The Wise Brain Bulletin

News and Tools for Happiness, Love, and Wisdom
Volume 2, 3 (3/12/08)

Featured Article:

Two Wolves in the Heart:

The Evolution of Empathy and Aggression, of "Us" and "Them"

Introduction

This essay is about the origin of the best and the worst characteristics of human beings . . . and how to nurture the good that lies inside every heart.

What Is Empathy?

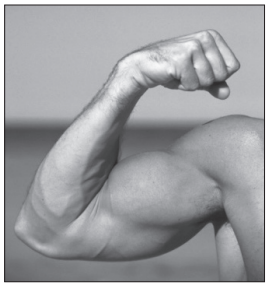
Empathy is the capacity to sense, feel, and understand what another person is going through, especially the deeper layers.

Empathy is not agreement or approval. You do not waive your rights by being empathic with someone.

Empathy is not inherently positive. For example, an autistic person who lacks empathy would make a poor interrogator.

Nonetheless, empathy is the foundation of any deep connection with another person. It asks more of us than generic lovingkindness, which is possible to offer without really allowing oneself to have a feeling for and be deeply moved by the suffering of another.

Also in this issue:



Greetings

The Bulletin offers skillful means from brain science and contemplative practice – to nurture your brain for the benefit of yourself and everyone you touch.

The Bulletin is offered freely, and you are welcome to share it with others. Past issues are archived at www.WiseBrain.org.

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Empathy has many benefits:

- Useful information about the other person
- Often, what the other person wants most
- Sometimes, understanding others better helps us understand ourselves better.

In Buddhist practice, empathy is important because:

- Empathy is the expression of Wise View, which sees how we are all related to each other: Empathy for others is thus, in a deep sense, self-understanding . . . since who we are actually is the whole web of life, the whole thing.

- Empathy is sila in action, the restraint of reactive patterns to stay calm enough to be present with the other person.

- Empathy involves non-attachment to view – one of the four types of attachment that lead to suffering – so that we can truly enter into the beliefs and worldviews of the other person. At least for a moment, we have to disengage from our "case" about the other person to enter his or her world. Empathy has a "don't know mind" quality to it, an attitude that has a particularly Zen flavor.

- Empathy expresses the fundamental Buddhist ethic of non-harming. Our failures of empathy are upsetting in themselves to other people, plus they lead us to do things that hurt them: both of these are harmful.

- Empathy is at the heart of diversity work.

- At root, empathy is a gift to another person, freely offered, a kind of dana (generous offering).

- If you work with, supervise, or teach others, empathy helps you read their emotional signals more accurately, and sense the deeper questions or issues.

In sum, it is beneficial to give empathy, and it is beneficial to receive it.

But for all its benefits, empathy is often the first thing to go out the door in long-term relationships, or during a conflict or upset.

Therefore, it is important to practice empathy, to increasingly incline our mind in its direction, and to become even more skillful at it.

Two Wings of Practice: Being With and Working With

There are two fundamental aspects of personal and spiritual growth.

One is simply being with whatever is arising internally or in the outer world: mindful, accepting, present. The other is working with inner and outer conditions to benefit oneself and others.

Both are required for practice to soar. Nonetheless, being with is primary, since you can always be with a difficult condition, but you may not be able to work with it.

In that context, our focus here is on working with the mind to cultivate greater capacities for empathy and caring, both for "us" and for "them."

Nothing Left Out

In Zen, there is the saying, "Nothing left out." While it's skillful means to include everything in the field of practice, it is also true that any moment of awareness short of Nibbana, any communication, and any response, must inherently leave some things out. There is always another view, more that could be said, an improvement for a sub-group of readers/listeners, etc.

In our heartfelt aspirations to include every person at the table, and to know our intimates fully, we must live with

the limitations of inclusiveness and empathy. That does not mean we should stop striving; it's the striving that is honorable and which sends an implicit message of caring. But as knowers and as communicators, we need to live with the self-acceptance and humility – which support each other – that our understandings and statements will always be partial. Similarly, when we are on the receiving end, it helps to keep in mind that the other person can never offer perfect empathy or a perfect communication.

Not leaving out . . . the inevitability of leaving things out.

The Evolution of Empathy

In the long march from tiny sponges in the ancient seas to crabs and spiders, dinosaurs and lizards and birds, squirrels and dogs and other mammals, and primates and humankind . . . it was an enormous aid to survival to get better and better at forming an inkling of the state of mind of others of their species, for mating, competition, and cooperation. It also helped to have some sense of the focus of attention, intentions, and arousal of both predators and prey.

In short, our ancient ancestors evolved in part through developing increasingly sophisticated capacities for forming a kind of model in their own mind – and therefore their brain – of the internal state of other animals. The ability to do so conferred reproductive benefits through enabling better responses to:

- Threats
- Opportunities
- Care of their young

Empathy in the Brain

Humans are by far the most empathic species on the planet. Based on the slow evolution of neurological architecture, several systems in the brain enable your empathy:

Train Your Brain

This course teaches practical, down-to-earth ways to activate the brain states that promote: Steady Awareness, Wholesome Feelings, Good Intentions, Caring Heart, and Wise Action. It is taught in a 24-month cycle which you can enter at any time. Talks and materials from past class sessions are archived at www.WiseBrain.org.

The class meets on the 2nd Tuesday of every month, 7 – 9:15 pm, at the Unitarian Universalist church in Terra Linda (San Rafael), at 240 Channing Way. The atmosphere is warm, informal, and focused. The suggested fee for each month of the program is $20 - $40, but no one will be turned away for lack of funds. Please arrive ten to fifteen minutes early so you will have ample time to register for the class.

Upcoming dates and topics:

- **3/11/08 – The Power of Intention**

"Everything rests on the tip of motivation." Frontal lobe controls. Methods for clarity of purpose: verbal, imagistic, theatrical.

- **4/8/08 – Energy and Strength**

The neuropsychology of energy. Thyroid, oxygen, blood sugar. Exercises for feeling strong. Focus on your sphere of influence. Cultivating efficacy, potency, agency. Development of the will.

- **5/13/08 – Tending to the Causes**

"Wise View" about what leads to good results in life, and what does not. "Fearless inventory" of improving your purposes and plans in life. Creating sanctuary in the brain and mind for wholesome intentions.

San Rafael Meditation Group

Open to beginners and experienced practitioners, we meet on Wednesday evenings at the A Sante day spa in downtown San Rafael at the corner of Brooks and 3rd. "Early-bird" meditation starts at 6:45 with formal instruction at 7:00; meditation ends at 7:30, followed by a brief break, and then a dharma talk and discussion, ending at 8:30. It is led by Rick Hanson, and for more information, check out www.WiseBrain.org/sanrafaelmeditation.html. Newcomers are always welcome!

• Recreation of primary emotions – The insula and other linked circuits activate both when we feel a primary emotion (e.g., fear of pain, disgust) and when we see another person, especially someone we care about, having such an emotion; these systems are often involved in "emotional contagion," when the feelings of others stir up similar feelings in ourselves

• "Theory of mind" – Centered mainly in the frontal lobes, this is a collection of capacities to think about and imagine the thoughts, intentions, personality, history, and inner workings of the other person.

• Mirror neurons – These light up both when we perform an action and when we see another person performing that action.

These neurological systems enable us to get a feeling from the inside out – a kind of echo or resonance – about what it is like to be another person. Of course, they are complex, intertwining with each other, supported by other mental functions – and just beginning to be understood.

Interestingly, the ability to recreate primary emotions appears to be present almost from birth; for example, infants will cry at the recorded sound of other babies crying but not at a recording of their own cries. Theory of mind (TOM) capabilities come on line later, developing during the third and fourth year of life – and usually attaining their full neurological maturation in many cases in the early twenties.

As individuals age and sometimes gradually lose cognitive capabilities, the capacities acquired last are the first to go, along with other frontal lobe functions such as planning, emotional control, and judgment. "First in, last out" is the fundamental ability to get a gut sense about the deep feelings of another person – which has implications for appreciating the fact that elderly people, even ones with apparently diminished capacities, can pick up on the feelings of others, both positive and negative ones.

Empathic Breakdowns

For all this high-powered neurological hardware, breakdowns of empathy are all around us to see:

• In the raising of children
• With other kids while growing up
• In intimate relationships
• With friends and at work
• And in the larger world, of large-scale "us's" and "them's"

Within one person's psyche, empathic breakdowns lead to emotional pain, feeling misunderstood and not cared about, as if you don't matter to the other person, even as if you do not exist as a being, a person, to them. In a relationship, empathic breakdowns lead to mistrust and make it harder to work out practical solutions to problems. And in the larger world, empathic breakdowns lead to racism and other forms of prejudice and discrimination, ethnic cleansing, and war.

Ways to Support Empathy

Here are some ways to build empathy, which you can apply to yourself or encourage in others. Empathy is a skill, and like any other skill, a person can get better at it. In order do so, it helps to consider the factors that bring it into being, practice them, and gather feedback (from one's own observations and from others) to improve over

time. Since "neurons that fire together, wire together," by repeatedly practicing empathy, you'll literally build and strengthen the circuits in the brain which make you empathic.

Foundational Capacities

Before stepping into a situation that calls for empathic understanding, there are a number of ways to build up your "empathy muscles." These include:

• First and foremost, self-care – handling your basic needs so you have some attention and good will left over for others

• Steadying attention – a fundamental condition of empathy is sustained attention to others, especially when their state of mind is complex, charged, or upset with you

• Opening the heart – to receive the other person

• Wishing well – a basic stance of good will, the hope that the other person may suffer less, even if we disagree with or disapprove of him or her

• Self-awareness – deepens your knowledge of your own psyche and thus the psyche of others; heals developmental wounds by giving yourself the attunement today that might have been missing when you were young

• Mindfulness of your bodily state – this "interoceptive sensing" strongly activates the insula, which also lights up when you sense the deep feelings of others; strengthening the ability to sense your own state strengthens your ability to sense the state of others

• Integrating thinking and feeling – being able to weave clear thought into powerful emotions, and to enliven rational analysis with warm-hearted affect, are important (and uncommon) psychological capacities . . . which also enable you to understand the emotions of others and to sense the feelings lying beneath their words and thoughts

Many things strengthen one or two of the capacities above. But there is one activity that strengthens all of them, and quite powerfully. What do you think it is?

It's meditation. For example, studies have shown that meditation observably thickens the insula by adding

millions of new synaptic connections, and it also thickens a part of the brain called the anterior cingulate, which is involved with controlling attention and with integrating thinking and feeling.

In Situations

Once the rubber meets the road, here are some ways to increase your empathy in the middle of specific situations:

• Establish your intention to be empathic.

• Pay attention to the other person and to yourself.

• Relax and open your mind; particularly if the other person is upset with you, it can help to focus first on feeling as safe and strong as possible.

• Let yourself feel in your own body the emotional and visceral state of the other person.

• Sense, imagine, and reflect beneath the surface of the other person's verbal and nonverbal communications. Ask yourself questions like: What is he feeling deep down? What is most important to her? Form hypotheses for further inquiry. This is akin to the enlightenment factor of investigation; it's an active process that complements the more receptive bodily resonance described just above.

• As you can, try "don't know mind." Respect the fact that you never know for sure . . . and that even the finest empathic attunement always must leave something out . . .

• Consider: What might it be like for people to be with you? What might be in play in their mind, given what you know or could imagine from their history? What might they want from you?

• Perhaps check back, to see if you are on the right track. Some examples: "Sounds like you are feeling _____ , is that right?" "I'm not sure, but I get the sense that _____ ." "It seems like what bothered you was _____ , and that you wished _____ had happened." "Did you feel both _____ and _____ ?"

You can use the other person's responses to your checking back as new input into your sensing and imagining what he or she could be experiencing.

Try not to muddle together empathy with any disagreement you might have. Keep them separate, if only by a few seconds, and be clear about the transition from one to the other.

• Perhaps offer empathy: subtly to explicitly. Often, that is all that's needed.

Us and Them

Now let's step back and take a larger view of the human condition. How could it be that such loving and cooperative and self-sacrificing creatures as us could also be so . . . racist, savage toward strangers, murderous, economically exploitive, willing to enslave others, capable of rape and pillage and car-bombs and carpet-bombing?

Sure, there are economic and cultural factors that make a huge difference. But it also seems that innate capacities acquired over the course of our evolutionary history could also play a role.

The Evolution of Altruism

First, let's consider the evolution of altruism, a hot subject in science today. In the animal kingdom, altruism is giving to others without any material reward. How could such behaviors develop through evolution under conditions in which creatures commonly lived on the edge of starvation while dodging predators and trying to pass on their genes? Put simply, how could sharing my banana help me pass on my genes?

No one knows for sure, of course, but it looks like self-sacrifice confers net reproductive benefits – the engine of evolution – when these three conditions exist:

• Individuals live and mainly breed within social groups (typically around 20 – 200 members). Consequently, even if a person's altruism led to her not passing on her genes, close relatives would live and pass on their own, and could be more likely to do so, given her sacrifice.

• Social groups compete intensely with each other for scarce resources in the wild, with a high death rate. Consequently, groups that work well together – in part due to altruistic sacrifices by some members – will pass on their genes at a much higher rate.

• The reputation of individuals is known to others. If someone became seen as a non-reciprocator – a taker, not a giver – then he or she risked others no longer sharing food, shelter, etc.

(By the way, as a result, people developed a natural interest in their reputation, in what others thought of them. An unpleasant emotion that punished individual "tribe" members for not stepping up in fights with other tribes, and for not reciprocating today for help offered yesterday, would help a tribe succeed in its brutal competition with other groups. And as a variant on that theme, an unpleasant emotion that enabled tribe members to train their young quickly in proper behavior – proper in central Africa, a million years ago, or during the last Ice Age, say 15,000 years ago – would also confer advantages to that tribe. Thus the origins of shame and guilt in the long slow grind of evolutionary history.)

The Gravitational Pull of "Us"

Second, unfortunately, there's a paradox at the heart of the ties that bind us to each other.

On the one hand, that bonding creates a secure base of "us" which helps a person venture out into the world and engage with "them."

But, on the other hand, those impulses to protect our own, especially our cubs, the associated rewards (dopamine, oxytocin, etc.), and our moral commitments, can create a kind of egocentrism of "us."

At a minimum, this tends to draw us away from "them." There are lots of everyday examples:

• New friends taking us away from old ones

• Parents focusing on their new baby rather than an older child

• Thinking little about groups in the world besides our own

The Evolution of Aggression toward "Them"

Third, moving beyond simple disengagement or neglect, multiple lines of evidence – from research on primates and other animals to anthropological studies of human cultures to computerized modeling of game theory – suggest that it was reproductively advantageous for our ancestors to be BOTH cooperative within their group . . . and wary and aggressive toward other groups.

Take good care of us . . . and fear, disdain, and attack them.

For millions of years of primate and then human evolution, in the primeval condition, there was no police system or international justice court, and tribal groups lived often on the age of starvation, so incentives were all around to take what they could, and protect what was their own, by any means necessary.

The rewards of joining with family, kin, and tribe have a dark side, sometimes leading people to push the interests of their own group unjustly, even violently, against the interests of other groups.

Our brains – us – still possess these ancient capabilities and tendencies.

You can see them at work in brawls between fans of opposing sports teams, in our contentious political culture (Red vs. Blue, news at 11), in the common indifference to the suffering of people who are "other" – Muslim or Christian, white or black, rich or poor – and so on.

Of course, those tendencies are intensified – and frequently manipulated – by non-biological factors such as economic pressures, religious fervor, and the classic whipped- up fears of not-like-us, apparent enemies as justifications for strong-father, authoritarian control.

Still, those non-biological factors find fertile ground in the between-group fear and aggression that is part of our evolutionary history.

Practical wisdom for these issues, and the healing of long standing grievances, starts with being crystal clear about both capacities within each person: to join and to exclude, to treat "us" with care and love and "them" with indifference or alarm or contempt or violence.

Yes, there is individual variation in the intensity and inclinations of these two capacities. But we each have them, to some degree. It is all too easy to consider ethnic slaughter in Africa or Bosnia, or bombs in Baghdad, or torture in Abu Ghraib, or flying planes with children on board into skyscrapers, or casual indifference to starvation and misery in the halls of power – and shake one's head and think something like, "What's wrong with them?" But "them" is actually "us." Their DNA is the same, and if any one of us were switched at birth and subject to the same causes and conditions of that suicide bomber – or bomber pilot – who among us can say for certain "I'd never do that"?

It is a kind of ignorance – always the root cause of suffering

What If It's *All* Empty!

I close my eyes to find no-me,
but that masquerading,
'Impermanent,
Empty,
Non-self'
Rudely interrupts,
"Over here! Over here!"

"I know you,"
I say.
"You're that noisy imposter
who rents part of
the top floor.
Time to go!"

But
All I hear is a
low smirky murmur,
"You may move me around
from time to time;
You may even try
to evict me-

But
I have a life-lease-
You're going to
have to
deal with me,
my Friend-

Who knows!
You may even come to
Love me!"
- Bruce Silver

and harm – to deny either the capacity for empathy or the capacity for aggression in the hard-wiring of the human brain, in the genetic endowment we've all inherited.

There's a Native American teaching that speaks to this. An elder, an old woman, was asked how she had become so wise, and so loving, and so respected. She answered, "In my heart are two wolves, one of love and one of hate. It all depends . . . on which one I feed each day."

The wolf of love sees a vast horizon, with all beings included in the circle of "us."

That circle shrinks down for the wolf of hate, so that only the nation, or tribe, or friends and family – or, in the extreme, only the self – are held as "us," surrounded by threatening masses of "them."

This is where we circle back to the Zen saying at the beginning of this essay: What is left out? Who is not in the room? Who is not held in my heart?

Feeding the Wolf of Love

If you choose to feed the wolf of love, your own virtues, empathy, insight, and equanimity will help you greatly. On that foundation, here are some specific practices you might like to consider:

• Exercise restraint about identifying with your own home/tribe/nation.

• Reflect on other people as they might have been as young children.

• Notice and consider good things about people who are neutral or unpleasant for you.

• Focus on similarities, not differences, between "us" and "them." Beware the little ways that you may dehumanize others, regarding them as less of a person than yourself.

• Reflect about the ways that others may appear threatening. How likely is it that they will harm you, personally?

• Consider the harms to yourself of using others as means to your own ends – in the framework of Martin Buber's "I-Thou" model of relationships, making them an "It" to your "I."

• Consider trying on the perspective from Tibetan Buddhism that every person was your mother or your dearest friend in some previous life. You can take this as metaphor or as literally true.

• Reflect on the suffering of so many people in this world. Equanimity really helps here, in enabling us to stay open in the face of the world's pain.

• Bring to mind the experience of really caring about someone who is an "us" to you; that primes your neural circuits to care about someone who could be a "them."

• Bring to mind the feeling you get around someone you know likes and cares about you. This is especially useful if you had a childhood that left you with an anxious or avoidant attachment relationship with your parents. Feeling cared about stimulates your capacities to care about others.

• Keep extending out the sense of "us" to include everyone.

All of these practices are expressions of wise view, that everything is connected to everything else. Their essence is the offering of lovingkindness to the "us" that is the whole wide world.

So that all cubs are our own.

So that all people are our family.

All life, our relatives.

The whole earth, our home.

Words of Wisdom:

Living from the Heart

Avoiding relationship?
Adi Da

I've learned that people will forget what you said;
people will forget what you did;
but people will never forget how you made them feel.
Maya Angelou

and if ever i touched a life i hope that life knows
that i know that touching was and still is and will always
be the true
revolution
nikki giovanni

Wanting to grasp the ungraspable,
you exhaust yourself in vain.
As soon as you open and relax
this tight fist of grasping,
infinite space is there –
open, inviting, comfortable.

Make use of this spaciousness,
this freedom and natural ease.
Don't search any further,
looking for the great awakened elephant,
who is already resting quietly at home
in front of your own hearth.
Lama Gendun Rinpoche

If you can sit quietly after difficult news, if in financial downturns you remain perfectly calm, if you can see your neighbors travel to fantastic places without a twinge of jealousy, if you can happily eat whatever is put on your plate and fall asleep after a day of running around without a drink or a pill, if you can always find contentment just where you are . . . . you are probably a dog.
Story quoted by Jack Kornfield

The Buddhist teachings are fabulous at simply working with what's happening as your path of awakening, rather than treating your life experiences as some kind of deviation from what is supposed to be happening. The more difficulties you have, in fact, the greater opportunity there is to let them transform you. The difficult things provoke all your irritations and bring your habitual patterns to the surface. And that becomes the moment of truth. You have the choice to launch into the lousy habitual patterns you already have, or to stay with the rawness and discomfort of the situation and let it transform you, on the spot.
Pema Chodren

I discovered long ago that, if you write a book about cats or dogs, everybody loves you, but if you dare to write a book about human beings, all hell breaks loose. It is impossible to write an uncensored, honest book about human behavior without offending at least part of your audience. If you feel you have a basic truth to tell, then you must tell it and be prepared to suffer the inevitable criticisms.
Desmond Morris

From Anger to Peace

Anger is a signal, and one worth listening to. Our anger may be a message, that we are being hurt, that our rights are being violated, than our needs or wants are not being adequately met, or simply that something is not right…..Just as physical pain tells us to take our hand off of the hot stove, the pain of our anger preserves the very integrity of our self. Our anger can motivate us to say "no" to the ways in which we are defined by others and "yes" to the dictates of our inner self . . . Jog, meditate, ventilate, bite your tongue, silently count to ten . . . There is no shortage of advice about what you can do with anger in the short run….In the long run, however, it is not what you do or don't do with your anger at a particular moment that counts. The important issue is whether , over time, you can use your anger as an incentive to achieve greater self-clarity and discover new ways to navigate old relationships…getting angry gets us nowhere is we unwillingly perpetuate the old patterns from which our anger springs.

from *The Dance of Anger*, Harriet Lerner

When I was in the fourth grade, like many other boys, I got into a fistfight in the classroom during recess. I don't remember what the triggering events were, but I have a vivid memory of standing with my back to the chalkboard, energy boiling up through me, taking a punch at the other guy's face, hitting him in the eye, then folding up when he counterpunched me in the stomach and my wind was knocked out of me. I'm not sure if I won or lost the fight, since I quit at that point and he had the "shiner" for the next several days. We wound up in the principal's office later that day, but nothing of consequence happened. In my memory, there are some vivid visuals about that event that seem pertinent here. One is the sense of inevitability of the conflict once it got started—the fight was to the finish and there was no concern for consequences. The next is the narrowing of focus onto the opponent—nothing else was there in the room. Finally, there is still an addictive sense of positive power attached to the moment—I was strong and manly, even in defeat, and I left a lasting trace on my opponent. Now, as an adult, I look back on this as both a "cute" childhood episode and a disturbing personal participation in the processes that leave so many dead and maimed bodies on our streets and around our world.

Why is skillful interaction with our angry emotions so necessary? It's because anger is both one of the most effective social tools for achieving short range results, and one of the most toxic emotions to ourselves and our family/social networks. Anger has an addictive quality to it; it gives us a sense of power and control; it achieves results; it defends us against injury and intrusion. In primate societies, such as baboon troops or chimpanzee clans, short bursts of anger and aggression help maintain the social structure and the dominance hierarchy, both among males and females. There is an expedience to anger as an emotion—it gets the job done in the least amount of time. Anger at "them" also bonds "us" and gives us a feeling of cohesion and support—note the post 9/11 emotional state of the United States.

There is also a cost to anger. At a social level, there are

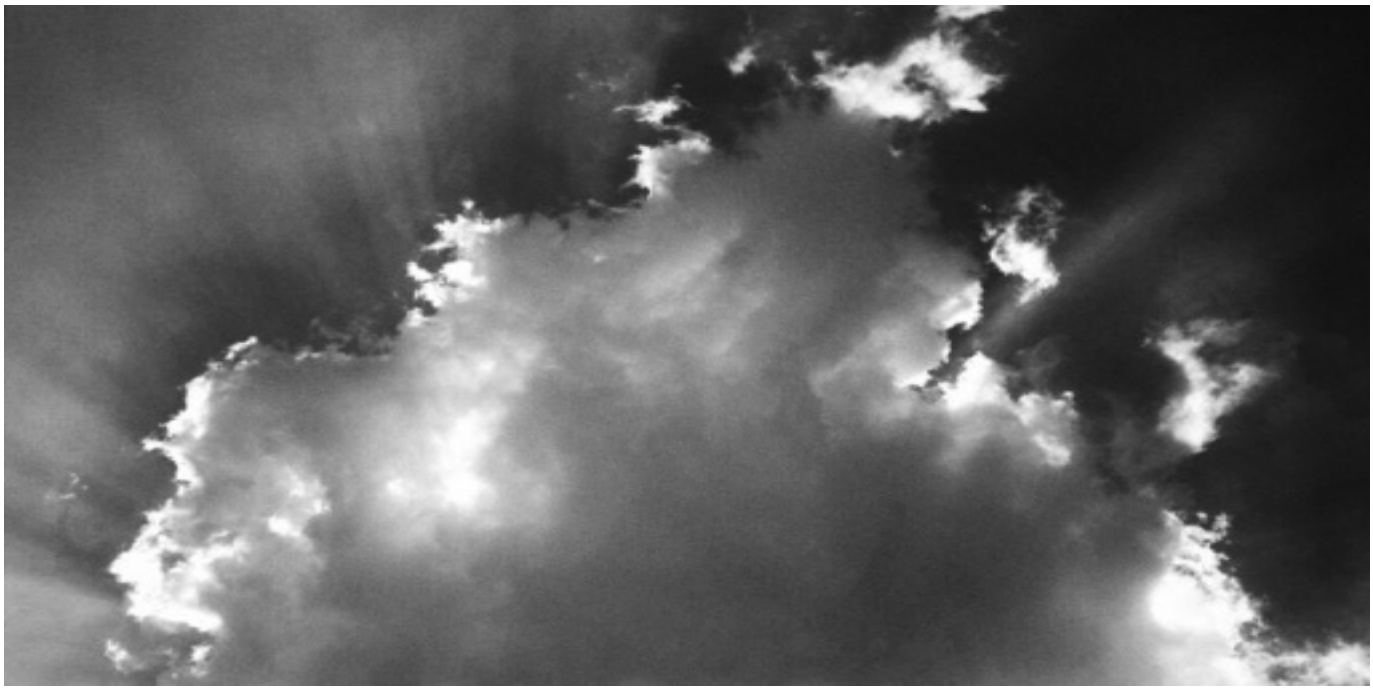
the consequences of withdrawal or flashback or revenge. The United States has the highest youth murder rate of any of the 26 wealthiest nations on the planet. In schools, there were 188,000 physical attacks, 11,000 weapons assaults, 4,000 sexual assaults during the 1996-7 school year. . Forty percent of high school males and twenty five percent of high school females report having been in a fight in the previous 12 months (2003). Assaultive trauma recurs, with hospitalization rates up to 44% for trauma and up to 25% for murder.

Within the family, there can be isolation due to fear or the formation of alliances to oppose the angry individual. In addition, early experience teaches children to develop aggressive behavior. If you follow infants closely, control of "innate" aggression starts at 17 months, and television violence exposure and being identified as aggressive by the age of eight independently sort for higher rates of conviction for violent crimes by age 30. Most violent attacks happen between friends, acquaintances, or family members.

At a personal level, people of angry disposition have greater heart attack and stroke risk than their more placid brethren, up to 2.69 times as great. Episodes of anger can increase the risk of a myocardial infarction (MI) 2.3 times baseline for the next two hours after the episode. Medical students who responded to stress with anger had a 3.1 times elevated risk of premature cardiovascular disease by age 55, and a 6.4 times elevated risk of MI .

Persons with irritable bowel syndrome have greater colonic pain and dysfunction due to corticotrophin releasing factor release in response to anger and stress. Patients with posttraumatic stress disorder have decreased hippocampal volumes on MRI scans(decreased memory) and greater dysfunction in neuropsychological tests of left hemisphere function (language and sequential memory). PTSD patients also have decreased glucocorticoid levels and more autoimmune diseases.

Animal studies show that aggressive animals, when dominance hierarchies are disturbed and they respond with more extreme behavioral outbursts, develop high levels of atherosclerosis in the coronary arteries independent of serum cholesterol, triglycerides, or blood pressure. There was also more coronary vasoconstriction and spasm in these aggressive animals. A brief episode of stress can cause dysfunction in the endothelial lining of the blood vessels lasting one to four hours, activation of the sympathetic nervous system with increased hemodynamic turbulence and endothelial damage, leading to atherosclerosis, heart attack, and stroke.



Activation of the hypothalamic-pituitary-adrenal axis by stress promotes increased steroid secretion, interference with macrophage activity and the inflammatory/immune response to infection, and cytotoxic effects on the central nervous system.

So how to balance the benefits and the costs of anger? First, we need to understand how anger arises, what triggers it, and how it works through the brain and body. Then we can observe and learn to detect the emotion as it arises. Finally, with practice, we can use the emotion to assist us in being effective, positive, and more deeply connected and attuned to our fellow humans and to ourselves.

At the base level of aggression, the emotion of anger and rage can be behaviorally elicited by the hypothalamus, a structure that sits just above the pituitary gland in the center of the skull and has overall responsibility for regulating homeostasis, hormones, and basic drive states. In animal studies, it is possible to stimulate one area in the hypothalamus and elicit a rage reaction, then move the electrode a small distance and electrically bring out fear behavior. It's as though the behaviors are a structured subroutine of motoric actions, hormonal secretions, and autonomic nervous system adjustments that, once triggered, will run independent of external feedback. If you remember the last time you expressed anger, you may be able to recall the feeling of it taking you over, that you were no longer quite in control of your actions. That loss of overall control could feel "good" or "bad", dependent on the context, your emotional makeup, and the consequences of your outburst or action, but those are all post hoc cortical judgments on the event and your behavior, not something that most of us are able to do "on the fly" in the middle of the storm. The cortex, or at least the portion of brain that does the analysis of your actions, is an observer, not an actor, during these basic, highly programmed neurophysiologic sequences. The good news here is that the cortex can then evaluate the stimuli for the emotion, the actions that occurred, and the results, and make decisions about how to process similar situations in the future. A person can make a decision to exhibit a modified anger behavior in the future, to aim for a more healthy result.

So where does this occur? In a normally functioning, uninjured brain, it begins with a perception of threat to well-being or to goal satisfaction. This is a different sense of threat than that which will arouse fear, because there is a sense of personal equivalence or superiority to the threat, so that the goal can still be achieved by active emotionally charged behavior. This involves dialogue between the amygdala/limbic system (emotional tone and memory) and the parietal lobes of the brain (multi-association areas that compute the size and quality of incoming sensations). Studies have shown that the left ventral frontal and medial prefrontal regions are the site of the go/no-go decisions and also the site of the emotional/behavioral rheostat that adjusts

Grateful Wonder

Love comes in many forms, especially when you consider the many kinds of attraction . . . even gravity!

• A video of the dear friends of a homeless person in Santa Barbara, made by its mayor; the friends are a dog, a cat, and a rat! If they can get along, why can't we?
www.youtube.com/watch?v=RuuesBhOR9g

• An article about what's going on inside the brains of couples who still love each other passionately after 10 or 20 or more years of marriage, including a video clip about the research.
http://online.wsj.com/article_email/article_print/SB120243044114252137-lMyQjAxMDI4MDAyODQwMzgwWj.html

• The Heart Nebula (couldn't resist)
http://apod.nasa.gov/apod/ap061003.html

• A spectacular picture of two galaxies twirling around each other, with filigree trails of stars marking the pas de deux of their billion-year waltz.
http://antwrp.gsfc.nasa.gov/apod/ap071101.html

your behavior to the context of the situation. So areas of the brain just above and between the eyes make that call and set other motor subsystem routines in motion. This way, just the right amount of force and energy is exerted to achieve the goals of the particular psychosocial occasion—just enough anger to get the job done. Decisions in the frontal lobe are sent to the hypothalamus, to organize the hormonal responses and autonomic nervous system adjustments necessary to support the behaviors.

The insular cortices (bilateral areas deep in the brain just above and in front of your ears) which is involved in internal body perception and "mirror neuron" empathic understanding of the other person, is probably partially shut down during anger expression. You don't want to necessarily feel the other person's pain at that point. The hypothalamus also gets involved in the body's chemical and hormonal expression and adjustments during anger. The hypothalamus is the top end of the endocrine system and has strong influence over the autonomic nervous systems. As anger is expressed, there is tremendous sympathetic system activity, with stimulation of cortisol via the pituitary and adrenal glands, increased energy metabolism in the muscles, and a shunting of blood flow to the arms from the rest of the body (arms are for fighting, legs are for fleeing). The bloodstream becomes more coaguable, to better sustain and control injury. The pain threshold is raised, so that sensations that might stop the execution of physical force are muted. The mechanism is engaged.

In more difficult moral dilemma situations, where the course of action may not be so clear, the anterior cingulate cortices (located between the eyes about two inches back from the front of the brain) become active. These are areas of error detection, that monitor the signal traffic between the frontal motor regions and the parieto-occipital-temporal sensory regions. In a somewhat oversimplified way, these are the "witnessing" regions, which note what is going on and how the organism is doing in achieving its goals. It's kind of interesting that the anterior cingulate cortex is in the location of the "Third Eye", and that it is also the area most activated during deep meditative states, when one is just being aware of awareness. So this area watches the parts of the frontal lobe we talked about above, and monitors the internal state, the environmental feedback, and the planned and in progress actions to ensure that the organisms goals are being achieved. Interestingly, my guess is that this area is truly active and in control in the masters of martial arts such as Aikido, where attun-

From Our Contributors

Tough Enough
There is
No need

To continue
Proving

That you're
Tough enough
© Tom Bowlin 2008

I can go without having it
I can go without grabbing it
Freedom from grasping
Is everlasting
Mother Devine

ement to just what is happening is the hallmark of their behavior. It also doesn't take much of a speculative leap to see the anterior cingulate as a site of delayed gratification behavior, a uniquely human trait. Here is the anatomy that might save us from the unfortunate consequences of our impulsive actions.

Individual traits and experiences can cause a great deal of variation in the functional anatomy described above. We inherit different central nervous system structure within the broad range of human brain anatomy. We have different experiences in childhood and through adulthood, which influence and literally rewire our brains to foster different habits of behavior. There may be injuries, disease, or drug/toxin exposure which can affect the brain's anatomy and it's potential to self-regulate. The differences can be so extreme that some individuals will lower their heart rate and blood pressure when attacking (almost a parasympathetic, relaxation response), while others will be more excitable with hypertension and high heart rate. Jacobson and Gottman talk about these types of attackers in their book When Men Batter Women, describing the first type of attacker as a "Cobra", and the second type of attacker as a "Pit Bull." Whichever type you might feel an affinity with, the important thought is to work with what is, with who you are, not with some "cookie cutter" program. One size truly does not fit all, or probably even most people.

In anger expression, there is the priming of the emotion, and then the release. Priming of the emotion comes from the inherited trait conditions discussed above, and includes the remembered experiences, the habitual behaviors, and the current situational context. The release involves a "go-no go" trigger, which allows the anger behavior to explode into the situation. Afterwards, there is usually a retrospective reconstruction of what happened, involving self-justification and memory of prior injury. What we remember about the situation would probably not agree with a videotape of the encounter.

So anger is a useful emotion, an appropriate response to injury or loss. Its expression is to be watched carefully, because consequences that follow our actions taken in anger may be deadly to ourselves, our loved ones, or our planet. Each of us is born with the neural circuitry and capabilities that can control the expression of anger, to make it effective and compassionate. We just need to train ourselves to use our mind (and thus brain) as a skillful means, rather than be gripped by seemingly uncontrollable forces.

Exercises for Transforming Anger to Peace

Neurological Frame

1) Spacious withdrawal/Strategic Retreat
Sit . . . establish some inner quiet. Bring the situation to mind . . . start in the situation . . . expand awareness around it—until it's a hurricane in a sake cup. The point is to disengage from limbic system reactivity and stimulate the dorsolateral frontal and parietal lobes. With repetition, this changes the frame of the action.

Perspectives on Self-Care

Be careful with all self-help methods (including those presented in this Bulletin), which are no substitute for working with a licensed healthcare practitioner. People vary, and what works for someone else may not be a good fit for you. When you try something, start slowly and carefully, and stop immediately if it feels bad or makes things worse.

The Heartwood Institute For Neuroscience and Contemplative Wisdom

The Institute is a 501c3 non-profit corporation, and it publishes the Wise Brain Bulletin. The Institute gathers, organizes, and freely offers information and methods – supported by brain science and the contemplative disciplines – for greater happiness, love, effectiveness, and wisdom. For more information about the Institute, please go to www.WiseBrain.org/Heartwood.html.

2) Temporal Withdrawal/Count to ?
This is classic, quick version of #1, useful on the fly, with the same aims of disconnecting the reactive from the analytic.

Psychological Frame

1) Counterintuitive Exercises
Anger as the trigger for love—"I love the one who is threatened." Love for allies, including the impaired allies.

3) Structural Analysis (TA)
Sit . . . establish some inner quiet. Bring the situation to mind as objectively as possible, analyze the roles and motivations of all involved, what was gained, what was lost, who was Parent/Adult/Child, who was Victim/Perpetrator/Rescuer

3) Foreseeing and Protecting
Focus on what makes you feel strong. Consider Nietzsche's famous saying: That which does not kill me makes me stronger. Make a plan to deal with what makes you angry, and build skills and alliances and other resources for accomplishing your plan, one step at a time.

Contemplative Frame

1) Emptiness practice
Observe many of the causes and conditions for all persons involved. Observe the
transitory nature of all of these beings and states of beings: You are as a flash of lightning in a summer sky… knowing this, why do you quarrel?

2) Dropping Story—Abandoning Self
Meet the anger as it arises, at the point of the bare sensations of it (called "contact" in Buddhist psychology) . . . observe the parts of the anger reaction that are pleasant, unpleasant, or neutral ("feeling") . . . and then notice the automatic tendency of the mind to magnify and reach for the pleasant, to dislike and resist the unpleasant, and to ignore the neutral. This will help prevent the story around the anger from gaining traction in your mind, particularly through stimulating a sense of "I who has been mistreated/disrespected/harmed." If there is no self to be injured, but only the arising and passing of states of mind (via passing electrochemical cascades in the brain), then freedom to choose the most skillful and compassionate action is much more available.

3) Metta (lovingkindness) practice
Hate is never conquered by hate. Hate is conquered by love. This is an eternal law.
- The Dhammapada
Doing metta practice for oneself, one's friends, and then one's enemies will change your reactivity to difficult people and situations

4) Invoking your community
One of the most painful states that arises with anger is the isolation of fear. In one's space of attention, bring to mind those fellow travelers on the path, meditators, friends, teachers, all of them working to develop their skills in working with anger. All of them offering you their support and encouragement.

Homework

1) Driving meditation using metta—"I am being traffic for all of these people." "May we be safe from inner and outer danger and harm."

2) Family gathering—Take one difficult relative and hold them in compassion for one hour. See how this feels.

Biochem Corner:

Natural Interventions For Feeling Strong

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Here is a fundamental summary of things you can do to have more sense of vitality and strength.

Hormones

1. Thyroid sets the basic rate for metabolism. TSH should really be under 3.0.
2. Estrogen for women and testosterone for men (and somewhat for women).

Vitamins

1. Always start with a good high potency multi-vitamin/mineral. They should have 100% of the daily value (D.V.) of minerals, and very high B-vitamins (500% or more of the D.V.).
2. Take a high B-complex: B-50 or B-100 complex.
3. Use B-12 as a sublingual. The type "methylcobalamin" is best. 1000 – 5000mcg.
4. Vitamin B-5, pantathenic acid. Therapeutically, you could use 250 – 500 mg.

Minerals

1. Magnesium is important. 400 – 1000mg. Magnesium citrate will loosen your stool, but magnesium glycinate will not.
2. Iron is critical for energy. Have your iron levels checked, and supplement accordingly.

Amino Acids

1. The neurotransmitters, norepinephrine and dopamine, lift energy, mood, and attention. They are made from the amino acids, phenylalanine and tyrosine. You can try 500 – 1000 mg. of one or the other. (Take in the morning on an empty stomach) However:
2. Always enhance your serotonin before enhancing dopamine and norepinephrine. Use 50 – 150mg. 5-HTP, the precursor to serotonin. (Also on an empty stomach in the morning.)

Diet

1. Lean toward a low carbohydrate diet with very low levels of sugar and flour products!
2. Avoid food allergens if you have any symptoms (G.I. problems, congestion, fatigue, brain fog, etc.). The main food allergens are: gluten (wheat, oats, rye, barley, spelt, kamut). dairy, soy – less so eggs, citrus fruits.
3. Eat lots of vegetables, lean animal protein, fruit, and some whole non-gluten grain.

Optimize your Gastro-Intestinal Health

1. Use beneficial bacteria. Have an assessment if you have G.I. symptoms.

Offerings

Rick Hanson, PhD, and Rick Mendius, MD

1. At Spirit Rock, in 2008, these daylongs are scheduled:
• The Neurodharma of Love, led with Sylvia Boorstein, on Sunday, March 30. Sylvia, as you may know, is quite extraordinary – sort of a cross between a Jewish grandmother and the Dalai Lama – and this workshop will be memorable. The emphasis will be on relationships in general and love in the broadest sense, integrating deep teachings on compassion and lovingkindness with a clear-eyed understanding of how we evolved to be caring toward "us" and often wary and aggressive toward "them."

• Equanimity, led with Christina Feldman, on Sunday, May 11. Christina is a senior Vipassana teacher from England who combines profound penetration with practical good humor. Equanimity is the key to freedom from emotional reactions, and to cutting the chain of craving and clinging that leads to suffering.

• The Neurology of Awakening, on Saturday, September 6. We'll cover how to nurture the brain states that foster the steadiness of mind leading to the deepest and most liberating insights. This is our foundational workshop, with solid neurology and practical tools for activating, step-by-step, the brain states of the Buddha's progressive process of contemplative illumination.

• The Hard Things That Open the Mind and Heart: Practicing with Difficult Conditions, led with James Baraz, on Sunday, November 2. This is for people grappling with difficult conditions – both internal and external – and for caregivers and friends who support those individuals. These include challenges with the body, mind, and life circumstances. We'll cover Buddhist perspectives and practices for difficult conditions; lovingkindness for oneself and for any being who suffers; brain-savvy ways to strengthen your capacity to be with the hard stuff; and methods from the intersection of the dharma and neuroscience for lifting mood and cultivating joy

• Resting in Emptiness: The Evolution of Awareness and the Transcendence of the Self, on Sunday, November 30. This workshop will address the thorny and fundamental question of . . . "me, myself, and I." The self – with its tendencies to grasp after possessions and take things personally – is perhaps the premier engine of suffering. We'll explore the evolution of the apparent self in the animal kingdom, and the ways in which the self is real and is also not real at all, coming to rest more and more in the underlying spacious awareness in which self appears and disappears.

2. At One Taste in San Francisco – an organization and living collective dedicated to conscious and embodied relationships – on Tuesday evening, April 15, we will be giving a public talk on the evolution – and transcendence – of jealousy. It should be a fun, playful, and informative event.

3. At the Sati Center in Redwood City, California, on Saturday, October 4, we will be presenting the Resting in Emptiness daylong.

4. At Claremont Graduate University, during October 19 – 21, we will be discussants at a conference on using neuropsychology to help illuminate the common ground – and differences – among the contemplative practices of different faith traditions.

Fare Well
May you and all beings be happy, loving, and wise.