

Chapter One

The Profound Brain

The human prefrontal cortex is the pinnacle of biological development in the mammalian world, by far nature's crowning glory. It enables us to look at a tree and imagine a house, calculate the many steps involved in cutting down the tree, grinding it into beams and plywood and fastening the segments together to form a floor, walls, roof, and so on. (Consider for a moment how wondrous it is to see a tree and imagine a house.) The prefrontal cortex empowered us to go well beyond mere survival to become the only animals that range across the planet, scratching out vast farmlands, building great cities, and creating advanced civilization.

A relatively late addition to the species, the many specialties of the prefrontal cortex (PFC) include analysis, sensitivity to the perspectives of others, judgment, calculation, and regulation of impulses and emotions. It appraises environmental cues and organizes information to reconcile those appraisals with internal experience – thoughts, sensations, emotions, and impulses - in a process known as *reality-testing*. It then decides on behavior consistent with learned preferences, prejudices, and/or deeper values.

The strongest internal signals to which the PFC must apply reality-testing are emotions. Consistent regulation of emotions requires continually:

- Interpreting emotional signals (This is how I feel.)
- Testing emotional signals against environmental cues (There is something or someone around me making me feel this way or there isn't - it's a false alarm)

- Considering preferences (This is what I like)
- Weighing deeper values (This is most important to me).
- Deciding a course of action (This is what I will do.)

As I look out my office window, I feel a sense of peace within. My PFC tests the reality of that feeling and decides that it is accurate, because I'm looking at a beautiful lake, lined by lush trees. I decide to linger with the splendid lake view. But if the reality were different, e.g., there was a storm, my PFC would regulate the anticipated peaceful feeling with the more urgent information from the environment, and I would probably check the windows and ensure that nothing important is loose in the back yard. Or if the lake was peaceful, but I felt anxious or depressed when looking at it, the PFC would modulate my internal experience to match the beauty of the environmental cues, because reverence for natural beauty is a deep personal value of mine. In other words, I'd remove focus from my feelings, which would allow appreciation of my surroundings. As a result, I'd feel better.

The PFC provides a level of self-awareness and awareness of others unparalleled in the animal world, by virtue of what psychologists call, "theory of mind." That's the ability to ascribe mental states, such as beliefs, feelings, motives, and desires, to self and others. Perhaps most important, the PFC enhances our most humane qualities, such as appreciation and higher order compassion - sympathy for vulnerabilities we do not share. Thus we are able to create connections of value with other people, in which we both give and receive emotional support. As a byproduct of its combined processes, the PFC creates value and meaning in our lives.

Nature Saves the Best for Last

Not only did the PFC develop late in human history, it matures late in each individual, due to delayed myelination, which isn't complete until the second decade of life. Myelin is the

substance that lines nerve fibers to protect and insulate neurons. It aids in the quick and accurate transmission of electrical current carrying data from one nerve cell to the next. In other words, the PFC isn't functionally "online" much before the second decade of life. Hence it is called, the *Adult* brain.

As we mature, the Adult brain gradually takes over dominance from that which controls the world of toddlers - the primitive limbic system, a small region near the right temple, which is common to all mammals. (When you see a picture or model of the brain, you don't see the limbic system. The large cerebral cortex sits over it like a helmet with a slit in the middle, where the two major hemispheres of the brain join together.) Although the brain is always changing, the limbic system is pretty much fully developed on a structural level by age three. Hence it is called, the *Toddler* brain.

The primary survival function of the limbic system is to generate an alarm. But it has little reality-testing capability, i.e., it can't distinguish what is really happening in the environment from what is being thought, imagined, or dreamt. (That's how we can have intense emotions when nothing is happening around us, invoked by thoughts, memories, imagination, or dreams.) Reality-testing falls to the Adult brain.

From a survival standpoint, the gap in development between the Toddler brain and the regulatory Adult brain makes sense. The only way that toddlers can survive is to sound an alarm that will get adults to take care of them. There is little survival advantage in regulating the alarm as long as the underdeveloped PFC is incapable of figuring out how to make things better. Because they can do very little for themselves, toddlers must manipulate their caretakers into doing things for them. Later in toddlerhood they're able to cajole with sweetness and affection. (What is more adorable than a three year old?) But early on they coerce caretakers through their

greatest tool – the *alarm*, ranging from persistent whining to full blown temper tantrums. (We tolerate the harshness of the alarm in toddlers because they're so damned cute and lovable.) When comforted, instead of punished, for the experience of intense negative emotions, toddlers learn that they do not have to hide part of themselves to gain connection. When connection persists during positive and negative experience, i.e., when caretakers do not react to the alarm by either rejection or withdraw of affection, children learn gradually that they prefer the positive experience of the connection to their reflexive reaction of “No!-Mine!” They begin the lifelong task of balancing the *Grand Human Contradiction*.

The Grand Human Contradiction

Human beings are unique among animals in the need to balance two opposing drives. The drive to be autonomous – able to decide our own thoughts, imagination, creativity, feelings, and behavior - must compete with an equally strong drive to connect to others. We want to be free and independent, without feeling controlled. At the same time, we want to rely on significant others - and have them rely on us - for support and cooperation. Other social animals – those who live in groups and packs and form rudimentary emotional bonds – have relatively little or no discernible sense of individuality to assert and defend. Solitary animals are free and independent but do not form bonds with others that last beyond mother-infancy. Only humans struggle with powerful drives that pull us in opposite directions, where too much emotional investment in one impairs emotional investment in the other.

Competition between the drives for autonomy and connection is so important to human development that it emerges in full force in toddlerhood, which is why “the twos” can be so “terrible.” Toddlerhood is the first stage of development where children seem to realize how separate they are from their caretakers, as they become aware of emotional states that differ from

those of their parents. They had previously felt a kind of merging with caregivers, which provided a sense of security and comfort. The new realization of differences stirs excitement and curiosity but also endangers the comfort and security of the merged state. Now they must struggle with an inchoate sense of self prone to negative identity, i.e., they don't know who they are, but when aroused, they know who they're not – they're not whatever you want. Thus we have the favorite two words of the toddler: “Mine!” and “No!”

The increasing conflict with parents wrought by the drive for autonomy endangers the other powerful human drive - to connect, to value and be valued, to be comforted and to comfort. Hostility toward their parents, however short in duration, stirs uncomfortable feelings of guilt, shame, and anxiety, which fuel intense emotional distress – the classic temper tantrum. Internal emotional conflict is overwhelming for toddlers, because they have so little development in the regulatory part of their brains – the PFC.

But for many people, the emotional intensity of those early struggles to balance autonomy with connection forged strong neural pathways in the developing brain. Under stress, these fortified neural patterns – reinforced countless times over the years – hijack higher cognitive processes to validate its alarms and justify its impulsivity and overreactions, instead of modifying them with assessments of reality.

The Two Brains

The downside of late maturity in the Adult brain is that it comes online after the Toddler brain has already formed habits of coping with the alarms it raises, mostly through blame, denial, and avoidance. Many Adult brain interpretations and explanations under stress are dominated by those habits, which lowers the accuracy of its reality-testing and impairs its ability to make

viable judgments. To the extent that Toddler brain habits are reinforced in adulthood, the Adult confuses the alarm with reality, which makes Toddler brain alarms self-validating:

“If I’m angry at you, you must be doing something wrong. If I’m anxious, you must be threatening, rejecting, or manipulative.”

The result is self-fulfilling prophecy; other people are bound to react negatively to the negativity I transmit.

Fortunately, the Adult brain has the power to override Toddler brain habits and intentionally develop new ones that serve long-term best interests. Developing new habits is not an easy process, but it’s utterly necessary to *soaring above*. The first step is to change the way we regard Toddler brain alarms.

Negative Feelings are Signals, Not Reality

All alarm systems, negative feelings included, are calibrated to give false positives. You don’t want a smoke alarm that doesn’t go off until the house is in flames; you want it to go off when there’s just a little smoke, even if that means it occasionally gets triggered when someone is cooking or having a cigarette. The Toddler brain functions as if the smoke alarm *is* the fire, instead of a signal that a fire might possibly exist. That’s like hearing a smoke alarm and screaming, “We’re all going to die!” We actually come close to that level of error by assuming that Toddler brain emotional alarms represent certain reality.

The Adult brain reacts to smoke alarms by checking out the signal to see if there really is a fire or just something cooking. If there is a fire, the focus is on putting it out, rather than reacting in panic, trying to ignore it, or blaming it on someone. In the Adult brain we pay attention to feelings as important signals but don’t validate them as reality. Negative feelings

must be regulated with reality checks (is there really a fire) *and* plans for improvement (put out the fire).

Reality-testing, appraisal, calculations, judgment, self-regulation, and theory of mind are the tools of the Adult brain. But it is capable of so much more.

The Power to Create Value and Meaning

Value is a special kind of importance that goes beyond survival and biological needs. To value is to make people, things, and ideas important enough to *appreciate, nurture, and protect*. We create meaning and purpose in our lives by honoring the value we bestow on people, objects, concepts, behaviors, and some notion of spirituality.

A sunset has value if and only if we give it value, i.e., invest energy and effort to fully perceive it, which allows us to appreciate it. While it does nothing for the sunset if we value it, valuing it does wonders for us. The moment of value-creation makes us feel more vital, engaged, interested, appreciative - in short, more *alive*; life means more at the instant we create value, just as it means less when we're not creating value. Most positive emotion, passion, meaning, purpose, and conviction come from creating and protecting value, and much emptiness, aggression, and depression result from failure to create value.

Humans are unique among animals in our ability to create value and meaning. I call the innate drive to create value (and experience it), *core value*. It includes the instinctual self-worth that makes newborns value and attach to caregivers, with the expectation that their emotional needs will be met by their caregivers. Psychologists have known for a long time that babies come out of the womb seeking to be valued. If they are not valued at all, they fail to thrive – they stop metabolizing food and reject medicines on a cellular level. Infants severely deprived of valuing behavior from adults lose the will to live.

A more recent discovery in child development suggests that being valued is not enough. Infants also need their own expressions of value to be accepted by their caregivers. For example, the majority of mothers with debilitating depression are able to love their children and care for them. But many also feel uncomfortable receiving love from them. Infants express love by mirroring caregiver smiles, reaching out, cooing, and widening their eyes for more connection through eye contact. Some depressed mothers feel a need to turn away from these behaviors but not in deliberate attempts to reject their babies. A more subtle discomfort outside their awareness makes them turn away from the children they love.

To understand the experience of these depressed women, think of times when you've felt down or blue or even slightly depressed. At those times it was a little uncomfortable to hold eye contact in social contexts, even intimate ones. It was a bit harder than normal to receive compliments, praise, or affection, because, in some vague way, it seemed like you were getting something you didn't deserve and something you couldn't quite gather the energy to return. Oh, you knew intellectually that you deserved it, but the subtle, unconscious sense of unworthiness remained. That same sense of unworthiness, experienced as a vague discomfort, makes some depressed caregivers turn away from babies who try to express love. As a result, their infants, though cared for, also become depressed.

Virtually all our accomplishments in life occur through Adult brain value-creation and all our failures owe to devaluing (value-destruction), which typically occurs in the Toddler brain. Consider who is more likely to maintain healthy weight, the person who values health or the one who devalues her body? Who is more likely to succeed with fewer mistakes, the coach who values the skills and cohesiveness of the team or the one who devalues his players? Who will do better at work and feel more satisfied with it, the employee who values her contribution and co-

workers, or the one who devalues his job, peers, or managers? Who is more likely to thrive after intimate betrayal, the betrayed partner who values her wellbeing, her other relationships, her strengths and resilience, or the one who devalues his life and most of the people in it?

High value investment increases meaning, purpose, and vitality, with stronger motivations to create, build, improve, appreciate, connect, and protect. It literally boosts the immune system and makes us physically healthier. As value investment declines, so does vitality, motivation, meaning, purpose, and health. You begin to function more on automatic pilot with less interest and positive energy. If it declines too far, you begin to feel numb or depressed. If it declines drastically, you lose the will to live.

Anthropologists report that the earliest humans decorated rocks to make them special. More important, they made themselves special by creating and appreciating the decorated rocks. We become more valuable as we create and appreciate value, and we become less valuable (able to value) as we devalue our surroundings and the people in them.

While value investment provides a greater sense of being alive; value-destruction diminishes the will to live. In the long run, if you devalue more than you value, your life will be pretty bad, even if a lot of good things happen to you. I've had considerable evidence of this since my frequent media appearances have attracted some rich, famous, and powerful clients, whose lives are filled with good fortune. Yet it's amazing how creative they are at finding ways to make themselves miserable, simply because they choose to devalue more than they value. On the other side of the coin, if you value more than you devalue, your life will be good, even if a lot of bad things happen. My primary example of this is a mother I knew who had lost both her teenage sons. Within a year of each other, one son died in an accident, and the other was killed while defending a pre-teen girl, whom he didn't know, from a bully's unwanted advances. Out of

nowhere, this woman's only children were taken from her. Yet she turned the deaths of her sons into inspiration for other members of the community through her impassioned advocacy for various youth groups. She was the most charismatic and genuine person I've ever met, because, despite the enormity of her misfortunes, she valued more than she devalued.

Value vs. Preferences and Pleasure

It's possible to live without much value in your life. But such a life, as Hamlet would put it, would be "dull, flat, and unprofitable." Acting consistently on the uniquely human drive to create and protect value provides a sense of meaning and purpose to life that endures well beyond the momentary satisfactions of pleasure, enjoyment, or meeting one's preferences. For example, I love ice cream, but it provides no meaning or purpose to my life. I love my family, who collectively and individually provide enormous meaning and purpose to my life. Although I love the momentary pleasure of ice cream, I never feel guilty or ashamed when I don't eat it. (In fact, eating too much causes guilt and shame, as overindulging any preference violates a deeper value of health and wellbeing.) But I certainly feel guilty and ashamed when I fail to nurture, appreciate, and protect my family. Guilt and shame keep us true to our deeper values. Yet we subvert this vital function with the toddler coping mechanisms of blame, denial, and avoidance, which undermines the ability to create value and meaning in life and makes us more likely to confuse preferences with value.

Toddlers experience pleasure, and they certainly have strong preferences. But creating value, beyond rudimentary emotional bonds, is something we need to do in the Adult brain.

Psychotherapy of Value

It was clear as we neared the end of our first therapy session that Tom had worked hard to cultivate an ironic sense of humor. So I expected some witty remark to try to lighten the tone as

he looked down at his fingers, toying with the loose fabric of the chair in my office. Still, I was in no way prepared for what he said on that summer afternoon some 20 years ago.

"I guess I'm just another middle-aged guy looking for a rainbow," he sighed.

Maybe it was the shadowy tone of voice or the thinness of his smile immediately after he said it. For whatever reason, Tom's little statement completely disarmed my empirically-based symptom-reduction training that had already yielded a treatment strategy. Suddenly I realized that the ebb and flow of his emotions were not merely symptoms crying out for therapy, specifically teaching him how to use the power of the Adult brain to outgrow the hurt and change the coping habits of the Toddler brain. Knowing that you can't enjoy a country drive if the sparkplugs in your car are misaligned, gives you no idea of what it takes to appreciate the beautiful scenery all along the drive. Tom did not simply need help with his sparkplugs.

My practice, while highly successful in reducing symptoms at one-year follow-up, was, before Tom, about sparkplugs, having to do with emotion regulation skills - making the emotional system stronger and more flexible. This is important, to be sure. But a more profound kind of importance is about value. We experience value as *self-enhancement* – becoming better - through the appreciation of someone or something and through investment of time, energy, effort, and sacrifice - above and beyond sparkplug considerations. Doodling is sparkplug (nervous-discharge); drawing is value. Using the stars as a compass or calendar is sparkplug; appreciating their beauty is value. Having sex is of spark plug importance; making love is about value. Influencing the behavior of loved ones is sparkplug; compassion for them is value.

It became clear to me on that afternoon with Tom that the services I offered had to help people create and invest more value in their lives, i.e., to get the fullest benefits of the Adult brain. I had to do more than help Tom weather the storm; I had to show him how to appreciate

whatever rainbow he found, and, in a real sense, to become the rainbow -- as T. S. Eliot would have it - you become the music while the music lasts. In marriage, for instance, if you do not become the love, the love will not last.

The rest of this book is committed to using the full power of the Adult brain to create value, meaning, and purpose.