (1) For
DA: (2) All
A: (3) The advances
AG: (4) In
G: (5) Medicine
GQ: (11) For
Q: (13) Birthday
QD: (8) Still
DG: (6) There
AQ: (7) Is
U: (10) Cure
N: (9) No
D': (12) Common

My justifications for these classifications are as follows:

D: (1) For can be classed in D because the opening words “for all the advances in medicine” can be replaced by “despite the drive, D, for a cure for old age to be among all the advances in medicine.”

DA: (2) All can be classed in DA since in the expression “for all the advances” the word “all” links the drive word “for,” D, and the anticipatory words “the advances,” A.

A: (3) The advances can be classed in A since these words lead one to anticipate, A, an explanation of advances in what field of endeavor.

AG: (4) In can be classed in AG since in the expression “advances in medicine” the word “in” links the anticipatory words “the advances,” A, and the goal-object word “medicine,” G.

G: (5) Medicine can be classed in G since medicine can be regarded as a goal object, G, namely as a field of human study and advancement.

GQ: (11) For can be classed in GQ since one might say that one sort of advance in medicine would be “for” an increase in the number of birthdays we each may enjoy, where “for” links the goal-object word “medicine,” G, and the quiescent concept of “birthdays,” Q, as a metaphor for longevity.

Q: (13) Birthday can be classed in Q since greater longevity, symbolized by a greater number of “birthdays,” would be a quiescent satisfaction, Q.

QD: (8) Still can be classed in QD since this word concerns the drive, D, to transition from one birthday as quiescent satisfaction, Q, to the next over time.

DG: (6) There can be classed in DG since this word refers to an abstract place as goal object, G, from the standpoint of observing agents or drive-bearers, D.

AQ: (7) Is can be classed in AQ since this word amounts to “is anticipated, A, to be no significant increase in longevity as a quiescent satisfaction, Q, as a result of advances in medicine so far.

U: (10) Cure can be classed in U since a cure would be a unified, U, success attained in the activity of medical research, or in short, in medicine.

N: (9) No can be classed in N since this word indicates a negation, N, in finding a cure for old age.

D': (12) Common can be classed in D' since this word refers to one birthday after another as each resulting from a subordinate agent or drive-bearer's, D', drive to live yet another year.

A 'Review' of *Pragmatism as Anti-Authoritarianism*

(Or: 'The Romance of Democracy')

Ken Shea

'The ultimate source of both objectivity and communication is the triangle that, by relating speaker, interpreter and the world, determines the contents of thought and speech.' -Donald Davidson

'Great intellectual achievements (Newton's laws, Hegel's system) are not categorically different from small technical achievements (getting the pieces to fit together neatly in a piece of cabinetry, getting the colors of the landscape to harmonize in a watercolor, finding a reasonable political compromise between conflicting interests).' -Richard Rorty (*Pragmatism as Anti-Authoritarianism*)

'When philosophy shall have cooperated with the force of events and made clear and coherent the meaning of the daily detail, science and emotion will interpenetrate, practice and imagination will embrace. Poetry and religious feeling will be the unforced flowers of life.' -John Dewey

In glorious 'Wordsworthian moments' glimpsing rare flora and fauna (lo, a snowy owl!) and daydreamed sanctuary outside the menacing glare of the schoolyard bullies, a young Richard Rorty indulged himself in a beautiful, though ultimately naïve, fantasy. There was a tension from the beginning between 'private, weird, snobbish, incommunicable interests' - such as chasing down 'pure' and 'noble' *wild orchids*, as well as offering 'warm congratulations' in letter form to the 'newly enthroned Dalai Lama', at the time a 'fellow eight-year-old who had made good' in Rorty's bespectacled eyes - and the unfocused yearning to 'hold reality and justice in a single vision' (W.B. Yeats). Throughout adolescence - particularly before trotting away to the University of Chicago (Hutchins College) at age fifteen, discovering a welcoming community of intellectual peers (away from the East Coast bullies), and joining what A.J. Liebling called 'the biggest collection of juvenile neurotics since the Children's Crusade' - Rorty sought a way to translate without remainder those private 'Wordsworthian moments' into a reality, ideally an enduring one, where - paraphrasing Nabokov - art, curiosity, tenderness, kindness, and ecstasy are the norm.

'By *reality* I meant, more or less, the Wordsworthian moments in which, in the woods around Flatbrookville [New Jersey] (and especially in the presence of certain coralroot orchids, and of the smaller yellow lady slipper), I had felt touched by something numinous, something of ineffable importance. By *justice* I meant what Norman Thomas and Trotsky both stood for, the liberation of the weak from the strong' ('Trotsky and the Wild Orchids', *Philosophy and Social Hope*, page 7).

Eventually Richard Rorty would question the wisdom of mixing the search for private fulfillment with elaborate, possibly unachievable, political agendas (cf. *Contingency, Irony, and Solidarity*); programs which journeyed far afield of the standard social welfare policies of the Scandinavian countries were seen as extravagant, possibly dangerous, distractions. Accordingly, later in life, Rorty harbored complex feelings towards French intellectuals such as Jean-François Lyotard, Michel Foucault, and Jacques Derrida. On the one hand, the Rorty who raucously egged on efforts at literary experimentation, 'the liberation of the weak from the strong', and John Dewey's iconoclastic vision of 'breaking through the crust of convention' was frankly delighted by the

poststructuralist, postmodern turn in philosophy. On the other hand, Rorty, a disciple of John Dewey to the end, couldn't *quite* understand why, for instance, Jacques Derrida fixated on Karl Marx (cf. *Specters of Marx*) when social changes, promising quality-of-life improvements for the put-upon working class, could be realized within the existing parameters of democracy. Put another way, the notion that philosophy could be 'its time held in thought' (Hegel) might well be sufficient, since depicting an age's exploitations vividly enough could provide the foundation for social change, Rorty surmised. 'For by thus holding one's time, one might do what Marx wanted done - change the world' (*PSH.*, page 11). But to hold a given period in thought necessarily meant a certain eclecticism and eschewing foundationalism, or the bugbear that Rorty made Platonism out to be. Few things were more repugnant to Rorty than a canon parroted *ad nauseam* or the 'neo-Aristotelian mystique' so in vogue at the University of Chicago.

'For quite a while after I read Hegel, I thought the two greatest achievements of the species to which I belonged were *The Phenomenology of Spirit* and *Remembrance of Things Past* (the book which took the place of the wild orchids once I left Flatbrookville for Chicago). Proust's ability to weave intellectual and social snobbery together with the hawthorns around Combray, his grandmother's selfless love, Odette's orchidaceous embraces of Swann and Jupien's of Charlus, and with everything else he encountered - to give each of these its due without feeling the need to bundle them together with the help of a religious faith or a philosophical theory - seemed to me as astonishing as Hegel's ability to throw himself successively into empiricism, Greek tragedy, Stoicism, Christianity, and Newtonian physics, and to emerge from each, ready and eager for something completely different. It was the cheerful commitment to irreducible temporality which Hegel and Proust shared - the specifically anti-Platonic element in their work - that seemed so wonderful. They both seemed able to weave everything they encountered into a narrative without asking that that narrative have a moral [Edgar Allan Poe's 'heresy of the didactic'], and without asking how that narrative would appear under the aspect of eternity' (*ibid.*).

After a 'disillusionment' with Plato and extended honeymoon with Hegel, Rorty was 'led back to Dewey' and inspired, partly through an encounter with Jacques Derrida's writing while at Princeton in the 1970s, to crystallize the reservations he shared with Jacques Derrida, John Dewey, Ludwig Wittgenstein, and Martin Heidegger (towards the impossibly-wrongheaded representationalist Cartesianism project) into a book, Rorty's wave-creating 1979 masterpiece *Philosophy and the Mirror of Nature*. Rorty saw himself as following in the footsteps of Martin Heidegger's critique of the 'ontotheological tradition', serving up a 'historicist anti-Platonism' à la Heidegger's 'history of being', cf. Iain Thomson's *Heidegger on Ontotheology*. The disgust with analytic philosophy and foundationalism coupled with disillusionment about 'the whole idea of holding reality and justice in a single vision' finally culminated in the 1989 book *Contingency, Irony, and Solidarity*. Along with the Habermasian emphasis on persuasion and the 'unforced force' of the better argument, the latter book's tenor can be summed up along these lines: 'There is nothing sacred about universality which makes the shared automatically better than the unshared. There is no automatic privilege of what you can get everybody to agree to (the universal) over what you cannot (the idiosyncratic)' (*Philosophy and Social Hope*, pages 13-14). Reducing the 'pain and humiliation' of other people was viewed as more important than returning the call of an asinine political, religious, or economic *cri de coeur*.

Rorty's commitment to 'Deweyan pragmatism' was unquestioned for decades before his last book, *Pragmatism as Anti-Authoritarianism*, was posthumously-published in August of 2021, less than a year ago, dear reader. The delayed circumstances surrounding the publication of

Pragmatism as Anti-Authoritarianism are certainly peculiar in a few ways. Rorty signs off in the Preface to the book with 'Bellagio, July 22, 1997', which gives some indication. The first footnote reads: 'He wrote the ten chapters that make up the body of this work to be presented to a single audience, in sequence, and as a unified whole, as his 1996 Ferrata Mora Lectures at the University of Girona [in Catalonia, Spain], under the title "Anti-Authoritarianism in Epistemology and Ethics." It should also be noted that it was not technically his *last* book'. The reason is that *Pragmatism as Anti-Authoritarianism* was immediately translated into Catalan and Spanish, and Rorty later published *Achieving Our Country*. It might be edifying, however, to dwell on the title of the lecture series, 'Anti-Authoritarianism in Epistemology and Ethics', for a moment before contrasting the results with the significance of the title *Pragmatism as Anti-Authoritarianism*.

The title of the lecture series, 'Anti-Authoritarianism in Epistemology and Ethics', furnishes a more accurate picture of Rorty's goal in presenting these lectures as a cohesive series, or at least captures the historical sweep which holistically stitches these lectures together. The idea is that the original Enlightenment of the 17th and 18th centuries - think Locke, Rousseau, Diderot, Voltaire, Kant, and Hume - was anti-authoritarian in weaponizing rationality against the superstitions of monotheistic religions. One could conceptualize this form of anti-establishment sentiment along *ethical* lines. Rorty thinks that, in effect, a pragmatist, 'second' Enlightenment is required in order to account for the fact that all truths are human creations: 'Truth is a property of sentences, since sentences are dependent for their existence upon vocabularies, and since vocabularies are made by human beings, so are truths.' Richard Rorty's perennial hero John Dewey historicized *The Quest for Certainty in Reconstructions in Philosophy* this way: 'Under disguise of dealing with ultimate reality, philosophy has been occupied with the precious values embedded in social traditions'. The goal of philosophy, science, education, philosophy, religion, art, economics, politics, and the rest for Dr. Dewey was to help clarify 'men's ideas as to the social and moral strifes of their own day' and eventually usher in an epoch for which 'poetry and religious feeling will be the unforced flowers of life' (*ibid.*, page 201). An anti-authoritarian *epistemological* attitude is useful for disabusing the false belief that human beings need to 'measure themselves against something non-human' (Rorty). Dewey employs the term 'democracy', analogous to Habermas's 'communicative reason' (cf. subject-centered reason), as a reminder that 'human beings should regulate their actions and beliefs by the need to join with other human beings in cooperative projects, rather than by the need to stand in the correct relation to something non-human' (*Pragmatism as Anti-Authoritarianism*, page 10), such as God, Truth, Reason, Science, The Intrinsic Nature of Reality, or 'realist' epistemology.

Rorty takes aim throughout *Pragmatism as Anti-Authoritarianism* at 'essentialism', because camouflaging human influence in the creation of knowledge. Vocabularies and truths, after all, are made by human beings. It is interesting that through disputing the essentialism purveyed by figures like Aristotle and Saul Kripke, the fifth lecture in *Pragmatism as Anti-Authoritarianism*, 'Pan-Relationalism', Richard Rorty the atheist actually comes pretty close to articulating Buddhist notions like Śūnyatā ('emptiness' or 'void') and the doctrine of dependent origination (Pratītyasamutpāda), via disputing the essentialism purveyed by figures like Aristotle and Saul Kripke. Rorty wants to dismantle quasi-Kantian distinctions like *ordo essendi* and *ordo cognoscendi* and get to something more like Wilfrid Sellars's 'psychological nominalism' by way of Alfred North Whitehead's notion that actual entities are a nexus of prehensions. Rorty invokes both Gottfried Wilhelm Leibniz ('monads mirroring the universe') and Alfred North Whitehead as

a sledgehammer for gleefully exploding 'metaphysical dualisms which we have inherited from the Greeks' [e.g., essence/accident, substance/property, and appearance/reality], or what John Dewey once called the 'brood and nest of dualisms' comprising the so-called 'problems of philosophy' within the 'spectator theory of knowledge'. The supposed appearance/reality divide is one that scientists and analytic philosophers hold dear, but pan-relationalism allows one to 'put aside the distinction between subject and object, between the elements in human knowledge contributed by the mind and those contributed by the world' (*Pragmatism as Anti-Authoritarianism*, page 85). There are only webs of relations indefinitely related to other webs of relations, rather than any conversation-ending 'fact' on which to rest: 'To say that relations go all the way down [cf. mereology, Arthur Koestler's 'holon' and 'holarchy'] is a corollary of what Sellars called "psychological nominalism," that is, of the doctrine that there is nothing to be known about anything save what is stated in sentences describing it. For every sentence about an object is an explicit or implicit description of its relation to one or more other objects' (*ibid.*, page 89). If one can conceive of a 'thing' *qua* number, i.e., lacking an 'essence' apart from other numbers, then one sees what Rorty means when he suggests that the potential of descriptions that could be offered is limitless and there's not much sense in arguing between Greek metaphysical dualities. Thinking of these infinite numerical relations as 'internal relations' in that 'none of these relations could be different without the number' being different is the gist of Rorty's idea of pan-relationalism and, one could argue, a serviceable parallel to Eastern notions like Śūnyatā and Pratītyasamutpāda. Of course, someone might come along and, for instance, bang her fist on the table, calling that a 'fact' - actually, such a gratuitous demonstration would have only proved that the table is interrelated with all of the other elements that contributed to its existence (e.g., the tree, the soil, forrester, carpenter, other merely-apparent fictional characters awash in the vibratory flux of Consciousness, the food that nourished the carpenter, environmental conditions). She has not proved the independent 'fact' of the table or that a 'fact' is possible, at all, outside of language and mind.

'Pan-relationalism holds that it also does not pay to be essentialist about tables, stars, electrons, human beings, academic disciplines, social institutions, or anything else. We suggest that you think of all such objects as resembling numbers in the following respect: there is nothing to be known about them except an infinitely large, and forever expandable, web of relations to other objects. There is no point in asking for terms of relations which are not themselves relations, for everything that can serve as the terms of a relation can be dissolved into another set of relations, and so on forever' (*ibid.*, page 88).

Literary critic Jonathan Culler once said that, 'One could therefore identify deconstruction with the twin principles of the contextual determination of meaning and the infinite extendability of context' (*On Deconstruction*, page 215). Jürgen Habermas expressed similar sentiments on page 197 of *The Philosophical Discourse of Modernity*: 'These variations of context that change meaning cannot in principle be arrested or controlled, because contexts cannot be exhausted, that is, they cannot be theoretically mastered once and for all.'

Both John Dewey and Richard Rorty harbored the hope that by adopting, in effect, the spirit of pan-relationalism, traditional epistemological quandaries would be more difficult to formulate or possibly look downright silly. Aristotle's view that humans - or, what Nietzsche derisively called, 'clever animals' - were a distinct species because of a faculty called 'knowing' would fall away

along with provincial Greek metaphysical dualities, such as essence and accident, substance and property, as well as appearance and reality; Rorty hoped that Donald Davidson's obliteration of the scheme/content distinction would be a lasting one, as well. In short, the happy upshot of pan-relationalism would be taking Darwin more seriously, according to Rorty. Taking Darwin more seriously would eventually mean abandoning notions like 'truth' and the aspiration of penetrating beyond appearance to the inner 'essence' of an object or reality at large. In the same way that describing a number as the difference between 6,329,461 and 6,251, 362 or its square root fails to capture the number's 'essence', describing the chemical constitution of a table comes no closer to divining the table's inner nature. 'The painfulness, the solidity, and the causal powers of the table are on all fours with its brownness and its ugliness' (*ibid.*, page 91).

Even on the 'meta' level of competing theories, Rorty's notion of pan-relationalism is no closer to the ever-receding horizon of 'truth'. In fact, Rorty maintains that all that really be offered is 'justification' and, therefore, pan-relationalism is not more 'true'. What is its value then? 'It would be inconsistent with my own pan-relationalism to try to convince you that the Darwinian way of thinking of language - and, by extension, the Deweyan, pragmatist way of thinking of truth - is the objectively true way. All I am entitled to say is that it is a useful way, useful for particular purposes' (*ibid.*, page 100). The merit of adopting the perspective of pan-relationalism and favoring justification over 'truth' is enabling more people in, what Rorty characterized as, 'bourgeois liberal' Western democracies to embrace societal change and engagement with their fellow citizens in constructive dialogue. 'The hundred-odd years spent absorbing and improving on Darwin's empirical story have, I suspect and hope, made us unable to take transcendental stories seriously. In the course of those years we have gradually substituted making a better future for ourselves - a utopian, democratic society - for the attempt to see ourselves from outside of time and history' (*ibid.*, page 103). The fiction of 'truth' is at one point likened to the Lacanian 'sublime object of desire' in this deflationary way: the 'desire for such an object cannot be made relevant to democratic politics' (*ibid.*, page 48). Rorty and Dewey grokked justification as more 'recognizable' than 'truth' and thereby more amenable to the demands of democracy.

About 'pragmatism', *The Oxford Companion to Philosophy* says that the 'efficacy in practical application' or the issue that 'works out most effectively' is the 'proper standard for the determination of truth in the case of statements, rightness in the case of actions, and value in the case of appraisals.' (Some have speculated that American pragmatism has its roots in the Skeptics of antiquity, who foreclosed on the potential for authentic knowledge - *epistēmē* ἐπιστήμη - and placed their hopes in plausible information - *to pithanon* πῖθάνος - in light of practice, cf. entry for 'pragmatism' in *The Oxford Companion to Philosophy*.) Following Charles Sanders Peirce, pragmatists acquaint themselves with beliefs *qua* 'habits of action rather than attempts to correspond to reality' (*ibid.*, page 52), and pragmatists accordingly allow that different circumstances or future audiences may require alternative justifications. What's more, pragmatist philosophers like William James and Friedrich Nietzsche reckoned that the will to 'truth' and the will to happiness were compatible (though they appeared to part company on how far to extend their sympathies). William James gathered there were as many truths as there were endeavors for humans, while Richard Rorty reminds readers that The Truth or 'love of Truth' is baloney anyway. 'What has been called by that name ["love of Truth"] is a mixture of love of reaching intersubjective agreement, the love of gaining mastery over a recalcitrant set of data, the love of winning arguments, and the love of synthesizing little theories into big theories'

(*Pragmatism as Anti-Authoritarianism*, 'Pragmatism as Romantic Polytheism' page 34). In more characteristically Nietzschean terms, clever animals invented knowing, and 'this intellect has no additional mission which would lead it beyond human life' (*Philosophy and Truth*, page 79). 'They were reduced to thinking, inferring, reckoning, coordinating cause and effect, these unfortunate creatures', sighed Friedrich Nietzsche. Richard Rorty, in fact, appears to largely share Friedrich Nietzsche's reservations about the epistemological claims of science (§ 373, Book 5, of *The Gay Science*, "Science" as a Prejudice), yet Rorty applauds the ability of scientists to cooperate socially in the attempt to improve 'man's estate'.

'The attempt to love Truth, and to think of it as one, and as capable of commensurating and ranking human needs, is a secular version of the traditional religious hope that allegiance to something big, powerful, and non-human will persuade that powerful being to take your side in your struggle with other people. Nietzsche despised any such hope as a sign of weakness. Pragmatists who are also democrats [Dewey and Rorty, contra Nietzsche, cf. 'the last man' and 'European Buddhism', Walter Kaufman's *Nietzsche*] have a different objection to such hope for allegiance with power: they see it as a betrayal of the ideal of human fraternity.'

'The pragmatist objection to traditional forms of religion [cf. Wilber's 'pre/trans' fallacy] is not that they are *intellectually* irresponsible in disregarding the results of natural science. Rather it is that they are *morally* irresponsible in attempting to circumvent the process of achieving democratic consensus about how to maximize happiness' (*Pragmatism as Anti-Authoritarianism*, page 34).

Rorty followed Jacques Derrida in the attempt to 'deconstruct the metaphysics of presence' and clearly delighted in impugning the value of the Greek metaphysical distinctions (e.g., essence and accident) in the age of 'bourgeois liberal' Western democracies. Accordingly, Rorty found greater merit in Jürgen Habermas's emphasis on 'communicative-reason' over the unfortunate historical development of 'subject-centered reason', inherited from the Greeks and Cartesians. Viewing beliefs as indefinitely webbed ('pan-relationalism') disallows the retreat to the supposed higher ground of 'The Intrinsic Nature of Reality' or suchlike myth. If higher ground cannot be achieved, Rorty reckoned, then dialogue, justification, utility, and hope ('Whitmanesque and Whiteheadian romance') should fill the vacuum. True, casual observers mistook Rorty for a cynic or modern-day Skeptic, but fellow philosopher Hilary Putnam got it right in an interview when he called Rorty a 'moralist', though Rorty himself might flinch from the description. Jürgen Habermas himself said the following in an obituary for Richard Rorty (1931-2007): 'Nothing is sacred to Rorty the ironist. Asked at the end of his life about the "holy", the strict atheist answered with words reminiscent of the young Hegel: "My sense of the holy is bound up with the hope that someday my remote descendants will live in a global civilization in which love is pretty much the only law." ' This largeness of vision explains the draw to Hegel, Romanticism, Whitman, Whitehead, Foucault, Dewey, and 'the hope of inventing new ways of being human'.

'The misconception which has haunted philosophic literature throughout the centuries is the notion of "independent existence." There is no such mode of existence; every entity is to be understood in terms of the way it is interwoven with the rest of the universe.' -Alfred North Whitehead

'Hegel had also shown that there can be a kind of rationality without argumentation, a rationality which works outside the bounds of what Kuhn calls a "disciplinary matrix," in an ecstasy of spiritual freedom.'
-Richard Rorty (*Consequences of Pragmatism*)

Physical Theory and Phenomenalism

Ken Shea

'I don't believe in empirical science. I only believe in *a priori* truth' -Kurt Gödel

'If you want to know the secrets of the Universe, think in terms of energy, frequency and vibration.' -Nikola Tesla

'Maxwell's field is also matter!' -Roger Penrose

Also matter? Can that possibly be true? Indeed. The McGraw-Hill *Dictionary of Physics* (Third Edition) defines matter in the following way: 'The substance composing bodies perceptible to the senses; includes any entity possessing mass when at rest'. The mathematical physicist Roger Penrose has noted the difficulties attendant to treating matter as a substance in the wake of mathematician James Clerk Maxwell and physicist Albert Einstein. The Maxwell field equations are defined thus: 'Four differential equations which relate the electric and magnetic fields to electric charges and currents, and form the basis of the theory of electromagnetic field equations' (Penrose, *The Emperor's New Mind*, page 217). Roger Penrose reminds readers that the world of classical physics encompasses space-time and physical objects (viz., particles and fields). Although concerning the particles Roger concedes 'little is said about their actual nature and distinguishing qualities', the fields are, epistemologically, less opaque due to 'the electromagnetic field being subject to the Maxwell equations and the gravitational field to the Einstein equations' (*ibid.*). Particles with 'tiny mass' and commensurately more trivial effects on the fields are designated test particles, as opposed to point particles. 'When the effects of the particles on the fields (and hence on other particles) need to be considered - i.e., the particles act as sources for the fields - then the particles must be considered as objects spread out, to some extent, in space' (*ibid.*).

Penrose says that 'matter' is the stuff that physical 'objects' or 'things', including people and bugles and planets, are composed of; nonetheless, there is a difficulty. 'How does one quantify this substance?', Penrose wonders. (After all, the scientific way of framing the 'world' now demands quantification, controllability, and amenability to technology. Friedrich Nietzsche says in § 635 of *The Will to Power*: 'We require "units" to be able to *calculate*: one must not suppose for that reason that there are such units. We have derived the concept of the unit from our "ego" concept - our most ancient article of faith', cf. Martin Heidegger's ontological difference. Alfred North Whitehead, analogously, warned against 'the fallacy of misplaced concreteness'.) In any event, mass is ultimately treated as a physical quantity, which needs to be conserved: 'the mass, and therefore, the total matter content, of any system whatever must always remain the same' (Penrose, *ibid.*, page 218). There are innumerable ways of accomplishing that goal.

The German physicist Albert Einstein showed that mass and energy were interchangeable. 'Mass is indeed conserved', Penrose says, 'but, being partly composed of energy, it now seems less clearly to be the measure of actual substance. Energy, after all, depends upon the speed with which that substance is traveling' (*ibid.*, cf. quantum entanglement) and a changing frame

of reference, which problematizes 'objectivity'. Penrose, as usual, deftly puts the puzzle pieces together and, in this case, enthusiastically all but rises out of his seat to conclude that, because Maxwell's electromagnetic field carries energy and because Einstein's theory of special relativity ($E = mc^2$) says that energy and mass are convertible, 'Maxwell's field is also matter!' Maxwell's field relates to the forces of particle binding; what's more, Penrose finds, 'There must be a substantial contribution to any body's mass from electromagnetic fields within it'.

In fact, the analytic philosopher W.V. Quine - mischievously? - toyed with the idea of factoring the fields themselves into the ontological definition of an object, e.g., a freshly-painted ship, handheld radio, or creaky wagon. Why not? After all, interacting forces, fields, and particles are widely believed to underlie material existence, and Quine played cheerleader to a self-styled naturalized epistemology. In any event, wherever one looks, there appears to be a plea for 'tolerance and an experimental spirit' (Quine, 'On What There Is'). At such moments, one reflects on the need for interpretation: probability amplitudes, nonlocality/entanglement ('spooky action at a distance'), indeterminacy, 'randomness', complementarity principle, superposition, and so forth. The sheer presence of 'the limitation that the uncertainty principle of quantum mechanics sets on our powers of prediction', in part, led Stephen Hawking to conclude, 'Even if we discover a complete unified theory, it would not mean that we would be able to predict events in general'. A number of different interpretations, moreover, are proffered for quantum theory; the situation is summed up by Dean Radin thus: Copenhagen Interpretation, Many Worlds, Quantum Logic, Consciousness Creates Reality, Decoherence, Neorealism, and Bell's Theorem (*Entangled Minds*, pages 222-227).

In wading into these larger discussions, taking stock with a few of the top physicists of the twentieth century may be helpful. Within *The Matter Myth* (by Paul Davies), fellow physicists Werner Heisenberg and Niels Bohr are seen adopting a skeptical, more instrumentalist, attitude toward scientific discoveries. Heisenberg himself says, 'In the experiments about atomic events we have to do with things and facts, with phenomena that are just as real as any phenomena in daily life. But the atoms or the elementary particles themselves [which, under the assumptions of scientific materialism, are supposed to undergird 'things and facts'] are not as real; they form a world of potentialities and possibilities rather than one of things or facts'. Potentialities and possibilities? Bohr was even more direct: 'Physics is not about how the world *is*, it is about what we say about the world'. Could scientific materialism itself be pseudoscience *par excellence*?

'Pseudoscience is often characterized by contradictory, exaggerated or unfalsifiable claims [e.g., 'matter' and 'randomness']; reliance on confirmation bias rather than rigorous attempts at refutation; lack of openness to evaluation by other experts; absence of systematic practices when developing hypotheses; and continued adherence long after the pseudoscientific hypotheses have been experimentally discredited [see Paul Davies's *The Matter Myth*].' -Wikipedia

The theoretical physicist Paul Davies weighs these sobering assessments by stating that the terms used in the mathematical models of physical theory (cf. Quine-Putnam indispensability argument) were never 'intended to represent an independent part of reality', let alone Reality as such. The latter is the domain of metaphysics. What is metaphysics? The *Random House Dictionary* has provided the following rough-and-ready definition: 'The branch of philosophy that

treats of first principles, includes ontology and cosmology, and is always intimately connected with an epistemology.' The entry in *The Cambridge Dictionary of Philosophy* is also pretty good: 'the philosophical investigations of the nature, constitution, and structure of reality. It is broader in scope than science, e.g., physics and even cosmology (the science of the nature, structure, and origin of the universe as a whole), since one of its traditional concerns is the existence of non-physical entities, e.g., God. It is also more fundamental, since it investigates questions science does not address but the answers to which it presupposes. Are there, for instance, physical objects at all, and does every event have a cause?' (*ibid.*, page 489). Scientists frequently appear to gravitate to a favored metaphysics, erroneously calling their metaphysical selection *science*. 'The view, sometimes considered scientific (but an assumption rather than an argued theory), that all there is, is spatiotemporal (a part of "nature") and is knowable only through the methods of the sciences [cf. *wissenschaft*], is itself a metaphysics, namely metaphysical naturalism (not to be confused with natural philosophy) [Isaac Newton's *Mathematical Principles of Natural Philosophy*]. It is not part of science itself' (*The Cambridge Dictionary of Philosophy*, page 489.). And remember that empirical science is - what Ken Wilber has categorized with - 'reconstructive sciences', since based on past observations and glorified guesswork. Ken Wilber, Karl Popper, and Alfred North Whitehead wanted to remind people that there is something unpredictable and wonderful baked into the universe, call it Spirit-in-action (Wilber), 'a universe of emergent novelty' (Popper), 'Category of the Ultimate' [creativity, one, many] (Whitehead), or what Erich Jantsch and Conrad Waddington called 'self-transcendence'.

'Historically, the empirical sciences got their start by studying precisely those holons that show minimal creativity. In fact, they basically studied nothing but a bunch of *rocks* in motion (mass moving through space over time), and thus they mistook the nature of science to be essentially predictive.

I mean no offense to rocks, but by taking some of the dumbest holons in existence and making their study the study of "really real reality," these physical sciences, we have seen, were largely responsible for the collapse of the Kosmos into the cosmos [see Jürgen Habermas's 'colonization' of the lifeworld], for the reduction of the Great Hierarchy of Being to the dumbest creatures on God's green Earth, and for the leveling of a multidimensional reality to a flat and faded landscape ['Flatland'] *defined* by a *minimum* of creativity (and thus *maximum* of predictive power).

It would take such a turn of events as Heisenberg's uncertainty principle to remind us that even the constituents of rocks are neither as predictable nor as dumb as these silly reductionisms. In the meantime, the "ideal" of knowledge as predictive power would ruin virtually every field it was applied to (including rocks), because its very methods would erase any creativity it would find, thus erasing precisely what was novel, significant, valuable, meaningful.'

'*Holons emerge holarchically*. That is, a series of increasing whole/parts. Organisms contain cells, but not vice versa; cells contain molecules, but not vice versa; molecules contain atoms, but not vice versa. And it is this not vice versa, at each stage, that constitutes unavoidable asymmetry and nested hierarchy (holarchy). Each deeper or higher holon embraces its junior predecessors and then adds its own new and more encompassing pattern or wholeness - the new code or canon or morphic field or agency that will define this as a whole and not merely a heap (as Aristotle clearly spotted). This is Whitehead's famous dictum: "The many become one and are increased by one."' (Wilber, *Sex, Ecology, Spirituality*, page 56)

'A "level" in a holarchy is established by several objective criteria: by a qualitative emergence (as explained by Popper); by asymmetry (or "symmetry breaks," as explained by Prigogine and Jantsch); by an inclusionary principle (the higher includes the lower, but not vice versa, as explained by Aristotle); by a developmental logic (the higher negates and preserves a lower, but not vice versa, as explained by Hegel); by a chronological indicator (the higher chronologically comes after the lower, but all that is later is not higher, as explained by Saint Gregory).' (*ibid.*, pages 62-63)

'The evolution of the universe is the history of an unfolding of differentiated order or complexity. Unfolding is not the same as building up. The latter emphasizes structure and describes the emergence of hierarchical levels by joining the systems "from the bottom up." Unfolding, in contrast, implies the interweaving of processes which lead to phenomena of structuration at different hierarchical levels. Evolution acts in the sense of simultaneous and interdependent structuration of the macro- and the micro-world. Complexity thus emerges from the interpenetration of processes of differentiation and integration' (Jantsch, *Self-organizing Universe*, page 75).

Meanwhile, Alfred North Whitehead mourned that scientific materialism (Wilber's 'Flatland') had rendered Nature 'a dull affair, soundless, scentless, colourless; merely the hurrying of material, endless and meaningless'. Scientific realism - which, you will remember, dear reader, has a metaphysical commitment to the mind-independent existence of the entities unearthed by science - says that scientific theories provide an accurate description of the world. Alternately, scientific instrumentalism views scientific theories as mere useful tools for making predictions, sans any claim to objective truth. Scientific instrumentalism is essentially more pragmatic, effectively fallibilistic, less arrogant in its posture. An example: Pierre Duhem is regarded as a famous instrumentalist and, with Quine, crystallized the Duhem-Quine thesis, an underdetermination argument strongly supportive of Quine's confirmation (epistemic) holism, cf. *Ontological Relativity*, holophrastic indeterminacy.

W.V. Quine and Hilary Putnam expanded the parameters of an 'object' in another way, as well. In the entry for 'mathematics, problems of the philosophy of', *The Oxford Companion to Philosophy* synthesizes the hypothetico-deductive account of mathematical epistemology known as the Quine-Putnam indispensability argument. The thinking goes that mathematics is integral to science such that mathematical entities have their existence confirmed once the scientific theories are accepted as being approximately correct. Put another way, mathematics and science are theory-laden and fall or stand together - a package deal. 'Mathematical objects, like numbers and functions, are theoretical posits. They are [therefore] the same kind of thing as electrons, as we know about them the same way we know about electrons - via their role in mature, well-confirmed scientific theories' (*ibid.*, page 537). But how do scientific theories themselves receive provisional confirmation? In Hilary Putnam's view, merely conforming to 'certain criteria of rational acceptability' is sufficient, rather than, say, proffering an explanation *qua* physical theory that cleanly 'hooks on' to the so-called 'real world'.

The simplistic notion of a physical 'object' has taken a hit from another quarter. Elsewhere in the dictionary (page 658), the protean doctrine of 'phenomenalism' is given the following contours: 'the doctrine that physical objects are reducible to sensory experiences, or that physical object statements can be analyzed in terms of phenomenal statements describing sensory experience' (cf. 'phenomena and noumena', *ibid.*, page 657). The former comments about 'physical objects'

arguably constitute more of a metaphysical/ontological claim, and square nicely with the work of George Berkeley and David Hume; the latter comments about formalized 'physical object statements' arose later, chronologically, and recrudesced with 20th-century logical positivism and the philosophical work of, e.g., A.J. Ayer, Rudolf Carnap, and C.I. Lewis (cf. Quine's 'Two Dogmas of Empiricism'). In any event, the philosopher David Hume (cf. Gilles Deleuze's *Empiricism and Subjectivity: An Essay on Hume's Theory of Human Nature*) can be seen channeling another 'great philosopher' in George Berkeley within *A Treatise of Human Nature*:

'A like reasoning will account for the idea of *external existence*. We may observe, that it is universally allowed by philosophers, and is besides pretty obvious of itself, that nothing is ever really present with the mind but its perceptions or impressions and ideas, and that external objects become known to us only by those perceptions they occasion. To hate, to love, to feel, to see; all this is nothing but to perceive [George Berkeley's claim that 'to be is to be perceived', ultimately in the mind of God]. Now since nothing is ever present to the mind but perceptions, and since all ideas are derived from something antecedently present to the mind; it follows, that it is impossible for us so much as to conceive or form an idea of anything specifically different from ideas and impressions' (Hume, *The Essential Philosophical Works*, pages 65-66).

Experience is, in fact, known directly, unlike 'matter' or a 'physical object' (however defined), and is presumably part of the reason that the philosopher W.V. Quine said that the 'phenomenalistic conceptual scheme' has 'epistemological priority' over the 'physicalistic conceptual scheme' (within the metaphysics/ontology essay 'On What There Is'). At the conclusion of that classic essay, Quine observes, 'Viewed from within the phenomenalistic conceptual scheme, the ontologies of physical objects and mathematical objects are myths.' It is certainly possible to harmonize the tenets underlying the philosophical doctrine of phenomenalism with the concept of 'maya' (Sanskrit term for 'illusion'), the phenomenal world *qua* myth, in the Eastern esoteric tradition. Actually, the Buddhist scholar D.T. Suzuki called William James's 'radical empiricism' the closest Western philosophy had come to approximating the Eastern 'non-dual' understanding, connected to the Advaita-Vedanta tradition in Hinduism. Accordingly, within the *Encyclopedia of Eastern Philosophy and Religion*, the entry for 'Advaita-Vedanta' reads:

'Advaita-Vedanta teaches that the manifest creation, the soul, and God are identical. Just as particle physicists have discovered that matter consists of continually moving fields of energy, so the sages of Vedanta recognized that reality consists of energy in the form of consciousness and that human beings perceive a gross universe by means of gross senses, because of identification with the ego-limited body. That which is real and unchanging is superimposed in the mind by the notion of an ever-changing manifest world of names and shapes.'

But what about the apparent physicality of the 'real world'? Surely that is real - anybody can see that. Does a tree in a forest unpolluted by human contact still make a noise? The epistemology of phenomenalism runs into an apparent snag, and the analytic philosopher John Searle rightly says that George Berkeley was willing to 'pay the price' (*The Construction of Social Reality*) for his atheist- and skeptic-thwarting phenomenalistic immaterialism by invoking the mind of God, which smilingly comprehends all material existence in one go (cf. Baruch Spinoza's *sub specie aeternitatis*). Also, the reason that David Hume and George Berkeley were earlier classed more in the 'ontological' camp vis-à-vis phenomenalism concerns metaphysics. Equating physical

'objects' with sense experiences quickly wades into the greatest delights of metaphysicians, e.g., change, identity, time, possibility, actuality, and logical necessity. 'The introduction of such possible phenomena imports a complication, for the possibilities in question must be in some sense "real" and not just logical. But real possibility is grounded in actual conditions. And what could function as the "base" or "ground" for the phenomenalist's actual conditions relative to which his possible phenomena are to be defined?' (*The Oxford Companion to Philosophy*, page 658). The foregoing is an lucid formulation of the problem, for which phenomenologists have presented different solutions. David Hume backstopped phenomenism with an ontology, the metaphysical arena studying 'being' and existence, of the mind and shewed the connexion betwixt mind and 'custom', whereas George Berkeley dilated on 'Spirit', to the abject frustration of atheists and skeptics everywhere.

Immanuel Kant, a later thinker sympathetic to phenomenism, grounds experience and epistemology upon the 'transcendental unity of apperception' or 'pure apperception' within a so-called 'transcendental idealism'. Immanuel Kant grew anxious in *The Critique of Pure Reason* that speculative cosmology generated antinomies ('conflict of laws'), which Kant characteristically partitioned along the lines of being a 'mathematical' antinomy (e.g., the time-bound nature of the world) or 'dynamical' antinomy (e.g., freedom of the will). Kant distinguished antinomies from genuine contradictions insofar as the former admits of seemingly reasonable thesis and antithesis. The antinomies apparently arise from the misguided temptation to treat the world as an object 'in itself', rather than conditioned by thought.

Eschewing the preposterous notion that there is a mind-independent reality, the philosopher of science Hilary Putnam extended Kant's transcendental idealism and concluded, 'the mind and the world jointly make up the mind and the world' (*Truth and History*, see also *The Many Faces of Realism*). Although Kant genuinely may have opened the door to a 'Copernican Revolution' in philosophy, an oversight of Kant's brand of transcendental idealism is that *thought itself* might be conditioned; and, moreover, there's the opportunity in this lifetime to find out if, and how, via an unmediated spiritual experience. In short, there are higher levels to the mind than Kant was able or willing to acknowledge. The philosopher John Stuart Mill found that Kant's skepticism did not extend far enough and railed against 'the psychological theory of the belief in an external world', viz., because the belief, tacit or explicit, pointing towards 'things in themselves' is not inferentially justified. John Stuart Mill dismissed faith in the so-called 'real world' for being an 'acquired product' arising from epistemically unsound 'associationist' psychological accounts.

'I feel myself to be a pure metaphysician. Bergson says that modern science hasn't found its metaphysics, the metaphysics it would need. It is this metaphysics that interests me.' -Gilles Deleuze

'Science cannot solve the ultimate mystery of nature. And that is because, in the last analysis, we ourselves are part of nature and, therefore, part of the mystery that we are trying to solve. Music and art are, to an extent, also attempts to solve or at least to express the mystery. But to my mind, the more we progress with either, the more we are brought into harmony with all nature itself.' -Max Planck

'Does this not mean that we are being led again into the fateful error of believing that science makes men wise, that it is destined to create a genuine and contented humanity that is master of its fate? Who would still take such notions seriously today?' -Edmund Husserl

The Dialectic of Spirit: A Triumphant Harmony

Ken Shea

'The entire physical universe would be the medium of expression of the mind of a natural God. In this context, God is the supreme holistic concept, perhaps many levels of description above that of the human mind.' -Paul Davies

'Nobody ever saw the square root of a negative one running around in the external world; that is apprehended only interiorly.' -Ken Wilber

'This is the basic idea of culture insofar as it assigns only one task to every single one of us: to promote inside and outside of ourselves the generation of the philosopher, the artist, and the saint, and thus to work at the perfection of nature.' -Friedrich Nietzsche

If the crude jargon and cultural baggage are shoved aside and (1) empirical science, (2) 'lower' philosophy (e.g., logic) and psychology (study of the mind or 'soul'), and (3) 'higher' philosophy (e.g., metaphysics) and spirituality are rendered epistemologically pure, then what remains? In an epistemologically pure sense, empirical science is attempting to suss out aspects of the phenomenal arena, 'lower' philosophy and psychology are attempting to illumine aspects of the mind, and 'higher' philosophy and spirituality are attempting to discover a transcendent (yet, paradoxically, immanent) Reality. 'Spirit is the life that itself cuts into life: with its own torment it increases its own knowledge. Did you already know that?' (Nietzsche, *Thus Spoke Zarathustra*, Part II, § 8). Sri Aurobindo appeared to throw his hat in the ring, as well. 'The two are one: Spirit is the soul and reality of that which we sense as Matter; Matter is a form and body of that which we realize as Spirit' (*The Life Divine*, page 255). The value sphere of (1) science, (2) 'lower' philosophy and psychology, and (3) 'higher' philosophy and spirituality roughly correspond to the sensory, mental, and transpersonal (or parapsychological) domains. Immanuel Kant tried to show how the 'transcendental unity of apperception' created the sensory arena of science, and theorist Ken Wilber has, more recently, compiled findings from hundreds of traditions, East and West, indicating how 'Spirit' infuses both the phenomenal and mental planes of existence; in fact, Wilber's work, aligned with the Advaita-Vedanta Eastern tradition, gives priority to 'pure groundless Emptiness' or 'radically *nondual* Spirit' (see, e.g., *Sex, Ecology, Spirituality*).

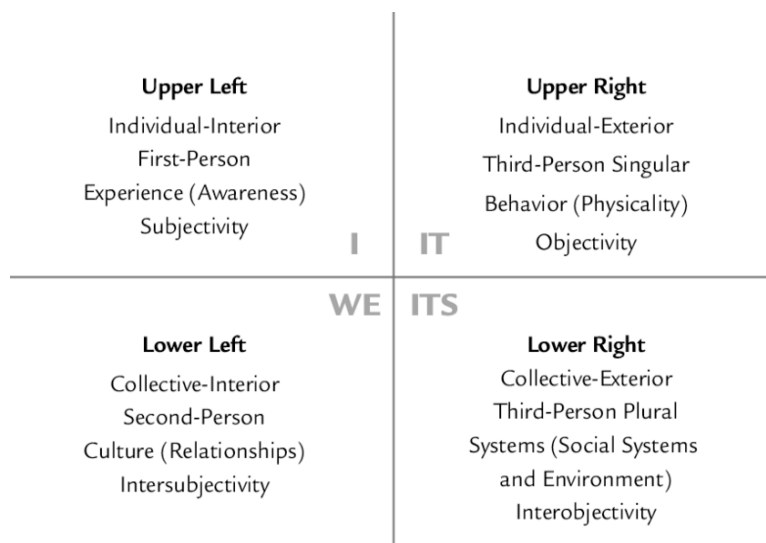
The world-famous physicist Erwin Schrödinger discovered, 'Consciousness is a singular of which the plural is unknown'. Indeed, the real 'emergence' is from Consciousness, not the abstraction of 'matter'. The theoretical physicist Amit Goswami says, 'Consciousness collapses the quantum wave function by choosing actuality from the superposition of possibilities, but only in the presence of mind-brain awareness. In this context, think of awareness as the field of experience' (*The Visionary Window*, page 48). Goswami helpfully adds, 'The subject (let's call it the quantum self) that chooses and causes the collapse co-arises dependently with the objects of awareness. Yet since this is only an apparent split, there is no ultimate dualism. The unlimited consciousness from which both subject and object arise identifies with the subject "pole" of the experiential duality, thus mistaking itself to be separate from the objects of experience' (*ibid.*, page 49). Might the concept of a Hegelian dialectic be transposed onto seeing consciousness as a frequency ('particle', wave, field), expressible or even grokked via the language of Fourier mathematics? Who is the 'observer' of the universal wavefunction (and the next)?

Theorist Ken Wilber reports in *The Spectrum of Consciousness*: ‘Our ordinary conception of the world as a complex of things extended in space and succeeding one another in time is only a conventional map of the universe - it is not real. It is not real because this picture painted by symbolic-map knowledge depends upon the splitting of the universe into separate things seen in space-time, on the one hand, and the seer of these things on the other. In order for this to occur, the universe necessarily has to split itself into observer versus observed.’ The challenge, in part, for science in the 21st century will be reformulating the historical accident of a mishmash of scientific ‘specialties’ to align with experience and the fact that *causation* is bidirectional in, if you like, ‘space’ and ‘time’. (Theoretical physicist Paul Davies says in *God and the New Physics* that, ‘Quantum theory requires a sort of reversed-time causality insomuch as an observation performed today can contribute to the construction of reality in the remote past.’) Roger Sperry, a Nobel laureate neuropsychologist, advocated for a bidirectional causation that flows both up and down. Within a paper titled ‘Structure and Significance of the Consciousness Revolution’ (published in *The Journal of Mind and Behavior*), Sperry contended that science cannot purport completeness until viewing ‘inner conscious awareness as a causal reality’, cf. Dean Radin’s *The Conscious Universe*, page 260. Ken Wilber has formulated an analogous stance on ‘downward causation’ enmeshed in a ‘transcend and include’ holarchy of the mind, which is predicated on ‘Spirit’ or non-dual consciousness. A depiction of the major levels in the model can be found below, followed by a short example of ‘downward causation’ using the model.

9. Causal	Spirit
8. Subtle	Soul
7. Psychic	[↖ ‘Waking up’ stages]
6. Vision-logic	[↗ ‘Growing up’ stages]
5. Formal-reflexive	Mind
4. Rule/role mind	[↖ Greater depth/complexity, less span/extension]
3. Rep-mind	[↗ Greater span/extension, less depth/complexity]
2. Phantasmic-emotional	Body
1. Sensorimotor	
	Matter

Ken Wilber clarifies by saying, ‘Spirit is both the highest level - “causal” - and the Ground of all levels - “nondual.”’ (The model above is, essentially, Figure 9.1 in *A Brief History of Everything*, page 127, and the clarifying quote is found two pages later in the same source.) Rather than the conventional ‘ladder’ metaphor for conceptualizing, what Wilber calls in the caption to the figure, ‘the basic levels or spheres of consciousness’, concentric circles might be more helpful. Why? Partly because the levels inherently transcend *and include* the preceding ones in a holarchical fashion. The crown jewel of Alfred North Whitehead’s metaphysics, indeed, the ‘Category of the Ultimate’, encompassing the mereology of one and many as well as creativity, is distilled further

by Wilber to include (A) holons, the one/many or part/whole, and (B) Spirit. Ken Wilber has traced the path of Spirit through the movements of 'evolution' and 'involution'. These maneuvers allow Wilber to accommodate both upward and downward causality. Example: a rational body-mind can decide to raise its arm, thereby displaying *downward causality* from, say, level five to level one, resolving John Searle's complaint over neuroscience not being able to provide a satisfactory answer for how an arm is raised. The solution is downward causality. By the way, the arm-raising example illustrates degrees of freedom of the will, since an individual operating a rational body-mind can exercise control over sensorimotor aspects of the environment, limited by actual physical constraints - think degrees of freedom.



The goal, dear reader? All the levels, all the quadrants: being and becoming *par excellence*!

'The upper half of the diagram represents individual holons; the lower half, social or communal holons. The right half represents the exterior forms of holons - what they look like from the outside; and the left half represents the interiors - what they look like from within. Thus we have four major quadrants or four major aspects to each and every holon.'
 -Ken Wilber (*Sex, Ecology, Spirituality*), cf. Figure 4.3 on page 127, Figure 5.1 on page 198

'Things have their within. I am convinced that the two points of view require to be brought into union, and that they soon will unite in a kind of phenomenology or generalised physic in which the internal aspect of things as well as the external aspect of the world will be taken into account. Otherwise, so it seems to me, it is impossible to cover the totality of the cosmic phenomenon by one coherent explanation.' -Pierre Teilhard de Chardin

'The within of things is *consciousness*, the without of things is *form*. Or, as we put it earlier, the within of things is *depth*, the without is *surface*. But all surfaces are surfaces of depth, which means, all forms are forms of consciousness.' -Ken Wilber

Laborers employing the tools of empirical science (e.g., brain scans) and computer science (e.g., 'neural nets') somehow have not paused to ask a simple question, 'what is consciousness *fundamentally*?', not at the superficial level of a familiar map or 'exciting' technique. The philosopher John Searle is right about one aspect of consciousness, and wrong about another. The experiential aspect of consciousness has a first-person, irreducible, subjective ontology. But John Searle errs in supposing that the 'machine' of the brain is *causally responsible* for the mind. What is the brain? The brain is, basically, the three pounds of tissue, part of the nervous system, commonly believed to coordinate the activities of the body, such as movement; the

mind, on the other hand, is the interior aspect of experience, awareness. The brain can be found in the first 'upper right' quadrant (above coordinate plane) dealing with 'objective' exteriority and surfaces; the mind can be found in the second 'upper left' quadrant (also above) dealing with 'subjective' interiority and depth. Think about what an empirical neuroscientist *can* and *cannot* do. She *can* provide you, if she's competent, with a 'map' of the exterior surface behaviors and physical processes of the brain; however, she *cannot* tell you, for instance, the name of your fifth grade teacher or the teams playing at the first sporting event you attended, strictly from the data of a brain scan. Of course she cannot do the latter: Personal memories relate to interiority, depth, and subjectivity (second quadrant) and cannot be accessed strictly via an empirical examination of surfaces, behavior, and exteriority.

The reason that the 'mind-body problem' - which has gone by many names over the decades, including Arthur Schopenhauer's world-knot ('the identity of the subject of willing with that of knowing') - hasn't been cracked for at least the last few hundred years of Western science and philosophy is partly because the very formulation of the problem unjustifiably presupposes a false duality of subject and object. 'In the disclosure known as *satori*, for example, it becomes clear that subject and object are two sides of the same thing, that inside and outside are two aspects of One Taste' (Wilber, *Integral Psychology*, page 181). Wilber centers the action around 'radically *nondual* Spirit' in *Sex, Ecology, Spirituality, Eye to Eye*, and *Integral Psychology: Consciousness, Spirit, Psychology, Therapy*. Bluntly put, the 'mind-body problem' cannot be solved from the rational levels of cognition; the insistence on the false duality of subject and object actually continuously generates the apparent 'mind-body problem' at every moment. In the same way that an individual operating at the lower stages of development, e.g., the phantasmic-emotional stage, has not honed the rational mind yet - and, therefore, cannot understand how the Pythagorean theorem could possibly relate to the 'real world' in such an exact manner - an individual at the rational stages cannot *get behind* the 'mind-body problem'.

The rational stages and egoity, in some sense, themselves *are* the apparent mind-body problem, the world-knot! 'Besides, if this nondualism could be genuinely grasped in rational terms, then the great materialist and dualist philosophers (many of whom are acknowledged geniuses) would have figured this out long ago, and the mind-body problem would not be much of a problem' (Wilber, *Integral Psychology: Consciousness, Spirit, Psychology, Therapy*, page 181). Ken Wilber rightly maintains that a rationalist will readily acknowledge a proof of the Pythagorean theorem, whereas an individual operating at a pre-rational stage of development will likely not even understand what the rationalist is going on about. 'Nonetheless, the rationalist is justified in making that claim, which is true enough to virtually anybody who develops to the rational level and studies geometry' (*ibid.*). The same principle applies to a 'grown up' rationalist who eventually develops past rationalism into the transrational 'waking up' stages of development. 'Those who develop to the nondual stages of consciousness unfolding are virtually unanimous: consciousness and matter, interior and exterior, self and world, are of One Taste. Subject and object are *both* distinct realities *and* aspects of the same thing: a true unity-in-diversity' (*ibid.*). The 'mind-body problem' dissolves at transrational stages of development, rather than getting 'solved' at the rational stages of development. The 'mind-body problem' or philosopher Arthur Schopenhauer's 'world-knot' is insoluble at the rational stages, because the ego body-mind *is* the 'mind-body problem'.

'We animate what we can, and we see only what we animate.' -Ralph Waldo Emerson ('Experience')

The Nature of Consciousness, “a Rose is a Rose is a Rose”

Richard May

It's probably not TurtleBots all the way down or a “machine in a ghost.” The world does not have to jibe with our intuitions (about the world of phenomena or about mathematics and logic). There is no ‘supernatural’ only the unknown natural. But is the natural only physical, i. e., can it be explained by the laws of physics as known today? Is there or could there be a non-physical natural or a natural that appears to be non-physical, according to the laws of physics known today? I don't know, but I suspect so. Thunder and lightning were once considered supernatural.

Perhaps this re-definition of what is ‘natural’ will eventually include Ψ phenomena, which, of course, can't occur, but do, at least according to Dean Radin, Rupert Sheldrake, laser physicist Russell Targ, and physics Nobel laureate Brian Josephson¹ among others, who claim the existence of overwhelming evidence for Ψ .

“Recognition that mind is fundamental rather than matter will be as significant a step for physics as the step from classical to quantum physics.” — Brian Josephson

“I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness.” — Physics Nobel laureate Max Planck²

‘It is my personal opinion that in the science of the future reality will neither be “psychic” nor “physical” but somehow both and somehow neither.’ — Physics Nobel laureate Wolfgang Pauli³

Conceivably consciousness could be as fundamental as the constructs of physics.

As, e.g., mass, spin, gravitation or quantum fields, may be considered fundamental in physics, consciousness could be an unknown fundamental in physics.

¹ <http://www.tcm.phy.cam.ac.uk/~bdj10/>

<https://www.nobelprize.org/mediaplayer/?id=977>

² From an interview in 'The Observer' (25 January 1931), p.17, column 3

³ In a letter to Abraham Pais.

Dean Radin (<https://noetic.org/profile/dean-radin/>) ,e.g., thinks that the materialist worldview of physics may be a special case of a more general theory. This more general theory will include the materialist worldview (current natural science) and also consciousness and Ψ phenomena, as classical physics is now included as a special case of general relativity and quantum mechanics.

The Orch OR (Orchestrated Objective Reduction) theory of mathematical physicist and Nobel Laureate Roger Penrose (<https://royalsociety.org/people/roger-penrose-12076/>) and Stuart Hameroff, professor of anesthesiology and of psychology, and director for the Center for Consciousness Studies at the University of Arizona (<https://consciousness.arizona.edu/>) could explain qualia (subjectivity), solving what philosopher and cognitive scientist David Chalmers calls the hard problem of consciousness. Viz., How does one account for subjective experience as subjective experience, e.g., the experience of the redness and scent of a rose? “What’s in a name? That which we call a calculation by any other name would smell as sweet,” the materialist-reductionist view, “TurtleBots all the way down” versus “A quale is a quale is a quale,” the hard problem of consciousness perspective, i.e., subjectivity is fundamental and must be explained.

According to Orch OR theory, the consciousness of an observer doesn’t collapse the wave function, rather the collapse of the wave function produces consciousness, as an intrinsic aspect of the geometry of space-time.

“Orch OR combines the Penrose–Lucas argument with Hameroff’s hypothesis on quantum processing in microtubules. It proposes that when condensates in the brain undergo an objective wave function reduction, their collapse connects noncomputational decision-making to experiences embedded in spacetime’s fundamental geometry.”

[Orchestrated objective reduction - Wikipedia](#)

Philosophical idealism, including, e.g., buddhist philosophy, the yogic philosophy of Patanjali, and Vedanta philosophy posits that the physical universe and its laws actually derive from consciousness, which is the fundamental substrate or ground of being. Of course, a philosophy of idealism may be difficult or impossible to investigate scientifically or to disconfirm its tenets experimentally. (Like string theory?) However, neither Radin nor Penrose and Hameroff have adopted the view of subjective idealism that the world is a “machine in a ghost.”

The world does not have to jibe with our intuitions. But this cuts in more than one direction. Presumably this includes the intuitions of materialist-reductionists also.

My highly fallible brain inclines me to think that the materialist-reductionist view of the world is incomplete and that consciousness is not an epiphenomenon of matter. Perhaps thinking that consciousness is not unimportant is a trick of the brain. Philosopher of mind Daniel Dennett considers human consciousness to be a sort of "user-illusion," analogous to the home screen at a human–computer interface. Maybe my intuition is wrong or not even wrong. But at least I'm in good company.

NB: None of this discussion of the nature of 'consciousness' is meant to negate the view of psychologist and altered states of consciousness researcher Charles T. Tart and teacher of traditional wisdom George Ivanovich Gurdjieff among others that *actual* consciousness is rare and we generally function as automatons, having far fewer moments of real consciousness than we believe. As Ludwig Wittgenstein observed, "We are asleep. Our Life is a dream. But we wake up sometimes, just enough to know that we are dreaming."

Richard May

Plurality IQ Society

Top 0.000000000000000000000000 ... % of Multiverse

Previously the highest-IQ group founded was the Aleph Society, which sought to have at most fewer than one member per Multiverse potentially qualifiable. However, the Aleph is found to be insufficiently selective in its admissions criteria for several reasons. First, it only considered 3 dimensions of space and 1 dimension of time per universe. We feel that it is necessary to include all theoretically possible multiple dimensions of spaces and of times per universe of the Multiverse. (For multiple-time dimensions see, e.g.:

https://en.wikipedia.org/wiki/Multiple_time_dimensions ,

<https://arxiv.org/abs/0812.389> ,

<https://bigthink.com/surprising-science/there-are-in-fact-2-dimensions-of-time-one-theoretical-phycist-states/>)

Secondly, the Aleph only sought the highest IQ 'individual', including AIs, in the Multiverse 'now', i.e., at only one point in 'time' relative to one (1) observer, the Wormhole Officer (formerly called the Membership Officer). To remedy this we 'now' recognize that to whatever extent possible technologically, the Wormhole Officer must be a time traveler.

Thirdly, it is not sufficient that our psychometric instruments selecting at the Aleph level be culture free. Our IQ tests must also be genome free, i.e., free of any genetic influences upon performance. Speciesism is even more common than racism and gender-bias. We seek genetic justice in our member selection testing criteria. For example, in the past and even today, species with brains are unfairly advantaged over species without brains, including, of course, AIs. Why should an Isaac Newton have an IQ advantage over a slug, simply because a Newton has a brain? This obvious bias must be eliminated.

NB: All of the non-members of the Plurality IQ Society are Full Non-members and Official Non-members.

Noesis #209, March 2022

Type 4 and Type 5 Kardashev-Scale IQ Societies, *Noesis*,

The Journal of the Mega Society, Issue #207, February 2021, page 256,

<https://megasociety.org/noesis/207.pdf>

Giga Society: <https://gigasociety.com>

Singularity IQ Society: <https://www.iqsingularity.org>

Singularity IQ Society — 3 most intelligent Homo sapiens on planet Earth identified

<https://www.iqsingularity.org/member>

May-Tzu

Intersubjective Testability

Which part of intersubjectively-testable knowledge is not a function of subjectivity?

May-Tzu

Shadow & Light

Any theory that negates the role of the theorizer is self-contradictory.

May-Tzu



‘The stars begin to fade like guttering candles and are snuffed out one by one. Out in the depths of space the great celestial cities, the galaxies, cluttered with the memorabilia of ages, are gradually dying. Tens of billions of years pass in the growing darkness. Occasional flickers of light pierce the fall of cosmic night, and spurts of activity delay the sentence of a universe condemned to become a galactic graveyard.’

-Edward Harrison

‘One must yet have chaos in oneself to be able to give birth to a dancing star.’

-Friedrich Nietzsche (*Thus Spoke Zarathustra*)

