Consciousness: The Bridge to Everywhere

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1 Mind, Eye, Illusion

It is my hope, essay reader, that we can never meet, not because we are distant in space, but instead, because we are distant in time. Ideally, you are reading this long after I have been incinerated, and those cinders have been scattered into the river, which is now no longer where it was, if it even is at all. It is my hope that this essay, this distilled fragment of mind, this daguerrotype of consciousness, reaches you, distant future person, and touches **your** mind, leaving behind a few fingerprints, or at most a handprint.

Most essays start at the beginning of something, or at the end of something, yet, this one will start in the center and radiate to the rim, like a pupil dilating. The center is the mind, my mind, and your mind, and our minds, and quite a few other minds.

According to rumor, Da Vinci said that the eyes are the mirror of the mind. According to fact, Dante called the eyes the gateway to the mind. If this was true, Zhuangzi [1] would not have said that the eye envied[1] the mind, the way the unipede envied the millipede. Whatever the truth, we must focus on the eye, examine its role in the growth of consciousness.

We, meaning humanity, spent much time staring at the stars, before drifting into sleep, as our elders told us the stories of those stars, those gods and heroes, permanently etched into the celestial dome. Once asleep, we would dream impossible things, hallucinate improbable terrors, and sometimes, we would wake at dawn with new memories and, most importantly, new questions. Do the dreams mean something in the same way that the stars do? If we know that we are awake when we are awake, why do we not know that we are dreaming when we are dreaming?

Staring at the sky, it is not obvious that the stars are impossibly far away, that their light is reaching our eyes at impossible speeds, while the stars themselves, imperceptibly, move and shift, carried by the swirl [2] of the universe[2]. The nearly perfect stillness of the night sky, and the permanence of the constellations, is an illusion, and it would take us thousands of centuries to see through it. But as luck would have it, we gained much more from that illusion than we lost.

For most of our history, no paper was durable enough, and no stone tablets portable enough, to be a substitute for our flawed and fading memories. Most

[1] Technically, the translation says "admired", but the context indicates that it is meant as "envied".

[2] Shamir observed that galaxies prefer one direction of rotation to another, by a ratio of two to one, suggesting that the universe itself is also rotating.

of our knowledge and wisdom is **remembered** knowledge and wisdom, passed down through language and song. Before the ancients discovered the method of loci mnemonic (sometimes known as a mind-palace) it seems likely that the primeval people, those who lived, not in permanent settlements and cities, but rather in yurts and tents, and on foot and on horseback, used the night sky as a mind-palace. They gave the stars metaphorical meanings, and these meanings carried ancestral memories and lessons, and perhaps most importantly, ancestral questions.

2 Monad, Dyad, Triad

The eye may be the mirror of the mind, but language, written or otherwise, is the map of the mind. The first senses that nature had given life were intimate and chemical — touch and taste and smell. The final senses — sight and hearing — were distant, and were given to all life that had to flee and hunt and scavenge and seek. Of the two, sight is the one with the greatest range and least delay. Yet, it is the attention of our ears that language demands. It demands an intimacy greater than sight but less than touch and taste. It demands a crack in the silence.

Spoken language is useless, if all you can see is what is in front of you, rather, it is only useful if you can close your eyes and imagine that which is not there — that which may never be there. To speak is to summon that momentary, useful kind of madness.

Language, whether aural or visual, cannot work without imagination. All language is metaphor. Even the words that form the grammatical structure of language, began life as metaphors — the English predicate "is" comes from the Sanskrit *asmiy* (to breathe), and the copular verb "to be" comes from the Sanskrit *bhu* (to grow) [3]. The noun "ego" is the Greek word for "I" — having a large ego is to have a large *I*. The noun "metaphor", meant[3] to "carry over" (i.e. *meta* means "across" and *phor* means "bear"). A metaphor **is** a translation. The oldest words are birdsongs whose birds have been forgotten.

The structure of language, reflects the structure of thought. We understand there are different things (i.e. nouns) and connections between those things (i.e. verbs). Nouns are idealized representations of things[4], stationary and unchanging geometric shapes, a simple and elegant map of a fractally complex territory. A noun can only exist by itself or not at all, unless connected to another noun by a verb, to form a sentence, a kind of bridge between shapes.

In the arts of writing and rhetoric, it is taught [5] that, a single word invites focus, two words invite tension and comparison, three words invite connection and unity. The dyad divides, and forces the mind to imagine how each word is similar to, and different from, the opposing word — it forces us into a kind of thinking that is a shy step away from metaphor. The triad unites[5][6], by placing an intermediary between two insular solitary concepts. This essay, its words and sentences and paragraphs, completes the triad between myself and

[3]Whenever I use the word "meant", I am talking about a previous etymological meaning of the word, that often gives us an idea of what the original metaphor was.

[4]Prototype theory is wonderfully explained by Lakoff, in *Women, Fire, and Dangerous Things* [4].

[5]Even in geometry, a curveless shape requires (at least) three lines, to exist.

yourself, my ego and your ego. We call this scriptal intermediary, a **medium**, a product of the **media economy**, often forgetting that the terminology was originally metaphorical — the word "medium" referred to an intermediary person[6], a kind of conduit, that conveyed messages from the dead to the living, an oracle that practiced, instead of divination, *necromancy*.

The Delphic Oracle — the Pythia — is, among both ancient and modern people, the oracle that is the best known. According to legend, her insights[7] into the future were not hers at all, but rather, those of the god Apollo, who would borrow her voice, and speak directly to her visitors. Her orations, described as mad, frenzied, and enthusiastic, were the literal words of Apollo, and were often incomprehensible to her listeners — her assistants, lesser priests and priestesses, would translate the divine speech into poems, set in hexameter verse.

How the oracle established contact with the sun god is disputed, but the two most intriguing and most cited theories are, first, that she inhaled hallucinogenic fumes to enter an altered, dream like, state of mind that let her speak to Apollo and hear his voice, and second, that she bathed in the sacred springs of Castalia, which were also said to inspire ancient poets. An interesting etymological note, the words "oracle" and "oration" share a root, and the word "enthusiasm" is Greek in origin (related to the Greek word for "god"), and it meant to be possessed or inspired by a god (or sometimes by music[8]), and thereafter entering a state of ecstasy.

It was told that the fumes emanated from a pit, and that they were once available for all the visitors to inhale. Too many of these visitors became enthralled by the visions, and would overindulge in the fumes, reducing their potency. Some of these vistors, unable to experience the waking dream with any intensity, threw themselves into the pit to their deaths. The temple then forbade the citizens from inhaling the fumes, and instead only the chosen women of the temple — the pythias[9] — could inhale them, and speak with Apollo on their behalf.

It probably made sense, to the ancient Greeks, that divine inspiration would be attained by inhaling fumes, because, after all, the word "inspire" meant "to breathe in", and various thinkers — such as Anaximenes of Miletus — believed [8] that the soul **was** air[10].

The oracles and their temples belong to the first civilizations (literally a community of cities, derived from the Latin *civitas*), formed when people abandoned their yurts and tents for agoras and forums, and chose to live, not among trees and animals, but among stacked stones and strangers. The oracle is the shaman, but civilized — an institutional representative, a brick in the temple wall.

The shaman, like the oracle, foretold the future, and spoke to the dead and divine, by altering their consciousness — though these societies, lacking our

[6] One scholar [7] believes that, more than any other modern institution, publishing (especially the newspaper) has supplanted the fortune-teller and medium.

[7] Insight, often used, in the present, to mean "sight into", used to mean "inner sight" or "sight from within".

[8] It is, perhaps, no coincidence that Apollo is also the god of music.

[9] In some periods multiple women served as high priestess.

[10] The word "psyche" made its way into English from a greek word "psykhein", which means "to breathe" (similar to the aforementioned *asmiy*).

jargon, characterized it as entering a new domain or realm. Most called this realm, the land of souls, but one group, the Australian Aborigines, stands out, calling it a land of dreams, or *dreamtime*. This name may imply that, at one time[11], the Aborigines believed that to practice magic is to *alter consciousness*.

Most cultures have a creation myth that explains where the physical fundamentals, like animals and trees and fire and language, came from. In most myths, on most continents, the multitude of languages is a curse unleashed upon humanity, by the gods, because of some kind of transgression — the earliest record of this kind of myth is *Enmerkar and the Lord of Aratta*, which is around as old as *The Epic of Gilgamesh*. But in the Kunwinjku mythology, a goddess from *dreamtime* gave each of her children a distinct language to **play** with. The multitude of languages were seen as toys gifted to humanity from the land of dreams, instead of as a curse, from the land of confusion, inflicted upon us. A recognition that language had something to do with dreams and with play, with exploration and with the unknown.

The Gilgamesh Epic is, as far as we know, the oldest written story that we have, and it contains examples of both prophecy (when Gilgamesh dreams that Enkidu will die while fighting Humbaba) and necromancy (when another character, Nergal, consults the ghost of Enkidu). Esagil-Kin-Apli, the earliest known compiler of the epic, wrote one of the first books on exorcism, as well as on dream interpretation, and, scholars assume, that he was a practicing shaman, or witch-doctor[12]. By the time of the first cities, the shamans had started to stratify and specialize, becoming oracles and exorcists and philosophers [9] — the respective ancestors of modern scientists and physicians and comedians [10].

We know (some of) the elements of ancient thought and ancient experience, but we do not know, with certainty, how or why those elements hung together. We know that all societies, settled or otherwise, had myths and dreams, and that both were often, respectively, told and interpreted by shamanesque figures. No doubt that bards, like Homer and Shakespeare, are branches in the shamanic family tree, not unlike psychotherapists, like Jung, Freud, and Lacan.

Not long ago[13], I had a strange and embarrassing dream, and I intend to share it with you, because you have read this far, and that makes us friends. In the dream, I visit a house, that has a biplane parked near it. The pilot is a woman that I know romantically, and when I visit, she sometimes has a husband, and sometimes a wife. This dream of repeated visitations, and wordless, perhaps telepathic, communication, becomes a new dream, in which, we are creating universes, by placing, what look like, two dangerous and venomous arthropods into urns, waiting for one to devour the other, and repeating the process with survivors. The final survivor is the final universe[14].

I started waking form the dream, and while half asleep and half awake, without any rational thought, I knew[15] what the dream meant.

[11] There are many tribes of Aborigines, each with a different interpretation of dreamtime, and anthropologists still argue about, both past and present, connotations.

[12] Their profession was called *ašipu*, and it is often translated as "exorcist", though that is a crude approximation.

[13] The second week of July of 2025.

[14] It is a tournament, where after each round, the number of candidate universes, is halved.

[15] The experience of waking from a dream with new knowldge is interesting because we

Imagine that there are two kinds of universes, those with **true** oracles and those without. Now imagine that the true oracle universes, can be further split into two infinite sets, those with oracles in *my* present, and those without. Seeing how most oracles are female, it can be assumed that their gift of foresight, if it is genetic, is passed down matrilinealy. If our universe is one that, in the present, lacks oracles, then it is, possibly, because the matrilineal line died out. If this were true, it would mean that our species had, tragically, become irreversibly myopic.

But what if the male descendents of the oracles, in a cruelly sexist twist, had survived, in our own universe? Might it be possible to awaken an oracular gift, should they possess it? Could it not be the case, in this very (**very**) **hypothetical** universe that once had true oracles, that humanity is, perhaps subconciously, through male-to-female transitions, attempting to bring about such a reawakening, like a blind man searching for a light-switch?

Like I said, it is a strange and embarrassing dream (that I **certainly** do not believe), but I wrote it down, because it might have potential as a fundamental element, in a future work of fiction. However, in one of those eerie coincidences, that would intrigue Jung, I found a connection between the dream, and the subject matter of this essay, while reading through the bibliography, two weeks later. Male oracles, were often called prophets, and the most famous prophet, among the ancient Greeks, was the mythical Tiresias. Tiresias is best known for being blind, for sacrificing his sight in exchange for *insight*[16]. It is less well known that Tiresias, in some tellings, had up to *six* sex changes [11]. To practice magic is to transform consciousness, and Tiresias underwent transformations so extreme, that, according to some myths, his prophetic power rivaled that of Apollo.

The myths that we hang upon the stars, might not be fabrications or entertainments, but rather, they might be records of strange dreams. Maybe the celestial mind palace, served as a tribal dream journal. Maybe our myths are also our dreams, messages from the deep[17], that we felt a need to remember, and to decode, across the millenia. What I **do** believe, is that my dream was similar (certainly not in detail, but in spirit) to a dream that someone, possibly a shaman, had at least three millenia ago. It is possible that, in this way, dreams and myths and constellations hang together. Maybe, it is by sharing our dreams, and being believed, that we learned to do the same — to turn many consciousnesses, each small and temporary, into one that lasts.

Belief implies a believer, a messenger, and (of course) a message. There may be as much solace in believing, as there is in being believed. There is certainly an infinity of evidence, that we crave incredible[18] stories. A mundane, yet flawlessly credible, story is unsuitable and unsatisfying. The believed and the believer, the unconscious and the conscious, the universe and the scientist.

Language allows us, or at least encourages us, to contemplate solitary con-

somehow know that the knowledge is not our own, and likely untrue — a memory of knowledge that belongs to someone else.

[16]The story of Tiresias may have started as a metaphor for dreaming itself, we all have to close our two eyes, in order to fully open our third eye.

[17]In the Gilgamesh Epic, the Deep is where all knowledge comes from, and Gilgamesh is, in the Sin-Leqi-Unninni tablets, styled as "he who saw the Deep" (greatness no longer came from deeds but from knowledge).

[18]Which, etymologically, means "unbelievable".

cepts, to gaze upon them, with our third eye, the mind's eye, without any interference from other adjacent concepts — we can contemplate the ant without the distraction of the anthill. The ability to grow and shrink the scope of our inquiry, between the monad, dyad, and triad gives language much of its power, and it, no doubt, played a role in our ascent from beasts into whatever we are now[19]. Dreams are the wilderness of the mind, uncooperative, unreasonable, messy — and language allows us to neatly reduce these hallucinatory messages into fixed words and sentences. The dream that I tell you, is not the dream that you imagine — the spoken Dao is not the true Dao.

The spoken Dao, is an illusion that, not unlike the celestial illusion, gives us more than we lose. We are able to treat every word as real. It does not matter that the dreams, and the words that describe them, are immaterial — they become something (very close to) material in our minds. A hallucination or a dream is immaterial, yet the *experience* of it is not.

For a memorable piece of evidence, of the materiality of an imagined experience, one has to look no further than the sudden (and at the time unexplained) deaths of Hmong refugees in the United States. Throughout the late 1970s and 1980s [12], 117 Hmong refugees, died in their sleep, seemingly killed by their own nightmares. While doctors looked for a medical explanation, the Hmong claimed they already knew the cause — a demon, named *Dab Tog*, that haunts victims in the dreamworld, and, in doing so, kills them[20].

This affliction, prominent among the Hmong, would become identified, in later decades, as Brugada Syndrome (caused by genetic defects, that make one prone to irregular heartbeats, and thus prone to cardiac death, when one is terrified). Intriguingly, sufferers of Brugada Syndrome, frequently, also suffer from schizophrenia.

If one wants to talk about something, it needs a name. It is impossible to speak of something like the Dao (or Dab Tog, or Brugada Syndrome), without first coining the name "Dao" (or "Dab Tog", or "Brugada Syndrome"). Despite having consciousness, it was, very nearly, impossible to speak of it, before we invented the word "consciousness".

Consciousness is, for any scientist or materialist, too nebulous of a concept, to be easily comprehensible. It can be experienced, it can be communicated, yet it **cannot** be measured. That all humans have consciousness, is as universal a fact as, for instance, all humans having hearts. And yet, this universal fact cannot be *proved*, scientifically.

Any sentence, any word, is like any piece of art — to see it is to see everything it can mean. A large part of the struggle is that the word "consciousness" (as well as predecessor words like "soul" or "self") is used and defined in many different ways. The word "consciousness" is similar, for the time being, to words like "utopia", or "El Dorado", or "Shangri-La", or "sage" [9], or "virtue", or even "beauty". Each of these words is a (metaphorical) *dream*, something to seek out, or to make real. The foggyness of these words, their silhouet-like nature, is what keeps them around, and keeps us asking questions, recontextualizing. It is what can turn a demon, like Dab Tog, into a biological mechanism, like Braduga Syndrome, and will, some day, allow us to slay it.

[19] In this essay, monad:dyad:triad corresponds to Pierce's firstness:secondness:thirdness [6].

[20] These events would inspire the creator of *Nightmare on Elm Street*.

And so, we have to interrogate the various definitions of consciousness, but not before a few more (relevant, I assure you) recollections.

3 Symbol, Enchantment, Charm, Hex

My own eyes spent countless nights observing, with curiosity and wonder and delight, the responses of a computer, as I commanded it with code, like a sorcerer casting spells. I could not have known, that this obedient machine, this silicon golem, was also, slowly and imperceptibly, enchanting *me*, and changing how my eyes would see.

At the time[21], I was a mere fifteen years old, young enough, so that the gravity of life was weak enough, and the mind nimble enough, to allow me to explore without any material justification.

The computer was the believed and I was the believer.

A consequence of becoming obsessed[22] with computer programming, is that one starts to see new metaphors, algorithmic metaphors, everywhere one looks. This new metaphorical lense, belongs entirely to the third eye.

Without this lense, I would look at a traffic jam, and see a traffic jam. With the lense, I would look at a traffic jam, and wonder if, and to what extent, the latency-throughput trade-off[23] was true for highways. Without the lense, I would read about social theory, and simply see the words. With the lense, I would ask if society was, a tree[24], a graph[25], a tree of graphs, or a graph of trees[26].

To generalize, the computer programmer looks at something, and asks, *is this thing an algorithm, and if so, what kind*? The entire *trade* of computer programming, it revolves around this question, around the discovery of metaphors that fit[27][13][14].

It is thus little surprise, when a computer programmer asks if (or sometimes asserts that) a certain kind of algorithm[28] is intelligence[29], consciousness, or both.

The entire *ritual* of computer programming, is similar to the trade, in that it involves discovering metaphors, not as a means to an end, but as their own end. This ritual is difficult to explain to someone who has never practiced it. Imagine, instead of trying to find metaphors that bridge the real to the algorithmic, one tries to find metaphors that bridge the algorithmic to itself.

[21] 2005 to 2006.

[22] Obsession meant the action of an evil spirit. Plato would have said that, he was driven by a splinter in the mind.

[23] On any internet connection, you can sacrifice latency for throughput, and vice-versa.

[24] Like a hierarchy.

[25] Like a network.

[26] The algorithmic idea of a fractal, as opposed to the mathematical idea, comes naturally to the programmer.

[27] We often call these metaphors programming languages, models, applications, application programming interfaces, user interfaces, database schemas, simulations, algorithms, functions, macros, domain specific languages, routines, endpoints, notations, and many other names.

[28] Such as large language models, chess-engines, theorem provers, expert systems, neural networks, markov chains, or even lookup tables.

[29] Another one of the dream-words, that has many overlapping definitions.

It is very similar to what mathematicians do, but it requires writing programs in a very principled and abstract way[30].

This ritual, unlike the ritual of writing, and unlike the ritual of mathematics, has a dominant material component (the computer) which can make your code, in addition to an *imaginary* experience, a *material* experience[31]. This makes the computer a medium — an artificial oracle or artificial hallucinogen — that can safely imagine the unimaginable. And like the oracle, the computer exists to provide insight[32].

Without the ritual of programming, there would be no field of chaos theory, nor complex systems (very important for economics and environmental sciences), and *certainly* no elaborate fractals. Pure mathematics could only scratch the surface, because the mathematical ideas, of the mid 20th century, that our imaginations could access, were insufficient for exploring these systems. Computers allow us, not unlike microscopes and telescopes, to magnify the informational dimension of nature [17].

Computers, and the arcane programming languages that make them obey, are magic machines, that created a new interaction between, two elements of the human psychic triad, the immaterial and material.

What is this triad, and what is its third element? The concept of the triad appears so frequently, in recorded human thought, and in the structure of language, that it is either some kind of adaptive ideal[33], or a consequence of language itself[34], if not both. Pythagoras called *three* perfection itself. Plato divided the world into three parts. And, even today, our modern shamans and sages, use triads to discuss the universe.

Roger Penrose has a traid consisting of physical, platonic, and mind. Lacan has a triad consisting of real, symbolic, and imaginary. Plato has a triad of good, truth, and beauty. Of the three, Lacan's naming is the most self-explanatory.

In this essay, the *material* is the *real*, and the *immaterial* is the other two.

The *trade* of programming is driven by the real, while the *ritual* of programming is driven by the imaginary. A trade is pursued because of real, material concerns (such as covering the cost of living), while a ritual is pursued because of imaginary concerns — concerns that can, more precisely, be called *aesthetic*.

This dyad between the trade and the ritual, the material (in the way Marx meant it) and aesthetic, is also present throughout nature, and is thus as old

[30]For the curious and similarly enchanted, this is the kind of exploration that seeks *endogenous* truths, like whether a mechanism is turning-complete, and whether bloom filters are, conceptually, purpose-built markov chains, and whether system dynamics models are basically boltzmann machines, with arbitrary weights (a causal variant of a correlative model).

[31]Writing and mathematics both have non-dominant material components [15].

[32]Richard W. Hamming said that the purpose of computing is insight, not numbers, [16].

[33]Maybe we get the most mileage out of traids, from an evolutionary point of view.

[34]The sentence structure of this very essay, for the most part, is a consequence of the triadic structure of language. We know that humans can hold seven (plus-or-minus two) elements in mind at a time. Most of the sub-sentences (anything between punctuation marks) of this essay have seven words, and no more than nine. If verbs (and conjuctions and so on) can turn a dyad of words into a triad, then they can also turn a dyad of triads into higher-order triad, making three plus three plus one into seven (metaphor is to triad as analogy is to heptad). Beyond seven to nine words, we need to use punctuation to turn a sequence into a tree.

as life itself. In evolution there are two filters, the very prominent and popular natural selection, and the less popularly examined sexual selection. Natural selection is a worldly selection — the individuals of a species are filtered, directly or indirectly, by individuals of a different species. Sexual selection is an aesthetic selection — the individuals of a species are filtered by individuals of the *same* species. Sexual selection is when a species (but not necessarily its individuals) becomes aware of itself.

Many of the durable dyads, are dyads only by the limits of our perception. They are often mediated by an unseen tension, making them secretly triads [18].

4 Consciousness, Real, Imaginary, Symbolic

Earlier, we touched on the human desire for incredible stories. The believed and the believer, the unconscious and the conscious, the universe and the scientist. Our desire for stories (and art), is an *aesthetic* desire, it comes from within. We are conscious that we, and those around us, have it, and we are even conscious of the observable, measurable patterns of those desires, but the desires themselves, their internal mechanisms, are unconscious.

When Plato speaks of the splinter of the mind, he is speaking of the intrinsic psychic force, that drives him to seek aesthetic truths. Even *if* we could measure consciousness (perhaps with a machine, that does for consciousness what computers do for information) and comprehend, in the finest detail, the mechanisms of the phenomenon, Plato (and all those that followed him) would still speak of the splinter of the mind.

Before Plato and before Socrates, was Parmenides. Parmenides believed that time was a delusion, and that the truth was constant. He distrusted the phenomenological senses, and argued instead, that truth must come from rational thought and logic. Parmenides is perhaps the first-recorded rationalist.

After Plato was Aristotle. Aristotle believed that the mind is born blank, a *tabula rasa*, and was inscribed by daily life experience. Instead of distrusting the senses, he argued that truth could only come from sensation. Aristotle is one of the first-recorded empiricists.

To Parmenides, in our Lacanian terminology, truth resided in the *imaginary*, while to Aristotle it resided in the *real*. Parmenides saw the *real* as **noise**, and the *imaginary* as **music**. In a similar way, consciousness scholars believe that consciousness is either *real*, *imaginary*, *symbolic*, or some messy combination, and this belief affects how they approach the problem of consciousness.

Descartes, for example, believed that consciousness was *imaginary* [19], and considered it an invisible force like gravity[35].

Francis Crick assumed that consciousness was *real* [19], and that measuring it was a matter of, incrementally and iteratively, measuring brain activity

[35] At the time gravity was considered immaterial. In the 1800s, the discovery of photons, x-rays, and gamma-rays would lead to theories of an *aether*, a medium which was believed to conduct light, radiation, and souls. Aristotle used "aether" as a metaphor for the "perfect", and the ancient Greeks believed that the celestial space (i.e. between planets and stars) was filled with aether. The Greeks even had a god, named Aether, that personified the aether, similar to Erebus and Nyx personifying, respectively, darkness and night.

(identical to how he discovered DNA).

Roger Penrose, similar to Descartes, suspects that consciousness is *imaginary* (corresponding to *mind* in his own triad), and that the imaginary was, itself, the result of quantum uncertainty[36], which makes it impossible to measure, because quantum physics is unmeasurable[37].

Julian Jaynes, one of the more controversial scholars, speculated that consciousness is *symbolic* — that it **is language** — and that the *imaginary* is the domain of the *unconscious*. While there are many objections to his neurological speculations[38], I find his *definition* of consciousness the neatest. In short, he believes that consciousness is whatever can be *introspected*, and that (often conflated) concepts like intelligence and perception, should be excluded from any definition (on the basis that these are primarily is unconscious[39]). To Jaynes, consciousness is about using the *symbolic* to shrink (and grow) the *imaginary*. Daniel Dennett [21] likens the role of Jaynesian consciousness to the role of computer software — directing the unconscious in the way that software directs hardware.

Gerald Edelman postited that consciousness is the result of selectively remembered concepts, and that these concepts were selected through an in-brain version Darwinian selection, that he conjectured operated on neural structures (he discovered antibodies using a similar theory [19]). Edelman, unlike Crick, was a rationalist, and his research was driven by the theory. In terms of the triad, consciousness was *imaginary*, but determined by the *real*.

Giulio Tononi, inventor of Integrated Information Theory [19], argues that consciousness is an *abstract* mechanism, that tries to integrate as much information as possible, into a singular experience[40]. The implication of IIT, is that consciousness can be non-human, and non-biological. This makes IIT a primarily *symbolic* theory of consciousness.

In the previous section, we asserted that the trade (and ritual) of programming centered on metaphors, not code. We *define* the metaphors (i.e. a browser or a word processor) in terms of code (i.e. instruction sets or standard libraries), but the code is **not** the metaphor (if it was, different browsers would be neither comparable nor compatible). We know, without reading any code at all, what a browser must be able to do, and because of this, we can write browsers in any language, and for any kind of computer. All of the code (or pixels or text) that make the metaphor accessible to the user, is called an *interface*, while the underlying code, that makes the interface possible, is called the *implementation*. The interface determines the implementation, but never the other way around — a theory of biology implies a theory of chemistry, but a theory of chemistry does not imply a theory of biology. The simple metaphor

[36]He is not mixing real/physical with imaginary/mind, because, to penrose, the real/physical is only that which can be measured.

[37]My understanding is that, unlike physics at larger scales, trying to measure at the quantum scale, interferes with the quantum particles (in computer programming, we have an analogous phenomenon called "probe effect", wherein the code that measures time, consumes much more time than the code being measured).

[38]The common objection is, that the corpus callosum could not evolve rapidly enough to cause breakdown of the bicameral mind (I think it is *plausible* if the *main* selection pressure is sexual/aesthetic and not natural/worldly).

[39]Cormac McCarthy wrote a great article about this [20].

[40]This is a simplification. There are 5 axioms, that are derived, not from data or measurements, but from the phenomenology of being conscious.

of downloading a file, requires that the underlying network protocols work correctly, under **noisy** and **turbulent** network conditions. Writing a correct implementation, a correct *algorithm*, for the metaphor, requires a mastery of the (only[41]) *real* unit of programming, namely **time**. A mastery of time is a mastery of **causality** [17].

Parmenides would have enjoyed the ritual of programming, which is about turning noise into music.

Iit has defined the metaphor of consciousness, its Platonic ideal. The symbolic connection between programming and IIT, becomes even more obvious when one considers Erik Hoel's theory of causal emergence [19]. It uses, as its central metaphor, the *error correcting code*, an algorithm from computer programming, used to repair damaged information, which preserves the illusion of a noise-free system.

It is unclear which, if any, of these models of consciousness is correct. If we can figure out consciousness, then we can figure out whether it has limits (i.e. if it is mainly *real* or *imaginary*), and if it does not (i.e. if it is mainly *symbolic*), we can figure out *how to scale it up*. We know how to scale the symbolic, the internet (and the dream machines that make it possible) gives the symbolic nearly infinite scale.

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