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My Mind

By

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Introduction

Friendship

Somewhere in the world there are people like me: people who worry about the nature of reality, about concepts that underlie concepts that underlie concepts. Somewhere there are people who trouble over things like why there should be such a thing as mind, as mathematics, as language. I don't know who they are: indeed it is a leap of faith to assume that I am not alone.

When we speak out we often hear a voice back that overcomes the echo of emptiness. And when we do, we find a friend. This book is a search for friendship.

Chapter 1

Relentless Passionate Thought

I wander out on a foggy night around my neighborhood, through parks, near shopping centers, or anywhere that my steps lead me. My children are at home, probably wishing that their Daddy would play with them. I think of them now and again while I walk, but I have to push them out of my mind to be able to think with the intensity that I need. I feel as if my eyes are open wider than usual—literally, physically wider open. I don't have any real control over my steps: they are slow and methodical; I don't know how I avoid puddles, curbs, cracks in the sidewalk, or traffic—it just happens. My hands are tucked in my pockets, emerging spontaneously to draw shapes in the air or to follow paths that mimic the motions of my mind. My lips purse slightly as I ask questions, then roll from side to side as I ponder potential answers.

Every night for the past six months the topic has been randomness. Tonight is no different. I know what there is to know about probability: I can recite the formulas, or teach a class about it. But there is something that doesn't sit right with me about how we think about randomness. I don't know what it is. That's why I am walking.

I look up at the branches on the trees. They seem to grow randomly. How could one predict where one branch will grow, where branches on branches will grow, where leaves will grow? I know that the reasons are everywhere in the tree. The Sun and the wind and the rain and the cells of the trees and the minerals and water in the soil and thousands of other forces have created this tree's growth

pattern. It is not random. It is purely deterministic. Despite the purely physical nature of the forces that have shaped this particular tree, I cannot begin to explain the tree. I can't even guess at the number and kinds of forces that produced its shape, let alone quantify them. I stand, staring up at the tree, unaware of the fact that I have stopped to look at it. A man walking a dog passes me by, walking faster to avoid having to talk to a man staring up at a tree in the darkness.

I turn the questions over in my mind: What is randomness? It is not just a word that equates with unpredictability? What does it point to? Does it signify anything? What is the nature of randomness? How do you describe it? How do you characterize it? How do you reconcile randomness with determinism? Can we say something about randomness that has not been said? The questions start to run faster and faster, parallel with doubts that a human mind can think clearly enough, can know enough, can experience enough, to arrive at the answer.

I keep walking. I stare intensely downward at a 15 degree angle. My steps mimic the pace of my mind inversely: the more intensely I think, the slower I walk. I feel intuitively that every time I come to a complete halt, I am getting somewhere. I can't control my pace; it just happens. I pause. I see something on the horizon of my mind. I realize that I'm not concerned with randomness, but rather with the idea that causality may underlie randomness: that there may be no such thing as randomness. My thoughts come creeping forward over the horizon, like the Sun in the East. But instead of more light confined by the perfect boundary of the Sun, I feel my answers starting to dissolve, as if the Sun bled out onto the sheets of the horizon, melting the Sun's roundness into flatness. Now I have to know what is making it dissolve.

The answer is "dichotomization". My answers keep dissolving because I am trying to choose between two extremes: randomness and determinism. I've read Pirsig, so I know the story. But what other choices are there? If you're going to do philosophy, how do you do it without categorization, without Either/Or? I am stopped, still, unmoving under the light of a lamppost.

The light wakes me. I realize that I am far from home. I need to turn and go back. It has turned cold, and there is much fog in the air. The leaves are wet, and I can see my breath. I look for street signs and realize that I must have walked for more than two hours. If I walk quickly, I can be home in an hour. My wife will ask me how my walk was. I will say, "fine".

The walk home is slow. I study a drop of water condensed from the fog on a leaf. It will fall to the ground and reach the roots of the tree. That one drop will contribute in some small way to the growth of the tree. I can't follow the path of that one drop, but I do know that many more drops of water combine to sustain the tree. Sunlight and water concatenate in the metabolic processes that contribute to growth. There it is! There is the dividing line: where the simplicity of water and sunlight combine within this particular tree, and growth and metabolism emerge. That is the line between randomness and causality.

It starts to rain. The raindrops fall randomly. I watch their distribution within a square of concrete on the sidewalk. My eyes try to keep pace with each new drop hitting the concrete and my mind tries to keep pace with the distribution of the drops over the area within the square. I divide the area into four equal areas in my mind, trying to assess their distribution before the entire area becomes wet and no distinctions can be made among the drops. My mind is racing to compare. I turn

the four squares sideways into an "X" and reassess the distribution of the drops. The rain is catching up, about to obliterate my experiment.

Just as the concrete is nearly covered with wet spots, I realize something: I could divide the area into many equal squares: say 100. I could then watch the raindrops fall. If I did, the least likely sequence of events would be for one raindrop to fall in each of the 100 squares consecutively. I could stand there for millions of rainy nights and never would I see a raindrop fall in square #1, then one in square #2, then one in square #3, etc. Since the probability of raindrops falling in precisely squares 1, 2, 3, 4... n is the same as raindrops falling precisely in squares 16, 15, 14, 13... 1; and these have the same probability as the raindrops falling in precisely the squares 4, 5, 9, 12, 16, 7... until they all are filled without repetition, it stands to reason that every sequence of events is equally unlikely.

When we say "unlikely", we mean that there is a very low probability that exactly that sequence will occur at exactly the moment in which the experiment is being conducted. But when we study "random" phenomena, we are not really interested in "likely" and "unlikely": we are interested in "predictable" and "unpredictable". Even though a raindrop might fall in square #1, followed by one in square #2, followed by one in square #3, there is no way to predict where the next one will fall.

Why? Because probability distributions have been used to explain these processes, and probability distributions work for random events, it is therefore assumed that prediction is incapacitated by randomness. This is not true. We cannot predict where the next raindrop will fall because we do not have enough information about the flight of the raindrop.

In other words, randomness is just a word to describe the tendency of certain systems to have unpredictable details, yet predictable large-scale results. Randomness, in the common sense of the word, is a verbal mask over causality.

I am completely stopped, bent over, staring at a square of concrete in the pouring rain. A car drives by and splashes, alerting me to the fact that I must appear very strange. I imagine one person in the car saying to another, "The poor guy must have lost a contact lens." I hope they think that.

I nearly run home; not from a desire to get there more quickly, but because I am elated with my new understanding. I have gone somewhere on my own that is very far from anything ever explained to me. I have broken a barrier of understanding that I don't know if others have broken. I have a broad smile on my face, my mind feels happy and light, I notice nothing along the way, and I am absorbed with intellectual alacrity. This is what I love.

I return home, and my wife does ask, and I say "fine." I return mentally to where she and my children need me to be. They never knew I was gone. I play with the kids and read them a story and tuck them in. They close their angelic eyes. I can't imagine what they think. Are they simply content? Do they have some worry or fear? Do they look forward to the next day? Do they think of all the fun of playing?

I climb in bed and read. I am reading A. D. Sertillanges' "The Intellectual Life". My wife does not notice what I am reading, nor does she care. She is tired. She says "goodnight" and rolls over for a sound sleep. I keep the light on and absorb the passages. Things keep connecting in my mind the way that they did when I was walking. It doesn't matter where I am. But sleep is coming quickly. I

hate sleep. I want to stay awake all night and read. My eyes start to pull closed, so I give in and turn out the light. I know that I have a couple of minutes remaining before I surrender consciousness to something that I don't understand. My last thought is: "No one can ever take away what is in my mind."

If you have felt what I describe, it doesn't matter what you were thinking about. What matters is that you felt a smooth, even rush of something indescribable. It is intellectual consumption, fire in the mind, burning all your mental energy, making love with ideas. You race to catch escaping thoughts, not knowing where you are, what time it is, or whether or not you are hungry. You run to catch them, but you know deep down—deeper than anything conscious—that an answer would ruin everything.

"If God offered me all Truth in His right hand and the pursuit thereof in His left, I would choose the left."

-Leibniz

Leibniz knew the moment. All great thinkers know the moment of passion when you wrap your hands around the throat of a problem and sense that it is immortal. You squeeze tightly and breathe deeply, nursing the air that your opponent can barely inhale. You stare into its eyes, drawing on the strength of your preparation: a line from Kant, an argument from Nietzsche, something from Aquinas, or thousands of pages of history. You know everything there is to know

about what you hold in your hands except how to put it to rest. So you breathe again and release your grip and thank God for so worthy an opponent.

You work at being an accountant, a teacher, a plumber, or a nurse; but what keeps you alive are those moments when your mind races. They give you a sense of being someone special, of knowing that you are different; and you relish the differences to the point of cultivating quirkiness. But the social benefits are small in comparison with the feeling itself. It separates you from a very, very, very large percentage of humanity.

Mostly, you keep those moments to yourself. If you talked about them at work, people would look at you like you were odd. (Of course you are odd, but you don't want people looking at you that way). Sometimes someone says something about precisely the topic you care about, and you want to contribute, so you mention that you have been thinking about *just that topic*. You offer your thoughts; and you are greeted with some ridiculously inane comment that shows that you weren't talking about the same thing at all, merely about the same word. It's frustrating, so you resolve to keep your mouth shut and live for your private moments of curiosity and intellectual passion.

Your resolution, however, lasts only so long. While you have to be quiet in the presence of intellectual inertia, you continue to seek friends outside the living. You turn to books.

Books do something to your mind that no person can do. They make you keep going, they make you pull away, they make you smile at the oddest of times. Books consume, and nothing else consumes like a book. The burning, combusting

energy that happens only when you are alone with books shifts your mind in ways that nothing else can. Books shape the landscape of your mind.

Deep inside an impenetrable network of neurons and chemicals in my brain, the ideas from books work slowly. The photons from the words on the page light up my retina. I recognize form and shape; form and shape combine mysteriously to form sounds; ideas emerge from sounds; the ideas connect and trespass upon each others' terrains to form a structure of viability that I call me.

I labor to keep within my mental ken that complex and ineffable mystery of how retinal stimulation cascades into a torrent of neuro-chemical activity called an idea. I try to follow the impression from first to last. I see the page and feel thought and become conscious of a deepening, a sculpting.

I feel for a moment that the word "sculpting" is the right word to describe my introspection. But as quickly as the word seems right, it seems lacking. I need a word that combines "sculpt" with "malleable". None seem available. I feel trapped in Greco-Renaissance verbiage. I feel the connections and the compulsions of an intellectual heritage. The simple word "sculpt" brings to mind Greek statues and Renaissance love of form. The liberation of the ideal from a block of stone presses upon me and insists that the landscape of my mind is being sculpted. But I know that the word is not right. "Sculpt" took me here; now I must press on.

I ask the question anew: What do books do to my mind? It seems that I will have to settle for a metaphor: terrain. What is happening to the terrain of my mind? This shifts the burden of thought away from the idea of "sculpting" to something more natural and less artistic. I see the water. When water first rushes over a smooth surface, it spreads out in all directions evenly. Over time the water

creates small irregularities in the surface. The irregularities become shallow pathways for the water. The paths become deeper and form systems of rivers and lakes. The process of water flowing over terrain, eroding the land and creating pathways and networks of deepened connections is a first step toward a metaphor for what books do to the terrain of my mind.

The metaphor, however, is flawed because I do not sense erosion: I sense a building up. I imagine water flowing over terrain, combining with the terrain to create mountains and hills. One useful way to envision this is to see the water creating the paths and rivers and lakes, then freezing the water, then inverting the water upwards in an exact mirror image of what had frozen beneath the surface, like a three dimensional reflection.

This metaphor is closer to what happens within my mind when I read, but my uneasiness tells me that it, too, is not quite correct. My description borrows terms from geology and topology, but it causes an odd feeling of inaccuracy within my chest that will not allow me to continue writing in that vein. I sense that I am moving in the right direction. The feeling is one of incompleteness. I have to push further.

The problem with the metaphor as it stands is gravity. The force behind the erosion that leads to rivers and lakes is gravity. The water is being pulled along and the weakness of the earth gives way underneath the pressure of the flow. My mind does not feel that force of gravity. My mind feels a force of extension upwards and outwards and the force allows the growth to turn upon itself and connect to roots and branches that had grown before. *That* is the metaphor: The Tree. That is why I was staring up at the tree in the dark: because it held the metaphor for what I was

trying to understand. My mind was trying to make sense of itself. The growth patterns of the tree reflected the nearest metaphor for making sense of the growth of ideas within the three dimensional terrain of my mind.

Now, I must slow down. When flashes of insight come upon me, I write and my body begins to sway. Now it is time to calm my body down and reflect upon what I have written. This is part of understanding the relentless, passionate thought about which I am writing, which lives inside my mind and which my mind tries to comprehend, as it looks simultaneously outward and inward.

Slow. I must go slowly. The passion must be followed by calm, or it extends itself too much and withers.

The branches of the tree grow in response to thousands of forces within and without the tree. That is like my mind. Ideas come as written and spoken and seen and inferred. The state of my mind at any given moment influences how they are received. A tree may bend to the wind, or reach its roots down deeper for water, or produce more leaves to capture more sunlight, but the metabolic processes are connected inextricably with the physical processes of its cells and the flow of its environment. So are the processes of my mind. My mind is like the tree: every branch and leaf is determined by the causes that influence its growth; but one cannot predict that growth. I cannot predict where my mind will grow; yet its growth is determined.

The metaphor is still lacking. My mind is like the tree, but not entirely. The branches need to connect. The branches of my mind meet and fuse and provide pathways to other branches for the current of thought. The branches start as tendrils: small, delicate, searching tendrils. In order to understand this, you must

plant vines and watch their growth every day. You must note with great care the new shoots that reach outward. These tendrils of tentative growth look like what my mind feels like when I start to read. As I read, my mind feels the expansion that new shoots on a vine demonstrate when first reaching for the Sun. Every cell needs the long reaches of the plant and its deep roots: everything is bound together in an irresistible push toward more growth.

That word "irresistible" resonates nicely. But I feel something more compelling than irresistible. I feel something uncontrollable, inspiring. I feel as if I want the skin of my mind to stretch and reach... but not too fast. I feel like my mind is reaching without struggle, searching without need, growing without effort. It can grow at those moments in any direction. It can reach; it can be still; it can leap, but there is no volition. I am carried along in the flow of exploration in the way that the vine is carried along in the flow of growth. The new tendril does not grow: it flows within the space of growth. It *is* the sunlight and the soil and the roots and the branches. The shoot is the moment when sunlight strikes and water provides and the universe combines and there is growth. That is what my mind feels: a growth that cannot do otherwise, like the vine.

That is right. Now, a story.

For many years I have suffered from the oddest of irregularities. (I call it odd because I have never found anyone who suffers from the same malady). I cannot be settled in life unless I am reading the "right" book. I feel an emptiness, a longing; a need. I want to know something tangential to what I have thought about. I need to follow a path within the flow of the path, like the water carving out the earth or the vine putting forth new shoots. Despite the naturalness of the

feeling, it is unsettling. I know why it is there, I am comfortable with its presence, but it is unsettling.

Perhaps “unsettling” is not a word that will help others to understand what I mean in using it. “Unsettling” is, after all, only a word that helps me to convey some internal state so that others can compare their state with mine. I cannot know that our states match; I only know that mentioning the word “unsettling” allows someone else to agree that something is “unsettling”. But the word is incomplete and tentative. The only thing that would properly describe what I feel is a complete informational picture about the state of my brain at the moment that I feel unsettled. Anything else casts the understanding of that moment into an enormous space of possible matches with other minds. It may be that my state of feeling unsettled is profoundly like your state of feeling unsettled. It may not. The best that I can do is to describe what happens when I feel it. And the best that you can do is to compare.

The feeling always comes upon me when I finish a book. I feel muddled. When I think about what to do, the answer never comes. I have to wander about, look at my books, browse through the shelves on the library, visit a bookstore, or browse books on the Internet. Only wandering helps me arrive at a solution. Focused effort never helps. Letting go and allowing my mind to explore a space of possibility brings me to a point of focus that feels right. Then I know that I have found the “right” book to read.

When I mentioned Leibniz’ dictum about Truth, you may have felt a sense of understanding. Because you felt the pleasure of pursuit and weighed it against the gratification of gratification, you understood. I have no reason to think that others

do not feel the same sense of being unsettled until finding the right book to read. So I must guess that, in the way the Leibniz' phrase resonated with those who have felt the passionate pursuit of truth, my sense of being unfulfilled will resonate with others. I imagine that others wander through stacks of books until finding the right one.

When I find the right book, it often takes me down an unanticipated path to new fields. I once read Keats' letters, fascinated by his thoughts on human suffering. So I read the letters of other Romantic poets to see if they, too, were concerned with the problem of human suffering. I found that Southey, Coleridge, Wordsworth, and many others were equally fascinated, troubled, and challenged by human suffering. Together they taught me why there was a "problem" of human suffering at all. I followed the path to John Bowker's The Problem of Suffering in Religions of the World. That led me to Jaroslav Pelikan's masterful five volume The Christian Tradition. Pelikan's work led me to the question of "impassibility", which led to Aquinas' discussion of heresy in the Summa Theologica, in turn to Henry Charles Lea's histories of the Inquisition. The path from Keats to the Medieval Inquisition is shorter than one might think; and the connections might exist in only one place.

That one place is inside my mind. No one else will think of Henry Charles Lea's History of the Medieval Inquisition when someone mentions "The Story of the Three Bears" (Robert Southey wrote the original "Three Bears"), because there is no logical connection between the two.

To emphasize this point further, I will describe a game that I play inside my mind that I have never heard of anyone else playing. (I say "playing" because I do it consciously, and I do not know from one game to the next how it will come out). I choose a "seed" image. Then I allow my mind to make connections as fast as it will between the selected image and another image. I never apply words to the images: I try to allow my brain to execute hops from one image to the next without slowing it down with language. In a recent game I glanced at the wall in my study and looked at a picture of myself in a little league uniform. I thought next of my father, who was a coach on the team, then of the General Telephone building where he worked, then of the lobby in that building where I once worked, then of Brenda Smight, who was a friend who worked in that building, then of her husband Tim, then of the fact that he tried out for Jeopardy several times, then of my friend Roger who won a lot of money on Jeopardy, then of NASA where Roger and I worked together, then of my friend Jim who worked with me at NASA, then of a roller coaster in Ohio that Jim liked (being a coaster enthusiast), then of the first time I went on the coaster, then of the view from the top of the coaster (onto Lake Erie), then to the time we watched fireworks from a boat on the lake.

I can also back the game up. While I am playing, I can step back about three images and allow my brain to go again, and it will take a different path. I did not do so during this particular game; however, an example of what might have happened would be the following: then of NASA, then of the day care center at NASA, then of my friend Jeff who picked up his children there every night, then of the brain teasers that he used to pass out at work, etc.

Every branch in the road leads to numerous paths. At the very beginning, my little league uniform might have reminded me of a "Shamrock", which was the name of my team, or of a player on the team, or the field at which we played, or a bat I used, or my glove (that I still have), or the glass company across the street from the field, or the snow cones at the games, or a parent of a player. (The connection might have been even less obvious, such as "shamrock" reminding me of Ireland, and in turn of a trip that a friend made there, in turn of the school at which he taught, etc.) Each branch, in turn, leads to many other branches, so that there is a very large space of potential end points for any given seed. This space would be limited to the memory available to my consciousness and to the inferences that my mind might make that cannot be classified as memories.

If I played the game enough times (and I only play it about once a day), I would probably notice that different ideas led me back to the same place at some point. Another way to say this would be: there is a certain probability that, given a seed idea S_1 and another seed idea S_2 , their paths would cross at some idea i_n with a probability that was a function of the total memory space available.

I have started the game by looking at a photocopy machine and ended with Carlos Baerga (a former second baseman for the Cleveland Indians); I have started with the Liberty Bell and ended with the tomatoes that I used to grow in my backyard. The uniqueness of each experience of playing leads me to think initially that there are an infinite number of games; I know, however, that that is not true. The potential number of games may be very, very, large, but it is not infinite.

There would seem to be two paths open to the game: my personal memories (experiences that I have lived, people that I have known, places I have been,

things that I have seen), and inferences or constructions outside my personal experience. An example of the latter would be an aboriginal person. My "experience" of that person would be an inference based upon data that I have about aboriginal persons in general. I can construct a picture of an aboriginal person in my mind, and even state what he or she might think upon arriving in Los Angeles. But that aboriginal person is a construct, not a memory. One interesting observation about this game is that my mind never follows a path to a mental construction, but always follows a path of a memory. In other words, I never reach Aborigines, but I do reach images of friends in Australia.

Next, I am never confused by the connections between any two mental images. When my brain takes me from the General Telephone company to the lobby to my friend Brenda, to her husband, to Jeopardy, each step seems logical to me: I sense the connection in my brain to be something that I could explain to anyone: "I used to work at General Telephone with a girl named Brenda. Her husband Tim tried out for Jeopardy several times, but he never got picked. But my friend Roger from NASA got picked and he won a lot of money!" (People who speak like this are enormously irritating).

While I can explain the connection between any two images, the connection is logical only in terms of my personal experience. The connection, then, is not logical in any formal sense. Since the word "logical" has a very broad meaning in common speech, signifying anything that can be explained without objection (such as the path from a photocopier to Carlos Baerga), I need to introduce another term that will narrow its meaning in order to show that I am saying something worth saying. That term is "unique". I am going to use this word in a strict sense to mean

something of which there is only one instance, rather than in the common sense of some trait that is easily identifiable. When used in this strict sense, the word “unique” cannot be modified, as in the common phrase, “She’s a really unique person”, which indicates that she has qualities that are not easily found in others.

I assert that the connection between “The Story of the Three Bears” and Henry Charles Lea’s History of the Inquisition of the Middle Ages is unique. It lives in one and only one place. Perhaps the only way to test this hypothesis of uniqueness would be through experiment. We could offer an association test to millions of persons, asking each to state—in order—everything that comes to mind upon hearing the words, “The Story of the Three Bears.” Quite obviously, any person who had never heard of either the story or of Henry Charles Lea’s work would never arrive at the connection between the two. If everyone we tested failed to produce a connection after a predetermined number of paths, we could conclude that the connection is unique.

Unfortunately, that would be a wrong conclusion. The proper conclusion would be that we had not found such a connection among the millions of persons that we had tested. We could safely posit further that the probability of finding such a connection is extremely small: a premise that we could have divined based purely upon a guess at how many people on the planet have read Henry Charles Lea, and how many knew of “The Story of the Three Bears”.

I can conclude that the connection between Southey and Lea is *not necessarily unique*, but that it is highly probably that it is unique. I conclude this from two premises: that absolute uniqueness cannot be tested by experiment, and that it is possible for two people to have some limited set of experiences in the

same order, resulting in a possible coincidence of experiences that are not logically connected.

I have taken this long path to ask one question: If the connection between two things is not logical (no one would think of it), nor is it necessarily unique (more than one person might think of it), what is it? This may seem like a rather mundane question, but it is one about which philosophers of every rank and school have puzzled and debated for centuries. Philosophers have commonly phrased this question as follows: "What is the connection between any two ideas?" I want to phrase it this way: "What is the connection between any two ideas *in my mind*?"

David Hume maintained that all ideas within human consciousness are there as the result of sensory impressions. His argument (which essentially sent Renaissance and Medieval philosophy to the rubbish heap) was intended to prove that individual ideas are in place because of singular impressions or combinations of impressions. My question is: what is the nature of the connections between and among impressions? I have chosen to observe the connections within my own mind for analysis and commentary because this is not a philosophical treatise (which would require much more exacting reasoning). This frees me of the obligation to insist that there is something logical (in the strict sense of the word) in my assertions, and allows me to conjecture and explore the mental space of my own mind. The advantage of this is that I can state what seems true to me and ask others if they discover the same within themselves. Such is an invitation to friendship, rather than an insistence upon Truth.

The most important discovery that I have ever made about my own mind is that there are no logical connections within it: there are only *neurological* ones. This statement needs support, even though it is a rather mundane comment from a philosophical point of view. To support it, here is a story: A person comes home at night and finds a broken window in her house. The drapes are blowing in the breeze, and lights are on that were not left on. She calls the police, who enter the house and find a large mess, but no danger. They see that a television, a VCR, and a stereo are missing. Quite obviously, there was a burglary.

This, however, is not the only explanation. It is possible that the woman's son, without key and desperate for entertainment, broke a window and carted off his TV, stereo, and VCR. While it sounds unlikely, we would consider it more likely if we learned that the young man, angered at a loss of privileges and parental tolerance, had fought with his mother and moved out two days earlier. He may even have entered with a key and thrown a rock through the window for good measure. (One could multiply explanations).

I used the phrase "quite obviously" in the preceding paragraph. That phrase implied rhetorically that there was compelling evidence and irrefutable logic to sustain the premise that there had been a burglary. In truth, however, such a conclusion was no more than highly probable. In other words, if we back the scene up to the point of entering the house, we could ask the question "Have any family members recently moved out?" or "Did the missing items belong to you?" Those questions allow us to consider the possibility of alternative scenarios, i.e., alternative mental connections. As we play them forward, they are like the game I play in my mind with images and memories. In considering scenarios, we provoke

the exploration of various neurological connections. Members of primitive cultures might consider the unexplained loss of valuable possessions to be the work of hostile invisible forces such as witchcraft. Members of a gang might consider the act retribution rather than burglary. It is even possible, if we substitute other possessions, to imbue those items with ambulatory powers. To demonstrate how believable this is, my mother once insisted for the better part of five years that her landlady had entered her apartment and taken a particular garment. When it turned up five years later she only grudgingly confessed that it had been misplaced.

It would be easy to accuse my mother of having been illogical. However, I can defend her conclusion on neurological grounds (although I would not be able to defend her on logical grounds). She had a falling out with the landlady, and the landlady once admired this particular piece of clothing. The connection from animosity to envy to malice is an easy one to make when we add ability: she had the key.

Everyone who heard the story agreed that my mother was being illogical. My mother said that she was being perfectly logical. Since my mother has consistently demonstrated adequate powers of reason in other matters, we must wonder if perhaps the terms of the argument were more confused than she was.

My mother, in fact, was not being illogical. She was being neurological. Other people followed the sequence of events (missing garment) and could not reach the same conclusion of theft by a specific party because neurological connections did not exist within their minds that linked the disappearance of the garment to the idea of theft. The paths and connections existed only in my mother's mind. Others called my mother "illogical". In fact, they were merely pointing to the fact that that

they did not perceive the connections. Because they could not see them, they called them “illogical”, when in fact they were uniquely neurological.

The dichotomization between logic and illogic is stark because it incorporates neither probability nor neurology. (In broader terms, it does not account for the system in which the logic is defined, nor for the probability that the system will follow paths outside the neurological sphere of the listener). Once we incorporate the nature of the brain (the system that is doing the processing) and the space of probability in which it works, the stark line between logic and illogic dissolves. The perfect boundary of Logic bleeds out onto the sheets of the neuro-Logic.

Every human brain is fundamentally alike. Each has regions responsible for the same tasks: brain trauma to the same region of two different brains results in the same lost capacities. Stimulating the same region of two different brains produces the same reaction. Brains produce the same chemicals, they have roughly the same number of neurons, and they regulate unconscious behaviors (sleep, the endocrine system, motor actions) in very similar ways. And yet no two people think alike. It is not merely that we do not share beliefs; it is that we do not *think* alike. All of the neurons fire in the same way and all of the chemicals get dumped in the same places, but the thoughts themselves are different from person to person.

The reason for this is that thought is not logic: it is *neurologic*. *Neurologic* is that pattern of explanation unique to each brain that is a consequence of the connections between and among neurons within that particular brain. Even a concept so apparently fundamental as “ $1 + 1 = 2$ ” is not logical to the brain trained only in binary arithmetic; it takes a brain trained in base three or higher to

understand and recognize the validity of "1 + 1 = 2".¹ The supposedly intuitive principles of arithmetic are no more transparent than my argument that if you start out with "The Story of the Three Bears", and perform a mental operation upon it, you will arrive eventually at Lea's History of the Inquisition of the Middle Ages.

Thinking of thought as *neurologic* helps you understand the uniqueness of mind and the miracle of friendship born of similar mental tendencies. The tacit acceptance of logic as a necessary fact of human mental endeavor discounts the uniqueness of each mind. That tendency toward a requirement of logical consistency divides lines of reasoning into "right" and "wrong" (i.e., "logical" and "illogical") that block connections between minds. If we approach a person without a demand for a consistency that passes our internal tests for "logical", we can see that person as the home to an enormous space of potential connections that we had perhaps never considered. Friendship becomes more possible when we see a new mind as a morass of connections with its own internal logic.

This is not a plea for mental egalitarianism. I believe that people can be wrong, and that people can be right. Not all views have equal value; not all views should be tolerated. However, I think that many more connections could be made between and among people if we would overcome the demand that other peoples' logic pass our own internal tests of logic.² Surprisingly, I am not suggesting that we become more tolerant of more diverse ideas. On the contrary, I am suggesting that we become more critical of them. However, I am not using the word "critical" in the

¹ While there are sound arguments about the transcendence of arithmetic as a universal logical construct, they depend upon the acceptance of logic as a discipline that is independent of brain. I reject such premises and such arguments. They don't feel right.

² A large political example of this would be a country that insisted that democracy, communism, fascism, or anarchy was the only appropriate system of worldwide government and sought to enforce that system on the grounds that the other systems were illogical or undesirable.

sense of subjection to more rigorous logic. I mean by it a broader and deeper look at ideas as products of *neurologic*.

By using the term "neurologic" I run the risk of introducing a word that will be interpreted (based upon its structural composition) of being a different *kind of logic*. I cannot emphasize sufficiently that I do not mean by placing the prefix "neuro" in front of the term "logic" that I am modifying "logic" like we do when we say "il-logic". Nor do I mean to associate it with the term "neurological" in the scientific sense. I mean by "neurologic" that unique set of connections and chemistry in an individual's brain that accounts for and explains the particular way that that individual thinks.

In this sense it becomes possible to speak of "my neurologic" and "your neurologic". This, however, requires caution, because the assignment of "mine" and "yours" should not imply uniqueness, but rather a granular distinctiveness that allows for overall similarity: rather like two trees.

I hope that you will forgive me if I ask you to stop reading for a moment and think about those four words: "rather like two trees".

Once you have thought about those words, imagine two trees, side-by-side. They are planted at the same time, are subject to the same winds, get nourishment from the same soil, get the same amount of sunshine and rain, and yet are unlike in many features. No matter how closely we controlled the environment of these two trees carefully they would be quite different after many years.

If we took the same two trees and moved them far apart, gave them different kinds of nourishment, different amounts of water and sunlight, and put them in very different temperature zones, they would, after many years, still be

recognizable as the same kind of tree. They would be very much alike, despite very different environments.

These two trees are like "my neurologic" and "your neurologic". There is something so distinctive about each that identical environments cannot produce identical results. There is something so alike about them that vastly different environments cannot separate them in kind.

Reasoning is not like remembering. The connections between images that flash in my mind as I play my mental connection game are available to anyone with his own set of images. Unlike connections of memories, not all qualities of reasoning are available to all minds. Some minds create highly complex ideas with great facility; others have difficulty grasping the patterns of elementary algebra. Some minds control highly complex arguments with dexterity; others become confused over simple tasks.

I want to turn now from connections of memories to creative processes that I sense in my mind. Rather than describe the formation of connections among various pieces of knowledge, which I likened to a vine-like formation of three-dimensional, upward-seeking terrain, I want to describe what that terrain feels like as it searches, creates, comprehends, and forges.

While I have been searching for answers to complex questions, I have walked into walls, walked past my wife in a shopping mall, knocked over items in stores, not heard the phone ring, not heard a child crying, dropped a phone while someone was speaking to me, completely ignored someone speaking to me face to

face, and forgotten to go to work. I came close to slipping into this state while driving once, but managed to jerk myself out of it in time to remain alive.

This experience of losing awareness while thinking is somewhat frightening, even though it creates some humorous anecdotes. Walking into a wall reminds you that you could also walk into traffic, drive off a cliff, or get a really bad sunburn. But it is frightening not because it can be life threatening; it is frightening because it is so completely engulfing. Someone who has come close to drowning might understand the feeling of being completely engulfed in water; but drowning is quite unlike thinking. Everyone who has watched fire burn understands how it consumes what it touches; but while my mind is consumed, it creates. Even though I would describe my thinking as "mercurial", it is more constrained, like water rushing down a gorge. In a word, most adjectives that I choose (engulfing, consuming, burning, mercurial) approach only tangentially my mental experience while searching for answers.

I have described some things that happen to my body while my mind is searching: walking without noticing things, staring up at trees or down at rain-soaked concrete. While those experiences intimate a certain immersion in thought that most everyone is familiar with, what goes on inside my head, I believe, is different from what most people feel. I have two reasons for guessing this. First, I have no indication that the majority of people spend much time thinking about complex issues. Second, the people that I have told about my experiences while thinking have all thought that what happens to me is not "normal". (Oddly, almost everyone goes silent at first).

As I begin to think about a complex problem, sometimes I stare. I never stare at an object, but rather directly at a point slightly upwards, and to the right. I can, in fact, recreate the sensation of deep thought by simply fixing my eyes in that direction, while if I try to fix my eyes at the same angle to the left, I feel uncomfortable and I cannot create the sensation. While in this state, the images in my visual field are clear, but I do not notice them. I have to come out of the state of thought in order to say, "That is a tree" or "I see a building".

When I am not sitting, I pace. One of the quickest ways for me to reach the state that lets me search for answers is to pace. Once I begin, I inevitably begin thinking hard. I have no problem doing this in a public place when I have nothing to do; others, however, seem confused by my pacing. I like a confined region to pace in, preferably about six or seven paces. I like to reach the end of those steps, turn quickly and return, and repeat the process over and over. When I am deep in thought, I can do this hundreds of times.

The result of this pacing or staring is that my brain shifts to modes quite unlike what I experience in everyday life. It is quieter, less sensitive, less aware, heavier. Unlike my time when I am in a more "normal" state, I seem uncannily aware of precise locations in my brain that seem active. Sometimes it seems to me as if thoughts are bouncing around inside.

This is an unacceptably ineffable experience. The closest that I can approximate an accurate description is by saying that it is like what I feel when I change from one language to another: it feels, quite literally, as if the "speaking" is switching sides. The experience of changing languages has always impressed me as rather clean: when I speak Spanish, the left side of my brain seems active, and

when I speak English, the right side of my brain seems active. (I would love to be able to verify this with an actual test). So the "bouncing around" is like a switching from side to side, but over many sides. When I am searching for an answer, this "switching" feels like a path being followed until there is no more path to follow, at which point there is a "jump".

This searching has another effect: the feeling of being engulfed. When I follow a particular thought for a long time, or follow it with particular intensity, I feel as if my mind is uncontrollably addicted to the state in which it finds itself. Since the brain is a chemical factory, I would guess that when I think with great intensity, my brain manufactures and releases chemicals similar to those that are released when addicts intake their drug of choice. I am on tenuous ground here, because I cannot verify if what I say is true. It is all metaphor; and my choice of metaphors is limited to those that I know.

This feeling of being engulfed is made more difficult by a feeling of being somewhere very special that is difficult to reach. Consequently, I do not want to leave this mental place when I reach it. When I reach this mental place, I feel as if my searching has led to creation, and that I can never return to that particular spot of creation. Therefore, I must take complete advantage of it until it burns itself out in understanding. If someone bothers me at that creative moment, it feels like the life is being sucked out of my mind... I feel like I can watch the effort vaporize into nothing. It makes me want to cry.

Because my personal experience of immersion in thought was so intense (at times), I had to learn to stop. It was partly due to the inability to manage the intensity that I once stopped reading and thinking intensely for seven years. Since

returning to thinking and reading and learning, I find that I stop short of where I could go mentally. I can still think with great intensity, but I do not go as far as I used to. There seems to be a barrier there; but I know that the barrier is my own fear. I am afraid of people not understanding, I am afraid of losing friends, I am afraid of having thought become so important that I neglect the things in life that we should not neglect. I am afraid of becoming strange.

At the same time, I miss it. I remember fondly my long walks in any weather when I wrestled with ideas that few people have had. I miss the arrogance of smiling to myself and dismissing an acclaimed philosopher as a pedant. I miss the rush of total absorption in ideas. I miss the feeling that nothing else matters. I miss the attack and the conquest. I miss the competition.

But I do not miss being unable to fit in at work. I do not miss having people dislike me who do not know me. I do not miss the social backlash of exposing someone's ignorance to a crowd. I do not miss the resentment.

You may wonder why intense thought implies social alienation. I do not know. I know that when I am deeply involved in thought, everything is open to analysis. If I am struggling with the question of whether the laws of physics are necessary or emergent principles (I believe the latter, by the way), the simple illogic of inconsequential banter is open game. Suddenly, I hold people to my rules: be informed, understand the argument, or shut up. The world becomes black and white and I become less forgiving.

It would seem that there would be a middle ground. Perhaps there is, but I have not yet found it. I do not think that it is a matter of merely shifting social strategies. There is a mental state associated with intensity of thought for me that

cannot be held back, which cannot be put to one side to return to at leisure, and which cannot be reconciled with the hypocritical requirements of quotidian social interchange. I prefer to be sincere and keep my mind at bay.

I have strayed quite a bit from my topic. I started talking about what my brain feels like as I search for answers. I ended by confessing that I sold out my mental potential in order to be socially acceptable. I would like to turn to something that doesn't hurt so much to talk about: the physiological sense of my brain changing shape.

The process of feeling my mind create terrain for comprehension is one of the most frightening that I have ever had. It has happened only rarely to me, with one instance being particularly intense. I had spent several weeks grappling with a difficult linguistic problem. Suddenly, I felt a distinct region to the rear left center of my brain begin to grow heavy and part. I remember thinking at the time "my brain is cleaving." My head grew very heavy and I had to lean it backwards while the sensation of space being carved out was intensified. I was completely aware of what was going on and understood it with uncanny clarity: a space (terrain) was being prepared in my brain for what I needed to understand. Even as I type, I can feel with great clarity—exactly like I can feel where my right index finger is—precisely where that region is, what its shape is (too irregular to describe, but I can visualize it perfectly), what the orientation is (nearly straight up and down with a slight inclination upwards to the left or downwards to the right) and how deep it is (about an inch and a half). Whenever I think of that region (or that topic—they are

inextricable to me) I sense that it is “ready”: it awaits more information, more understanding. I sense that it is there at my service.

While the experience was frightening, it was also quite calming, and quite startling. (Awareness of one’s “insides” is not common: I can’t even accurately point to my liver). What was both calming and startling about it was what it taught me about myself. It fused a deep disassociation between my sense of self and my sense of body. I know that I have no “mind” separate from my brain; I know that “I” do not exist as a separate entity apart from my body. But before that experience I never sensed the unity of selfhood.

That sentence should impress you as strange. You expect “such a unity of selfhood” or “the unity of mind and body” or “a unity of self and soul”. Despite the initially odd impression that the sentence makes, I mean it quite literally: the oneness of self. Since that experience I can speak only awkwardly of “me” and “my body” (even though I do so for convenience). The *sense*—not the knowledge, the *sense*—that a specific spot inside your head makes something specific tick removes a habit of mind that you have accepted from your earliest age and which you find among very nearly every human that you have ever met.

Imagine having a disorder so rare that describing it to others brought utter and complete incredulity: something like “I don’t hear the word ‘what’. I hear all the other words in all the other languages, but I can’t hear the word ‘what’. In fact, even when I say it, I can’t hear it. I’m just guessing that it is coming out of my mouth, and I only learned how to say it by writing it and comparing it with other sounds.” No one would believe you.

That is what it is like to sense physiological unity of self. And *that* comes from the experience of physically sensing your brain become shaped in response to the necessities of thought that your brain itself conjures up.

Yes, it seems strange even to me. And I live with it.

So much goes unanalyzed. It is as if we have time only for a strand of interest in a fabric of descriptive ideas. But when you think passionately, you spread out the fabric of thought across a cool, dark slab—the kind you see in chemistry labs—and run your hands over it to know every detail with Braille-like concreteness. Passion inspires profundity and thoroughness—it eliminates the possibility of drawing out an idea into a single fiber of acceptance. Passion drives my mind to feel the connectedness of Keats and Torquemada. I do not see that they are connected; I do not learn what they share; I do not feel that they are connected; I feel their connectedness. I traveled one road between them, and no one else has ever taken that same road.

What starts out as a feeling in my mind ends as a journey that cannot be completed. Because the process branches, I follow paths endlessly to new ideas. Following those paths makes the feeling of need go away. It creates an excitement of pursuit, a sense that I am close to discovering something, an anticipation of connection between disparate ideas. But it also creates the hope that as I reach the top of a hill, then there will be a new horizon.

John Keats' poem, "On First Looking into Chapman's Homer" describes his experience of reading Chapman's translation of "The Iliad" for the first time. He

compares his experience to being like an astronomer who discovers a planet, or like an explorer who finds something completely unexpected:

Then felt I like some watcher of the skies
 When a new planet swims into his ken;
Or like stout Cortez when with eagle eyes
 He stared at the Pacific—and all his men
Looked at each other with a wild surprise –
 Silent upon a peak in Darien.

Keats is describing the explorer's experience when he arrived at the Panamanian Isthmus (he mistakenly calls him Cortez: it was Balboa). He calls this spot "Darien". Cortez (or Balboa) and his men expect to find a great land. They climb to the top of a hill to see the vast expanse that they will soon claim for their majesty and they see... the Pacific Ocean: a body of water much wider than the one they crossed.

When my mind becomes inflamed pursuing ideas, it feels like what Keats describes here. You cross the Atlantic, find the land, get your land legs, climb to the top of a hill to view the immensity and beauty of what you have sought and will soon possess... and you find more ocean. I like to think that Balboa's men were not disappointed.

What is this need? What is this feeling when I am locked in pursuit? Do others feel what I feel? Do my experiences cross humanity's experience? It would be arrogant to think that they do not, but that is small reason to think that they do. Since this book is a call for friendship, I want to know if you feel what I feel.

If you have felt what I feel, I want to talk to you. I want to talk because there is an indescribable loneliness to this kind of thinking. It is maddening, stifling. It requires that I sink deeper into my reserves of self-reliance and cultivate a

Spartan resolve to gather in my mind's resources to myself and for myself. But it makes no sense to drink one's own blood to stay alive.

If you have felt what I feel in those moments of intellectual obsession, you have also felt how people look at you at your most enthused moments. You know that your mind is alive and vibrant, that it is spilling with life; but those who do not understand equate your thoughts with cold, harsh calculation. You are rational therefore you are cold. Your rationality is evidence of your lack of emotion, your aloofness from humanity, your distance from warmth. You are a machine, calculating and cruel. But there is nothing stark, cold, or unnerving about my ideas. My ideas are bathed in emotion. The landscape of the interconnectedness in my brain that defines an idea and its relationship to other ideas is flooded in a physical history of chemicals whose release creates anew the sensation of passion in my mind.

I want to teach this with an example. The following poem came to me after a lecture on the Ukrainian famine of 1932.

I see a fence not far
 Where lies an open field
And just beyond the field
 The simple warmth of bread.

My hand envelops air
 My eyes encompass naught
And yet my heart is full
 Of dreams I dare not have.

Each one requires a step
 I know I cannot take
For beyond the fence not far
 There lies an open field.

And just beyond the field
 The lies a sullen grave
Of one like me before
 Who sought my dream at night.

And perished there beside
 The open field beyond
And perished there below
 The open sky at night.

That covers like a grave
 The crime deep in the earth
And buries deep the sound
 Of death's last heated breath.

And when I think beyond
 The field that lies afar
I weigh against the stone
 Of death and hunger bare.

To die in one more step
 Or live in one more grave
The balance ne'er decides
 Til death inclines which way.

This particular poem is the distillation of a moment of intellection passion in which what I knew about the famine coalesced with what I felt about humanity into an expression about the value of ideas within life. Pressed into these lines is an understanding of Lenin's policies toward peasant Russia in the years following the Bolshevik overthrow of Tsarist Russia, of Stalin's policy of grain requisitioning, of Kopelev's testimony about his personal involvement in the grain collections of those years, of the people and history of Ukraine and their struggle for independence, and of the flight toward madness and desperation of which we are all capable if sufficiently hungry. I can see a poor peasant, weak with hunger, wondering whether or not another step is wise. I can see Stalin signing the decree to prohibit passage from famine-stricken areas. I can hear babies crying and feel their cries turn to silence as they die from hunger. I can see an old man crying alone at what

he did when he was too young and too ignorant to understand that Truth is deceptive.

What is this phenomenon of compression of image, memory, sentiment, and understanding? It is this poem. Another day it will be something else. Today, it is this poem. With other languages and other friends and other students, it is something else. It may one day be regret. It may one day be pride. It may one day be my dying breath passed on to generations. Today, it is this poem.

Perhaps the most halting and ponderous fact about poetry is that it can inspire emotion in so many different minds when minds are so different. I talked above about the uniqueness of each mind, and of the need to avoid insistence upon logical coherence that matches our own if we are to understand and befriend another person. Somehow, without its own mind, poetry seems to help us understand and befriend. Many people can read the same poem (or hear the same song) and feel a deep emotion which, when described aloud, often matches the emotions of others. Poetry disables the boundaries of logic that we use for parameters of acceptance or rejection and enables connectedness through a resonance of emotion.

Keats' poem about reading Chapman's Homer resonates within many people who have never read Homer, and who may have not ever read Keats. It does this by describing something that inspires emotion, which emotion in turn unites disparate readers. It seems that certain poetry has the ability to create emotion within various minds. This mutual acknowledgement of emotion in the face of a particular poem has the ability to produce agreement (friendship) between two

minds that would otherwise expose the logical inconsistencies of the other. In simpler terms, two people who agree that a poem is beautiful might overlook the other's illogic in areas outside their mutual agreement about beauty.

The great Spanish philosopher, Miguel de Unamuno, wrote in his book, The Tragic Sense of Life in Men and Nations: "Man, they say, is a reasoning animal. I do not know why he has not been defined as an affective or feeling animal. And yet what differentiates him from other animals is perhaps feeling rather than reason. I have seen a cat reason more often than laugh or weep." Unamuno was right: sadness and laughter are universal human experiences. So is passion. The passion of my mind is my call for friendship. It is my hope to overcome the echo of emptiness.