

Let's Talk About Consciousness, Baby

by R. Salvador Reyes

Good Morning: This Is Your Life

Your alarm clock begins to wail. You wake up. You look around 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 notice 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?* You scan the room again, notice the suit hanging behind your door. *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 & observations might occur slowly enough to hear all those words 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 his interview notes does not indicate that he has decided urinating is a more worthy goal than wealth and prosperity. Rather, his 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, he could pee first and still have plenty of time to do everything he needed to be optimally prepared for the interview. In fact, in a smaller calculation (one so obvious he was probably never even aware that he thought about it) he might've realized that there was more likely a slightly higher cost to studying his notes first and

waiting a half an hour to pee. However, if he was feeling particularly unprepared for the interview or believed it was a uniquely valuable opportunity, he might choose to "hedge his bets" and grab the notes first, then bring them to the bathroom to begin reading *while* he 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 access as many possible solutions or

predicted pathways toward any goal, then judge their usefulness before choosing which predictive data to apply in each decision. This is *Narrative Complexity*.

And if you think it 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 "spoken" & "experienced" internal dialogue, terms I'll explore in more detail in later essays) that is the essence of conscious experience. 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—some, like peeing, might even be such rote predictive scripts that they can be enacted with almost no conscious attention allocated—a few of these 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 Myth of Multitasking

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, and is more akin to quickly sending narrative vehicles on and off the roadway to accommodate each as we switch our attention. 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 iterations of the thought to be processed through our subconscious.

These iterations are like echoes of every thought. Each sentence & idea that appears in your conscious internal dialogue re-enters your subconscious processing (along with all the ongoing or freshly-

encountered, incoming environmental & physical data), and then—via linguistically- and emotionally-based neural associations—that thought "pings" associated, memory-stored pattern data, washes through the narrative-analyzing/building machine again, generates new or continuing emotions, and comes back out of the loop as the next thought on the previous one's heels. With each dive back into the subconscious processing, the next version or extrapolation of the thought (essentially, the next *sentence*) has the chance to ping new associations & access new patterns in its data bank 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 to be spurred by the "pinging" of newly-associated data.

Focused attention on a series of thoughts or ideas or a narrative help our brain to maximize iterations via multiple unbroken loops through our conscious expression & subconscious processing. Keep in mind that the longer a 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 loop and "return" to the thought, you are not often returning exactly at 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. The costs of restarting each loop 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 through the interaction of the core terms.

Thus, words are just malleable enough to be highly-varied (therefore, more frequently useful) and dynamically-applied in their usage, 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. As our neurons evolved, they essentially gained these same modular, programmable abilities through an ever-increasing capacity for more & different types of

connections between each other. Think of it this way: insects, 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 new things and dynamically apply what they have learned in new situations.

At its core, this is a result of the creature's neural limitations. "Early" creature brains do not have the types of neurons & neural structures required to create & record ideas in a modular fashion, and thus cannot compare and connect the component parts of a data pattern; most data patterns in early brains essentially have *no* component parts. 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.)

As we move up the evolutionary brain ladder, growing sophistication within (& more sophisticated relationships *between*) the cerebral cortex, amygdala, thalamus, and cerebellum allow for more robust memory & learning mechanisms to be added to the operating system in creatures like birds and mammals. But many of the early learners were still limited by their inability to construct truly complex, modular, multi-association data patterns. Thus, their learning is mostly limited to simple pain/pleasure encoded responses (primarily pain) 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. 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. And 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, but when linked by a singular common component part, the connection between them and the possibility of cross-application becomes possible. It's the power of metaphor. This kind of 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 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 wouldn't talk, which quickly reveals one of the creature's flaws, and one of the basic benefits of internal dialogue. 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 & dialogue in aiding our progress.

It's not hard to imagine that rudimentary sign language (something much more akin to pantomime than modern day 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 yet, the evolutionary pressure was there. 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 "being." 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*. Even if we have completely forgotten who and where we are, we will and *can* still tell ourselves, *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.

Which tells us *how we know* we're here, but the question I promised was: *why* are we here? The short answer: problem-solving virtuosity. It's all about the loop, baby. The beauty of a sentence or a thought is that it's essentially a dynamically-created, symbolic equation, a mathematical algorithm 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 subconscious processing: *whaddya get from this?* When a thought from our internal dialogue is reabsorbed into the subconscious, this "equation" 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.

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* relevant terms, depending on the particular cranium that's doing the musing.)

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 some guy an idea when he was building a system for programming computers and he wanted make some of this mass-less stuff easier to handle in his little system, and he was 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.

Until then, a final word about the final word in Narrative Complexity. The *complexity* is all in the neurons. It's in their 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 those neurons and their complexity we would be robots. 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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