

The Neurophysiology of Revenge: How Our Brain Pushes People and Nations Toward War

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Recent research in the neurophysiology of emotions shows that the desire for revenge, "We'll show them! They won't get away with that!", is deeply ingrained in the human brain and in human evolution. This does not mean that the expression of revenge is inevitable. It means that the effort to transform the desire for war requires more than correct reasoning, rational foresight and common sense. It means to overcome a deep neurophysiological impulse that is universal, to "love us, hate them!" and, therefore, to "attack them!". This impulse needs to be reflected upon and contained more effectively than ever before due to the new dangers of nuclear war and global overpopulation.

Not Only the Interests of Power

The peace movement is losing ground. When 250 billion dollars are being spent everyday for war on a worldwide basis, and when this sum is increasing every year, we must admit that our ethical message, "Make love, not war!", "Peace through peaceful means, not violence!", is not being heard. This article attempts to show the human depths of the problem.

When we attribute the people's war cry, "Wipe out the enemy!", to a manipulation by mass media, the demagoguery of politicians, the economic interest of the military, arms industry and international oil companies, we are pointing to the forces of the central power that have dominated civilization for ten thousand years. (Historically, the over-muscled "central power" began with the development of agricultural reserves that permitted population expansion, accumulation of wealth by a few, and the military control of these few over the majority.) Therefore, this analysis of why war happens is correct. But it is incomplete!

To "Contribute" to a Problem Does Not Mean to Cause It

I often receive a negative reaction when I ask friends in the Peace Movement, Ecology Movement, Social Change Movement, **"And don't the people themselves contribute to this unhappy state of affairs? Or are we merely led in ignorance by the politicians and mass media?"** But this causes a misunderstanding. Friends: "You mean that the people are to blame?!". And this leads to a defensive reaction. Friends: "It's not the people's fault! It's because of those in power who manipulate the people!" And this can escalate into a dispute, "Whose fault? Who is to blame?"

But such a misunderstanding can have grave consequences when a whole nation becomes defensive. The trauma of the war pushes people into an either/or form of reasoning. Everything is seen in terms of black and white. "One side must be right, and the other side must be wrong! We must be right, and they must be wrong! If anyone says that **they** are right, that means that we are wrong! And that cannot be!" Such primitive reasoning is pushed by neurophysiological impulses, and we can all be vulnerable to this negative tendency. (More about individual neurophysiology below.) My own point of view: "To say that the people **contribute** is not to say that the people are 100% responsible!" To "contribute" means to have acted and communicated, in a preceding time, in such a way that "the enemy" aggression is **worse** than it might have been. "But we didn't do anything to them!" a blatant denial of objective reality, might be overcome with the presentation of evidence. But even so, a national or religious group that is attacked, and then retaliates, will say, "What we did to them was justified. And what they did to us is worse than what we did to them!" The neurophysiology of traumatic experience inevitably deforms reason in just this way: "There is nothing we have to change in our own behavior. We are totally innocent. The

total problem comes from the Other, the enemy." And the only positive action foreseen is to attack the enemy, not to change one's own behavior. Both sides reason in the same way. The situation worsens, but **brain neurophysiology explains why people can think destructively and nevertheless feel better:** In the brain, the automatic sub-cortical emotions can deform all higher thinking. And why do people feel better? Because the strategy of revenge makes people feel less humiliated, less distressed, more clear about "what has to be done" and some people will even feel "ready for courageous action." All these "benefits" of brain dynamics occur when the reaction to the trauma becomes a unified cry, "Kill them! Love us!"

September 11th

The 21st century opened with this tragic logic when George Bush declared, after Sept. 11th., "We will hunt them down! We will wipe them out!" Method? Attack Afghanistan. Then Iraq. And future events of this century may show that the whole world will pay the tragic consequences for this neurophysiological, impulse-dominated illogic. The escalation continues, justifying each side's indignant defense, "Look at what they are doing to us! They will pay!"

What did George Bush **not** say? He did not admit, "We are sorry that the United States has created a series of actions that have provoked the Arab world and the Islamic culture. We are sorry for the bombing of your factories in Sudan (a pharmaceutical factory was bombed because the Americans claimed it was making military weapons), for the embargo of Iraq that has caused the death of 500.000 children, for the one-sided support of Israel in its conflict with the Palestine nation."

At this moment, in 2006, five years after the tragic event of Twin Towers and its aftermath of war in Afghanistan and Iraq, the American people, or at least 50%, have finally concluded, "The war in Iraq should have never begun!" But why was it virtually impossible for the people to foresee the destructive consequences of violent retaliation? Noam Chomsky spelled it out so clearly in his book, **September 11th**. "The attack of Afghanistan and Iran was the best way to recruit more terrorists who wish to defend the honor of Islam." But this message could not be received by a people that felt hurt and humiliated by the destruction of the Twin Towers and the death of more than 3,000 people. Why?

Neurophysiology Creates Genetic "Proclivities" That Can Be Changed

We will present the neurophysiology of revenge. This is a brain mechanism which involves the unconscious, sub-cortical forces that are a part of our genetic heritage. But before this, it is important to see the implications. **If "the people," as distinct from government, industrial and military "central powers," have an active role in wishing for revenge, then the analysis of war as totally due to political, military and industrial interests is incorrect!** The people also wish for war! They are not just the victims of economic and political interests. On the positive side, this also means that the Movement of Non-Violence, which wishes to help people overcome the logic of attack and revenge, has more responsibility than ever before in playing an educative and spiritual role for the prevention of war in the future.

In addition, we must avoid a misunderstanding. By demonstrating that aggressive attack and revenge can come from species development that is engraved within the genetic code, does **not** mean that such behaviour is inevitable! We have many genetic code "proclivities", meaning tendencies to act in a certain fashion. But culture, learning, family experiences, the social context, etc, can all modify and even inhibit certain tendencies. For example, hierarchical dominance, aggressivity toward strangers, fear of isolation and, on the positive side, empathy and reciprocal cooperation, represent other "proclivities" engraved in our genetic code. But such "proclivities" are not totally hard-wired, and therefore, not totally inevitable, in the way that our genetic code makes inevitable our physiological functions such as our heart beat, respiration, gastric secretions, arterial pressure and hormonal output.

Some genetic code capacities, like to eat and digest food, must be carried out, whatever our experience teaches us, because our physical life depends upon these vital processes. But other genetic capacities, like "strike back for revenge," can be more or less cultivated, or else suppressed, according to our formative experiences. In conclusion, **even if we can demonstrate a physiological, genetic basis for revenge, the argument is not closed. The emotions and strategy of revenge can be changed!** But if this universal physiological tendency is **not** faced – such as when our analysis of war concludes with, "The people are only victims of the oil companies!" – then we can continue to bathe in the comforting illusion that war is a contrivance of the power crazy bad guys and that **we, ordinary people, have no responsibility for such massive destruction.**

"Are You With Us Or Against Us?"

First, aggressivity is not a rational strategy that comes from the top and "highest" part of the brain, which is called the conscious cortex. Instead, aggressivity is an automatic response to a provocative situation that comes from the part underneath the conscious cortex, called **the unconscious sub-cortex**. A neuronal center called "the amygdala" (LeDoux, 1999) conditions human beings and lower animals to react with "fight or flight" active responses when the living creature is in front of a formidable opponent. And this sub-cortical motor sends messages "upwards" to the higher cortex, thereby biasing all of our thinking. This genetically coded proclivity exists in all of us. Thus, our "intelligent cortex," the pride of humanity, can also **contribute** to increased vengeance, since it can enhance our memory, group identification of "Us" vs. "Them," satisfaction for a seemingly effective "strategy for action," and psychological pride for being "good" (ethical, democratic, chosen by God., patriotic, culturally superior) when we are pitted against "an enemy," "the bad guys," who are "evil," "destructive," "uncivilized," and "inferior." **These are the self-righteous concepts that we will find as the publicity for every war.** Not only do the mass media, dependent upon politicians and financial sponsors, spew out such revolting contempt for other people, but **we, the people,** eat it up. Fox News, for example, overcame CNN, in popularity, when it began to give out "hate them, love us!" patriotic war news after September 11th. And George Bush won his second term in office **not** because of his domestic policy, but because of his enthusiasm and ambition in conducting the war against Iraq.

Revenge is "Mirroring Behavior"

Another neurophysiological principle that favours war is the automatic tendency for "mirroring the other's actions." The research of Giacomo Rizzolatti, of the University of Parma, has brought to light these "mirror neurons." Because of these "mirror neurons," **we have a universal tendency to imitate the Other's behaviour.** This genetically hard-wired proclivity is especially evident in infants, who imitate, soon after birth, the facial expressions, sounds and movements of the caretaking parents. And even if the proclivity becomes partially suppressed, as occurs in all children at five years of age, the basic tendency is always present and remains so for life. The benefits of "mirroring the other's action" is evident when the other's action is collaborative, peaceful, constructive, etc. **The "mirroring tendency" creates rapid learning and promotes cooperative action.** Example: "Let's all work together to build this hut!"

But the very same "mirroring tendency" can also favour competition, such as when the other creature is performing his action on your territory. **When the other's action is also aggressive, the "mirroring tendency" will promote an aggressive response identical to, if not worse than, the provocation.** And so our genetic proclivity favours an escalation of aggression. This is how we create war!

What happens when we try to inhibit our spontaneous aggressive reaction? Henri Laborit's research shows that this will make us feel very uncomfortable. We will feel out of balance.

(Thus the revenge reaction helps the brain to remain in equilibrium!) **And our bodies will begin to suffer if this inhibition goes on for too long.** Our corticosteroid levels (stress hormones) will become **over-secreted**, causing damage to our protein synthesis and immunological protection. At the same time our noradrenalin will also become **too high**, causing hypertension; in contrast, our hormone that leads to action, adrenalin, will be **reduced**, making us feel passive, incapable, inept, even though our system of vigilance – “Something is terribly wrong!” -- gets overworked. (Prof. Kevin Ochsner’s research shows that the cingulate gyrus, which monitors the situation and informs us when “something is wrong,” can lead to **compulsive action**.)

Deeper Neurophysiological Structures

Below the sub-cortical amygdala we have yet other brain processes that push us toward revenge. A physical attack, for example, also stimulates the secretion of the brain’s “neuromodulators.” (This brain system was described by Nobel Prize Winner Gerald Edelman.) Neuromodulators activate our brains, very much like anti-depressants. The chemicals are sent in jets all over the brain to stimulate all of our neuronal processes: The **dopamine** pushes us toward action. The **noradrenalin** focalizes thinking. The **acetylcholine** creates a high level of vigilance. To **not** act is like putting one’s foot on the brakes of a car at the very moment that the other foot is pushing the accelerator down to the floor, thus driving the motor into high speed and at the same time blocking the axel.

One more neurophysiological factor pushing us toward revenge involves our “visceral reaction,” meaning how we feel deep down in the belly, as well as in the chest and around the heart. Dr. Steven Porges of the University of Illinois shows that there are two primary “visceral” strategies when the organism faces an attack: either fight-or-flight, **a vigorous action**, or else “freeze,” do nothing, **inhibit the response**. Dr. Porges shows that this inhibited response creates a very unhappy and painful experience. It is as if there is “a hole” in the belly, “everything is lost,” “the bottom falls out.” It is difficult to tolerate, and the brain is in disequilibrium.

“They Look Like They’re Gloating!”

Can we see evidence of this discomfort and disequilibrium when people renounce vengeful counter-aggression to an attack? (The fact that the counter-attack is called “protection” or “a preventive war” should not fool anybody. The motor of revenge has been turned on.) It is easier to look at recent events that demonstrate **the benefits of vengeance**, that is, benefits in terms of brain equilibrium: The American people, for example, received with enthusiasm George Bush’s message to “wipe out the enemy!” “We will hunt them down!” The use of “hunters” language goes well with the American people. And from the other side of the globe came the TV images of people in Arab countries jumping and down in joy, smiling and waving their arms, while their “heroic” soldiers with Kalashnikovs were raising their guns over their heads. This image of the joy, “We got them back!”, occurred every time the Arab people received news of Islamic attacks against the Occident. **Thus two peoples on opposite sides of the globe have been mirroring one another, just as their leaders, George Bush and Osmar Bin Laden, mirror one another’s threat and contempt for the Other while brandishing one’s own nation or religion as superior.**

It is hard to find examples of “inhibition of action” and “inhibition of revenge” when an entire people feels attacked. It does not occur very often. And if any group today shows itself to be “soft” or “weak” when threatened by the enemy, this deviation from normal is returned to the mainstream culture of attack merely by voicing the phrase, “Remember Munich!”

Neurophysiology shows that the retaliative response, “Punch them back!”, is too deeply ingrained to be overcome by merely preaching peace. Something more is needed.. Whenever the retaliative reaction becomes inhibited, the organism feels very uncomfortable. **Revenge, despite its destructive consequences, creates equilibrium in the brain.** This means

that a peace movement must find more vigorous means to deal with the uncomfortable feeling that surges up when aggression becomes inhibited, when the response to aggression involves, "We don't strike back!" Theoretically, a peace movement can define its project in **active** terms – "We can create peace by courageous action!" – but revenge has the psychological advance of imagining that the enemy will be humiliated, "brought to its knees," "shown a lesson," or even, "eliminated from this world." The point is that the task of the peace movement is enormous when its goal is to convince those people who have been directly exposed to the violence of war, along with their family members, that the road to "peace through peaceful means," rather than "peace through war," will be found to be more secure and just.

The Danger of Voicing Peace in a War Torn Country

There is yet another reason why it is difficult to find examples in which those people who are feeling attacked will show a commitment to peace through peaceful means: Peace-oriented people will inwardly refuse the logic of revenge, even though it is masked by terms like "preventive defense," but they may find it **dangerous** to voice their wish for peace. For example, the Israeli-Palestinian Peace Association called "Windows for Peace" invited Israeli and Palestinian youngsters who have shown a commitment toward peace to come to Italy and discuss their feelings about the conflict that has been going on for over fifty years. These courageous peace activists confided that if they were in their home countries, rather than in the safe countryside of Toscana, to voice their views for peace would put them in a dangerous situation. (see www.Windows for Peace), and has already done so.

The point is that every person lives within a "reference group" which influences identity, point of view and emotions. We can be sure that military leaders and war prone politicians will be influenced by friends and companions who are in "in the same boat," that is, who have the same interests, social background, vision of the future, etc. But even ordinary people are conditioned, and to some extent controlled, by their own "peer group". Friend to friend: "*You think that we have done actions which have partially contributed to this tragedy that has been inflicted on us? **The enemy would like what you are saying!** Why don't you go live with them?*" Thus the "deviation" toward peace will be menaced, throttled and squashed, much like a feedback mechanism, which is called a "governor," that returns a process which is deviating from the norm, back to the original trajectory and equilibrium.

Just try to imagine, during the days after September 11th, a television program in which a public figure says, "Perhaps we have provoked the Islamic world (through bombings, embargos, discrimination, social prejudice, etc.), and this has fed their hostility!" What would happen? That public figure would be black-listed, lose his job, lose the support of his party, lose the next election. And in like manner, just try to imagine, after the U.S. attacks on Iraq, in which countless civilians died, an Islamic religious leader who publically tries to show "understanding" for the military belligerence of the U.S. and English. What would happen? I imagine that such a person would have his life threatened.

In other words we take into our deepest unconscious "the community" that surrounds us. "Identity" means that we will have empathic feelings if something negative happens to a person within our own national or religious group. That is the feeling of "We." Meanwhile the death of the Other will leave us cold, or even give a certain satisfaction (thus, the impulse of "revenge" if we feel the Other has hurt Us).

A Challenge for the Peace Movement

In summary, our neurophysiological processes of brain and body make us keyed up for a vigorous action, for "Getting back!", when we are exposed to physical threat and attack. This happens on an individual level, as well as within a community, nation or international religious group. Everybody's brain is going into tilt when the news of destruction bombards us by means of the television and newspapers. **This highlights the challenge that faces the**

Peace Movement. How can a Strategy for Peace replace our tribal War Strategy? The world is on the brink of a series of military escalations, whether it be the conflict in the Middle East, the spreading of nuclear arms, the competition for oil or the control of the over-population. To become aware of our neurophysiological proclivity for revenge, as this article tries to accomplish, may help us better see the depths of our dilemma and, at the same time, mobilize, still further, our determination to preserve our planet and all its peoples.

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[Windows](http://www.win-peace.org) for Peace: www.win-peace.org