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# The Tapestry of Emotion

## Feel Is How We Real

*“The question of whether the world is nothing but a physical accident or whether there is a plan, this is the main question of every human being. Because the only answer to our suffering would be that there is a purpose in it, that there is a spirit behind it. If these would not exist, our life would be a hopeless business.”*

- Isaac Bashevis Singer

Seeing sunsets with digital pulses is consciousness at chip level, the cellular mechanics of our color vision. The development of our brain, both individually and in the evolution of mankind, brings us to adult consciousness in a dynamic illustration of systems development over which we have little control. Recent upgrades allowing us to do memory searches, abstractions, and predictions characterize our current consciousness. These all came built in. They come bundled with the brain we are born with and we can't change it a bit. We hadn't gotten into personal issues yet.

Theologian Paul Tillich argued that after the fear of death, the fear of discovering everything was meaningless was the major mental torture of anyone who thinks a lot. It tortured Shakespeare's Hamlet, and it clearly got Isaac Bashevis Singer upset. His childhood was displaced and difficult. but the last twenty years of his life were spent in comfort and worldwide respect. So why couldn't Singer just enjoy it? Life, it seems, is a very personal thing.

Discussing the basis of personal feelings is new territory. Now we get into personal belief systems, a form of mental applications software we can update with experience. As usual, rather than answering the question directly, we'll investigate how we create and perceive the emotional basis for our beliefs and see if there is a little common sense lurking about in there. We may have unique brain architecture, but the rules of physics don't change from building to building. Likewise, we may have different feelings about things but we all use the same brain.

We are born into this world with minds as basic as cauliflower. Our brain still a *tabula rasa*, the classic blank slate. A fetus can be conditioned with music or talking, responding to them after birth, but we cannot inherit earlier memories. There's simply no place for them to hitch a ride in the one cell DNA fusion that brought us into being. Besides, for any personal meaning a person has to do the perceiving and we have to develop that person first. A human infant, peering into a mirror, takes at least ten months to discover that it is separate from its environment. It takes two more years to get things synchronized. Still, it is during this time all the basic foundations for our sense of self and our personal feelings are created.

## **Neural Net Sites: Our Personal Web Page**

It happens without any effort and most of the work is simply coincidental. Our very first perceptions start the ball rolling. No matter what sense is picking up the information, it travels to the brain in a series of pulses for correlation and reaction. Since neurons fire, rest, and then fire again, an infant can create and enlarge a neural network just by staring at something for a while. If she is in Thailand in a basket next to a rice paddy, she might be enlarging networks based on buffaloes. An infant in New York City could be patterning on pigeons. We all created early familiar patterns based on parents' faces, familiar sounds, family smells, tastes, touch and everything available. Soaking up our

surroundings like a sponge, we built the foundations of our world from whatever was there at the time. Our initial feelings about reality are based on this unconscious network, this ancient neurologically entrained part of early memory itself. It occurs well before we slip into the relative world of socialization. It happens before we know time, back in those times we've all forgotten. All an infant knows is what it perceives. In fact, as each child in a family will experience parents at different stages in their own lives, siblings can trace basic personality differences to family history as well as birth order. The child of happy newlyweds will develop differently from a baby born shortly before a divorce.

Research shows increased brain activity, the result of a more attentive mind, stimulates early branching of the neurons. As a result, challenging or stimulating environments in infancy can play a decisive role in a child's later mental development. "There are two main stages of brain wiring," explains developmental neurobiologist Carla Shatz of the University of California, Berkeley, "An early period when experience is not required, and a later one when it is." "A lot of organization takes place using information gleaned from when the child moves about in the world," adds William Greenough of the University of Illinois, "If you restrict activity, you inhibit synaptic connections in the cerebellum." Young animals raised with playmates, toys, and other stimuli reached maturity with twenty five percent more of these neural connections. "Connections are not growing willy nilly," notes Dale Purvis of Duke University, "But are promoted by activity." At the University of Konstanz in Germany researchers found the amount of the brain used by young piano players was determined not by the hours they practiced but the year they started. Language is particularly sensitive. At six months we close the books on new syllables, becoming nearly deaf to sounds we haven't heard. The speech cortex, maturing in the first year, is fixed for life. As American babies babble "ba"s and "da"s, Japanese infants bark "hi"s and twine "r"s and "l"s until they cannot hear the difference. We can learn other languages as adults, but we use entirely different parts of the brain. Mothers talking to toddlers increase their kids' vocabularies by an average of 300 words more at

two than children of less verbal parents. As verbal ability is basic to communication and education, this can have far reaching effects. In modern Israel, Ethiopian immigrants are reluctant to send their children to common pre-schools. Israelis tend to speak to their young children but this is uncommon among Ethiopians. Culture succeeds here only in crippling the verbal development of Ethiopian children, the very ones who need every advantage they can get. Early experiences are so powerful, says pediatric neurobiologist Harry Chugani of Wayne State University, "they can completely change the way a person turns out."

As most of these events occur during the years before time is conscious, it provides useful insights into the widespread Asian belief in the *karma* of past lives. Karma, residual effects of past activities in previous lives, is a fundamental concept in both Hindu and Buddhist belief. It may not be lives actually passed that have burdened or blessed us. It could easily be deep and forgotten incidents in our earliest years helping to form the emotional terrain, rocky or smooth, we will travel during our life.

## **Lines of Least Resistance**

After physical neural branching is complete, we continue to enlarge and deepen our neural networks. Rather than physically, now we do it biochemically. Branching patterns occur as neurons communicate with each other when the brain reacts to any perception. These patterns never totally disappear. Over time, repetition makes some of them into permanent networks. The reason is simple. When a neuron fires, it alters the *synapse*, the gap between the end of a dendrite and the next cell. The pulse is actually relayed by neurotransmitters, specialized molecules which travel across the gap to the cell membrane of the neighboring neuron. Nothing is perfect, so thousands of these molecules end up floating about in the gap like so much space debris. Many are pumped back to where they came from in a recycling process called "*re-uptake*" but there are plenty left over.

Each time a neuron fires, this routine is repeated, leaving the synapse with ever more molecular bits floating about in its communications channel. Littering synaptic gaps with leftover junk doesn't have much effect on any one neuron. Each neuron has thousands of synapses, one at the end of each dendrite. Furthermore, specialized cells called *microdendrocytes* are usually patrolling around to snorkel up any garbage. Still, there's a better chance of getting a billiard ball in the pocket if you have lots on the table and the same may hold true here. Investigating changes caused by repeated stimulation, neurologist Gary Lynch of the University of California found repetition by itself eventually creates permanent physical alteration at the synapse level. Neurons in the hippocampus and cortex remained more responsive for weeks or months. This effect, long-term potentiation (LTP), is assumed to have a part in the formation of our memory.

The synaptic gap is also the secret behind Prozac<sup>®</sup>. Prozac is a serotonin re-uptake inhibitor. Serotonin, a neurotransmitter with the formal name *5-hydroxy triptamine*, is found in a structure called the *Raphe Nucleus*. Here it affects the brain's "meaningful-or-not" filter, the RAS or *Reticular Activating System*. The RAS is a recently evolved network (*reticula* in Latin) of nerves focusing on the world around us. It knows what we're used to. It lets us sleep through sounds of traffic but waken immediately if someone opens the door. Depressed or compulsive people are caught up in repetitious thoughts and can't get out of them. With Prozac<sup>®</sup> in the brain, reuptake of serotonin in the Raphe Nucleus is inhibited. More ends up hanging around. This lowers resistance in the gap, more signals get through, and the outside world appears more meaningful to the medicated individual. Without the repetition of depression or compulsion, they can heal. Taking it to an extreme, the molecule of LSD, lysergic acid diethylamide, is shaped very much like serotonin. Some neurons can't tell the difference. If LSD gets into the Raphe Nucleus, the RAS can turn on and stay on for hours. To the user, everything is very important and meaningful. LSD "trips" are indeed meaningful, but it's meaning based only on molecules. Human serotonin may be only a molecule itself, but it was designed for this brain. LSD prophet Timothy Leary himself is now becoming molecules.

A portion of his ashes were lofted into earth orbit in 1997, so he'll be refined by the sun into simpler states for the rest of time.

Discovering how repetition reinforces neural networks added a new dimension to computer research. It inspired scientists to create "neural net" programs for computers that actually "learn" in this manner. The software lets multiple connections, or nodes, interact with each other, automatically reinforcing pathways getting the heaviest traffic. By 1985, computer scientist Alan Hopfield perfected the first self-educated neural net software program. It could imitate nearly exactly the neural world of a sea snail. The virtual snail not only reacted correctly, it "learned" patterns of attraction and avoidance as it encountered software equivalents of pleasant or unpleasant stimulation.

The sea snail, *Aplysia*, was chosen as a model because it has very few neurons, well known to all scientists acquainted with sea snails and identical for each. Of course the real sea snails do it all underwater and make more sea snails by the sea shore. Synthetic neural net programs, including the fanciest artificial intelligence software, can never duplicate the living networks modified and energized every moment in our brain. Here, millions of lowered-resistance synapses are created in the instant perception or recollection occurs. Leftover traces, the physical by-products of these momentary networks, are likewise scattered by the billions every moment as billions of neurons send pulses down thousands of channels dozens of times each second. Every one of these energetic networks leaves a ghost in the system, reinforcing previous levels of molecular change created by previous events.

Neural pulses traveling neuron to neuron prefer a lower resistance pathway. This makes it easier for any repeated information to travel further. An incoming pattern of pulses similar to an earlier will utilize some pathways created by the first perception. For example, if a small dot is flashed on a television screen followed by a bright flash, the dot is instantly forgotten. Tufts University philosopher Daniel Dennett marveled at how one perception seems to overtake and destroy the second. Does it defy time? Neurology

tells us that as the retinal map is reproduced nearly dot for dot in the visual cortex, the second flash barrels down many of the same pathways. It shatters the previous pattern into pieces. This can only happen under experimental conditions, however, and only with vision. If loud sounds did the same, rock stars would never remember what they'd just sung. In the words of the immortal Ray Charles, "Baby, what'd I say?"

Complete sense impressions are far more complex. Even parts of them increase the size of earlier networks. Pulses can travel further, contacting and energizing a larger population of cells. This simple tendency for repetition to increase the size of a neural network is the underlying basis of our emotional spectrum as well as our personal sense of meaning. Our initial perceptions may be incidental, but our repetitions become more than coincidental. These neural networks are far more extensive in the human brain due to its greater size and complexity. As a result, they soon begin to have a noticeable effect on body hormones which respond to levels of brain activity. Brain activity is always mirroring perception and increases when we encounter anything similar to previous perceptions. Parts of our internal networks respond and reverberate, creating an internal echo in response to familiar perceptions. It adds a boost to brain activity, a nudge signifying recognition. Since many hormones react in accordance with brain activity, our growing neural nets start to have their effect on our perception itself.

Many of these hormones, including adrenaline, have direct effects on our body. We feel them. As a result, the subtle echoes from large internal networks start to create a spectrum of hormonal responses. We begin to perceive "feelings" that accompany some perceptions and not others. It's our body's hormonal reaction to those internal echoes, physical feelings in degrees depending on the size of the network. As this size results from early familiarity or later repetition, all our emotional cues, including our subtlest sense of ourselves and our world, are ultimately based on personal familiarity with everything we know, have known, or could imagine. Our feelings are there to keep us safe and sound, but the subtlety of those cues and responses is exceedingly complex.

We now know a single neuron may release two or more different transmitters at a single synapse. Some neurons can switch molecules, like changing languages, and send different messages at different times depending on what's happening. At this time, the number of known neurotransmitters has risen to over eighty and there is no end in sight. The innumerable networks established by these electrochemical changes are subtle patterns, but unlike other speculations on the nature of the mind we know for certain they exist and could serve this purpose. Over time we weave our personal collections of extensively interconnected memories. If there were a friendly dog in our childhood home, we made early networks having to do with dogs and early abstracts about animals. The infant becomes a child unafraid of dogs, knowing instinctively the general signals that distinguish playful from menacing. Our personal hormonal echoes gradually become our basic emotional checkpoints for the simple safety of past experience. It has happened often before. It is familiar. We feel the way we "feel" when things are all right. It's making sense.

Actually it's making microvolts and hormones. As repetition begins to provide these clues as to what is familiar and what is not, the tendency to remain safe by repeating the familiar builds upon itself as soon as a toddler is able to express choice. Getting small children to accept variety is sometimes quite a chore once their little minds start to repeat what they like and avoid what they don't. Our entire sense of self emerges over time from an unimaginably complex pattern of biochemical cues that had their beginnings in pure chance and parenting patterns, the earliest repetitions of our infancy and early childhood. They are unique for each of us and they are constantly changing. As Larry Swanson, a neurobiologist at the Salk Institute, describes it, "Instead of thinking of nerve circuits as fixed anatomical circuits that always do pretty much the same thing, there's a metabolic or biochemical plasticity, a real chemical dynamic in brain circuits that is probably different to some extent in different people."

Even after the patterns of personality are established and neurologically reinforced, thresholds for triggering pain, pleasure, depression, and anger are always being set and reset by the growth or waning of

these networks. When more experience or further thought add more networking, we feel more intensely about it, whatever it is. By the time anything is deeply in our memory, we have thought about it and imagined it many times. Each time the network enlarged, and each time we do it again it will enlarge a little more. The more neural activity we generate in response to a perception, the more we will feel excited or aroused. This is why we can actually alter or update this aspect of consciousness simply by choosing areas and activities which we know are useful and repeating them until they are meaningful.

In fact, if we want more meaning from anything, all we have to do is concentrate on it and to that degree it will become more interesting and mentally attractive. For example, if we were to arise each morning for a month, sing the same eight bars of a song, and go out and stare at one tree for five minutes, both the song and the tree would acquire greater meaning for no other reason than the time we spent. Repetition alone, throughout life, expands our nets ever wider, creating both new cross associations and deeper reactions to repeated patterns. Most of us can get quite excited by any of our favorite topics. Other activities can help to calm and refresh. Repeated prayers, chants, meditation or mantras are a good example. Even shooting free-throws on the basketball court. Easy repetition can in this way create both a reality and genuine feelings associated not with the interruptions of life but with quiet times of emotional and mental peace.

Over time, in this manner both prayer and practice can become sources of consistent internal stability and emotional well being, as comforting as a friend. Insights which come at times like these also help explain the word “realize”. When separate patterns extend enough to cross connect, they can collapse into one inclusive pattern. It’s a paradigm shift at the micro-level, and the immediate effect is a tiny burst of energy. The sudden feeling caused by the voltage spike is “I just realized something!” New understanding can give us a real jolt when unawakened memories, gathered for some purpose, collide and fuse into new analogies and abstractions. It’s enough to pull out some body hormones, real gung-ho physical molecules,

and make us really feel. It isn't just in the mind any more. We made it into a physical part of our body. We made it real, and we're do it whenever we make each other feel. Happy and sad leave their marks, and they leave their molecules as well. We all leave our calling cards. When we start to realize our effects on others, we can change as well.

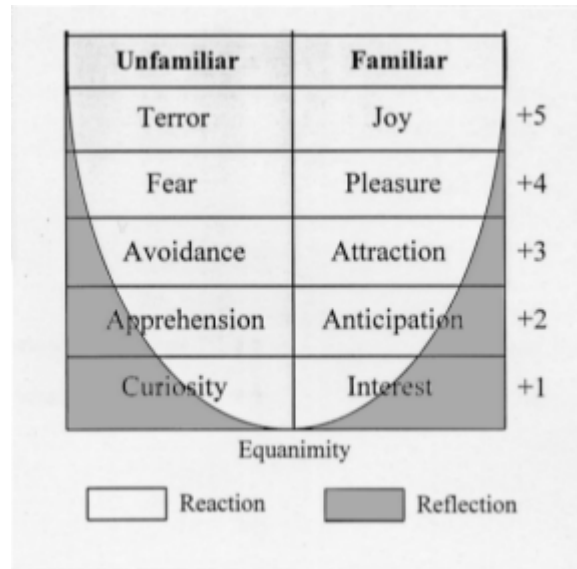
Progressing from infancy into early childhood, each day our personal networks grow until we have enough associative cross links to maintain an ongoing sense of general familiarity with nearly everything we perceive. Our world, in fact, becomes real around us. It is a mirror of our memories and a memorial to the particular path we have followed. It would be impossible to underestimate the power of these earlier mindscapes and the sunlight or shadow they cast on our later understandings. From this perspective, we can reflect on the pain and confusion which must have affected the early life of Isaac Bashevis Singer. Why did he feel such doubt in his old age? His tales resound with humor; they are filled with compassion. But the writer himself was still unsure, imploring the assurances of an elegant plan. As the neural twig is bent, so the arborated mind will grow. Children who get assurances when they need them usually grow up to be self assured adults. If our past lives were blessed by a stable childhood and steady parenting, our future life will probably be a blessing to others.

### **Joy, Terror, and All the in-betweens**

If early neural branching sets the scaffolding for our personal sense of reality and self, it is the development of massive neural networks which provides the shading and coloring of our full emotional spectrum. It's initially hard to face the fact that every one of our emotions is a personal mixture of familiarity and unfamiliarity, there to trigger forms of approach or avoidance. Still, if we can manage visual magnificence with binary pulses, an entire future with prefrontal gymnastics, and meaning with

unconscious networks it shouldn't be strange to learn our most personal feelings are created from the most common directives of all living creatures.

The basis of all simple emotional states between joy and terror is illustrated in a graph based on a parabolic curve. It charts the effects of rising hormonal release resulting from present stimulation and/or



internal echoes. The parabola forms a line dividing each level of brain activity into “reaction” and “reflection”. As the amount of information rises, unknown or familiar, hormones push consciousness further and further from the reflective state we call “thought” into the emotional states we call “feeling”. As emotional intensity pulls us further from objectivity, chronological time also distorts in a smooth progression. If we're ecstatic or terrified, time seems slower because adrenaline always speeds up the brain.

It seems clear where our personal feelings are coming from. When something feels familiar, we are experiencing a hormonal reaction to large memory patterns previously networked and sequenced. If it is unfamiliar or unexpected, anything we feel we cannot comprehend or control, our brain speeds up immediately to find analogies or escape. Whenever our feelings start to arise, we can be sure brain activity

has increased. If the source is unfamiliar we're trying to find a fit for a growing unknown before we have to run. If the source is familiar, we trigger larger and larger hormonal echoes from networks created in our past.

The bottom of the parabola represents consciousness at equilibrium. This is equanimity, where no emotional reaction is apparent at all. This is also true disinterest, the contemplative mind valued in both Eastern and Western philosophy. Neither positive nor negative feelings are present to cloud our perception. Emotional states then increase by degrees, familiar on the right and unfamiliar on the left; to pure joy on one side, to pure terror on the other. The intrusion of "feeling" into our "thought" is the area inside the parabola, an area which grows rapidly as the hormones increase. Present perception usually overrules past experience but on some occasions intense arousal is clearly an internal event. For example, seeing a picture of our mother will light up a lot of networks, hopefully positive, even if nothing else is happening. We all have immense networks associated with images dating to our earliest experiences. Likewise the swastika, the symbol of Hitler's Nazi party, is an image with such negative emotional associations in the West it is banned in Germany. At the same time, it remains the ancient symbol of Saraswati, the goddess of learning in India. In India and Nepal schools often display a six pointed star, which has nothing to do with Israel, on one door post and Saraswati's swastika on the other. In each case, it is only crossed lines with bent ends. Any emotions of reverence or repulsion must be coming from our internal associative networks.

External stimulation is more obvious. Hearing our favorite music at a concert, attending revival services, or meeting with someone we love are good examples of high hormone states triggered by large amounts of familiar stimulation. On the other hand, being in a car careening towards a freight train is an example of sudden stimulation with no idea how to deal with it. The brain races to make transforms and predictions but it's drawing blanks rather than reassurances. It can't make abstracts fast enough to formulate a strategy. The frantic neural activity releases enough adrenaline to propel us into feelings of

terror. Of course if the person in the car is a stunt man who chose his career because of damage inflicted by an abusive parent, the situations could reverse. Feelings of exhilaration and panic would take each other's places. The stunt man might have enough strategies dealing with the stunt to carry it off with cool detachment but a visit from his mother could make him break out. A camel, a welcome sight to an Arab, could be a monster to an unprepared Eskimo. Likewise, a walrus in the oasis could terrify the bravest Bedouin. Our personal emotional makeup is so very personal and so very idiosyncratic that even the ancient Romans had a saying, "*De gustibus, non disputandum est!*" "There's just no accounting for taste." The mechanics of feeling and preference are no more than a construction of familiarities. Our responses to the world we perceive are likewise entirely biased by this internal mirror of previous perceptions we construct during our life.

## **The Book and The Bliffer**

To further illustrate how familiarity forms the basis of all emotional states there are the parallel parables of the book and the "bliffer", an imaginary creature. In the first instance we imagine that we are walking down a sidewalk in a familiar neighborhood. We're thinking about nothing in particular. This would correspond to the point at the base of the parabola. The mind is in a relaxed reflective state. Then we notice a book lying on the sidewalk ahead. On the graph, this raises us up a notch from equanimity to +1; *interest*. We're familiar with books and here's one lying on the sidewalk. Networks associated with books revive as we cache prefrontal patterns to approach for a better look. As we do, the image becomes clearer. It's a spiral bound notebook with what seems to be the seal of a school we once attended. More familiarity. Networks associated with memories of school energize. Brain activity increases again, pushing hormonal response to +2 on the scale, *anticipation*, expectation of something we like. As long as it feels good, we will continue to approach. Bending over the notebook, we see it is indeed from our old school. A

rush of conscious and subconscious memories boosts the hormonal level again, this time to +3, and we feel *attraction*. We are smiling and warming internally as we reach for it. Adrenaline, released during any exciting event, relaxes our capillary walls creating a mild radiator effect while prompting the liver to release glucose into the bloodstream to improve muscle metabolism. This feels “good.” More familiarity patterns log on, increasing the emotional meaning of the situation.

As we reach down to pick it up, we are astonished to realize it is one of our own notebooks. One in a box we misplaced during a move months ago. Our emotions increase to +4, or *pleasure*. More adrenaline, more hormones. Smooth muscle begins to tingle with a shiver of expectation. We grasp the book, bringing it even closer. Now we are getting excited because maybe it’s the long lost notebook with the address and phone number of a friend we’ve been trying to find for weeks. It is the long lost notebook! The number and the address are still there! The memories of our friend cascade into our immediate memory. We have now topped out at +5, pure *joy*. The entire day stops in its tracks as a rush of happy feelings floods us with delight at finding not only a familiar notebook but a chance of re-connecting with an old friend. If anyone were watching us, our rapid changes from one emotional state to another without any obvious change in the world around us would seem peculiar. In fact, there was every reason for us to get excited about anything so interconnected with so many of our internal memories. It’s the way we discern the familiar from the background, from the interesting to the delightful. It is our mechanism of meaning, the way we use our massive memory to provide a wider range of emotional clues and cues than any other creature on earth could experience.

On the other hand, there is the “bliffer”. The bliffer is a quasi-android intelligent pseudo-life form from another galaxy, one going backwards in time relative to us. Bliffers are given as pets to young zurks. They absorb bad dreams. They are trained during their autogenetic cloning to seek out apprehension or fear. Like zurks, bliffers are metallic and communicate with vapor streams. In English, it’s a harmless baby

pacifier that fell out of a flying saucer passing between where we can't see and where we can't know. It is also unknown in this universe. There has never been a bliffer on earth before.

Once again, we are walking down the same sidewalk. This time, we notice a little metallic object lying on the sidewalk ahead. It is unfamiliar but small. The increased stimulation we get from directing our attention to it is also limited. It wakens a couple of familiarity networks associated with small tape players but there's no real match. We feel *curiosity*; +1 on the unfamiliarity scale. When it comes to approach/avoidance, the first stage of avoidance is usually a form of approach. Depending on the circumstances and our feeling of security we seek more information so we can fit it into some association. The bliffer is just lying there so we pick it up to examine it. It "wakes on" and starts to warm up. At this point we notch up to +2, or *apprehension*. We start to feel the same feelings, but this time it doesn't feel good. Then, as bliffers will always do, it starts to hum. To us it is acting really strange as unexpected visual and tactile stimulation continue to rise without any internal match.

We are beginning to get anxious due to increased hormonal release without the reassurance of familiarity. The prefrontal cortex races through all visual files on small explosive devices. Emotions signal a +3, or *avoidance*. We put it right back down on the sidewalk again. Now that it is warmed up, the bliffer tries to ask what is happening. As far as we know, it just started to smoke. As colored vapors begin to rise out of the device, we back off. This thing is really weird. Maybe it's about to explode or something. Now we're pulling up images of car bombs and airline hijackers, triggering a +4, real *fear*. Sensing a nearby life form is imagining a nightmare, the bliffer does what it was made to do and starts slowly sliding towards us. That's enough to panic any fearful human. We turn and run with the poor lost bliffer, trying to calm us down, skittering along behind us. We're scared silly, sheer *terror* at +5, top of the scale and only interested in getting away. We are not thinking or planning or doing anything but escaping.

In both examples nothing really happened. In the first instance, internal familiarities elevated us to a froth of happiness while in the second a sudden rise in unknowns had us running scared when no danger existed. The book itself had nothing inherently pleasurable about it and the bliffer was harmless. It all happened in our heads. If we want to be mathematical about it, joy is familiarity networks logging on faster than we can integrate them, while terror is unfamiliar information flooding in faster than we can get away from it. To us it is all kinds of real, but it's no more than perception, patterns, and hormones. As we tune in to the way simple molecules turn on our emotional circuits, we finally drop out of the misconception that the world is to blame for it all. We did it to ourselves as usual.

Would increased neural complexity have anything to do with it? The density of the connections between brain cells is as much a variable as any other aspect of our genetic makeup. A relatively over-connected brain could cache more detailed patterns. It would remember and imagine a bit better, and because of the existence of more parallel neural circuits, probably process a little faster. However, there is no reason to expect those on the high side of brain density would be blessed with sluggish reactions to compensate for their rapid minds. Like high rpm engines they always run at the higher end of the scales, living their exciting lives no matter what the weather.

The denser an interconnective network is, however, the faster emotions would shoot up the curve. More pathways means more activity which means more intense reactions. The over-imaginative can fall deeply in love after one meeting, all excited with hormones and hope, just as the paranoid can sense real danger in the arrangement of towels on a towel rack. Ruth Richards, a researcher at Boston's McLean Hospital, has suggested the emotionally vivid lives of those suffering from bipolar disorder may explain the number of writers and poets who were known manic depressives including Shelly, Byron, Hemingway and Woolf. The dull rarely get emotional about anything that isn't obvious. They often don't sense danger until it is nearly too late. Each of us is completely different.

## **Cloaked in the Fabric of Familiarity**

The way familiarity weaves meaning around us was described by psychophysicist Jonathan B.B. Earle, who tracked the progression with subjects while monitoring their brain functions. Both drug and meditation-induced hallucinations developed in a similar sequence. The first awareness is a meaningless pattern; a visual hallucination, a mantra, a mandala, confusing images or a jumble of sounds. After a while, the patterns start to make sense and take on personal meaning. Gradually fear gives way to acceptance and understanding. Finally, the individual feels merged into the scene, a part of the practice or ceremony, going with the flow and accepting a part in a meaningful and reassuring experience.

This is a rapid example of exactly what happens to each of us. Over time, memories and familiarities urge us to repeat enough to drive their associations deeply into our brain. All during our lives this gradual progression is repeated. The graduate student during the first semester at law school is awash in terms and torts, contracts and court procedures. She's trying to make sense of it all. By the end of three years, the theory and the systems of law have become a complex and comfortable structure with both meaning and purpose. The early confusion of law school is transformed into the logic of a legal career. After ten years of legal practice, the structures and systems of law have become an inseparable part of the lawyer's daily life and thought, thoroughly integrated into both her self-image and life direction. Once intimidating, the practice of law is now a reassuring, meaningful part of her life.

In the same manner, we are all initially confronted with life's challenges as a confusing mass of stimulations and perceptions. Gradually, as we move into our self-repeating repertoire of likes and dislikes, we find ourselves drawn toward the patterns and images similar to those we have already made meaningful through repeated experience. Over time our lives begin to provide a more personal and profound sense of meaning. This becomes the basis of an adult sense of self and our place in the world. This self-creation of

meaning is a frustration to our many attempts at intercommunications but a necessity for any sense of personal validity. We perceive with a consciousness both unique and consistently personal as to what is real and what is not. If we did not have that unique sense, we would have no sense of ourselves either. Without a personal outlook on life, we would be reduced to herd mentality or ant-like anonymity. It has to be our way or no way, a constant majority of one.

Eastern philosophies deal with this paradox somewhat better than those in the West. The Sanskrit word *maya* speaks directly to this situation. *Maya* has three translations which ordinarily seem in conflict. *Maya* means “beauty.” It also means “power.” But it means “illusion” as well. *Maya* is the power of our beautiful illusion, our personal virtual reality, to fool us into thinking that anything in the world has inherent reality or special meaning. This is the major misunderstanding of humanity, the profound ignorance Buddhists believe is the root of all suffering. We suffer because we are emotionally attached to the things we feel are meaningful to us, never realizing that it was we ourselves that made them so. We become like Marley’s ghost in Dickens’ *A Christmas Carol* dragging our cash boxes behind us as we forage through life chained to our ghostly valuables, our personal feelings that mean more to us than anything. People live for their beliefs, die for their convictions, and hope the world notices their meaningful lives.

The world notices nothing. It only provides us with a place to find our own checkpoints, the familiar cues that feel real to us. It is only *maya* which lets us imagine we will be young forever, that power is exhibited by money or intimidation, or we are here only to be gratified. *Maya* is always waiting to trick us into believing something in the world is awfully important when in fact everything can be reduced to personal perception biased by personal emotion. We see it, but we just don’t get it. *Maya* is forgetting that everything we sense is only temporarily there and subject to change at any time. *Maya* is thinking that we know, or can ever know, what is really going on. It’s a nice thought, but it can’t be true. We can only

know what our neural networks filter through to us, hopelessly clouded by emotional relics collected from our own wanderings on this planet.

Call it karma or call it cash boxes, it's our own sense of what's really important that maroons us on our personal islands of meaning and purposes. Only if personal differences were eliminated could we see the world as it is. As long as we have the bias of our feelings, we can't be objective in any way. Not with a brain that operates with neurons and synapses. If we cleaned up all the incidental branching and rewired the nets practically rather than personally we'd wreck all the patterns. We'd be back to ant-thought again. We could all agree about reality only if we could agree, even for a moment, to retrofit us all with identical brains. Then we'd see how it looked when we were all perceiving with the same mind. This is not going to happen. The closest we ever come is the very simple mind before birth and just before death. Neither one has anything to do with the world outside our heads, the place where we spend most of our lives.

Perhaps the Buddha phrased it best with one of his most quoted sayings: "There is no *Nirvana* without *Samsara*, and there is no *Samsara* without *Nirvana*." *Nirvana* is an ultimately "realized" state of no bias, no time, no space, and no self either. "Samsara" is a state of futile repetition like a fly caught in a vase, buzzing around and around without getting anywhere at all. *Nirvana* is unbiased, untimed, pure perception. The repetitive and circular nature of life for many of us, repeating again and again due to the attachment of emotional attraction and avoidance, is the groove that became a rut, the unrewarding rat race called *Samsara*. There is no reason to suspect that Siddhartha Gautama was familiar with neural nets or virtual realities for that matter. As an ex-prince, he was the junior executive dropout of the 5th century BC. His statement, however, speaks to the paradox that we all face. If we approach *Nirvana* or experienced it, we perceive reality in its purest form. To do this, we would somehow have to circumvent or eliminate every associative cross-link in our personalized neural system. This is all fine and good, but it essentially reduces our ego to the level of cauliflower again. Enlightened cauliflower perhaps, fully realized cauliflower even,

but without those personal crosslinks, incidental networks, and hormonal clues we would lose any sense of personal meaning, reality, and self at the same time. To know ultimate meaning, in other words, we can't be we. We would have to completely lose touch with ourselves in the process. This might be fine for a last endless moment of conscious existence, but it doesn't pay the rent. Perfect nothingness may be neat but it's also without worldly value. It's nice to know it's there, but it's no place to spend a lot of time while we're here.

Likewise, whenever we find enormous amounts of pleasure or misery in life we are just over-focusing on our own virtual versions of the bigger picture. We're getting excess hormonal activity out of our one-witness neural netscape, quite out of touch with reality in any pure sense. We can never really know what is taking place because it's entirely pre-selected by our personal filters of preference and familiarity from the serotonin system to memory matching. It's a paradox, but it's true. We can't have one without the other. Without accepting meaninglessness as a baseline reference we can never be certain about the meaning we find or the personal fulfillment we achieve. We'll never find our own meaning just by looking for it. We can't. Someone we know or something we do will help us find it inside. This is another reason it's good to have loved ones to help guide us when we get a little lost. It is not coincidental that all spiritual teachers say that we will can never really find ourselves unless we lose ourselves and rebuild ourselves again. The very patterns that bind us can then be rebuilt into the ones that support us. We just have to know the ones to repeat, and the reconstruction can be not only a delight to ourselves but a blessing to others as well.

Our home-made feelings direct us, they make our lives meaningful. They are our happiness and our fulfillment. But they also bring us all the emotional pain and mental suffering we know. They are the very human side of us, the part that makes each of us different from all the others, each equally alone, equally unique, and equally precious. It is by our feelings alone we are made heavenly; by them we have known our hells. In our feelings we have all been lost and found again, and it will keep happening as long as we

believe in ourselves and the meaning we have found in our lives. It is called the human condition and we're all part of it. No other creature on earth could know it. It may be a matter of neural nets, cross-associations, and hormonal tapestries, but it makes meaning for us every day of our lives.

Painter Marc Chagall died at the age of 97. Like Isaac Bashevis Singer, he knew life's darker sides. Born in a Russian ghetto, enduring pogroms and persecutions, he survived the revolution and two World Wars. It was Singer's history, the very same, and yet Chagall saw an entirely different world, one filled with childlike joy and faith in the human spirit. As he once told an interviewer, "There is no secret about it. You have to be simply honest and filled with love. When you have love, all the other qualities come by themselves." It was the only world he knew. So he repeated it, and re-created it, and celebrated it, and painted it in all the colors of the rainbow. There was no master plan needed. There was just lots of love. It was enough for him, and probably enough for any of us.

*"What is it all about?"* The question has real answers; over six billion variations on a theme. What is the purpose of it all? It is whatever we believe it to be and for whatever reason feels the best to each of us. Why are we here? Is there a plan or a purpose? Of course there is a plan; it is whatever we love to do or be the most. This is our destiny, the only one we could imagine, the only one that feels right to us and available to each of us every day if we just let it happen. After all, what have we been doing all our life already but demonstrating this? We have made things happen. We have made others happy. We have conjured love and endured tragedy. We have been touched by joy and we have been gripped by terror. We all have. Every moment of every day, in this world we perceive and believe in, we are the ones who make it conscious. We are the ones to give it meaning. For better or for worse, 'til death do us part, *we* make it real.