

THE NEUROSCIENCE OF PEACE

*Creating Neural Pathways for Collaboration to Advance
the Human Condition*

BY ROBYN SHORT



MERRIAM-WEBSTER DEFINES EVOLUTION AS: “a set of prescribed movements, a process of change in a certain direction; the action or instance of forming; a process of continuous change from a lower, simple, or worse to a higher, more complex, or better state; the process of working out or developing; the historical development of a biological group (as a race or species).” Humans have existed on Earth and have been in a process of continuous change for more than 200,000 years, and the modern form of humans has been evolving for more than 50,000.

This process of evolution and continuous change has largely been a result of humans adapting to changes in the environment. In other words, external forces served as the catalyst for human evolution. Humans changed because the environment around them changed. Continuous change served as a mechanism for survival — adapt to the evolving environment or risk extinction. This paper argues that for the first time in human history, humans have the knowledge, skills and intellectual capability to choose the destiny of humanity by intentionally shaping human evolution rather than reactively evolving to changes in our environment. Internal forces, rather than external forces exclusively, can now serve as the catalyst of human evolution.

The twentieth and twenty-first centuries ushered in an unprecedented understanding of the human brain and with this understanding of the brain came a deeper understanding of human behavior: what shapes how an individual thinks and, therefore, behaves; what shapes "group think" and, therefore, how the individuals that make up a group behave. Advances in neuroscience demonstrate that humans are not puppets living under the mysterious control of some unknown force, but rather we are that force and have great power in shaping the future of it. To understand how humans can intentionally shape the future of humanity requires an understanding of the brain — the anatomy of it and how it works — so that we may be deliberate in our thinking and actions and positively advance the human condition.

THE ANATOMY OF THE BRAIN

The brain is an exceptionally sophisticated organ responsible for regulating thoughts, memory — the interconnected relationship between the two — judgment, personal identity and other aspects collectively referred to as “the mind.” However, the brain’s responsibilities do not stop there. It also regulates all aspects of the body — voluntary and involuntary. It is both the birthplace of hopes and dreams and the engine that allows for the creation and realization of them. The brain and spinal cord comprise the nervous system — the hub for processing and communicating the information that controls all aspects of the human body.

The forebrain, midbrain and hindbrain are the three main parts that comprise the brain. The cerebrum, which comprises the left and right hemispheres of the brain, the brain stem, which is attached to the spinal cord, and the cerebellum, which is located below and behind the cerebral hemispheres are important structures within the forebrain, midbrain and hindbrain.

The Cerebrum

The cerebrum is the largest section of the brain. This portion of the brain plays a critical role in decision-making. Understanding the cerebrum and how it works is paramount to the intentional shaping of the future of humanity. From an evolutionary perspective, this is a highly developed area of the brain and can be thought of as the brain’s CEO. The cerebrum is where complex functions such as action and thought occur. Housed within the cerebrum are the following:

- The frontal lobe is often referred to as the “executive center” of the brain because it controls cognition, including speech, planning and problem-solving. It contains an important area of the brain called the prefrontal cortex, which is responsible for foreseeing consequences of actions, exercising self-restraint and developing moral and ethical standards.
- The parietal lobe controls sensation (i.e., touch, pressure and ascertaining size and shape).
- The temporal lobe mediates visual and verbal memory as well as smell.

- The occipital lobe controls visual reception and the recognition of both shapes and colors.

Each of these lobes are divided by sulci — fissures that form boundaries between each. The cerebrum is symmetrical in structure and is divided into left and right hemispheres. Generally, the left hemisphere is responsible for functions such as creativity, and the right hemisphere is responsible for functions such as logic and spatial perception. Though each side has distinct areas of control, they are interdependent of one another. Every human has a dominant hemisphere that controls language, mathematical and analytical functions, as well as whether that person is left-handed or right-handed. The non-dominant hemisphere controls simple spatial concepts, facial recognition, some auditory functions and some emotional functions. Nerve fibers send messages to the body, crossing over the medulla; therefore, the left hemisphere controls the right side of the body and the right hemisphere controls the left side of the body.

The limbic lobe is comprised of adjacent portions of the frontal, parietal and temporal lobes that surround the corpus collosum and is involved in both involuntary and voluntary behavioral activities, receiving input from the thalamic nuclei that are connected with parts of the hypothalamus and with the hippocampal formation.

Within the cerebral hemispheres exists the basal ganglia — large grey masses of nerve cells called nuclei. There are four basal ganglia:

1. The caudate
2. The putamen
3. The globus pallidus
4. The amygdala

From an evolutionary perspective, the amygdala is the oldest of the basal ganglia and is almost exclusively concerned with survival. The amygdala controls the “fight, flight and freeze” response designed to ensure the body has the hormonal support necessary to respond when the brain perceives a life-threatening stimulus. The amygdala is an almond-shaped nucleus located

THE AMYGDALA IS THE OLDEST OF THE BASAL GANGLIA AND IS ALMOST EXCLUSIVELY CONCERNED WITH SURVIVAL.

under the corpus striatum in medial parts of the temporal lobe. While the amygdala does receive olfactory input as a function of its survival responsibilities, it plays no role in olfactory perception.

Beneath the cerebrum and above the brain stem is the diencephalon. This portion of the brain is comprised of the epithalamus, thalamus, hypothalamus (responsible for controlling the sex drive, pleasure, pain, hunger, thirst, blood pressure, body temperature and other body functions such as the emission of oxytocin) and the subthalamus. The diencephalon functions as a relay system between incoming sensory input and other areas of the brain and is also a location for interaction between the central nervous system and endocrine system. The diencephalon has a role in the limbic system — the area of the brain located below the cerebrum and in front of the cerebellum — which is responsible for hereditary traits, emotions and memories. The limbic system also has a role in regulating basic body functions.

The thalamus plays an important role in the relay and distribution of most sensory and motor signals to specific regions of the cerebral cortex. The thalamus segregates and organizes the sensory signals, which are generated in numerous receptors and projected via intricate pathways to specific relay nuclei. Just below the thalamus lies the hypothalamus, which controls the endocrine functions such as the secretion of oxytocin — an important hormone associated with bonding, developing trust and forming human attachments — and vasopressin, a hormone that allows for the muscle contractions of the reproductive and digestive systems.

The Brain Stem

While the cerebrum is the engine of thinking and emotions, the brain stem is the engine for basic body functions. It is the area of the brain that works “behind the scenes” and on autopilot, keeping the body breathing,

pumping blood and managing critical functions that keep the body alive. The brain stem includes:

- The midbrain — controls visual and auditory systems
- The pons — controls arousal and respiration as well as serves as relay system for the cerebrum and cerebellum
- The reticular activating system — a group of nerves concerned with consciousness and alertness

The Cerebellum

The cerebellum, sometimes referred to as the “little brain,” regulates and coordinates nerve impulses between the brain and the body’s muscles. Playing no role in sensory perception, the cerebellum is concerned with influencing the body’s ability to maintain equilibrium, muscle tone and the coordination of voluntary motor control.

HOW THE BRAIN WORKS

Communication within the nervous system largely occurs between independent cells — one cell transferring information to another. There are two types of cells: neurons and neuroglia (also referred to as glial) cells. The neurons are the task masters of the brain while the glial cells work as the “body guards” for the neurons. The brain consists of more than 10 billion neurons all of which have their own identities expressed in complex networks of unique relationships with other neurons. Each of the more than 10 billion neurons has its own function, depending on its specific function and location and the interdependent relationships relative to its function and brain location.

Neurons are the brain’s carriers of information. Much like a cargo ship transports goods from one port to another, neurons carry data from one area of the brain to another. All actions — voluntary and involuntary, conscious and unconscious — derive from the transmission of information from one neuron to another, a process called neurotransmission.

A neuron consists of a cell body that has branching structures called dendrites. These branching structures

reach out of the cell body in the same way that tree branches reach out from the tree trunk. The dendrites receive information from nearby neurons in the form of impulses and push that information through the cell body in which they are associated. The neuron also has an axon — tube-like fiber with its own branching system — that carries nerve impulses away from the cell body to the dendrites of nearby neurons. The axon of one neuron reaches out to the dendrite of another neuron, but they do not actually transport information by touching. Rather, there is a space between the two called a synapse. Neurons translate their messages into presynaptic and postsynaptic chemical messages. The chemical floats out of the presynaptic neuron and is caught by the postsynaptic. The chemical message fits into the receptor like a key in a lock and that is where the message is translated. These chemical messengers are called neurotransmitters. The neurotransmitters float across the synapse to have their messages heard in the second neuron. The neurotransmitter is either recycled back into the presynaptic neuron or it can be dumped into the synapse and flushed out into the cerebral spinal fluid, which pushes it into the blood and then it is flushed out of the body via urine.

Neurotransmitters Involved in Human Connectivity

Extraordinarily complex and highly intricate, the brain has developed numerous chemicals, including hormones and neurotransmitters to strengthen or weaken responses and to influence how information is organized. The following chemicals are particularly relevant to human connectivity:

- **Adrenalin** — triggers the fight / flight / freeze response
- **Testosterone** — stimulates aggression
- **Oxytocin** — instills trust, increases loyalty and promotes attachment and bonding
- **Estrogen** — triggers the release of oxytocin
- **Endorphins** — reinforces collaborative experiences with pleasure
- **Dopamine** — generates a reward response and fortifies addiction
- **Serotonin** — regulates moods

- **Phenylethylamine** — induces excitement and anticipation
- **Vasopressin** — encourages bonding in males

Each of the above mentioned chemicals influence how the brain responds to conflict and attachment, yet humans are not enslaved to these chemicals. There is choice involved. How a person chooses to respond to a conflict situation or an opportunity for human connection will inform the brain on the appropriate chemical response and how much of that chemical is necessary to achieve the desired response.

Neural Pathways

Because all actions and functions of the human mind and body are the result of neurotransmissions, the brain has developed efficiencies in the form of neural pathways. Much like a well worn path is created by constant travel, neural pathways develop within brain structures that allow certain actions to go on autopilot. For example, simple activities such as tying one's shoe, driving a car, making coffee and even more complex tasks that are done routinely such as operating complicated machinery are all actions the brain has developed sophisticated and "well worn" pathways for, allowing a person to complete these tasks without giving any conscious thought to them. These neural pathways free the brain to give more energy and focus to other neural networks that are not as well formed. For example, while making coffee, one may be thinking about a complicated task that needs to be completed later in the day that requires solutions that have yet to be determined. The solutions-focused thinking involves the connecting (wiring and firing) of numerous neurons as information is delivered to various areas of the brain

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mentioned in the brain overview that are necessary to accomplish the task. One neural network is working on autopilot while another is actively forming.

It is easy to understand this in relation to mundane tasks such as tying one's shoes or making coffee, but the same "autopilot" concept holds true to belief systems about one's self, one's family of origin, one's community and the belief systems associated with politics, religion, the environment, etc. The brain does not discriminate against right and wrong, moral and immoral, healthy and unhealthy, productive and unproductive, collaborative and competitive. The brain is a brilliant order-taking machine that simply creates what it is asked to create, and it is very efficient about creating what it is asked most frequently to create. This is great news when a person's neural pathways are life sustaining, promote positive human connection, develop and perpetuate trust, bonding and attachment. But when the neural pathways are founded in self-interest at the expense of others, zero-sum expectations regarding resources, fear-based responses to differing ideologies and belief systems, then these efficiencies the brain so brilliantly developed can become destructive to self, the community and, ultimately, humanity.

CREATING NEURAL PATHWAYS FOR PEACE AND COLLABORATION

In order to consciously create neural pathways designed for peace, collaboration and a mindset of sustainability of all life, one must have an understanding of the anatomy of the brain, how the brain functions and the key areas of the brain that help to form specific emotions, feelings and behaviors, which is why the previous overview of the brain is essential. In order to change something, one must understand what is being tasked to change.

The human brain is wired for survival. To that point, it is designed for two main functions: 1) keep the individual alive; and 2) keep the species alive. All areas of the brain support one another to create opportunities for the human and the human species to remain in existence.

Emotions serve as an important evolutionary tool to ensure survival, which is why the brain experiences two primary emotions: fear and love. All feelings, at their

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core, are founded in one of these two emotions. When one of these two emotions is triggered, the nervous system responds with chemicals that create numerous feelings. And these feelings inform human behavior.

From a neuroscience perspective, there is a distinct difference between emotions and feelings that warrant a brief explanation. Emotions are physiological and can be objectively measured by blood flow, brain activity, facial micro-expressions and body language. Feelings are how the individual expresses emotions. Feelings are based off memory associations and reactions the individual has with that emotion. Feelings are subjective and are influenced by personal experiences, beliefs, personal temperament and memories.

The emotion of fear may be expressed in the following feelings:

- Anger
- Hatred
- Disgust
- Anxiety
- Panic

While the emotion of love may be expressed by these feelings:

- Calm
- Happy

- Comfort
- Connected
- Safety

Mirror neurons play an important role in the expression of emotions. Mirror neurons are a class of brain cells that fire when an individual performs an action and also when the individual observes someone else performing the same action. Because connectivity is paramount to human survival, humans are intensely social beings. Mirror neurons send messages to the limbic system allowing a person to experience what others feel. They allow for the deepening of prosocial behavior because they allow individuals to have intensely shared emotional experiences. For example, watching someone perform deeply emotional music inspires a shared emotional experience. Observing an individual crying often brings tears to the eyes of the observer. Watching someone experiencing a panic attack causes panic in the observer. Mirror neurons are the birthplace of empathy and suggest that deep within the human architecture is the framework for connectivity or “togetherness.” There would be no point of a mirror neuron system if human’s were designed to live in isolation from one another.

The Amygdala

As mentioned previously, the amygdala is, from an evolutionary perspective, the oldest of the basal ganglia and is almost exclusively concerned with survival. Located deep within the anterior inferior temporal lobe, it receives information from the sensory regions of the thalamus and the cortex as well as from the hippocampus and prefrontal cortex. The amygdala plays a critical role in the survival of the human species because it is the guardian of the fear emotion and provides the body with the chemicals — most notably adrenaline — to respond to life-threatening stimuli. The connections from the amygdala to the cortex can influence the attention the brain gives to a perceived threat, which is influenced by both the perception of the current stimuli as well as memories of previous perceptions of danger. The amygdala also has indirect influence over the cortex through its connections to the attention system in the brainstem, which has other parts that trigger the cascade of physiological reactions

associated with fear that send feedback to the brain. The “in the moment” feedback merges with the feedback associated with working memory to produce the unique feelings associated with an emotion.

When the brain receives a sensory stimulus that informs it that danger is present or pending, that information is routed to the thalamus. The thalamus routes it over two parallel pathways: the thalamo-amygdala pathway (the “short route”) and the thalamo-cortico-amygdala pathway (the “long route”). The thalamo-amygdala pathway conveys a quick, high-level impression of the situation that does not involve cognition. This pathway activates the amygdala and generates an emotional response before any perceptual integration has had time to occur. However, the information that travels through the thalamo-cortico-amygdala pathway is processed in the cortex and informs the amygdala on the validity of the threat. The assessment requires various levels of critical processing, including a comparison of explicit memory by means of the hippocampus, which communicates closely with the amygdala. The hippocampus supports explicit memory and holds information about the dangerousness of a situation or object. The hippocampus is especially sensitive to context associated with behaviors that have been negatively perceived. The hippocampus is responsible for a stimulus (and the objects and conditions surrounding the stimulus) becoming a long-term source of conditioned fear. This perception of imminent danger activates the amygdala. The parallel operation of our explicit (hippocampal) and implicit (amygdalic) memory systems explains why traumas experienced very early in childhood are often not remembered. The hippocampus is not yet fully developed during childhood, but the the amygdala is well formed and ready to record unconscious memories. Early childhood traumas can disturb the mental and behavioral functions of adults by providing inaccurate data upon which to act. This data, whether accurate or not, plays a critical role in the development of neural pathways — pathways that shape behavior.

In a truly life-threatening situation, the amygdala can be a real life-saver. However, as noted, memory can provide false data. Without intervention from

the prefrontal cortex — the executive center of the brain tasked with logic and analytical thinking — the amygdala can cause the individual to behave in self-destructive behaviors. For example, if a child is lost at the park and cannot find his parent, he may experience an intense feeling of panic that causes him to freeze in one place. The chemicals flooding his body may literally have rendered him frozen in fear. This can be a very pro-survival response to danger because it might afford the parent an enhanced opportunity to find the child. Fast forward 20 years, that fear may have become so profound to the child that it was imprinted in the brain as “parks are dangerous.” However, the person is incapable of remembering the source of the fear because of his underdeveloped hippocampus at the time of the event. The memory can persist for decades, or perhaps throughout his life. He may feel a great sense of discomfort, or even full blown panic attacks, when he is in a park, near a park or drives past a park. This fear may cause great disruption in his day-to-day life as he seeks out every opportunity to avoid what might, as an adult, be packaged as “an aversion to nature.” This is an oversimplified example of how the amygdala can provide a false sense of danger to the brain that, without intervention, can cause self-destructive behavior. Apply this same thinking to false data about individuals of other cultures, ethnicities, belief systems, etc. and it quickly becomes apparent how self-destructive neural pathways can develop and perpetuate behavior that is self-destructive to both individuals and the communities in which they live.

EARLY CHILDHOOD TRAUMAS CAN DISTURB THE MENTAL AND BEHAVIORAL FUNCTIONS OF ADULTS BY PROVIDING INACCURATE DATA UPON WHICH TO ACT. THIS DATA, WHETHER ACCURATE OR NOT, PLAYS A CRITICAL ROLE IN THE DEVELOPMENT OF NEURAL PATHWAYS — PATHWAYS THAT SHAPE BEHAVIOR.

This process of feeling overtaken by fear is referred to as an “amygdala hijack” — when the amygdala is engaged, and the fight / flight / freeze coping mechanism is activated. In a truly life-threatening situation, the amygdala hijack may save a person’s life. But when a person is hijacked inappropriately, there are techniques for engaging the prefrontal cortex and fostering cognition to inform productive behavior. The following techniques can help a person disengage the amygdala and re-engage the prefrontal cortex:

- **Breathe:** Oxygen increases the blood flow to the brain. It also engages the prefrontal cortex.
- **Write:** Whether writing in a journal or simply grabbing a small piece of paper and initiating the process of writing, this activity requires the engagement of the prefrontal cortex.
- **Get curious:** Explore the “facts on the street.” Describe exactly what is happening. What can be recognized (seen, heard, smelled) and labeled. Curiosity is a function of the prefrontal cortex.
- **Label feelings:** Recognize the feeling that is being experienced, and give it a name. The moment a person recognizes the feeling, it creates a shift that begins to disengage the amygdala and engage the prefrontal cortex.
- **Think positively:** Interrupt negative, self-destructive thoughts with positive thoughts that evoke positive feelings. This creates a disruption for the amygdala.
- **Change locations:** Removing one’s self from the environment that is causing the amygdala to become activated allows the brain the space to process what occurred and to apply cognitive thinking to the situation that may help the individual to reframe the situation.

Like the well-worn path in the grass, continued use of the path hardens the soil and more clearly defines the pathway. Neural pathways are the same. The more an individual perpetuates a thought or belief system, the more developed the neural pathway becomes. In other words, the more “true” it becomes to the individual. And, just like the well-worn path, a lack of use results

in new growth covering the previous pathway, which means the path through the grass is not destined to always be a path. A lack of wear and tear allows it to take on a new shape. The same holds true about belief systems. Intervention allows a new pathway to take shape. New information changes previously held onto belief systems and forges new pathways that inform different behaviors. Neuroscience has brought to the forefront of human possibility the awareness that the past does not have to shape the future. New neural networks can be developed at any time by seeking out and consuming new information, then acting upon that new information in order to allow pathways for different behavior to emerge.

NEUROSCIENCE HAS BROUGHT TO THE FOREFRONT OF HUMAN POSSIBILITY THE AWARENESS THAT THE PAST DOES NOT HAVE TO SHAPE THE FUTURE.

In his book, *The Dance of Conflict: Explorations in Mediation, Dialogue and Conflict Resolution Systems Design*, author Kenneth Cloke surfaces the poignant reality that, “While people in conflict commonly make reference to the facts, behaviors, feelings, personalities or events surrounding of their conflicts, for the most part they ignore the deeper reality that these experiences are all processed and regulated by their nervous systems, and are therefore initiated, resolved, transformed and transcended by their brains.” In other words, individuals create, process and experience conflict and are, therefore, solely responsibly and completely capable of processing information differently. The brain can remain mired in conflict or it can transcend it.

The Hypothalamus

Just as the amygdala is the guardian of the emotion of fear and activates the “fight or flight” response to perceived threats, the hypothalamus is associated with oxytocin — the prosocial, “tend and befriend” hormone that encourages trust, increases loyalty and promotes attachment and bonding. Oxytocin is primarily in the hypothalamus. From there, it is either released into the

blood stream via the pituitary gland or to other parts of the brain and spinal cord where it attaches to oxytocin receptors thereby influencing behavior and physiology. While the fundamental features of living are contingent upon the activities of the entire brain, the hypothalamus plays an important role in maintaining the body’s comfort by maintaining homeostasis — the maintenance of hormone emission, body temperature, blood pressure, heart rate, water and electrolyte levels.

Research shows that oxytocin may have a dual purpose and dual pathways. When an individual is experiencing periods of low stress, oxytocin physiologically reinforces good social bonds with feelings of well-being. However, when a person is experiencing periods of high stress and high levels of the stress hormone cortisol are present, oxytocin can encourage prosocial behavior such as seeking out the positive attention and affection of others.

The hormone oxytocin — and the catalysts for its emission in the body — supports the notion that the human brain is wired for connectivity. Actual or anticipated social contact can cause bursts of oxytocin emission. However, the brain may also respond to the stress associated with periods of social deficits with bursts of oxytocin emissions as well in order to produce physiological changes that then encourage the individual to behave in more prosocial ways — i.e., a physiological nudge to make positive contact with other people. In this manner, oxytocin actually affords the potentially stressful experiences to become an opportunity for expressing joy and love.

OXYTOCIN ACTUALLY AFFORDS POTENTIALLY STRESSFUL EXPERIENCES TO BECOME AN OPPORTUNITY FOR EXPRESSING JOY AND LOVE.

Research has found oxytocin to be an incredible resource for powerfully increasing trust. Numerous studies have found that participants given pretend money who are then encouraged to invest that money

with a stranger will, on average, invest only one-fourth to one-third of their money. However, after a few sniffs of oxytocin, their trust levels increase significantly and their investment amount jumps to 80 percent or more. Here is a summary from the original study:

Human beings routinely help strangers at costs to themselves. Sometimes the help offered is generous — offering more than the other expects. The proximate mechanisms supporting generosity are not well understood, but several lines of research suggest a role for empathy. In this study, participants were infused with 40 IU oxytocin (OT) or placebo and engaged in a blinded, one-shot decision on how to split a sum of money with a stranger that could be rejected. Those on OT were 80 percent more generous than those given a placebo. OT had no effect on a unilateral monetary transfer task dissociating generosity from altruism. OT and altruism together predicted almost half the interpersonal variation in generosity. Notably, OT had twofold larger impact on generosity compared to altruism. This indicates that generosity is associated with both altruism as well as an emotional identification with another person.

FROM AN EVOLUTIONARY PERSPECTIVE, IT IS BENEFICIAL TO EXERCISE EMPATHY IN RELATIONSHIP TO OTHERS BECAUSE BOTH THE ACT AND THE HORMONE SERVE TO STRENGTHEN SOCIAL BONDS.

There is a reciprocal relation between oxytocin and empathy: Oxytocin increases an individual's capacity for empathy, and empathy increases the emission of oxytocin in the body. Therefore, from an evolutionary perspective, it is beneficial to exercise empathy in

relationship to others because both the act and the hormone serve to strengthen social bonds.

According to Danial Goleman, author of *Emotional Intelligence: Why It Can Make You Smarter Than IQ*, explains the three types of empathy in an article posted to his website:

- 1. Cognitive empathy:** Cognitive empathy is knowing how another person feels, or "perspective-taking." This form of empathy is highly effective at motivating people to apply their best efforts. While at first blush all forms of empathy may appear to be prosocial, cognitive empathy does have a dark side. Interrogators, narcissists and sociopaths (individuals who are purely self-motivated) can be masters at this form of empathy and utilize it for purely selfish reasons.
- 2. Emotional empathy:** Emotional empathy is truly feeling the emotion along with another individual. Emotional empathy is due to the activation of mirror neurons, which help individuals to be well-attuned to another person's inner emotional world. While emotional empathy does promote bonding and attachment and can positively affect trust and loyalty, one downside is that it can become overwhelming to the person extending empathy, causing burnout and then ultimately detachment as a coping mechanism. Emotional empathy must be paired with a healthy ability to self-regulate one's own emotions and high attention to self-care.
- 3. Empathetic empathy:** Empathetic empathy, also referred to as empathic or compassionate empathy, involves the capability of understanding a person's predicament and feeling with them along with the willingness to help if help is necessary. This form of empathy is what the emotion love looks like in action.

NEUROSCIENCE AND HUMAN EVOLUTION: ADVANCING THE HUMAN CONDITION

An intentional and widespread focus on increasing empathy and collaboration — both interpersonally and within institutional structures such as schools, corporations and governmental agencies and governmental systems — is paramount to the intentional shift in the future of

humanity. For the first time in human history, individuals are able to lay claim to a peaceful future through collaborative means rather than evolving in response to changes in the environment while competing, often violently, for resources.

Knowledge is the key to change. In order to change the human brain, the human brain must be understood by the masses, and the power each individual person has to affect great change within his or her own mind must be understood by all — or at least by enough individuals to create the tipping point effect.

Strategies for creating neural pathways for peace and collaboration include:

- Creating change within one's self
- Learning to cultivate empathy
- Learning and implementing conflict resolution techniques

All of the above stimulate and perpetuate new neural pathways in the brain.

CREATE CHANGE WITHIN ONESELF

To transcend adversaries in the external world, one must first transcend the adversaries within one's internal world. To do this requires implementing practices and tactics designed to develop new, prosocial neural networks that support peaceful resolution for conflict and enhance the release of oxytocin.

In his book, *Conflict Revolution: Designing Preventative Solutions for Chronic Social, Economic and Political Conflicts*, mediator and peace builder Kenneth Cloke advises on many small, practical and deeply personal ways to every person can participate in systemic change, by being the very change they wish to see in the world (the following is reprinted with permission of the publisher):

- Be open, honest and willing to speak the unspeakable; to surface undeclared rules, secret expectations and covert behaviors
- Take time to listen closely and empathetically,

“BE OF LOVE A LITTLE MORE CAREFUL THAN OF ANYTHING.” — E. E. CUMMINGS

especially to those who disagree with us

- Act with unconditional integrity and respect, treating others as we would want them to treat us without requiring anything in return
- Increase our emotional, cultural, systems, process and relational sensitivity, along with our general awareness, intelligence, capacity and skills
- Invite in people and groups that have not been included before, especially those that don't already have the answers
- Be willing to ask “silly,” “ridiculous” and “stupid” questions
- Change the ways we think about success and failure
- Give more generously of ourselves and both offer and invite open, honest and empathetic feedback
- Offer feedback, evaluation and assessment using heterarchical, collaborative and democratic methods
- If it isn't working, whatever it is, stop the process, call attention to what isn't working and initiate a collaborative effort to improve it
- Model the behaviors we value and believe in
- Engage in unilateral acts of love and kindness without any expectation of reciprocity or demands that others do the same
- Be prepared to spend time with others, to apologize, forgive and surrender something important, in order to build trust and create a whole that is greater than the sum of its parts

What is evident in each of the above tactics for creating self-change is, to quote E. E. Cummings, to “Be of love a little more careful than of anything.”

In addition to the tactics listed above, meditation is also a powerful form of self change and achieving inner peace so that one may be an agent of peace outwardly. Research shows that mindfulness-based practices are effective in improving social relationships, increase the

body's immune system, allow for more positive and effective responses to stress and optimize emotional regulation.

Mindfulness training is a particularly effective method for achieving inner peace because it involves the practice of "re-perceiving." Mindfulness practices train the individual to become an observer to his or her life story by developing awareness of the personal narrative much like a mirror reflects an image without being immersed in it. The ability to observe one's narrative brings about a profound shift in the relationship one has with his or her thoughts, emotions and feelings, resulting in greater clarity, perspective and objectivity. The profound shift that is experienced is, in part, due to the fact that the brain structure in individuals who meditate quite literally changes. The area of the insula, which involves interoceptive and visceral awareness and may also play a role in the process of awareness, shows marked difference in individuals who meditate as compared to those who do not.

Another important reason mindfulness practices enhance feelings of inner peace is because they involve the teaching of acceptance. An important component of meditation and other mindfulness practices is to accept physical sensations, emotions and feelings, thought and judgment as they are experienced. No meaning is placed on them, they move through the meditator without consideration. Studies show that acceptance is an important element to experiencing inner peace.

There are numerous forms of mindfulness practices, including numerous varieties of sitting and walking meditations, yoga, journaling and prayer, all of which serve as powerful tools for creating and sustaining neural pathways for peace and collaboration.

Cultivate Empathy

While empathy is something some people experience and express in higher degrees than others, it is something all people can cultivate and practice in daily life. The following are just a few techniques to help cultivate empathy.

- **Active listening:** Active listening is a technique in which the listener relays back to the speaker what he or she heard the speaker say by way of re-stating or paraphrasing what was heard in his or her own words. This serves a dual purpose of confirming the listener correctly heard and understood the speaker to say and also provides the opportunity to verify that it was interpreted accurately. This practice allows the speaker to feel heard and understood and the listener the ability to gain important insight into the emotions and feelings of the speaker, humanizing both parties in the process.
- **Be fully present:** To be fully present means that all focus is on what is happening in the here and now. The individual's intention is focused on noticing what is happening and not trying to control what it is happening. It is being present to the words being spoken, the emotions being experienced, the feelings being expressed without analyzing, judging or placing attachment to them.
- **Take personal interest:** To take personal interest in another person or in a situation is the epitome of empathetic empathy. Taking a personal interest involves the willingness to be personally invested in the solution assuming responsibility or joint responsibility in doing so.

MINDFULNESS PRACTICES ENHANCE FEELINGS OF INNER PEACE BECAUSE THEY INVOLVE THE TEACHING OF ACCEPTANCE.

Embrace Conflict Resolution Techniques

Conflict provides rich and potentially rewarding opportunities to gain a deeper understandings of one's self, the community in which one lives and the world. Understanding how to navigate conflict in such a way that is nonviolent and productive is critical to advancing the human condition. The following are just a few conflict resolution techniques that hold great promise in advancing the human condition as it relates to the nonviolent, interest-based resolution of human conflict.

- **Mediation:** Mediation is a form of conflict resolution that invites an impartial third party into a conflict to facilitate a mutual agreement between or amongst all parties. Mediation is designed to empower the parties who participated in the creation of a conflict to also be the authors of its resolution. Interest-based mediation is designed to address the foundational causes of conflict, optimizing collaboration and agreement amongst all involved.
- **Restorative justice:** Restorative justice models seek to repair the harm that has been done to an individual or individuals as a result of another person's or persons' behavior(s). Restorative justice models bring those who have been harmed by another's actions into the a restorative process designed to reclaim as much normalcy as possible for the person who has been harmed and allows the person who created the harm to take ownership and responsibility in the repair.
- **Healing dialogue circles:** Healing dialogue circles are a safe space created for participants to talk about what is important to them. Dialogue circles are an opportunity to respect and share in a journey that affects a community, a population of people as well as families and friends experiencing conflict.
- **Victim offender mediation:** Victim offender mediation is a mediated dialogue in which the victim of a crime has the opportunity to meet the offender in a safe and structured setting. The victim and offender engage in a mediated discussion of the crime via the assistance of a trained mediator. The victim is able to share with the offender about the crime's physical, emotional and financial impact, and to ask for answers to the questions that may have remained obstacles in the healing process. Victim offender mediation often involves a restitution plan for the offender.

more vulnerable than at any point in history. When it comes to creating a more sustainable and peaceful future, there is an unspoken challenge that should be running through the minds of every individual: If not me, then who? If not now, then when?

The American novelist Alice Walker is quoted as saying: "The most common way people give up their power is by thinking they don't have any." Science has proven that the human brain is powerful beyond measure. It is a malleable, order-taking machine. Every individual can choose to leverage that power for positive change and doing so is critical to advancing the human condition.

CONCLUSION

Humanity is at a turning point in history. Never before has so much been possible and never before has so much been at stake. Humans are more powerful and

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ABOUT THE AUTHOR



Robyn Short has worked in media relations, strategic communications and content management for more than 15 years. With a passion for peace-building and social justice, Robyn founded GoodMedia Press, an independent publishing and film production company, in 2012 with the sole purpose of creating rich and actionable media that provides peaceful solutions for conflict, sheds light on social justice issues, specifically issues related to mass incarceration, and offers solutions for creating parity where there is disparity. In 2016, she opened an alternative dispute resolution consultancy with the mission to be a peacemaker who helps clients understand and navigate conflict with integrity and mutual concern for the well being of all parties, thereby creating a ripple effect of positive change. Robyn is an avid writer and blogger and has written eight books and collaborated on numerous others. An international speaker and peace-building trainer, Robyn works with organizations to develop grassroots efforts for building sustainable peace in areas of historical conflict. In this capacity, she has been featured on news outlets internationally. Robyn holds three certificates in mediation and has expertise in transformative mediation and restorative justice models for dispute resolution. Whether in a corporate, nonprofit, academic or home environment, Robyn assists parties in discovering the root causes of their conflicts, so they may transform their relationships and create new and productive paths forward individually and as teams. Robyn helps organizations through mediation, facilitation, onsite conflict training seminars, leadership training and dialogue circles.

Robyn holds a Bachelors of Science in Psychology from Auburn University, a Masters in Liberal Arts from Southern Methodist University and a Masters in Conflict Management and Dispute Resolution from Southern Methodist University. Robyn has 140 hours of mediation training, including, transformative mediation and victim / offender mediation. She is currently pursuing a Doctor of Liberal Studies with a focus in building systems for sustainable peace from Southern Methodist University.

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