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Neuropsychology of Conflict: Implications for Peacemaking

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Abstract

This essay/chapter summarizes and integrates some current thinking and research on brain function and emotion, then relates it to human conflict and the potential for peace.

Neuroscientists now recognize humans to be emotional beings with rational thoughts. The Newtonian-Cartesian description of the rational person has been rejected. Instead of a linear method of processing information, a complex multi-faceted process occurs. The end result is that humans rationalize and justify after the fact and do not consciously choose much of what they do.

The human brain has been uniquely adapted to forcing growth as hominids evolved. The fear response system protected hominids from danger. As cultural and social evolution began to accelerate past biological evolution, the fear response system became a liability. Most conflict arises from the fear response system. This system is outside conscious control, is always on during consciousness, and cannot be turned off without extensive reprogramming and training. To overcome this liability requires higher consciousness and self-awareness.

The human brain also has been adapted to form social attachments through pair bonding, family, and community. While the neurophysiology of these systems is less understood, there is clearly a neurological substrate for cooperative, harmonious human behavior. Much of this behavior is modulated by the neurochemical systems in the brain.

Mediators and peacemakers must understand fundamental brain processes. First, every human shares the same basic physiology. Although experience, environment, and culture moderate and influence expression of fundamental brain processes, the processes are same across humanity. In other words, the emotional system of a brain in Ubekistan is physiologically identical to that of a brain in New York City. Culture and environment may result in different programming, but the fundamental brain response remains the same.

Second, human response to conflict is largely emotional and not rational. Third, conflict responses are largely predictable and uniform. Variations in expression occur because of culture, environment, and local norms of behavior. Third, peacemaking interventions are likely to be

more successful when addressed in part to the underlying brain reactions of the parties. Finally, peacemaking is probably a stepping stone to higher consciousness and higher human evolution because it compels a higher awareness onto parties in conflict.

Neuropsychology of Conflict: Implications for Peacemaking

Recent advances in the neurosciences have established an irrefutable fact: Human beings are far more emotional than rational. Nevertheless, on the strength of Descartes' rationalist philosophy, the Enlightenment opened the doors to modern empiricism and led humanity into the Scientific Revolution. No one doubted the power of rational thinking to solve problems and unravel the mysteries of the observable universe. From these observations came the belief that humans were distinguished from all other creatures because of their rationality. To be irrational was to be something less than human.

This belief deeply influenced English and American law, foreign policy, and economics. Legal standards were set by comparison to a prototypical rational person. Foreign policy was based on the assumption that rational beings could sit together and work through international disputes and conflicts. Economists built an entire field of study on the assumption that consumers acted "rationally" in maximizing their utility. People engaged in peacemaking, from the interpersonal to the international level, assumed that despite the emotions of conflict, people fundamentally were rational.

The truth is that human beings are 98 percent emotional and about two percent rational. Thus, the assumptions underlying many disciplines and practices, especially peacemaking, need significant revisions. This chapter explores what neuroscience has discovered about emotions and how that knowledge is relevant to human conflict and peacemaking. Much remains unknown, but the implications of the research so far demonstrate that peacemakers must be far more aware of neuropsychological factors of human conflict. These factors explain much about conflict behaviors. They also provide insights about new interventions in serious and intractable conflicts.

Neuroscience is a highly technical, rapidly developing, and growing area of research. Consequently, for a lay person to distill the basic concepts of emotion is fraught with the peril of oversimplification and generalization. Nevertheless, an understanding of the big picture provides a deeper insight into conflict behaviors and the interventions useful to create positive

peace. Consequently, the risk of academic imprecision seems outweighed by the benefit of practical knowledge gained from a broad understanding of the concepts.

All human psychological experience depends on brain activity, making temperament nd behavior biologically based. Gray (1991) Strelau (1994). Thus, theoretical speculation about the causes of peaceful and conflictual behaviors must be consistent with neurological functioning. Beatty and McCroskey (1997). If we assume the existence of cognitive processes (e.g., attributing, appraising, construing, etc.), we are obligated to specify the neurological activity responsible for those processes. If we are goal-oriented, we must tackle the question of first cause: Where do our intentions, motives, and goals originate if not within the neurobiological structures of our brains? If we can control our cognitive processes or make choices, where does the control originate if not in brain structures? More generally, credible explanations of why and how people engage in peaceful or conflictual behaviors require adequate attention to the neurosciuence of peace and conflict.

Conflict Behaviors and Emotions

Conflict Behaviors

The fields of conflict theory and negotiation theory have generally settled on a typology of five conflict behaviors or conflict management styles. These are competing, accommodating, compromising, avoiding, and problem solving. There are variations and subsets within each of these behaviors, but these are primary.

Competing. Competing is satisfying one's own concerns while disregarding the other's concerns. This is usually a pre-conscious reaction based on how a schema cluster filters a situation. Parties often make their own demands apparent, then hide their true motives and any other information that might weaken their position. Competing people are quite active in conflict and aggressively pursue personal goals. A competing style is typically not very flexible as people avoid sacrificing any goals. Rubin, Pruitt, and Kim (1994). Competing is typically seen in two strategies. The first, forcing, occurs when one party simply coerces others to go along. There is neither concern for understanding for the other's position nor any attempt to build a

future relationship.

The second form of competing is contending. Contending is softer than forcing because it has an element of flexibility. Typically, a contender will be flexible as long as flexibility does not block her goals. A contender may also express understanding and sympathy for other's feelings. Unlike forcing, contending shows concern for future relationships.

Accommodating. Accommodators give in to others to preserve a bad relationship or improve a good relationship. Rubin, et al. (1994). Accommodators are highly flexible, as they will accede to the other's demands. They tend to empower others while suspending personal control. Again, this is usually the result of pre-conscious schema clusters being triggered by some aspect of the current situation.

Accommodation is a useful strategy when relationships are more important than the issues underlying the current conflict. Skillfully employed, accommodation can convey an understanding of the other's needs to improve the relationship. On the downside, accommodation may be viewed by the other as a sign of weakness and encourage a more competitive approach. Accommodation is also a poor style when it results from the fear of facing difficult conflict issues.

Avoiding. Parties who avoid conflict do not demonstrate concern for their own or other's interests. Avoiding prevents these interests from being aired and addressed. Of course, if one expects to lose a conflict, avoidance is not a bad choice. Even in this circumstance, however, issues will remain unresolved and latent conflict will boil beneath the surface. Avoiding disputes disempowers others by denying the possibility of dealing with the conflict. Thus, avoidant behavior can escalate a conflict because it can be so frustrating for others to deal with.

Sometimes parties avoid conflicts because they have the power to ignore issues. In these cases, the other party is forced to escalate, oftentimes to violence, to provoke a response. In such cases, avoiders become indignant and quite often turn into competitors.

Compromising. Compromising requires both parties to give up some of their needs to fulfill others. The compromiser looks for an intermediate position in which some important

goals can be reached in exchange for trading off others. Compromisers show moderate flexibility as they do relent on some of their demands. They empower themselves and others because shared control is necessary to the give and take necessary for compromise.

Compromising is often confused with problem solving because tradeoffs and exchanges seem like integrative behavior. Compromising is advantageous when there are two equally strong parties locked in impasse. However, compromise often results in a low commitment to agreements because parties must give up something they value.

Problem Solving. Problem solving has received attention because its goal is to meet all the important needs of both parties. Successful problem solving does not have any significant disadvantages. Nevertheless, problem solving is difficult to maintain during a conflict because the emotions of the situation trigger other schema strategies. Nevertheless, parties are generally pleased after successful problem solving sessions, and this satisfaction promotes a high commitment to keep agreements.

Problem solvers are highly concerned with both their own and the others needs. They are involved in the conflict, seeking understanding of every issue and exploring all possible integrative solutions. They are flexible because they do not rigidly adhere to positions. However, they are also committed to achieving their goals and will not sacrifice them. Problem solving works best when parties have high aspirations for the outcome of the conflict, insist that their goals and needs be satisfied, and are flexible about how this is done. Rubin, et al. (1994).

Problem solving requires a high degree of information about issues, needs, and interests. Thus, problem solving requires an open, safe, and secure communication climate. Problem solving also requires mutual empowerment without sacrificing individual power bases. This is most easily accomplished when both parties have common power resources.

Emotions, Emotional Awareness, and Language

Emotions are information about how well we have achieved our goals in our environment. These goals do not have to be and usually are not consciously selected. Rather, they are part of our scripts and automatic behaviors learned to minimize cognitive processing

power. Consequently, emotions may experienced for no apparent reason, or we may be able to causally link our emotions to some event or memory.

We experience emotions on five levels:

1. Physical sensation
2. Action tendencies
3. Simple emotions
4. Blends of emotions
5. Blends of blends of emotion experiences.

At the fifth level, we appreciate the complexity of our experience and the experiences of others. Our ability to be aware of and express our emotional experience is a significant indication of our ability to be empathic. Language promotes our development of emotional information processing. Lane (2000). Thus poor language skills, cultural norms inhibiting expression of emotional experience, and education are constraints on emotional awareness. The more we are emotionally aware, the great our potential to use emotional information for adaptational success. In other words, people with refined emotional awareness are m ore likely to be successful in unusual or challenging social environments.

The Emotions of Peace and Conflict

Emotions are associated with the five conflict behaviors. These emotions can be divided into conflict affects and peace affects. Conflict affects and peace affects are described by a continuum of selfish to selfless behaviors. Selfish behaviors are individualistic, competitive, and dichotomous (I win-You lose). These selfish behaviors require no object for expression; instead, it is always meaningful to ask how hungry, cold, happy, aroused, or angry a person feels. Selfless behaviors are communal, social and inclusive (I gain only if you gain as well). Selfless behaviors always require an object. Thus, it is only meaningful to ask how loving, attached, or compassionate one feels towards someone else. Selfish and individualistic behaviors are always turned on, although they are often manifested at very low levels. In contrast, cooperative behaviors are only accessible when a relationship with another person is salient.

Conflict affects include anxiety, fear, anger, hatred, distrust, sadness, guilt, shame, disgust, and despair. Peace affects include happiness, compassion, contentment, loving kindness, and the will to do good. These affects can be associated with conflict behaviors and fundamental brain functions as follows.

Conflict Behavior	Associated Affects	Selfish-Selfless	Brain Function
Contending	Fear, anger, hatred, distrust	Selfish	Withdraw (fight)
Accomodating	Compassion, contentment, loving kindness	Selfless	Approach
Compromising	Anxiety, fear, distrust, Or Happiness, compassion, contentment, loving kindness, and the will to do good	Selfish Selfless	Withdraw (Flee) Approach
Collaborating	Happiness, compassion, contentment, loving kindness, and the will to do good	Selfless	Approach
Avoiding	Anxiety, fear, anger, hatred, distrust, sadness, guilt, shame, disgust, and despair	Selfish	Withdraw (flee or freeze)

The Neuropsychology of Conflict and Peaceful Behaviors

At the risk of over-simplifying a very complex subject, our brains are composed of two distinct emotional systems relevant to conflict and peacemaking. Consistent with identified conflict behaviors, the first system is *selfish* and directed towards self-preservation. This part of the brain contains, among many other systems, the fear response system responsible for the freeze, flee, or fight response to threats. The fear response system can further be separated into a hyper-arousal system manifesting in fight or flight behavior and a dissociative system manifesting in freezing and avoidance behavior. Each system is composed of neural networks and is controlled by neurotransmitters and neurohormones.

The second system, consistent with descriptions of peaceful behaviors, is *selfless* and directed towards attachment, social bonding, and cooperation. This system is not as well understood as the fear response system, but provides the foundation for the mother-infant attachment, sexual pair bonding, group attachment, and social cooperation. Similar to the selfish system, the selfless system is composed of distinct neural networks controlled by neurotransmitters and neurohormones.

Behavioral Processing Systems

The Role of Neurochemicals

The physical structure of the brain operates in large part through a complex neurochemical messaging system. These neurochemical systems act by altering the response properties of transmission and receptor sites. Buck (1999). Neurohormones may be released by sensory input (day-night cycles, display of other creatures, presence of food) and internal input, reflecting needs and desires (hunger, thirst, sex). They either sensitize or de-sensitize receptor sites and thus excite or inhibit brain cell activity.

The Amine Neurotransmitters

The amines are divided into two broad categories the catecholamines dopamine,

norepinephrine, and epinephrine, and the indole amines, including serotonin, and histamine. The amines function as neurotransmitters, carrying stimulating or inhibiting influences from the presynaptic cell to the postsynaptic cell. The amine neurotransmitters are manufactured in the presynaptic cell, within which they are broken down by the enzyme monoamine oxidase (MAO). Once released into the synapse, they are absorbed back into the presynaptic cell in a reuptake process.

Dopamine and norepinephrine are associated with reward because they cause intense pleasure. Dopamine is involved in the brain's pleasure pathways, some of which run from the hypothalamus, gateway to the endocrine glands, through the emotional areas of the limbic system to the planning and working memory areas of the frontal lobes. Ashby, Turken, and Isen (1999), Brown *et al.* (1999), Schultz *et al.*, (2000). Dopamine inputs are important for the proper development of frontal lobe circuits in young children. This has been proposed as the mechanism by which proper caregiving, including pleasurable emotional experiences with parents or other caregivers, contributes to the growth of a child's mental capacities. Schore (1994). Dopamine also probably plays a role in surges of both generosity and creativity in adults brought on by good moods. Ashby *et al.*, (1999).

Serotonin is an indole amine neurotransmitter and appears to counterbalance the catecholaminergic systems. Thus, serotonin promotes sleep, parasympathetic activation, and the anti-stress relaxation response. Buck (1999). Drugs that bind to specific serotonin receptor sites include the selective serotonin reuptake inhibitors that are used in the treatment of major depression. One of these, fluoxetine, is widely known by its brand name Prozac. Buck (1999). The effect of these reuptake inhibitors is to allow serotonin to linger long in the synaptic space and thus increase its influence on the post-synaptic neuron.

Serotonin is intimately linked to social status in primates. In experiments changing the level of serotonin in monkeys, monkeys with low levels of serotonin had low status. Brammer *et al.*, (1994), McGuire and Raleigh (1986), Raleigh *et al.*, 1(984). When the concentration of serotonin was manipulated, the monkeys' social standing was influenced. Thus serotonin levels

directly affect social status. By contrast, higher status was not related to obvious physical features such as larger body size or canine teeth. During the course of the experiments, which lasted several weeks, social status changes were always preceded by changes in affiliative behavior with females. Male monkeys given drugs that increased serotonin engaged in more frequent grooming interactions with females. Increased grooming behavior was followed by female support in dominance interactions, which increased the male's social status.

Conversely, male monkeys given drugs that decreased serotonin had less frequent grooming interactions with females, and female support in dominance interactions diminished, resulting in decreased status for the male. The dominant monkeys were more relaxed and confident; the subordinate monkeys were more likely to be irritable and to lash out at other animals. The experimenters also found that the amount of serotonin was positively related to the frequency of pro-social behavior, such as grooming, and negatively related to antisocial behavior, such as fighting. Thus, serotonin seems to stabilize the relationships between the individual and other members of its social group. In addition, low levels of serotonin are linked to high levels of aggression in men. Asberg, (1994), Brown, Botsis, & van Praag (1994), Coccaro (1993).

The Peptide Neurohormones

The second kind of neurochemical system involves peptide neurohormones, with particular attention to those that seem to have important emotional properties: the endorphins, cholecystokinin, oxytocin and vasopressin, gonadotropin-releasing hormone, and corticotrophin releasing factor.

The neuropeptides have been characterized as information substances. Each neuropeptide may bias information processing in a unique way when occupying a given receptor site. Pert (1985) noted that these substances are distributed in the mood regulating areas of the brain.

Endorphin, a contraction for endogeneous morphine, is a morphine produced by the body. Pain is regulated by the endorphins in the spinal cord, which inhibit the release of the peptide neurotransmitter substance P, which carries pain messages. Panksepp (1986) suggested

that endorphins are associated with social attachment and that attachment is associated with increased levels of endorphins. The endorphins are associated with subjectively experienced euphoria, and inhibit breathing. This suggests, in turn, that strong social attachments increase endorphin levels.

Oxytocin and vasopressin are pituitary peptide hormones derived from an evolutionary divergence of an ancestral hormone, vasotocin. Buck (1999). Oxytocin and vasopressin appear to act in behavioral opposition to each another.

Oxytocin is important for positive emotions relating to social and family connections. This hormone, found only in mammals, was discovered to be essential for maternal behaviors such as uterine contraction and milk ejection. Thomas Insel, James Winslow, and their colleagues discovered that oxytocin has broader importance for bonding, in male as well as female animals Insel (1992), Insel and Winslow (1998), Winslow *et al.*, (1993).

Oxytocin also appears to inhibit the fear responses of flight, flight, or freezing. Oxytocin promotes a positive stress response by seeking positive social interactions and sensory stimulation. Taylor *et al.* (2000) termed a subclass of these responses tend-and-befriend. Thus, oxytocin promotes peaceful responses to stress, as opposed to flight, fight, or flee responses.

Uvnäs-Moberg (1997, 1998) found that administering oxytocin to male and female rats counteracted many of the typical physiological and behavioral effects of stress. For example, oxytocin lowered blood pressure and lowered cortisol levels. Cortisol is a hormone typically released in stressful situations. More generally, oxytocin reduced activity in the sympathetic part of the autonomic nervous system, which is activated in the fight-or-flight response. Oxytocin delayed the onset of withdrawal to heat and mechanical stimuli, and to increase the healing rate of wounds, possibly through a shift in the allocation of energy in the body. The physiological anti-stress effects of oxytocin also occur with both lactation and sexual intercourse. Thus, breast feeding and sex release oxytocin, create pleasure, and reduce stress. Oxytocin may also released by other forms of pleasurable social contact, such as mutual grooming in animals and supportive friendship in humans. Turner *et al.* (1999) found that oxytocin levels increased in the blood of

women who had never been pregnant in response to relaxation massage. They also found that oxytocin sometimes decreased in response to sad emotions, mainly in women who were insecure in their interpersonal relationships.

The Fear Response System

One emotion that has been clearly linked to specific brain structures is fear, which is generated in a brain substructure called the amygdala. Le Doux (1996). The amygdala is an almond- shaped structure deep inside the temporal lobe. It connects to the hippocampus, the septal nuclei, the prefrontal cortex and the medial septal nucleus of the thalamus. These connections make it possible for the amygdala to play its important role on the mediation and control of the expression of fear.

The amygdala is like the hub of a wheel in that it receives inputs from a wide range of levels of cognitive processing. These inputs include stimulus features from the sensory thalamus, perception of objects from the sensory cortex, and memories and contexts from the rhinal cortex and the hippocampus. Through these connections, the amygdala is able to appraise emotional meaning and initiate reactions consistent with its appraisal.

The fear reaction system involves a parallel transmission to the amygdala from the sensory thalamus and the sensory cortex. The first information about external stimuli reaches the amygdala by a direct path from the thalamus. This path, being shorter, is much faster than the parallel pathway from the thalamus to the cortex to the amygdala. The downside of the shortcut is that the amygdala does not benefit from cortical processing. Thus, the amygdala is provided with a crude representation of the stimulus and appraises it as either "good" or "bad." The advantage of this down and dirty pathway is speed-we can react to potentially dangerous stimuli before we fully know what the stimulus is. Eventually the cortex processes the stimulus input and sends its information on the parallel, but longer, path to the amygdala. Based on this information, the amygdala may modify its appraisal of the stimulus.

The process can be illustrated as follows. A hiker encounters a snake coiled behind a log. His eyes send the visual information to the thalamus for initial processing. The thalamus sends

part of the information to the amygdala and part of the information to the cortex. The path to the amygdala being shorter allows a fast, unconscious response to begin. Right now the hiker doesn't know if the object is a stick or a snake, but it registers as potentially "bad," and the amygdala sends signals to the hypothalamus to arouse the organism for action. Meanwhile, the thalamus feeds information to the visual cortex, which assembles a more detailed representation of the snake. This outcome is sent back to amygdala about a half second after the amygdala received the first inputs from the thalamus. If the thin curved object was a stick, well, better to be safe than sorry. If it was a snake, the earlier faster response could mean the difference between life and death. Hence, the down and dirty pathway has a powerful survival value.

The amygdala appears capable of not only triggering and steering responses to danger, but also acting on higher-level neocortical processes. First, the amygdala arouses the organism early on. Cortical arousal, once established, makes concentration on anything else very difficult. The working memory execution function becomes actively focused on the emotionally arousing situation as it tries to figure out what is going on and what should be done about it. All other inputs are blocked out, resulting in impaired reasoning, decision-making and other higher cortical processes. If you have experienced a feeling of tunnel vision when emotionally engaged your working memory is shutting out all other inputs as it tries to deal with the source of arousal.

The reason for this is strictly biological. The connections from the amygdala to the cortex are much richer than the connections from the cortex to the amygdala. This allows the amygdala to literally overwhelm the cortex, which in turn feeds the arousal back to the amygdala. A vicious cycle of emotional reactivity results. Thus, arousal tends to lock people into an emotional state. Once the fear system is turned on, it is difficult to turn off unless something else occurs that significant enough and arousing enough to shift the focus of arousal. Worse, stress, as a form of arousal, facilitates amydalic functioning. Thus, stress shifts us even deeper into a mode where we react to danger rather than think about it.

Thus, the amygdala is able to overwhelm the neocortex and the rest of the brain so that a person not only forms emotional ideas, but also responds to them. A famous example of this is

Charles Whitman, who in 1966 climbed a tower at the University of Texas and indiscriminately killed people with a rifle. Whitman had initially consulted a psychiatrist about his periodic and uncontrollable violent impulses, but was unable to obtain relief. Post mortem autopsy of his brain revealed a tumor the size of a walnut compressing the amygdaloid nucleus.

The Attachment, Bonding, and Cooperation System

During the process of the brain's evolution from reptiles to non-primate mammals to humans, most of the structural and functional systems found in earlier species were preserved. At the same time, additional mental capacities developed with the massive growth of the cerebral cortex, MacClean (1989), Pribram (1981). Specifically, in humans the subcortical system of socially-based emotional regulation interacts with the prefrontal cortex. This gives us the ability to process complex social stimuli, rewards, rules, and customs. The prefrontal cortex controls complex emotional responses including social responses. This region is connected to high-order sensory and association areas of the cortex and to emotion-related areas below the cortex (hypothalamus, limbic system, and basal ganglia with extensive autonomic and visceral projections).

The orbitomedial prefrontal cortex links specific sensory events in the environment - for example, particular people or family and social structures - and positive or negative emotional states. This accomplished through the neural connections of the prefrontal cortex with sensory areas of the cerebral cortex, on the one hand, and with the hypothalamus and autonomic nervous system, on the other hand. In short, the orbitomedial prefrontal cortex has evolved in humans to enable behavioral choices in an increasingly complex social environment. Damasio (1994).

When a person makes a conscious choice to engage in more caring behavior, the orbitomedial prefrontal cortex releases caring capacities and prevents those capacities from being inhibited by stressful stimuli and beliefs. The prefrontal cortex modulates signals to the parts of the brain that contain oxytocin or the cortisol precursor. Thus, the prefrontal cortex influences the relative likelihood of oxytocin-mediated (tend-and- befriend) versus cortisol-mediated (fight, flight, or freeze) responses. Since the orbitomedial prefrontal cortex seems to store the emotions

of social memories, life experience affects its function Future behavior is therefore strongly influenced by past experience.

A second response selection pathways is probably the loops between cortex, thalamus, and basal ganglia. These loops are a basis for reward-based behavioral regulation. Eisler and Levine (2002). These same pathways are also believed to be repetitively activated as part of the disrupted regulation caused by drug addiction. Koob and LeMoal (2001). The strong connections between the prefrontal cortex and the nucleus accumbens (a primary area for both natural and drug-related dopamine rewards) are likely to be important for both tend-and-befriend and dissociative responses.

Finally, this part of prefrontal cortex has strong reciprocal connections with areas of the limbic system involved in emotional evaluation. These include two parts of the amygdala (central and basolateral) that are also part of a positive feedback loop that mediates stress-related responses. Koob (1999). Thus it is a third pathway by which the orbitomedial prefrontal cortex might influence response to a social situation.

Specifically, the orbitomedial area is roughly divided into two parts: an orbital part that receives inputs from sensory association areas of the cortex that reflect effects of experiences, and a medial part that receives inputs from areas of the hypothalamus that reflect effects of emotional states. Price (1999). Connections to this prefrontal region from other parts of the cortex and limbic system, representing social stimuli, are strengthened or weakened with experience, including the severity of previous stresses and the person's previous responses. This in turn influences the tendency toward fear response or approach in a given social context.

Implications for Peacemaking

Eisler (1987, 1995) argues that throughout history conflict has existed between those who promote mutually respectful and caring relations, and those who inhibit peaceful behavior to protect social hierarchies. Rigid hierarchies - whether man over woman, man over man, race over race, religion over religion, or nation over nation - require caring and empathy to be

suppressed. Today, beliefs, institutions, and behaviors required of hierarchies of control are often seen as normal - from violence in childrearing and male-female relations to socially and environmentally unsound business practices and the idealization, and even religious incitement, of violence in intra-national and international relations.

From a neuroscientific perspective, such beliefs are the result of disrupted prefrontal-subcortical loops. According to Eisler (1987, 1995, 2000), this disruption occurs from the stresses inherent social structures and hierarchies maintained by fear and force. If the orbitoprefontal cortex contains emotiona memories of stress and fear, it will not properly activate the oxytocin system of the brain. Instead, cortisol will be released. Additionally, the orbitoprefrontal cortex will have less control over the amygdale and the fear response system. In optimal contexts, the orbitoprefontal cortex takes over amygdalic functions to coordinate information and correct responses as conditions change. When the orbitoprefontal cortex has not developed this capacity, the fear response system will dominate behavior.

Thus, when we are enmeshed in intractable conflict, we may simply be trapped in a compulsive pattern or not know of alternatives. Peace can lead to a prefrontally regulated readjustment of the set points for reward that the conflict behavior disrupted. What this suggests is that conflict behavior is reversible with sufficient outside support.

Mediation

Mediation encompasses a broad array of interventions and strategies designed to help parties find peace when they are incapable of doing so on their own. When a conflict is mediated, a third party comes into the conflict to assist the conflict parties. The third party, called a mediator, may assume a wide variety of roles and functions, depending upon the needs of the parties, the nature of the conflict, the geo-political realities, and the professional judgment of the mediator.

In conflict theory, two paradigms of mediation predominate, the structuralist paradigm and the socio-psychological paradigm. The structuralist paradigm is based on a belief that through the use of persuasion, incentives, and disincentives (i.e., a cost-benefit process), parties

in a conflict can be led to and through a negotiated settlement. This paradigm is anchored in a rational choice view of the world, and treats the causes of conflict as objective issues that can yield to negotiation. This approach generally ignores the subjectivity of experience and is based on the assumption that humans are essentially rational, not emotional, beings. This paradigm dominates diplomatic mediation.

The socio-psychological paradigm focuses on communication and exchange as a way to change perception and attitudes. This mediation approach provides a forum in which parties can explore options and develop solutions, often outside the highly charged arena of a formal negotiating structure. The approach appeals to super ordinate goals and values. Because much of human conflict is anchored in conflicting perception and misperception, the mediator concentrates on changing the perceptions, attitudes, values, and behaviors of the parties to a conflict.

Limitations of the Mediation Paradigms

The rational choice assumption is not warranted by our current understanding of brain function. As discussed above, we are 98 percent emotional and 2 percent rational. We have all experienced the emotionality of conflict. Despite this experience, we persist in believing that we can reason our way out of disputes. However, people in conflict are emotionally enmeshed at different levels, making rational processing difficult. The higher the conflict is escalated, the more behavior is emotional and the less it is rational. We understand this to be caused by the brain's fear response system and the degree to which life experience has conditioned reactivity over empathy. Furthermore, a mediation process based on competitive negotiation plays to the selfish, individualistic part of the brain, rather than the selfless, cooperative part of the brain. In the long run, agreements will be weaker because they are not supported by the attachment systems of the brain.

The socio-psychological view of mediation is closer to current neuropsychological understanding, but is likewise based on assumptions that are not supported by neuroscience.

The first assumption is that good communication is a key to peace. Many times, people

in conflict are excellent communicators. They are very good at communicating positions, arguments, and defenses. At a deeper level, escalated conflict compels emotionally charged communication that can be perceived as aggressive and threatening. To the extent that the parties lack emotional awareness, they will be unable to communicate their feelings effectively. This can lead to frustration, a sense of disrespect, and stimulation of the fear response system.

The second assumption is that conflict is often based on cultural differences. Cultural differences can seem profound, but culture is merely a technology for achieving attachment, group identity, efficient group coordination, and reduction of uncertainty and anxiety. Focusing on underlying needs, goals, interests, and desires play to the shared attributes of our brains rather than on the relatively superficial differences presented by cultures.

The third assumption is an understanding and acceptance of value differences can lead conflict parties to common ground. The unstated requirement of this assumption is that brains are in a state to be empathic rather than defended. Value differences may preconsciously trigger fear reactivity, making an empathic connection difficult to achieve.

Peacemaking

Peacemaking is a form of mediation that seeks as reconciliation between parties. Peacemaking creates relational and structural justice that allows for social and personal well being. This is an ideal objective, perhaps not attainable in many conflicts. Nevertheless, peacemaking implies the use of cooperative, constructive processes to resolve human conflicts, while restoring relationships.

Peacemaking is a complicated concept because peace can be defined in so many different ways. When we speak of peace, we understand it in two ways. First, there is negative peace. Negative peace means the absence of violence, typically through coercion rather than cooperation. When Mom tells Sally to stop beating up on Sarah, she is imposing a negative peace in the household. Sally's conflict with Sarah is not resolved, but merely suppressed. The concept of negative peace extends not only from our mundane example in the home, but also to

international peace. International peace is said to exist at a cessation of violence and hostility. This form of peace is often imposed by U.N. peacekeepers. Again, peace is defined as an absence of war and is imposed coercively or through balances of power or terror as in the Cold War.

The second way of understanding peace is as positive peace. Positive peace implies reconciliation and restoration through creative transformation of conflict. In positive peace, Mom sits Sally and Sarah down and invites them to exchange stories about what led to the fight. Mom and Sarah learn for the first time that Sally feels angry at the way Sarah ignores her. In five minutes, they work out a plan that allows Sally the safety and security to speak out about what she is feeling. Sarah promises to listen more carefully to Sally. Sally promises not to hit Sarah when she, Sally, becomes frustrated. The fighting has stopped, but more importantly the relationship has been reconciled and restored. In the process, Sally and Sarah have grown morally just a little. In the same way, a peacemaker looks at conflict not just as an abstract, intellectual exercise in analysis and persuasion, but as an opportunity to help people reconcile. When reconciliation is not possible, separation and resolution is possible with a minimum of hostility and acrimony.

Positive peace is supported by the attachment systems of the brain. Negative peace, especially if imposed through coercion, activates the fear response systems of the brain. Ultimately, if negative peace is not transformed to positive peace, negative peace will dissolve into further conflict. At a neuroscientific level, this is because negative peace does not support the attachment systems of the brain.

Practice Implications

Process

The fundamental principle of process should be to encourage attachment and approach. In highly escalated and intractable conflicts, this is challenging. Convening people in the same room without them resorting to violence begs the use of coercion, threats, and promises. Sometimes, coercive measures are required. However, decision makers should be mindful that

coercion will disrupt the normal functioning of the loops between the prefrontal cortex and the subcortical parts of the brain.

Peacemaking and negotiation processes, if seeking peace, should take into account how best to stimulate oxytocin, endorphins, and serotonin within the participants' brains. Likewise, process design should consider how to reduce the stimulation of vasopressin, norepinehprine, and cortisol, which are associated with aggression, fear response, and stress. Viewed through the lens of neuroscience, every detail and nuance of process design should be reconsidered for possible inhibitory and stimulating effects on brain systems.

People negotiating conflict should be in a very relaxing, safe, secure environment. As much as possible, the surroundings should evoke feelings of attachment, not fear. Conversations should help the parties relate to those aspects of their lives that give contentment, happiness, and allow for compassion. People will naturally feel angry, hostile, and violent towards their opponents. Rather than deny or suppress these emotions, they should be permitted and perhaps explored. As parties develop emotional awareness, they can make better choices about whether to approach or defend. Assessing fear reaction behaviors therefore becomes an important tool. On the fly judgments about the parties' emotionality, reactivity, empathic openness, and ability to form social bonds profoundly influences process choices. Mediator training should include basic neuropsychology and skills development in nonverbal observation, emotional interpretation, and empathic intervention.

De-Escalation

From a neuropsychological perspective, de-escalation of conflict requires two steps. The first step requires inhibition of the fear response system. Ritual, dialogue, and empathy all seem to have larger roles in inhibiting the fear response system. Ritual gives the parties a different context in which to process the conflict. It redefines the relationship within a larger community and gives meaning to the peacemaking process. The Native American tradition of the peace feather is a simple, but effective ritual to slow down conversations. Only the person holding the feather may speak and has the right to speak without challenge or interruption. More formal

rituals opening plenary sessions of negotiations, with the presence of influential outsiders, can impart significance and meaning to the process. The neuropsychological effect is to encourage the attachment systems of the brain to activate such that each person feels a part of the process.

Controlled dialogue requires the presence of a sensitive mediator. The mediator slows the conversation down, acts as a buffer, and allows the parties to take their time forming attachments in place of fear responses. Sometimes, the dialogue does not progress the substantive conflict as fast as some might like. However, the mere fact of face to face civil discourse appeals to the brain's innate attachment mechanisms.

Empathic communication is, of course, a powerful means of attachment because it represents the first experience of relationship for every human—the mother-infant relationship. Empathic communication, properly and sensitively performed, is a powerful de-escalation process.

The second step in de-escalation, which is probably more challenging, is to support the conflict parties as they walk the path towards peace. Walking this path with a history of hostility and violence takes faith and courage. Moving from initial anxiety and insecurity to essential peace seems to require a traverse of intense feelings of inadequacy, incompetency, and increased anxiety. The desire to revert to the fear response can be overwhelming because the fear response system provides immediate, although short term, relief from anxiety. Finding essential peace seems to require a profound emotional growth in humans that is achieved only through single-minded desire. Choosing the path of peace and rejecting the default fear response should be recognized as a great act of personal courage because it requires moving away from a comfortable, reliable way of being.

Importance of Trust, Compassion, Patience

One of the most significant aspects of neuropsychology to peacemaking is the discovery that humans are far more alike than they are different. As Pinker (2003) points out, universal mental mechanisms underlie superficial variations across cultures. While familiar categories of behavior vary across cultures, such as marriage, customs, folk traditions, and food taboos, the

deeper mechanisms within the human brain that generate them appear to be innate and universal. People may dress differently, but they may do so to show their status through their appearance. People may respect the rights of their family, clan, or tribe, or respect the rights of all human beings, but they all divide the world into an in-group and an outgroup.

This commonality is lost in conflict as people exaggerate their differences and minimize their similarities. For peacemakers to grasp that each person has the innate ability to love and be loved, to cherish family, to seek peace significantly reduces judgment and faulty assumptions. Furthermore, understanding that humans invest every perception and thought with emotional content allows peacemakers the ability to see anger, hatred, violence, and hostility with far greater compassion than might be the case if the rationalist philosophy predominated. This understanding also changes how we go about peacemaking. Instead of basing process on negotiation, which may be easily siderailed by emotionality, the peace process can be created to account for the need to acknowledge emotion and create empathic connections. Until this work is complete, holding rational negotiations will be limited.

Finally, peacemakers and peace negotiators must develop trust with the parties, exhibit deep compassion, and be supremely patient. Understanding the deep emotionality of conflict and its roots in neurophysiology is a great help because attributions of intention are no longer as relevant. Instead of thinking about how irrational or illogical parties might be, peacemakers can, from a neuropsychological perspective, understand that parties are emotional, not irrational. Emotional is normal, necessary, and therefore an expected component of conflict and of peacemaking. From this perspective, peacemakers should find compassion and patience easier to achieve as they walk with the parties through the darkness to essential peace.

Conclusion

Rationalist orientations predominate and, in many cases, trivialize the emotion of conflict. Our expanding knowledge of the neuropsychological bases of emotion suggests that a broader, humanistic orientation to peace negotiations be required. Negotiators and mediators should examine their fundamental assumptions about human nature, rationalist philosophy, and

human behavior in the context of neuroscience. Perhaps the common assumptions are now out-dated and dangerously narrow. Recognizing that the brain operates on at least two emotional systems, assumptions based on power domination and hierarchy might be revised. Power and domination assumptions seem to play to the fear response systems, thereby furthering and reinforcing conflict behavior. Perhaps positive peace can only be found through partnerships that support and encourage the selfless, attachment and reward systems of the brain.

The fear response system has been a successful evolutionary adaptation to a dangerous, uncertain environment. The selfless social attachment system has also been successful in creating pair-bonds, families, and larger communities. The peacemaker's challenge is to encourage the choice of peace rather than through conflict. In a larger sense, this may be the next evolutionary step for Homo sapiens. By learning to abandon the fear response system as a default and learning to choose peace, humans will be developing a higher consciousness of relationship. Interestingly, spiritual teachers have advocated this way of being for thousands of years. Only with advances in neuroscience can we see how prescient they were. The problem with peace therefore lies in the emotional brain. How we understand, utilize, and train, our emotional brains will determine the course of human conflict.

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