Let's Talk About Consciousness, Baby

Good Morning: This Is Your Life

Your alarm clock begins to wail. You wake up. Your eyes take in the space: it's your bedroom, and the sun is just starting to rise outside the window. You reach for the button on the clock and read the time: *6:30 AM. I usually wake up at 7:30—why is the alarm set for 6:30? I have to pee. Oh, I woke up because I have to pee. No, the alarm woke me. Why did I set the alarm?* Your sight focuses on the jacket hanging behind the door. *My suit. The job interview: 8:30. I wanted to make coffee and breakfast first. I'm nervous, and tired: if I grab coffee & a muffin at the train, I can sleep until 7:00 and forget about the interview until then. But I should go over my notes one more time, that will relax me, plus I really have to pee: I'm getting up.* You get out of bed, feeling groggy, excited, nervous, hungry & with a strong urge to pee. Your first stop: the bathroom.

Depending on a menagerie of factors—including everything from how deeply you were asleep, to how quickly your specific brain chemistry responds to awakening, to how much alcohol you drank the night before—that series of thoughts might unfold slowly enough to hear all those words distinctly in your head, or so quickly that they barely register as sentences. But in both cases, the same basic thing has happened: your consciousness has come online. The operating system that governs every choice you will make & every emotion you will experience while awake has just booted up for the day.

And in this brief series of moments, the multiple and multifaceted interweaving narratives of that day have quickly begun to assemble, consciously and subconsciously —each building on one and other, triggering yet others, interconnecting, reassembling, submerging, dispersing & reemerging in all combinations, and all while integrating new incoming data that must be sorted, analyzed and distributed into the most relevant & useful, current or new narrative streams. Their purpose: to identify, prioritize, plan for, and seek out that day's myriad goals; and to predict the

best possible path through the day to achieve the most important and maximum number of those goals at the lowest possible "overall cost"—all while avoiding as much unnecessary risk as possible. In this sense, each narrative is a predictive pathway toward a goal, any goal, large or small. And any moment might see any number of extremely varied goals competing for the same expenditure of resources: time, energy and/or "assets" (which is essentially the ultimate result of any choice—a decision about how we will allocate a particular available or predicted-to-be available unit of time, energy and/or assets).

When our character awoke, the urge to pee found itself in competition with the goal of wealth and prosperity that a new job might bring. The fact that our character chose to pee first instead of immediately heading to their interview notes does not indicate that they've decided urinating is a more worthy goal than wealth and prosperity. Rather, their brain was able to lay out a predicted path in which both goals could be achieved without increasing cost or sacrificing "goal value." In other words, they could pee first and still have plenty of time to do everything they needed to be optimally prepared for the interview. In fact, in a smaller calculation (one so obvious they were probably never aware that they thought about it) they might've realized that there was more likely a slightly higher cost to studying the notes first and waiting a half an hour to pee. However, if they were feeling particularly unprepared for the interview or believed it was a uniquely valuable opportunity, they might choose to "hedge their bets" and grab the notes first, then bring them to the bathroom to begin reading *while* they peed.

Urinate! Succeed! Do both! Deep down in our psyche, these are the kinds of impulses that are competing for our brain's undivided attention. Each moment of existence is a Roman Colosseum in our minds—each urge, each impulse, each desire tossed into the arena, fighting viciously to be heard, to be made part of the story, to be *expressed* out there, where the thing that thinks them acts its act in the world.

Consciousness: The Navigator

This is what our consciousness was built to do. To bring these multiple, myriad goals and all of their attendant predictive pathways into some sort of navigable focus. To provide our brain with the methodology & mechanisms needed to support humans' uniquely-evolved & dynamically-adaptive ability to interact with their environment, its creatures, and each other. To predict results and make decisions. Lots of them. Lots and lots of them, every second of every day. And to base those decisions as best as possible on data recorded in previous

experiences or learned through study, and to make those decisions according to current & future circumstances & needs. *And* to access a broad, diverse array of relevant or uniquely-applicable (previously-recorded) associated data in the process of culling & sorting what specific data will be used to help generate those predictions & decisions—an associative process that is *vital* to generating *creative* or *unique* solutions to the most difficult problems that those prediction & decision mechanisms are tasked to handle. This is *Narrative Complexity*.

(That culling of the most-applicable predictive or associative data from a broad spectrum of ultimately-unrealized, but partially-recognized other data patterns reflects neurobiologist Terrence Deacon's theory about how "constraint" plays a central role in consciousness. He presents this view—and several others that *Narrative Complexity* supports—in his bold & insightful 2011 book *Incomplete Nature: How Mind Emerged From Matter*. [1])

If you think all this sounds complicated, you're right. That's why humans are presumably the first species in earth's history to possess such magnificent faculties. Whether that's truly a blessing or a curse is for the poets and philosophers to decide, but in purely evolutionary terms, it's probably the best hand that's ever been dealt on this particular blue sphere. Luckily for us, despite the extraordinary complicatedness of it all, our consciousness is also designed to keep our eye on the ball —to narrow the focus of our awareness to one or a handful of narratives that draw our conscious attention. It's a bit of a chicken and the egg argument as to whether our external attention is drawn to objects of internal conjecture, or internal conjecture arises from objects that draw our external attention; ultimately, both are happening in an ongoing fashion, and both are probably interchanging places as the "driver" of our conscious focus enough to make the process essentially simultaneous.

Nonetheless, it is this singular or nearly-singular ongoing focused narrative stream —one that combines both distinctly "spoken" & quickly "experienced" internal dialogue, terms I'll explore in more detail in later essays—that is the essence of conscious experience. (This category of consciousness, which is what our theory defines & focuses on, is often referred to as "higher-order" consciousness.) Think of this *stream of consciousness* as a narrow roadway. All narratives have attached to them an importance or urgency value. I have to pee a little or I have to pee a lot. I have an hour to get ready for my big interview or I have 20 minutes to get ready for the interview I don't care about, or vice versa.

The more urgent or important the narrative, the more "space" it takes up in the roadway of our consciousness. If your narrative is "I need to do this right now or I'll die!" your conscious roadway is pretty much at capacity. No other thoughts bubbling around in your subconscious are going to enter that narrative thoroughfare: *on-ramp closed, we're very busy, come back later, if we're still here.* But a few items of only medium immediate importance and that require little attention —many, like peeing, are such rote predictive scripts that they can be enacted with essentially no conscious attention allocated [2] (something we won't discuss in detail until Essay #5, *The Will Of The Free*)—a few of these lesser stories might be able to occupy the conscious narrative roadway nearly simultaneously, weaving together all their paths, and keeping all the goals "in mind" along the way. This is the navigator doing its job: circling destinations on the map and hollering directions as you go.

The Value of Deep Thoughts & The Magic of The Internal Dialogue Loop

As we've all learned for ourselves one time or another: the worst navigators are those who keep telling you to exit here, only to change their mind after you've left the highway. Although the real-world version of this experience usually has trivial (although annoying) consequences, the narrative version can have some hidden, but very real costs. This is particularly true if your narrative goal requires some deep thinking. A good example is the myth of multitasking (which is, frankly, an entire essay on its own, but we'll simply sideswipe it here). Multitaskers believe that our conscious roadway can simultaneously accommodate multiple narrative threads that all either require high attention or are of high interest. In reality, juggling these types of road-hogs likely requires a process that is not genuinely simultaneous or well-interwoven, but rather, is more akin to quickly sending narrative vehicles on and off the roadway to accommodate each as we switch our attention. [3]

What believers in multitasking are overlooking is the interference with narrative fluidity that occurs during this switching process, which likely hampers the brain's ability to probe the kinds of new solutions, associations & predictive models that can be accessed through a fluid *narrative loop*—primarily because this fluidity presumably allows for more extrapolations of thoughts to be processed through our unconscious.

According to our theory, in a fluid narrative loop, every thought (or thought parcel) is like an extrapolation or an echo of the *previous* thought parcel. This is one of *Narrative Complexity*'s unique & foundational hypotheses: after each sentence, phrase or idea is produced by our unconscious processing & emerges in our (prefrontal-cortex-based) conscious

internal dialogue, that language-based thought parcel *re-enters* our unconscious processing (along with all the ongoing or freshly-encountered, incoming environmental & physical data).

Basically, *we hear ourselves think the thought.* And then—via linguistically-, sensorially-, and emotionally-based neural connections—that thought "pings" & compares associated, memory-stored pattern data, washes through the narrative-analyzing/building machine again, generates new or continuing emotions, aids in enacting or inhibiting any potential actions, then comes back out of the loop as the next thought on the previous one's heels. In the view of *Narrative Complexity*, this is our consciousness' primary driver, the mechanism that engages all other mechanisms that generate our consciousness: the thalamocortical *internal dialogue loop*. (Inner speech's key role in myriad aspects of experience & cognition has already been well-documented. [4])

With each loop's dive back into our unconscious processing, these ongoing extrapolations of our thoughts (essentially, the *sentences* that compose our stream of consciousness) all have a chance to ping new associations & access new patterns in our databanks for possible application and/or comparison. This is almost like a process of "thought evolution" in which increased numbers of slightly-varied iterations of an idea or thought (new sentences) allow a greater possibility of a uniquely valuable or useful response being spurred by the "pinging" of newly-associated data.

Focused attention on a series of thoughts or ideas or a narrative helps our brain to maximize these thought iterations via multiple unbroken narrative loops through our conscious expression & subconscious processing. Keep in mind that the longer a specific narrative loop goes unbroken, the more likely it is to reach a "deeper" response in terms of using multiple iterations to allow for a more complex branching of ideas. Consider that when you break that narrative loop and "return" to the thought, you are not often returning exactly to your previous location in the idea branch, but probably begin instead a few steps further back, "retracing your steps" into the idea, taking a little time to pick up speed again on the roadway and get the iterations back into that fast, fluid flow. (This tendency to begin again "a few steps back" is probably due to how the *recent & repeated recall* of that slightly older data impacts its recall likelihood—a mechanic detailed within a much deeper discussion of this entire cognitive loop in Essay #4, *You Remember You*.)

The costs of restarting each narrative might be small when viewed individually, but over time the sustained cumulative losses in the process when attempting to do something

like "multitasking" can often be the difference between reaching or coming up short of the branch in the iterations of ideas where the best solution is suddenly accessible.

Language: The Creator & Ambassador of Ideas

In this looping thought-iteration process, the likely value of generating multiple, unique, cross-referenced data pings from a single thought or narrative input stream helps to explain the importance of language itself in the mechanisms of consciousness. Words are symbolic units whose core meaning is enhanced and, typically, completed by its context: the surrounding words & sentences, the real-world setting in which they are encountered, the speaker & audience, and so on. Every word represents a core expressive or descriptive value, but its full & specific meaning depends on the context of its appearance & usage.

There is an economy to this that makes sense when you think of the brain in terms of an operating system. Instead of creating multiple, large, highly-detailed units of data to represent very-specific, full versions of ideas (which would likely quickly become memory hogs & processing nightmares), it creates a core dictionary of malleable terms, and uses a system that allows these terms to build a full idea's specific details through a complexity that emerges via the interaction of the core terms.

Thus, words are just malleable enough to be highly-varied & dynamically-applied in their usage (therefore, more frequently useful), and yet just solid enough in their core meaning to allow for a mostly-predictable, un-confusing, specific result in that same dynamic usage. Therefore, instead of having one word that only & specifically means "I see a red snake by the river this morning," and another word that only & specifically means "I see a green snake by the river this morning," we have eleven less specific words that can be combined to say either, or a plethora of other very specific things.

The human brain's ability to build thoughts & ideas with interchangeable, highly-configurable units capable of multiple associations and usages became possible through the development of our neurons and associated brain structures. Deacon's theory of language evolution (presented in his brilliant & provocative 1999 book, *The Symbolic Species* [5]) suggests that the evolution of the primary brain structures & capacities required for language actually occurred over an extended period of time in mammals before humans emerged (due to non-language-based evolutionary forces).

And it appears that as these mammalian brains evolved, their neurons essentially developed those robustly modular, programmable (& *re*-programmable) abilities that allowed the complex creation &

analysis of the cognitively-generated predictions & choices that would eventually empower & be required to manage language. These abilities were partly acquired through neurons' ever-increasing capacity for more & different types of connections between each other. (As we'll explore next essay, our *emotional* cognitive systems also benefitted from advancing neuronal capacities—e.g., our unique & powerful *spindle neurons*, which only appear in humans, great apes, elephants & cetaceans, and are present in brain regions like the anterior cingulate & fronto-insular cortexes—areas that appear to be heavily involved in emotional analysis.)

The existence of these kinds of neural structures & their looping, highly-malleable, powerfully-associative capacities is supported by the work of Nobel Prize-winner & neuroscientist Gerald Edelman (& his frequent partner Guilio Tononi)[6]. In addition, those "*re*-programmable" neurons are central to pioneering neuroscientist Peter Ulric Tse's theory of "Criterial Causation" (he dubs it *synaptic resetting*). He explains this mechanic in his groundbreaking 2013 book, *The Neural Basis of Free Will: Criterial Causation*[7], which presents a powerful case for the neural properties & mechanisms required by *Narrative Complexity*'s systems of cognition (the focus of *Essay #4*).

Additionally, in the view of our theory, all of those neural mechanisms identified & defined by Deacon, Edelman, Tononi & Tse are exactly the kinds of brain systems necessary to support & manage the model of language-based cognition proposed in M.A.K. Halliday's & Christian M.I.M. Matthiessen's seminal 1999 book, *Construing Experience Through Meaning*[8]. Their deep, complex & pioneering theories of language & grammar strongly support our own hypothesized syntactic systems & the consciousness-sustaining language-based cognition process that we are proposing here (& will discuss much more deeply in *Essay #4*).

Returning to that prehistoric path of mammalian brain evolution—by the time primates arrive on the scene, they are capable of using their evolved, modular, complex systems of cognition & behavior to develop sophisticated & dynamic responses to many unique & complicated problems. But they cannot manage these responses with that extraordinarily powerful & symbolic tool: human language. In essence, they have no real words & thus no internally malleable way to represent & symbolically cross-associate all those modularly-constructed, wordless-yet-dynamic (& rudimentarily "creative") thalamocortically-based behavioral responses. It is not until hominins developed their highly-unique & sophisticated control of vocal faculties (again, due to primarily non-language-related evolutionary forces) that they were able to begin developing & nurturing complex human language (something else that Deacon details in *The Symbolic Species*).

Thus, it's likely that language took hold of those already sophisticated cognitive systems incrementally—with language itself & hominins' slowly-refining/repurposing brain structures/mechanics each helping to push our ancestral minds along the path toward modern human linguistics (a process that Deacon describes as "co-evolution").
Going back to those pre-mammal minds, think of it this way: sharks, amphibians, reptiles, and other simple-brained creatures of their ilk are all essentially what we would consider robots. By this I mean that they basically have fixed responses to very specific data input, almost all of which has been pre-programmed. If external input satisfies some, but not all of the specific "data-point" requirements for a pre-programmed fixed response, the response will not be triggered.

This leads to highly-controlled, highly-predictable (thus, more reliable) behavior, but it does not allow the creature to adapt very well to its environment. Essentially, these robotic brains have a severely limited ability to learn & distinguish the similarities & differences between like-but-not-identical patterns, and therefore possess a limited ability to dynamically combine any component parts of previously learned data for use in new situations.

In the view of our theory, this is, at its core, a result of the creature's neural limitations.

Based on the highly-specific, pre-programmed, robotic & non-dynamic (essentially, entirely *reflexive*) nature of their behavioral responses, those "early" creature brains do not appear to have the types of neural structures required to respond to & record experiences (in essence, *ideas*) in a complexly modular (independently-associative component-based) & creative fashion. Thus, these creatures cannot compare and connect the component parts of a data pattern—because most integrated, multi-modal experiential data patterns in early brains likely have essentially *no* independently-associative component parts. (*No modular experiential data structures.*)

Their operating system is still using that reliable, but clunky and old-fashioned method: *one word that only & specifically means "I see a red snake by the river this morning."* In fact, for much of the creature kingdom the operating system is even more rudimentary than that. Their method is more like: *one word that only & specifically means "I see red; now run."* Obviously, these creatures don't literally have "words." But they do have neural structures that correspond to experiential-data patterns and are used to help determine the creature's responses—which is ultimately what human words & language are.

Beginning in amniote (i.e., reptilian) brains, it appears that rudimentary, non-modular,

but *remembered* or *learned* experiential-data patterns—high-pain experiences that became the earliest forms of simple memories—were handled by the *amygdala*. (This system still, in fact, exists in humans, which we'll discuss in Essay #4.)

As we move up the evolutionary brain ladder, growing sophistication within (& more sophisticated relationships *between*) areas like the cerebral cortex, amygdala, basal ganglia, thalamus, hippocampus and cerebellum allow for more robust (*cortex*-based) memory & learning mechanisms to be added to the operating system in creatures like birds and mammals. (Although birds' neural systems diverge in some distinct ways from mammals, their advanced methods of data-handling mimic many mammalian mechanisms. And, in fact, recent research has shown that highly-intelligent birds like crows demonstrate creative, communicative & behaviorally-sophisticated cognitive capacities that are comparable to advanced mammals.)

But many of the earliest mammalian learners were still limited by their inability to construct truly complex, modular, multi-association experiential-data patterns within these cortex-based memories. Thus —although cortex-based memory & learning mechanisms in early mammals (like mice) are more complexly, broadly, frequently & usefully applied than those simple reptilian amygdala-based mechanisms—early mammalian learning is still mostly limited to basic pain/pleasure encoded responses to either a large, very specific non-modular data pattern (*"When I see a red snake by the river in the morning, run"*) or a single data point (*"When I see red, run"*). This means that the next time either of those little-minded fellows comes across a dusty-green rattler in the desert for the first time, they're probably screwed. (As we'll discuss later, early modularity in these record/response neural mechanisms probably began with mammals like early canines or even humble guinea pigs—although those systems are far less complex than the systems that emerged in primates.)

Humans, on the other hand, have an operating system that can say in its modular, multi-word way *"I saw a red snake by the river this morning and he bit me,"* and then later say *"I see a green snake in the sand."* Here the common modular element "snake" connects the two ideas and the data from the potentially life-threatening earlier experience is pinged & cross-referenced, spurring a new narrative response that leads the human away from the danger. Believe it: *words save lives*.

Or, to view it in less dramatic terms—like saving memory space, and allowing for more malleable, dynamic, interchangeable units of idea construction—the benefits of symbolic, adaptively-configurable words over highly-detailed, idea-specific words are

fairly obvious. But the hidden value of this type of symbolic language, and its special use in our consciousness' internal dialogue mechanism goes back to our discussion of iterations of thoughts.

Because each word has multiple uses in multiple settings, every time it enters our subconscious processing via internal dialogue, there is a greater possibility that in this new context the word's multiplicity of connections will help generate one of those "uniquely-useful" pings of a now suddenly-associated, formerly-unlinked idea or piece of pattern data (a cross-matching capacity that is, by comparison, *severely limited* in even highly-advanced & cognitively-creative but *non-complex-language* mammals like apes).

In addition, thanks to that malleable power of language, this multiplicity in now-comparable connections can aid in the creation/discernment of a broader, more useful *symbolic pattern*. Another way to look at it, word *malleability* (usefulness in multiple contexts) allows & enhances both more-direct "*snake-to-snake*" connections between different ideas/experiences, *and* less-direct, more-symbolic (and more-broadly-useful) "*snake-to-guy trying to steal my girlfriend*" connections between different ideas/experiences.

Thus, it is because of the malleability of words & their symbolic content that they are able to bridge the gap between larger concepts that might otherwise remain unconnected if compared as wholly-constructed, complex idea patterns. When these complex patterns are linked by a singular or a subset of common modular component part(s), the connection between them and the possibility of cross-application & larger symbol generation/discernment becomes possible. *It's the power of metaphor*. This kind of useful pollination between incidentally-relatable but seemingly-unlike larger ideas is the root of human creativity, the very essence of the problem-solving virtuosity that has propelled humanity to such dizzying heights.

Internal Dialogue: This Is Who You Are

Although it happened so quietly that you probably didn't even notice, we just answered that celestial question-of-questions: *why are we here?* Which is really the question: *why this internal dialogue shtick?* Upon first glance, it seems that human beings could function in a highly-complex learn & adapt fashion without experiencing the manifestation of an observational & conversational internal dialogue. This dialogue-less creature could use the same modular data structures to record & encode new data, then connect & compare it, etc., generating a seemingly similar range of behavioral & action responses—all without that experience being reduced to one or a few internally "spoken" key narrative streams. This would seem to be a creature very similar to a human in all outward ways—

except that it probably wouldn't talk, which quickly reveals one of the creature's flaws, and one of the basic benefits of words. Social behavior, cooperation, negotiation—some of the most crucial interactive tools contributing to human advancement seem nearly impossible without language.

But even in those social arenas, there are still less-costly evolutionary developments that could have supplanted the role of words in aiding our progress. It's not hard to imagine that rudimentary sign language (something much more akin to pantomime than modern word-based signing) and other forms of non-word-based communications could have been powerful drivers in the area of social interaction and allowed plenty of human advancement before there was any real evolutionary pressure to make the complicated & spectacular leap to an internal dialogue capable of sustaining the experience of consciousness.

And by supplementing those pantomimes with rudimentary, vocalized, word-based language (which is likely what occurred) it seems that early hominins could have developed an even more useful system of communication that *still* doesn't require complex self-sustaining internal dialogue to access many of those early cooperative & social benefits. Thus, if this interactive social aspect of rudimentary language was its primary (or only) evolutionary advantage, there would not seem to be any powerful push for it to evolve into that spectacular system of complex language & internal dialogue.

There is, in fact, evidence of a modern group of humans who have built a rudimentary "language" from such non-word-based pantomiming: a group of deaf individuals in Mexico who never learned sign language and who communicated via basic, communally-shared & -developed pantomimes (depicted in Susan Schaller's 1995 book *A Man Without Words* [9]). Interestingly, even after one of these individuals eventually learned word-based signing, he basically couldn't provide any kind of language-based depiction of what it was like to live without words; he referred to it as a "dark" time, a confused former state that he had no desire to describe. In essence, according to our theory, without words he was unable to generate a fully perceivable & recount-able conscious experience—resulting in that "dark" time of an amorphous, confused, wordless & thus, narrative-less existence.

Obviously, hominins did not remain in such an internally wordless, self-dialogue-less state—there was clearly strong evolutionary pressure for our brains to make that spectacular leap forward. Translated: there was a very rewarding advantage created by inching generation-by-generation,

mutation-by-mutation, toward a brain that talks to itself using words, toward an internal narrator. And it is that internal narrator—the one that says "I am here," even in total sensory deprivation, as long as the brain is conscious, or at least semi-aware—it is that internal dialogue that truly defines us as *us*, as the thing that is our self-aware "being." [10] We know innately: I am here if I can say to *myself* that I am here. That mere snippet of internal dialogue is the essence of being: *I am here*.

This is the key to understanding the *uniqueness* of human consciousness: once our systems of dynamic language production have been learned (our toddler years) human consciousness is—at its most fundamental & unadorned core—essentially *entirely unrelated* to external sensory input. As long as a human has language, even in the *total absence* of external sensory stimuli, internal dialogue can continue to *self-generate* dynamic cognitive responses (creative self-sustaining thoughts) via its perpetually-looping nature.

I briefly experienced just such a sensory-deprived, but linguistically-conscious & coherent state prior to fully emerging from a seizure-induced unconscious episode that occurred in my late 30s. The thoughts I had in the those minimally-conscious moments —which presumably occurred while lying in the emergency room bed, unable to move or feel or hear or open my eyes—mostly focused on wondering what kind of dire predicament I'd gotten myself into, and whether or not I was, in fact, dying. In this state, I still retained a good understanding of who I was and the general facts about myself, but I was lost in time—unable to remember where I was in the story. (This *lostness* is something that would actually continue for several weeks after I awoke—a result of the temporary amnesia caused by the seizure, which I'll discuss more in Essay #4.)

In the view of our theory, this kind of sensory-deprived but coherently-conscious experience *is not possible* in any other (or *non-linguistic*) animals—even other advanced mammals, whose dynamic "cognitive" responses *require* sensory data to be constructed, because without internal dialogue *there is no other source* of useable incoming data. (The rare exceptions are possibly creatures like highly-advanced & rudimentarily-language-capable cetaceans —i.e, dolphins, which makes humans' oft-horrific treatment of them even more disturbing to contemplate.)

In the absence of sensory stimuli, a pre-language mammal brain might *attempt* some kind of cognitive behavior generation by essentially randomly associating their "darkness" to stored data & engaging cognitive processes in that way. But because their lack of internal dialogue makes them incapable of "narratively-contextual" cognitive rule application, these brains require that fundamental spatial/physical

context (absent in this scenario) to effectively choose which cognitive rules to apply to that random data—which means any attempts at cognition would essentially result in useless behavioral nonsense. Basically, these creatures would be reduced to a waking version of their *dream state*. (Dreams are the subject of Essay #3, *The Night Shift*, which hypothesizes that language-less mammals' dreams are likely a nonsensical, narrative-less, non-contextual internal replaying of incidentally-associated experiential data: *a flash of chasing followed by a flash of eating, and so on.*) This waking version a non-contextual *dream state* in a language-less mammal would be entirely unlike the robust & reasonable "awake-but-sense-deprived" *internal dialogue* that humans can experience—even in that *total absence of external stimuli*. (We will explore a deeper comparison of human & pre-language mammalian cognition is Essay #4.)

This means that all of that rich, detailed fully-integrated sensory data that we experience via our "consciousness viewfinder" of awareness (yet another concept we'll explore in Essay #4) and which *seems* central to human consciousness is really just a pre-packaged (& extraordinarily-useful-to-the-point-of-near-necessity) system of external data processing that comes built-in to mammalian brains because it was once the *only* data source for cognition. In humans, however, that system of external data processing is not actually necessary to run our system of language-based internally-self-sustaining & dynamic conscious cognitive processes. (How that internal dialogue loop manages to be effectively *self-generating* without some essentially metaphysical *self-entity* directing the focus & scope of that dialogue is explained in our discussion of "narratively-contextual rule application" in that frequently aforementioned Essay #4.)

The reason we strongly, desperately *prefer* to run our language-based consciousness system along with this rich sensory input system is that it allows our consciousness to actually do *useful stuff* with its cognitive powers—like responding to that sensory environment to satisfy our needs and correlate sensory data to internal dialogue that is simultaneously being integrated within that *in-the-moment* experiential arena that's anchored by our prefrontal cortex.

This internal dialogue capacity is so powerful & central to humans' conscious "being" that even if we have completely forgotten who and where we are, we will and *can* still tell ourselves that essential fact: *I am here*. Anything less is viewed as unconsciousness or consciousness without "being" (or without any form of "being" that would be recognizable to us in a line-up). Dualism's silliness might've been beyond Descartes' grasp (and really, who could blame him—it sure *feels* like there's some kind of *floaty thing* inside this other more obviously

visible & awkward one) but he really nailed it when he conjectured: *I think, therefore I am*. You just can't argue with it.

In fact, thanks to our brain's (very useful) obsession with cognitively *mapping* most of our internal data to some part of our body, internal dialogue is likely why we sense that "floaty thing" thinking *inside our heads*. (In other words, we don't sense that this floating voice is inhabiting our hand or our leg.) As we'll describe in the next essay, our brain likely maps our emotions to different body parts—which is why we sense that *feely thing* inside us. Similarly, we sense that *floaty thing* in our mind because our brain likely maps internal dialogue-based auditory data to our head. (And the internal dialogue also helps us to cognitively contemplate both those *feely & floaty* parts of ourselves.) Essentially, the brain is trained to map almost *all* (consciously-experienced/modeled) internal data to *some* part of the body (otherwise, generally speaking, that data isn't much use).

All of which tells us *how we know* (or *sense*) that we're here, but the question I promised was: *why* are we here? Why *did* those early humans end up with little voices in their heads instead of remaining modularly-cognitive, pantomiming & rudimentarily-speaking, but internally dialogue-less zombies? The short answer: problem-solving virtuosity. It's all about the loop, baby! (A sentiment that's shared by cognitive scientist Douglas Hofstadter, who pioneered the idea that a "strange loop" is the centerpiece of consciousness, and whose work I greatly admire. [11, 12]) As we'll explain in Essay #4, the beauty of a sentence or a thought is that it's essentially a dynamically-created symbolic equation. It's a type of mathematical hypothesis, either an *observational* or *causal* pattern of sorts —one that our brain tends to view as a problem to be solved in some way, or maybe more accurately, as a proposition to our sub-conscious processing: *whaddya get from this?*

(Although thoughts are ultimately presented in that linear fashion typically associated with our "left-brain," the mechanisms that lead to this linear product occur in a primarily parallel pattern-processing fashion. In other words, the brain does not function like an algorithmic & linear "computer"—in *very, very* simplistic terms, we might think of it instead as a powerfully-associative, heuristically-oriented pattern-matching & -processing machine.)

When a thought from our internal dialogue is reabsorbed into the subconscious, this "equation" or *observational/causal pattern* and its data are basically being submitted for a quick-but-thorough, cavity-probing Google search of the brain's vast memory-based data banks. And as we noted earlier, it's the metaphorical, transitive abilities of symbolic language that unlock the cross-referencing, cross-application, problem-solving power within these data banks.

There are a couple of killer-app-like advantages to using this system of generating & reabsorbing a narrow stream of word-based, narrative thoughts that pertain to your area of attention. One, by using a method that sends only the highest priority or most attention-requiring narrative(s) into the internal dialogue loop, the brain is sorting and guiding the momentarily most important, relevant or useful current data into the part of the system that has the necessary & devoted resources ready for high-powered Googling & cross-checking. Two, before that Googling & cross-checking, each sentence or cycle of internal dialogue is reconfiguring the complex, high-priority data of the moment into the more-efficient symbolic terms crucial to the useful cross-application of pattern data.

If our brain didn't reabsorb this stream of word-based thoughts, that circularly-looping data pathway would look more like a *U-turn arrow*: vacuuming in environmental & physical sensory data at one end, processing it linguistically, then launching the resultant word-based narrative parcels out the other end & into the world via speech, but never allowing the brain to make *internal* use of all the syntactic & vocabulary-based data contained within those parcels. Such a "*speak-but-don't-think*" (*aka*, zombie-like) system would, thus, be bereft of all those killer-app-like symbolic & associative advantages provided by our system of *looping* self-heard internal dialogue.

Why are we here? Because a brain that talks to itself is likely to be much, much better at coming up with unique solutions to our most pressing and/or most difficult problems. And those crazy-sounding, echoing-in-your-cranium musings also help your brain to focus its problem-solving mechanisms on the most crucial or immediate matters in our purview, thus ensuring that the brain's most useful processing resources are being devoted to analyzing the most important data. Of course, "crucial," "immediate," and "important" are *very* relative terms, depending on the particular cranium that's doing the musing. (This is a matter we'll discuss in great detail in Essay #2, *Monkey Feel, Monkey Do*, which covers our human *emotions*; I believe our emotions' evolved, in-born, complex gain/loss & prediction judgement systems provide the value- & validity-based data-encoding & behavioral-signaling required by those cognition-producing neural mechanisms proposed by Edelman, Tononi & Tse.)

Although the very earliest usage of language among hominins was, indeed, likely driven by social, verbalized person-to-person exchanges—because of the way self-produced speech is integrated into our systems of perception, it would not have taken long for the simple repression of actual vocalization to produce the first sparks of internal dialogue. Over time, this capacity to run our complexly-useful &

creative language process in an ongoing fashion quickly helped make the many uses of internal dialogue (& its recruitment of neural resources) grow exponentially—eventually becoming the dominant component of human consciousness.

Ultimately, you're here because without you, your brain might never realize that a *bucket* isn't just "a cylindrical, topless object that can be filled with and dispense water," but rather, that a *bucket* is "a device for carrying stuff." A thought which—many eons after buckets were actually invented—might've helped give somebody an idea when they were building a system for programming computers and wanted to make some of this mass-less stuff easier to handle in their little system, and they were thinking "y'know, like to *carry the stuff* around...wait, like in a *bucket*, I'll make virtual *buckets*." That's why you're here—to create *buckets* from *buckets*. Sure, it doesn't sound very romantic, but it did make evolving toward our conscious existence seem like a good idea for our species, so it has to get some props for that.

All Narrative, No Complexity Makes Jack a Dull Boy

Happily, despite the underwhelmingly pragmatic foundations for the development of consciousness, romance is never far from the human mind. And the same evolution of neurons & neural structures that allowed for symbolic language and modular data systems also mirrored the evolution of our more romantic consciousness-generating faculties: our capacity for sophisticated memories, complicated belief systems, and complex emotions. All of which we'll explore in delicious, passionate detail in later essays, as well as some of the more swoon-worthy side-effects of our oh-so-functionary, consciousness-inducing internal dialogue, and a few other secrets that will have to be deviously kept for now. (We'll also explore the ways in which other vertebrates' *language-less* conscious experience, emotions and cognition are *very similar* to our own.)

Until then, a final word about the final word in Narrative Complexity. The *complexity* is all in the neurons & the language they enable. It's in their combined, magnificently-evolved ability to freely connect, associate, compare, extrapolate, reduce, measure, encode, discard, assemble and disassemble all the data taken in and subsumed by the human brain during an entire lifetime. Without our complex neurons & language, we would be those *thoughtless* zombies. Things that didn't think they had that *floaty thing* inside this other visible thing. We'd be things that didn't *think* at all. And of course, as we all know...*one more time, with feeling:* I think, therefore I am.

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