

# A Matter of Life and Death: How Humanity is More Than “Mere” Matter

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## **I. A System of Materials**

This project is born of a concern with signs, systems, and meaning. As a public project, two ideas present themselves here: that consciousness arises out of biological processes and that these processes are sufficient for a meaningful human life. And while intended for a wide audience, it is also a personal account, for I have found that the personal account always fits into a larger system, and seeing how the pieces fit together can say more than what is on the face of things. I once glimpsed a sign of this bigger fit while on a trip in elementary school, where I saw silently proclaimed on the wall of a classroom in the Sierra Mountains: “When we try to pick out anything by itself, we find it hitched to everything else in the universe” (Muir Ch. 6). At the time it was like a secret acknowledgement, a whisper of the underlying links between things. Only later was it clear to me what these hidden relationships meant for humanity.

Throughout our lives, we encounter ideas like this that are meaningful and valuable to us, accumulating the pieces that compose our lives. With each new truth we find we can interact with the world in new ways, ways we perhaps could not reach or even see without them. While exploring these ideas at the cusp of logic, biology and religion more than ten years later, I searched for that remembered phrase and identified naturalist John Muir as the author, for he too beheld a vision of nature and divinity simultaneously affirming and unifying the myriad threads which connect and define us with the fabric of being.

The same scientific or Socratic process of accumulating discoveries forms the basis of the social sciences. However our sciences have developed to the point where today it becomes difficult to talk about the meaning of human behavior without talking about the natural processes involved in biology, psychology, and sociology. The various theories of sociobiology let us look at human behavior through a variety of lenses: The sociologist may speak of the ideas of love as a motive, the psychologist of the demands of desire, and the biologist of the buildup of neurotransmitters. Each is a causal explanation, but each takes place on a different level and thereby implies a different relationship between the individual and the environment.

It is important to admit these developments do raise questions about what it means to be human. However, a close look at the biological origin of shows that rather than taking something away from humanity, these findings redefine it. Indeed if our findings did not raise questions, we would be learning nothing about ourselves. It should be stressed that only by being conscious of our beginnings – including the beginnings of consciousness – can we grasp the essence of our humanity and take up a place in these processes apropos of our awareness.

## **II. A Triptych of Selection: The Tower of Generate-and-Test**

Contemporary philosopher of mind Daniel Dennett pokes at the problems of persons and processes in his 1996 book *Darwin's Dangerous Idea: Evolution and the Meanings of Life*. Chapter 13 of Dennett's book, "Losing Our Minds to Darwin," includes a three-tiered representation of development which aims explore the role of language in intelligence, as "a framework in which we can place the various design options for brains, to see where their power comes from . . . to find better and better moves, and find them more efficiently" (373) – Dennett notes he discovered later a that similar idea in Konrad Lorenz's 1977 *Behind the Mirror*. Each level on Dennett's triptych of selection highlights a critical development on the road to consciousness.

Dennett called the creatures on the first level of the triptych Darwinian creatures, after Charles Darwin who put forward his biological theory of environmental selection in the 1850s (*Dangerous* 374). This "dangerous idea", now an established theory, put simply states that if you have a population which produces diverse individuals in a competitive environment, successful competitors will tend to persist and spread their successful traits. Creatures on the Darwinian level rely upon genotypes and phenotypes helpful for survival in the current environment (*Dangerous* 375). Useful mutations will slowly accumulate into a kind of toolbox of environmental adaptations. For instance, motor and sensory mutations help an organism reach better habitats and energy sources which promote that mutation's survival. A Darwinian creature must develop a useful phenotypic toolbox out of its genetic material. The organism must concert these tools in order to continue to be productive and competitive in its environment. All organisms possess a diverse set of tools; the important thing is how they use these tools to seek out value in the world. Even the most rudimentary creatures are specialized for a distinct set of tasks which allow them to get by.

For example, think of a simple creature such as the starfish. The starfish has several tools to employ in its environment: five-footed locomotion, a powerful mouth, strong suction grip, and the ability to regenerate from decapitation. But what kinds of processing power does the starfish possess? As biologist Jonathan Dale of the Boston University Marine Laboratory explains, the starfish has no brain to speak of: “Instead, a radial nerve runs down the length of each ray, connected with the other radial nerves by a circumoral nerve ring in the body. The nerve ring provides connections, but is not a processing center, and its structure is much simpler than the radial nerves. [. . .] Starfish . . . lack a central coordinating nervous center” (“Chemosensory Information”).

How, then, does the starfish go about finding value without a central processor, without any headquarters to make decisions? How can we begin talking about consciousness with such a simple organism? We can do this because the starfish nonetheless engages in value selection. The starfish also possesses another developed tool, a set of chemoreceptors, one hooked up to the nerve in each of its five rays. Dale’s orientation experiments have shown that these chemoreceptors allow starfish to “compare concentration [information] between their rays” (“Chemosensory Orientation”). He found this by temporarily disabling some of the chemoreceptors on the starfish rays – the lack of the disabled rays clearly affected the pathfinding abilities of the whole organism. Yet this occurs despite the lack of a brain or central processor:

Contrary to what you might expect, the nerve ring doesn't seem equipped to do any kind of processing of information. Instead, all the sensory information must go to the radial nerves, any memories . . . any decisions . . . And somehow, the five different radial nerves must coordinate those decisions if the starfish is going to get anywhere.

The best theory is that some sensory information is shared between the different rays (it is unclear how much, or how far it goes), and that the rays can inhibit each other — that is, one ray can take charge of the whole starfish for a time. . . . When trying to locate an odor, the ray sensing the odor most intensely seems to be the one which takes charge, directing movement in its own direction. (“The Starfish Nervous System”)

By concerting these developed abilities, the starfish can be productive and competitive in its environment. The importance of the starfish's position on the Tower-triptych is that it reveals that the power of tying together multiple tools, processes, and stimuli in order to achieve a value-selecting equilibrium. We see here the first essential feature of consciousness: Life begins with choice.

Nevertheless, some of those faced with a purely biological account of behavior fear that we are in danger of losing our minds to Darwin. They fear that these functionalist explanations coming from thinkers of Dennett's tradition "reduce" us to apes or machines, and that Darwin was saying we were nothing special at all. However, this is a resistance to be defeated, as Dennett agrees. Their pessimistic conclusions seem only capable of arising from the mistake of looking at human thinking only in terms of something like this most basic level of biology. However, only the simplest kind of information processing occurs on the Darwinian level, still far from the experience of thinking in the way you or I know it. To reach the point of consciousness, the power of selection must be combined with some other crucial components.

### **III. The Emergence of Value**

According to Dennett, many creatures are not blind Darwinian survival machines, because they have accumulated tools allowing them to learn from their surroundings and begin behaving beyond the horizons of other organisms. Dennett calls these creatures of conditioning Skinnerian creatures, named for the behavioral psychologist B.F. Skinner who stated that "where inherited behavior leaves off, the inherited modifiability of the process of conditioning takes over" (*Dangerous* 374, qtd. from Skinner's 1953 *Science and Human Behavior*). A key difference of Skinnerian creatures from Darwinian creatures is what Dennett calls conditionable plasticity (374). Darwinian creatures had to rely upon a capable gene and a practical phenotypic expression, but many lucky Darwinian creatures also possess "elements of their design that [can] be adjusted by events" (374), or what is called phenotypic plasticity – a gene's power to be expressed in a variety of behaviors. Finally, many fortunate Darwinian creatures also "have wired-in reinforcers that happened to favor . . . actions that [are] better for their agents" (374).

Conditioned selection is possible without a brain. For example, even the single-celled paramecium *p. caudatum* has been shown to learn to avoid negative stimuli in research involving associations between shock stimuli and brightness (Armus, Jellison & Montgomery). The

essential feature is the pairing of Darwinian phenotypic plasticity with conditioned plasticity, by which Skinnerian creatures reach a step beyond environmental selection because they are able to internally check, monitor, and moderate genetic responses to external stimuli. This reflective power is the genesis of intelligence, because it allows for new values to arise which did not exist in the genetic blueprint of the valuing creature. Biologists call this emergence, and this is the second critical feature of consciousness. A pair of examples can show us the importance of the use and abuse of emergence for life: one in biological modeling, the other in animal psychology.

In their 2000 book, *A Universe of Consciousness: How Matter Becomes Imagination*, authors Gerald Edelman and Giulio Tononi, the former recipient of the 1972 Nobel Prize for Physiology or Medicine, explain the importance of emergence by presenting a simple neural net. We can look at it as a simple Skinnerian creature. This neural network is specialized to visually distinguish red crosses from green crosses amid a series of shapes. The net's 10,000 neuronal units combine to create a million connections (116). It is composed of "nine visual cortical areas, divided into three anatomical streams mediating responses to form, color, and motion, respectively" (Edelman & Tononi 116).

The model was trained by the activation of a projecting value system which serves as a producer of neurotransmitters. Just like rewarding any creature in training, "activation of the value system globally signaled the occurrence of a salient event and permitted changes in the strength of the connections" (118). This training soon helped the model to locate the red cross with 95 percent accuracy. The astounding thing is that the neural network was never programmed to look for a red cross. Like the Darwinian starfish, the Skinnerian neural net has "no superordinate area [which] coordinates the responses of the model" (Edelman & Tononi 116). Training for value selection is achieved by the conducting of the various visual areas by the value system, which acts as a Skinnerian "reinforcer," diffusely encouraging all activity synchronous with the reward associated with the red cross.

The main point of this example is to show that higher-order processing involves a number of entities working together cooperatively. The emergence of the higher-order value occurs when various groups of neurons bounce their results off of one another, creating a feedback loop involving internal reward systems that eventually results in more complicated external behaviors. As Edelman and Tononi write,

the most important point is that in this model, the conjunction or integration of the appropriate attributes of an object to yield a correct output was not achieved in any one particular simulated cortical area or by just one particular groups of neurons. The model contained no units that were directly selective for arbitrary conjunctions or object properties, such as a “red cross located in the upper left quadrant. (118)

By combining Darwinian developments with Skinnerian conditioning, creatures with this kind of integration achieve a greater range of behavior than those who cannot modify any hardwired movement habits they might have. This machine parallels that process, and so it is very useful tool for comparison when looking to understand that the phenomenon of emergence is based in the various selectional processes of a value-based reentrant parallel processing system. However it remains only a functional representation. When we get out of Legoland and look at the real deal, we can see how the practical implementation of these emergent powers quickly allows things to get complicated.

A second example of emergence appears in the research of B.F. Skinner, a pioneer in behavioral psychology, who learned a lot about learning by teaching pigeons. He was studying conditioning. In one of his many now classic experiments, Skinner set up timers to feed the pigeons at regular intervals, and he found that the birds would begin to associate other events which occurred at the same time as the food (“Superstition”), as in the Pavlov’s famous experiments on dog and Edelman & Tononi’s neural net. And, well, pigeons do the darndest things:

One bird was conditioned to turn counter-clockwise about the cage, making two or three turns between reinforcements. Another repeatedly thrust its head into one of the upper corners of the cage. A third developed a 'tossing' response, as if placing its head beneath an invisible bar and lifting it repeatedly. Another bird was conditioned to make incomplete pecking or brushing movements directed toward but not touching the floor. Two birds developed a pendulum motion of the head and body, in which the head was extended forward and swung from right to left with a sharp movement followed by a somewhat slower return. The body generally followed the movement and a few steps might be taken when it was extensive. (“Superstition”)

These movements would often be performed at a particular location in the cage, and the birds would usually emphasize certain parts of the behavior, sometimes resulting in movements so elaborate that they resembled little dances. What

[began] as a sharp movement of the head. . . became more energetic, and eventually the whole body of the bird turned . . . and a step or two would be taken. After many hours, the stepping response became the predominant feature. The bird made a well defined hopping step from the right to the left foot, meanwhile turning its head and body to the left as before. (“Superstition”)

This is the basic pattern of conditioned behavior – internal values are created by associating external events with rewarding behaviors. We can see that the birds were associating rewards to a discrete set of stimuli – cage position as well as movement, and perhaps other things we have a harder time observing. We can see in the neural net that “integration was achieved not in any place, but by a coherent *process*. This process was the result of reentrant interactions among neuronal groups distributed over many areas. . . . rapidly, within 100-250 msec after the presentation of the stimulus” (118-119). It would be ignorant to deny the vast amount of processing occurring so quickly in the pigeon’s brain. But how is it exactly that the pigeons reach such an extreme reaction? Are they simply so stupid that they think *dancing* is the proper way to make food appear? This, of course, is only a judgment of ignorance, a jump to conclusions where a real explanation does not make itself clear.

Though the pigeons did reach strange conclusions, Skinner pointed out that a number of similar superstitions persist in human culture (“Superstition”). Any judgments we should make about the pigeon’s behavior should consistently explain our own activity. Saying that the pigeon is simply not smart enough is a form of explaining away the problem by blaming it on a single quality which in reality has no substance at all. We want a theory that can account for this kind of behavior and avoid such attribution errors, and it seems that only a theory which accounts for conscious thinking as a composite of integrated performers can do this.

#### **IV. Theorizing Those Crazy Connections**

Before looking at how these functionalist theories explain the powers and problems important to us, it can be helpful to consider their common ground in brief detail. Edelman & Tononi’s theory of neuronal group selection or Neural Darwinism is based upon three features:

developmental selection, experiential selection, and the correlation of re-entrant signaling (79). They concluded with additional examples that more active processing areas and greater integration leads to higher complexity and differentiation (134). A system with mechanisms designed independently for the expert handling of various tasks may be better equipped than a single machine built to perform all of those tasks on its own. Marvin Minsky, who presented his theory of emergent “agents” in his 1985 book *The Society of Mind*, suggests that this makes evolutionary sense:

I think something like the Society of Mind theory is necessary if you're going to try to understand anything like human intelligence. Just as you need some theory like that to understand any aspect of biology... 'cause consider any animal. An animal is made of organs, a liver and pancreas and stomach and lungs and heart. And each of those systems has evolved to be good at some particular way of doing something or some particular function or solving some particular problem. Of course, they're all related to survival, but that doesn't mean that the animal has a survival instinct. It's a wonderful paradox. Many people say, well the important thing about a living thing is that it has a survival instinct. That's why it eats, to stay alive. And that's why it reproduces, so that the species... but there really isn't any survival instinct. There's just a collection of mechanisms, all of which help to solve problems in different situations. It seems to me that it's the same with the mind. That in order to survive or whatever, you have to solve and deal with different situations. And each situation involves some collection of problems to solve. So, a successful animal or the product of an evolution is almost... when it's successful, is to develop a society of different methods for dealing with situations. (*Web of Stories*, part 92)

Properly co-coordinating specialized pieces is more effective than designing additional mechanisms which need to see the big picture and direct the entire organism at once. In order to make sense of this phenomenon, Daniel Dennett's theory of consciousness focuses firstly on the emergence of specialized brain functions – “specialist demons . . . opportunistically enlisted in new roles, for which their native talents more or less suit them” (*Consciousness* 263) – and secondly on the central claim which gives the theory its name, the Multiple Drafts theory, the central claim that “feature detections or discriminations only have to be made once” (113). The



strength of Minsky's theory, among what Dennett quotes Bernard Baars calling a "gathering consensus" of theories that consciousness is "accomplished by a distributed society of specialists . . . whose contents can be broadcast," is that Minsky has offered "histories and genealogies," rather than simply positing an unobserved but expected phenomenon. At worst these are placeholder ideas, ready to be replaced, but they fulfill the role of encouraging further thinking about a theory rather than sweeping all the problems under the rug and giving it a name.

Such a theoretical framework allows us explain the pigeon's problem: a "superstition" is the activation of discrete brain areas whose activations depend upon the superstition's connection with other stimuli. The brain can "get away" with this because it speeds up processing power – the brain does not need to re-check information at some central processor. To do so would in fact only increase the "notorious von Neumann bottleneck" of information that Dennett points out hampers all modern computers, descendants of the early von Neumann processors (*Consciousness* 214). If all information needs to pass through a particular point, the performance of the whole organism depends upon the performance of a single piece; such a weakest link scenario is a huge evolutionary handicap.

All decision-making involves using a diverse set of integrated tools to create an account of the world by making discriminations and selecting values. But we are not out of the woods yet; as living organisms we tend to process the trees in front of us before we know the forest in the bigger picture. We often hear things like, "So-and-so knew better, but went and did it anyway." This is the layman's acknowledgement of two distinct processes which, apparently, should have crossed paths for a better decision but did not. One might say that two and two do not make four until combined in a particular way – but this is not as simple as we make it seem. Both the pigeon and the basic neural network have a diverse set of tools which, when interconnected, allow for new values to emerge which did not exist in the blueprint of the valuing subject. And because these emergent features are not pre-conceived, they allow the whole subject to take a step beyond hardwired biology. But while the neural net shows that a well-integrated system does reach a bit higher in the branches of biological thinking, it nonetheless seems that mere complexity does not promise self-consciousness. In order to get beyond unconscious processing, we need something that can act alongside of our genes.

## V. Composing Something More – the third criteria of consciousness

Good luck and persistence may work wonders for the designs of Mother Nature, but for the individual who must at times persist alone, it is not a very promising tool with even the best of genotypes. The individual will need a better way to solve problems. The pigeon is doing what it knows how to do, but unfortunately it does not have the ability to approach the problem logically. If it did, it would simply experiment and investigate the actual cause of the food. This power to investigate and change values is science, which Dennett states is the most valuable tool to be gained from his Tower of Generate-and-Test (*Dangerous* 380).

It's nice to be adaptive, well-suited to possibility, "so long as you are not killed by one of your early errors. A better system involves *preselection* . . . weeding out the truly stupid options before risking them" (*Dangerous* 374). For this reason, Dennett called creatures on the third stage of the Tower Popperian creatures after philosopher of science Karl Popper, who said that we as humans are able "to permit our hypotheses to die in our stead" (*Dangerous* 375, *Freedom Evolves* 248). Creatures on this level are able to test possibilities by making an internal representation of the world, an "inner environment" (375). So long as the internal representations functionally represent the external environment well enough to produce moves that work in the "real" world, the organism will enjoy practical advantage thanks to its representations. This allows for a whole new level of what Minsky calls resourcefulness:

If an animal has only one way to do something, then it will die if it gets in the wrong environment. But people rarely get totally stuck. We never crash like computers do. If what you're trying to do doesn't work, then you find another way. If you're thinking about a telephone, you represent it inside your brain in perhaps a dozen different ways. . . .

. . . A 'meaning' is not a simple thing. It is a complex collection of structures and processes, embedded in a huge network of other such structures and processes.

The 'secret' of human resources lies in the wealth of those alternative representations. ("Suitcase").

Many mammals and birds have been shown to use language. A creature's ability to create different categories directly affects its ability to appropriate meaning from the outside world. The better the linguistic capabilities, the better the internal representation.

This can be seen in a comparison of language studies involving dolphins and sea otters. According to animal language expert Louis Herman, Sue Savage-Rumbaugh has already shown that chimpanzees can come to understand many signaled instructions, and can also understand that signs refer to objects, a fact called referentiality (“Learning”). In the 1970s, Herman and other researchers at the University of Hawaii Kewalo Basin Marine Mammal Laboratory and The Dolphin Institute in Honolulu took our understanding a little further. The researchers created a sign language, of about 40 words, which used syntax rules to govern the meaning of sentences, which “allowed for many thousands of unique sentences” (“Learning”). The work of Akeakami and these researchers showed a non-human animal’s ability to “account for both the semantic and the syntactic component of the language” (“Understanding”). This was done by showing referentiality that depended upon syntax, for

to interpret relational sentences correctly, the dolphin had to take account of both word meaning and word order. For example, a sequence of three gestures glossed *asperson surfboard fetch* tells the dolphin to bring the surfboard to the person (who is in the water), but *surfboard person fetch*, the same three gestures rearranged, requires that the person be carried to the surfboard. (“Language Learning”)

This demonstrates that Akeakami could make associations that relied upon logical constructions. Such categorical constructions are important because they allows for the association of attributes to logical classes rather than directly to an object-stimulus. Akeakami the dolphin would enact the suggested behavior not towards just any instance of the stimulating object, but only to instances which concur with another specific stimulus. One might easily imagine a scenario and environment in which Sound A followed by Sound B is a threatening scenario, but Sound A if preceded by or otherwise occurring with Sound C signifies a rewarding scenario.

Herman reports attempts made to teach a California sea lion named Rocky to carry out instructions like Akeakami did. Rocky, however, “did not show significant generalization across objects of the same class (e.g., different balls), but unlike the dolphin seemed to regard a gesture as referring to a particular exemplar of the class rather than to the entire class” (“Learning”). Moreover, Akeakami proved able to successfully interpret even previously unheard strings of words and correctly perform the action stated, whereas the sea lion Rocky was given instructions

with a pause between words in which he could locate the signified object before receiving the next sign (“Learning”).

Resourcefulness depends entirely upon how a piece functions within a structure – when an organism is unable to fit in a certain piece or unable to properly attribute a particular quality, the result is at best a strange mix-up and at worst a complete disconnect from reality. This was a serious problem for Rocky the sea lion, who got locked into old patterns of meaning.

Minsky believes that much of the human resourcefulness that is the difference between mechanical or logical thinking and animal thinking is due to our prowess for analogy (*Web of Stories*, part 77). Analogy is a very useful feature of emergent association. Rather than building a new set of solutions for every problem in the world, the subject able to solve creatively by analogy can apply past experiences which are “something like” the new problem but do not match it exactly. It is likely related to our ability to extract a specific attribute such as roundness from the larger set of stimuli that make up a ball or a fruit. Other researchers have also wondered about the role of metaphor in consciousness, noting the strange behavior of patients with damage to the TPO junction that connects various sensory stations, and concluding that the interconnectivity of various brain areas enhances the ability for metaphor, for understanding one concept in terms of another. To this end it is pointed out that the “almost explosive development” of the brain centers involved in cross-modal abstraction, and suggested that this ability was selected for in mammal and primate history as an aid ensuring “that the proprioceptive map . . . matches the horizontality of a branch’s visual appearance” (*A Brief Tour of Human Consciousness* 74). This interconnectivity would enjoy selection pressure and would likely correlate with increased selection for abstraction and association between different sensory systems as well as selection for the various systems involved. But what is it that causes self-consciousness, if even the most complex integrated values and environmental representations are not sufficient?

## **VI. The Devils in the Details**

The emergence of language opens up the space for the conscious experience, because it allows for that most important category which alone makes possible the self-aware subject. Now that we are close enough to also see the conscious experience from the other side, a pair of

studies involving *homo sapiens* should lay bare that the path from an emergent value system to a categorical problem-solver also leads to self-consciousness.

At the University of California San Diego, neuroscientist Vilayanur S. Ramachandran studies neural disorders that come from faulty connections, giving us a chance to really pick our brains about what makes a person. Because many areas of the brain communicate along specific pathways, it is possible for these connections to become damaged with severe consequence. One of Ramachandran's most revealing studies involved a woman with a condition called mirror agnosia (*A Brief Tour of Human Consciousness* 121). This woman would not believe the information offered by a mirror. This is a really strange condition – the woman could identify herself in photographs, but when presented with a mirror, she would deny that the identity of the woman in the mirror is her own. Weird, right? But things get weirder. The doctors attempted a standard “mirror test” used to demonstrate bodily self-awareness in animals: they painted a red mark on her forehead while she was sleeping. When presented with the mirror, the woman's arm shot up immediately and – to everyone's surprise – rubbed the spot right off! But the woman still did not accept that her image was the one in the mirror!

We can see that there is a problem with the connections between the woman's visual centers and her other cognitive processing centers. We can see that her vision centers did tell her motor cortex about a spot, and that the woman's own value centers chimed in that the spot should be removed. However even this complex arrangement of facts was not enough to cause the woman to properly attribute the fact and “know” it was her own self. Ramachandran theorizes this is because the woman cannot honestly make that identification without the emotional investment which ought to accompany the image in the mirror. The conditions necessary for her to logically affirm that image as her Self were not present. Ramachandran's observations on the phenomena of Capgras' syndrome suggest a similar lack. Like the mirror agnostic, a patient of Capgras' syndrome suffers from damaged connections to the emotional centers – and in this case, without the emotional investment that would lead to proper identification, patients assume that their loved ones are some sort of impostor or Doppelgänger (*A Brief Tour of Human Consciousness* 120-122).

Without the proper signal, a part of the woman literally lost its sense of Self. One could hardly imagine what it would be like if this were to happen all over – sensation without

significance, unnamed emotions. But it seems that there is at least one person who can do more than imagine it, because she lived it:

Before my teacher came to me, I did not know that I am. I lived in a world that was a no-world. I cannot hope to describe adequately that unconscious, yet conscious time of nothingness. I did not know that I knew aught, or that I lived or acted or desired. I had neither will nor intellect. I was carried along to objects and acts by a certain blind natural impetus ... I can remember all this, not because I knew that it was so, but because I have tactual memory. It enables me to remember that I never contracted my forehead in the act of thinking. I never viewed anything beforehand or chose it. I also recall tactually the fact that never in a start of the body or a heart-beat did I feel that I loved or cared for anything. My inner life, then, was a blank without past, present, or future, without hope or anticipation . . . [Keller, 1904/1908, pp. 113-114] (Leiber 437; qtd. variously in Allott and Dennett's *Consciousness Explained* 227)

The experience of Helen Keller confirms that language and identity are deeply connected. Helen Keller was rendered blind and deaf at the age of eighteen months. Her first attempts at language involved representing desired objects, for instance mimicking the slicing of bread (Leiber 432). When she was five years old she met her teacher, Anne Sullivan, who began to teach her a way to spell words by hand and famously helped Keller grasp referentiality by pumping water into her hand while repeatedly spelling the word. Yet one very special word proved to be more significant than all others to the selective individual:

When I learned the meaning of "I" and "me" and found that I was something, I began to think. Then consciousness first existed for me. Thus it was not the sense of touch that brought me knowledge. It was the awakening of my soul that first rendered my senses their value, their cognizance of objects, names, qualities, and properties. Thought made me conscious of love, joy, and all the emotions. (Keller, 1904/1908, p. 117; qtd. in Leiber 438)

Ramachandran's account of the mirror agnosic suggested that a specific significant discrimination or identity is being withheld from important areas of the brain. In the experience of Helen Keller, we can see that the concept "Self" was withheld from the entirety of the brain,

because the words needed to hold such a diverse set of impressions together were not present. She simply lacked the tools, despite the advanced development of her human brain.

Philosopher Justin Leiber points out that “her choice of “I” and “me” is significant, for the pronouns form a system, a framework of consciousness and personhood; the words “girl” and “Helen” had come long before” (438). These latter “object” words are categories of sensations and meanings, but the word “I” is a category which has a special relation, what Dennett calls an “intentional stance,” towards all other meanings. Recognizing an intentional position is the necessary condition for identifying another person, almost like a kind of Turing test – if it possesses an intentional stance, it is not only an object but also an experiencing subject. A value is placed on this subject which is independent of the various values the subject holds, because the subject can only be conceived of in the first place as a thing which is independent of the world and possesses certain valuable problem-solving strategies.

The condition of the mirror agnostic and that of Helen Keller show us that identities are not to be taken for granted even under near-ideal biological conditions. Just as in the selection of value, we can see that a variety of brain processes are involved in creating identities. Helen Keller found herself opened up to a whole new world of experience. She found herself able to experience the joys of pursuing work in the world, the joys of learning and living. Yet Keller writes that she was self-determining “to a degree,” for she found herself in a world where she had to begin defining herself against all that affected her and had determined her personality. We all do the same, separating a thing from its causes and associations. And just as the creation of categories allowed a leap beyond more basic conditioning, the category of identity seems to be the requirement for the next such leap.

The reactive behaviors of the starfish and the pigeon are leagues away from the reflective processes made possible by the linguistic operations seen in the dolphin and even in the person who takes the time to question his own impressions and intuitions. This is the basic concept addressed by Nobel Prize-winning psychologist Daniel Kahneman in his *Thinking, Fast and Slow*. There Kahneman talks about what he calls System 1 and System 2, describing how System 2 or reflective thinking can help us avoid the consequences that come from the System 1 failings in phenomena such as availability heuristics and attribution errors. The linguistic conditioning operations in the neural net, the dolphin, and even the petty paramecium *p. caudatum* represent the emergence of reflective awareness, System 2 thinking. We don’t want to act as stupid as a

starfish; we don't want to be prancing around like a possessed pigeon. But we are stuck at the reactive System 1 thinking of the Darwinian level whenever we give in to any kind of "knee-jerk" reaction, whether motor, mental, or moral. We need to acknowledge that identities arise from language so that we are not limited to the urges of the unconscious and so that we do not run the risk of forgetting who we are.

## **VII. The Synthetic Self**

The Self conceived as a composition of qualities and impressions, the inner Idea "I" as a valuing subject against a background of internal details and external effects, is the final necessary condition of self-consciousness. Now, we normally don't identify with our every neuron or impression. However, we do identify with and invest into those personal processes closest to our hearts, our loves and moral values. Helen Keller did not jump immediately into consciousness upon her "conception" of identity; it was a gradual process which she herself was not entirely aware of. While Keller did remember experiences, she only came to, as we say, "identify herself" with them later. In some instances, it is clear that Keller reconstructs her earliest childhood experiences from the stories of others so that the "first-person" experience is a composed set of representations. These ideas and associations make up what Dennett calls our "center of narrative gravity . . . [like] the enormous simplification you get when you posit a center of gravity for an object, a single point relative to which all gravitational forces may be calculated" (*Consciousness* 418). The evolutionary biology of language is a kind of structuralism, and these centers of narrative gravity correspond to the ideological "centers" important in deconstruction: when identified as a category by the subject, this center works as a tool which tracks and describes all the various impressions important to a person, helping to associate and coordinate. The "center" is of course a generalization of attribution, a reification – no object possesses some thing called a "center of gravity" which could be taken away. But such structures are very useful when they are actually used as internal representations – we must only not forget that we put them up ourselves and end up taking them for the real thing. A good reflective representation should describe experiences in two ways: by looking objectively at the processes of interpretation so that we can shake off the assumptions tied to a particular center of meaning, and should and should also include the subjective reality which alone represents the complex connections of experiences past.



Historically speaking, there are two main traditions of notions regarding the Self: the functionalist position and the idealist position. As this may well be humanity's most significant idea, any examination of human value must concern itself with the different implications of these two positions. This dichotomy arises because, as Marvin Minsky writes,

There are two quite different reasons why "something" might seem hard to explain. One is that it appears to be elementary and irreducible-as seemed Gravity before Einstein found his new way to look at it. The opposite case is when the 'thing' is so much more complicated than you imagine it is, that you just don't see any way to begin to describe it. This, I maintain, is why consciousness seems so mysterious. It is not that there's one basic and inexplicable essence there. Instead, it's precisely the opposite. ("Suitcase")

B. F. Skinner suspected that early humans first experienced causes through their own actions and later attributed to all events such intentional causation; by this logic, a polytheist posits gods as causes independent of the known world (*Beyond Freedom and Dignity* 7). This behavior benefits from the explanatory account tied to it, for the representation or personification improves as more is "learned" about the god. The same human pattern of attributing causes offers an explanation of thought patterns from animism to polytheism and the monotheistic development. Today, however, we no longer need to posit any *vis inertiae* to cover up some invisible gap – though unseemly comes to me as a better word.

Dennett at times calls the neuronal groups jumping around in the brain "demons." This is the same sense for which the word was by the Athenian philosophers Plato and Sokrates more than twenty-five hundred years earlier. Sokrates described voices like those of the Muses that speak to poets, inflaming him occasionally with intuition and telling him towards the end of his life to practice music. These elusive phenomena of suggestion, the domain of polytheism as a psychology of personification, were compared by Plato to an aviary full of pigeons: ". . . let us make in each soul an aviary stocked with all sorts of birds, some in flocks apart from the rest, others in small groups, and some solitary, flying hither and thither among them all. . . . and we must understand that the birds represent the varieties of knowledge. . . ." (*Theaetetus*197). As Dennett writes, the hard part is learning to call the right bird (*Consciousness Explained* 222-223). However Plato refused to admit that the mind would be so constituted as to, for instance, end up thinking eleven when one wanted twelve; this would be like getting a dove when one wanted a

pigeon, and would imply that something besides knowledge was entering the mind. For Plato, the Idealist for whom the *eidōs* was the truth yet to be formed, despite the fact that he in his *Republic* shows a very logical and functional account of the appetites and senses, the idea that one might possess false knowledge was absurd.

Across the world in India, a similar teaching was spread by the Buddha, the Enlightened Prince Siddhartha Gautama. He described what are called “skandhas” in Sanskrit and “khandhas” in Pali, the languages of Buddhist scripture. All of the things which might affect a person, such as emotions and stimuli, can be described as one of the skandhas. In English they are called aggregates or bundles. Whether the Buddha’s teaching shared a common origin with the Egyptian Atenism that Pythagoras brought to Greece is not clear, but it is clear that like Plato, the Buddha created such distinctions to help show that, truly, none of these are the Soul or Atman proper:

[The Buddha’s word *anatta*, “no-self”] does not say simply that the Soul (atta, Atman) has no reality at all, but that certain things (5 aggregates), with which the unlearned man identifies himself, are not the Soul (anatta) and that is why one should grow disgusted with them, become detached from them and be liberated. (Anatta)

The Buddhist doctrine assumes that this failure to find identity means that the Soul must be something else, something independent. And so, like Sokrates accepting his cup of hemlock in hopes his immortal soul would go on to enjoy the company of Homer and Hesiod, the Buddha’s position is a turn away from materialism and all the world with it:

“One attached is unreleased. . . .”Should consciousness . . . stand attached to feeling . . . watered with delight, it would exhibit growth, increase, & proliferation. . . .”If a monk abandons passion for the property of consciousness, then owing to the abandonment of passion, the support is cut off. . . . Consciousness, . . . not increasing, not concocting, is released. Owing to its release, it is steady. Owing to its steadiness, it is contented. Owing to its contentment, it is not agitated. Not agitated, he (the monk) is totally unbound right within. He discerns that 'Birth is ended, the holy life fulfilled, the task done. There is nothing further for this world.' ” (“UpayaSutta: Attached”; *Samyutta Nakaya*22.53)

This conclusion is even the stuff of many today who, like the Buddha and like Sokrates and Plato and Pythagoras who followed a tradition strikingly similar to those of the priests Aten and Moses in Egypt, keep their eyes on the skies instead of affirming the meaning of the earth at their feet.

Fortunately, there is another way to conceive of this failure to find the thing – that we've already found it, and now we are too busy looking closely to see it, missing the forest for the trees. Minsky contends that we continue think about this big multi-faceted thing called consciousness because consciousness is “a suitcase word that we use to describe-or rather, to avoid describing-perhaps dozens of different phenomena” (“Suitcase”):

For example, I see that lamp in this room. That perception seems utterly simple to me-so direct and immediate that the process seems quite irreducible. You just look at it and see what it is. But today we know much more about what actually happens when you see a lamp. It involves processes in many parts of the brain, and in many billions of neurons. Whatever traces those processes leave, they're not available to the rest of you. Thus, the parts of you that might try to explain why and how you do what you do, do not have good data for doing that job.

When you ask yourself how you recognize things, or how you chose the words you say, you have no way to directly find out. It's as though your seeing and speaking machines were located in some unobservable place. You can only observe their external behaviors, but you have no access to their interior. This is why, I think, we so like that idea that thinking takes place in a mental world, that is separate from the world that contains our bodies and similar 'real' things. That's why most people are 'dualists.' They've never been shown good alternatives.

(“Suitcase”)

Dennett mentions the Scottish philosopher David Hume is in the same tradition, writing in 1740:

For my part, when I enter most intimately into what I call myself, I always stumble on some particular perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure.

. . . When I turn my reflection on myself, I never can perceive this self without some one or more perceptions; nor can I ever perceive any thing but the perceptions. It is the composition of these, therefore, which forms the self. (*A Treatise of Human Nature*)

This entire problem can be located in a proposition of the logician Ludwig Wittgenstein, perhaps the most succinct encapsulation of functionalism: “Roughly speaking, to say of two things that they are identical is nonsense, and to say of one thing that it is identical with itself is to say nothing . . . This shows that there is no such thing as the soul – the subject, etc. – as it is conceived in the contemporary superficial psychology. A composite soul would not be a soul any longer (*Tractatus Logico-Philosophicus* 5.5303; 5.541). This means simply that to say that identifying a distinct series of individual impressions and processes as one in the same means that this composite is a functional or conceptual identity rather than an essential or objective one: if two things must be equated then they were previously differentiated, and if one thing must be differentiated into two then how can we say they are also the same, except as conceptual identities?

For the functionalist, the Self is a matter of epistemology and not as for the idealist a matter of metaphysics. While the functionalists are accused of “explaining away” and “reducing” consciousness to a bundle of neuronal processes, the idealists behind this hand-waving are actually the ones who are reifying consciousness, weaving something out of nothing, attempting to claim that an observable phenomenon is not caused by a complicated series of explainable events but is evidence of some other unseen entity. It is only the idealists who have something to lose to a functionalist account, but of course this is only an apparent loss. As Friedrich Nietzsche, the philosopher of power, says: “between ourselves it is not necessary to get rid of ‘the soul’ . . . and such conceptions as ‘mortal soul,’ and ‘soul as subjective multiplicity,’ and ‘soul as social structure of the drives and affects,’ want henceforth to have citizens’ rights in science” (*BGE* § 12). Dennett responds with: “Yes, we have a soul, but it’s made up of lots of tiny robots” (Worthey). These answers are crafted to show that changing our concept of humanity does not mean taking away from it, and redefining the subject does not mean it is lost.

The main difference is the understanding that a combination of causes avoids the need to posit unnecessary reifications. This is the old idea of William of Ockham: do not multiply entities beyond necessity; the simplest explanation is preferable. Likewise, another of Wittgenstein’s important contributions to philosophy, after his logical method, is his insistence that “Where one cannot speak, one should remain silent.” This means among other things that we should not make the mistake of assuming facts where a fact seems only apparent or implied by our language. The fact that consciousness has a cause does not mean that there is a single thing

which causes consciousness. Such an understanding leads the idealist to end up making statements of fact and jargon which must be untied later from the accumulated misconception. With Ockham's Razor, one might want to argue that attributing consciousness to a *deus ex machina* is the simplest possible explanation, but the extent to which this is true is only the extent that forgets all the additional explanation that would be needed make it a viable account. And although consciousness is not an isolable phenomena, self-conscious is a well-definable experience because it coincides necessarily with a linguistic concept. As Wittgenstein's logic suggests, we should not seek a "composite soul"; we need to conceive a synthetic Self.

This is the task which survives to our tradition: an account which keeps to its specialties and origins while not remaining confined to them. Attempts to define such a position in the world can be seen in the narratives of all human time. For instance, a syncretism of perspectives from the Buddhist tradition and the functionalist perspective can be seen in the Wachowski siblings' *Matrix* trilogy. The central assumption of the film is a virtual world which has been compared to such famous thought-experiments as Plato's cave, Descartes' evil genius, and the timeless classic "How Do I Know If I'm Dreaming Right Now?" The conflict revolves around the effort of those who "wake up" from this unreality and want to free their fellows from the same control. I have argued elsewhere that science fiction is a special vehicle for changing cultural values, especially suited to conflicts between public and private power systems (Cappel). *The Matrix* is an excellent example of the genre's strength. The protagonist's success can be seen as due to his moving beyond the phenomenal world, and in that light the failure of the antagonist corresponds to a refusal of the call to a new world, as the mythologists would say.

With this the trilogy offers a depiction of the perceived trade-off between the need for a promised purpose from above and the belief that meaning can bubble up from below. The question that remains is whether the call is to an ascent to an ideal truth or if the primary thing is whether or not to work for the world of humanity. For instance, if the situation were reversed, if humanity had chosen to live within the dream-world, the cave, would the hero be the one who returns to help them or returns to pull them out? However, it would seem that complete detachment is not suggested, for like a bodhisattva and like the escapist of Plato's cave the protagonists of *The Matrix* often re-enter the truth-deprived "Desert of the Real" in order to help its inhabitants find a meaningful life.

The trilogy's ending is open to interpretation; we are not given any "big answers," and I believe this is part of the point. This lack of a big answer does not mean a lack of confirmed truth. Instead, the trilogy chimes in with a complementary set of themes drawn from religion and biology by presenting a number of human and machine characters with diverse perspectives. The Wachowski's mediatory or synthetic aspect can be seen very clearly in the minor character RamaKandra, named after the popular neuroscientist. When asked how he could feel what he called love for the "daughter" program he had created with his "wife," RamaKandra gives a perfectly functional answer: "Love is a word. What matters is not the word, but the connection the word implies" (*The Matrix Revolutions*).

This can be seen as an attempt at mediating between the demand for an ordering idea from above and a purposeful operation arising of concerted functions: the general plot of the film affirms the power of enlightenment to lead the way out of darkness, while both machine and human characters affirm the power of the individual to choose values for itself. The final question of Idealism is whether a theoretical *deus ex machina* can steal center stage from the significance of the behaviors come before it. One atheist philosopher has suggested that if God does not exist, it would make no difference, for our values must come from ourselves. I sympathize with the message, but I think it is not quite right. I think it would make a difference, but nonetheless, if our human striving is not a real source of value, what God could save us, and how?

Idealism sees the value of humanity, but, in contrast to functionalism, can only believe it caused by a mind or soul existing separate from the body. However, there is an important shared ground between these two traditions, a concern they both find themselves facing – that of nihilism, the extinction of value. Both idealism and functionalism are seen by the other as eclipsing all other values. As Slavoj Žižek would say, a certain parallax is necessary here – we must look from both places to see the combined truth. Darwin was initially attacked for reducing all value of human existence to single set of particulars, all style and morality to sensation and measurement. I do not think this is the case, for I agree with Dennett when he writes that there is even some value in the fact that a person's worth cannot be uncontroversially measured – we must always take in the first-person perspective, the subjective Self, if we want to preserve our versatile human values.

I suspect many authors who speak of the value of subjectivity are criticized when mistakenly seen as hedonists – for instance, Aleister Crowley’s phrase “Do what thou wilt” and Joseph Campbell’s “Follow your bliss.” Yet some modern thinkers have attempted to objectify value once and for all in the name of science. We have the objectivism of Ayn Rand as well as the polemics of atheists like Sam Harris. But this is back to reactive conditioning – yes, we can now control our behaviors, but if our goals do not get beyond immediate gratification we are bound more by this objectivity than even the blindest subject could ever be. Such irrationality of rationality is simply chasing after endorphins in the wind – the rats of Olds & Milner who would self-stimulate unto death are a comparable example. Both an ideal meaning from above and a perfect pleasure from below posit a claim to objectivity that interferes with the subjective decision-making experience that is the very essence of life. A person is more than an object – a person is subject of the world and a subject facing fate. Let us not think ever a person a simple thing.

Now I don’t want to give the idea that thinkers as diverse as Nietzsche and the Buddha are entirely in agreement, but you might be surprised at what you find comparing them. The humanistic common ground where we can locate Nietzsche and the Buddha and Dennett is the desire that we all affirm our human specialties and become a part of something greater. Only through an awareness of ourselves as an autonomous agent, a stand-alone complex, can we reach a point philosophically apropos of our adaptations.

### **VIII. The Thinking Reed**

The French Christian Blaise Pascal once wrote that “Man is a reed, but he is a thinking reed”:

Man is but a reed, the most feeble thing in nature; but he is a thinking reed. The entire universe need not arm itself to crush him. A vapour, a drop of water suffices to kill him. But, if the universe were to crush him, man would still be more noble than that which killed him, because he knows that he dies and the advantage which the universe has over him; the universe knows nothing of this. All our dignity consists, then, in thought. By it we must elevate ourselves, and not by space and time which we cannot fill. Let us endeavour, then, to think well; this is the principle of morality.

A thinking reed. -- It is not from space that I must seek my dignity, but from the government of my thought. I shall have no more if I possess worlds. By space the universe encompasses and swallows me up like an atom; by thought I comprehend the world. (*Pensees* § 347-348).

This is one more way of acknowledging that we become something more when we operate on two levels, as a composition of consciousness and a composition of the earth. Though Pascal is speaking from a Christian perspective, throughout human history similar statements have been made. “Thou art that” is the Hindu expression of unity with Brahman, “As above, so below” was the formula of the ancient alchemical philosophers, and the Buddhists speak of the Tao, the active and passive principles that we are caught up as a part of (Huxley). “Hen kai pan” – one and all – was the phrase used by the Greek philosopher Herakleitos, later reborn in the philosophy of Spinoza and still later taken up by German thinkers including Goethe, Hegel, Nietzsche, and eventually Einstein.

The mystics of all time profess an awareness of unity that William Blake famously phrased as “infinity in the palm and eternity in an hour.” This is precisely what John Muir knew as well, and this is the identity I have found for that idea of universal connection that whispered to me when I was young. Aware of the various forces that shape us, we can take a step beyond the particular. We can identify attributes and shape an identity out of them. We can make things that matter more than all the matter in them. Here we are beyond the triptych of self-consciousness: we enter social consciousness, for society is to the individual as the individual is to the brain. We are past Dennett’s Tower and out of Kahneman’s System 2. For when we encounter others, we allow for new values to emerge, just like groups of neurons in the brain. We know this when we say that two heads are better than one and when we talk about our “better halves.” Likewise, when we rejoice in community identities and the power of group decisions, we make a reality that is more than the sum of its parts.

Albert Einstein, for his part, said that a person only begins to live when that person can live outside the self. And if there is one thing truly determined in philosophy and science it is this – the affirmative power of the individual to participate in a greater whole. Nietzsche himself hoped for “the unity between man and man reaffirmed” (*BT* 1), and Dennett has said that the formula for happiness is to find something greater than you are and devote your life to it. The philosophers answered this way because they see that our human values are real values that the



subjective experience is an important experience, and that showing that the thing is more complicated than we had thought does not mean that we lose it. This is the crucial point, this is the crux of all human time. Mixed as we are of mind and matter, here we can look outward and inward, into the future and the past, and we can take our experiences to heart in the way that is most important to our lives.

During my research for the 2012 Bay Honors Symposium at Berkeley, I met on the very Road outside my door a stranger asking for directions. But as I shook his hand, he pulled a pistol from his pocket and gave me some directions. I didn't exactly do what he asked, though thankfully there were more holes in his ability than he could leave in my clothing. But now occasionally I'll see a face that brings back the bundle of everything that happened there, and I remember where I stand. I feel the rush of adrenaline and my racing heart. Yet at the same time I reflect on this unconscious reaction, and that reminds me of what we have to do – that in order to preserve our own values and our own identities, we have to keep reaching out to strangers, because if we limit our reality to idle impressions we will never be able to reach outward beyond ourselves. As Mohandas Gandhi said, “If you do not find God in the next person you meet, there is no use looking any further.” We must not forget that the individual can always be more than the sum of its parts, lest a matter of life become one of death.

By coincidence – though Jungians and Nietzscheans and functionalists would likely describe the occurrence by different words – the phrase chosen as a motto for that symposium expressed a similar sentiment: “What we have learned from others becomes our own reflection.” As one of the so-called transcendentalists, Ralph Waldo Emerson represents a confluence of Eastern and Western ideas about the connections between humanity and nature.

“Bless the cup that wants to overflow;” this is the humanism of Herakleitos. We reach beyond environmental selection thanks to the learning loops that let us control our own behaviors. We are past the pigeon because we can create logical categories, and we are beyond any one-sided identity when are able to reflectively locate ourselves as a link in the great chain of being. For mythologist Joseph Campbell, “mythology was ‘the song of the universe,’ ‘the music of the spheres’” (*The Power of Myth*). In his famous phrase, we all dance the dance, the trick is to name that tune – to voice one's own song amid the chorus of the universe.

Nietzsche's call still sounds out to all of us: “Write upon the will of millennia!” (Z §29; end of *GD*). We do not always know where we will stand a thousand days or years from now,

but this cannot stay our hands. Today I offer only one moral proposition: Nothing for itself. All meaning, all value is relational. What is given must be taken. It turns out Darwin also once wrote: “Nothing exists for itself alone, but only in relation to other forms of life.” To truly accept responsibility for the things in this world we must see ourselves as a part of it. And this is what I implore you today – that we take our reflective awareness, our material self-consciousness, and step lovingly beyond ourselves into an ethical universalism born of our human condition and reaching into eternity. When we act, we can act as if the world moves with us. For it does.

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