WHOLISTIC HEALING PUBLICATIONS

THE INTERNATIONAL JOURNAL IJHC OF HEALING AND CARING

WHOLISTIC HEALING WHP PUBLICATIONS

WHOLISTIC HEALING WHR RESEARCH

January, 2016 **Volume 16, No. 1**

Neuroplasticity Challenges: Cognitive and Emotional Disuse Atrophy

Daniel Benor, MD

Abstract

Neuroplasticity of the brain may help us to use the transducer that is our brain in an economical manner. It may, however, distort our perceptions of reality and may make it difficult for us to perceive aspects of our world that are outside our habitual frames of reference. This may help us to understand some of the reasons for the slowness of humans to respond to global warming and other threats to the survival of life on our planet as we know it today. Other reasons, including the unidentified and unresolved effects of serious trauma and grief in the collective consciousness of humanity that are also contributing to the human march to collective suicide are discussed elsewhere (Benor, 2014; 2015a; 2015b).

Key words: Neuroplasticity, neuroplastic hypertrophy, neuroplastic atrophy, mind, brain, consciousness

Use it or lose it.
- Jimmy Connors

Background

"I can't move… I have no idea whatever how to take the first step" (Sacks, 1984, p. 107).
The late Dr. Oliver Sacks, a neurologist and popular author, found he could no longer use his leg to walk after his leg was released from a surgical cast.

I invite you on a journey to explore some of the ways you perceive and react with your inner and outer worlds. Dr. Sacks' leg had been released from a cast that he had worn for seven weeks – following surgery to repair a severely torn tendon in his thigh. There was no objective residual physical or neurological damage. His disconnection from his leg following the removal of his cast offers us wonderful lessons on how the brain works.

Your brain controls a wonderful array of perceptual, conceptualizing, and body-monitoring functions. For the most part, your brain allows you to live on automatic pilot. This saves you from having to think about each action and reaction you experience with inner and outer issues that your body, emotions and mind are engaging in. You get out of bed in the morning and don't have to think about which muscles you are using to push yourself upright or to take your fist step towards the bathroom. Your senses alert you to what is going on around you and your habits from past

experiences enable you to respond – with or without conscious awarenesses. That's the good news.

The bad news is that sometimes your automated brain functions can create problems for you that have far-reaching consequences. You may even be unable to move your limbs or may suffer from selective blindness – and you may be blind to the fact that you have these problems.

Your brain is an amazingly complex organ. It consists of a forebrain that handles perceptions and decisions about interactions with the outer world; a midbrain that processes emotions; and a hindbrain that controls automated body functions of your heart, lungs, digestive, elimination systems, and more. All of these parts are intimately interlinked and participate together in the management of your inner and outer world activities.

Let's start our explorations by looking at our communications systems. As young children we learn gradually to understand ourselves and the part of the world we live in. With time and experience, we develop habits of responses to our world – through seeing the benefits and costs of our decisions. We are constantly processing many thousands of bits of information – from our interactions with our outer and inner worlds. How lucky we are that much of this is automated and does not require a constant, conscious effort!

Our brain also makes decisions about how our brain itself functions, during the process of learning – setting up and monitoring collections of brain nerve cells into networks to handle the flow of informational inputs, processing of our awarenesses, and controlling outputs to various parts of our bodies. Let's take the example of athletic performance. As we learn the rules of baseball and the moves required to watch the pitcher, swing the bat, and field the ball, our brain is organizing into memory banks our understandings of the rules of the game and the experiences of our muscles in playing the game; outputting orders to the muscles to make the appropriate moves; and monitoring our successes and failures in order to improve performance. With practice, many of these perception and action processes become automated. This makes our swing of the bat and our throwing of the ball ever so much more quick and accurate.

The wind-down from engaging in a practiced activity is also monitored and processed by the brain. Even if we're quite good at playing baseball (or any other sport) but don't continue playing and practicing our skills, we will find that our sports abilities go into disuse atrophy. The brain releases some of the nerve cells from baseball duties and redirects them to help in other activities. Even though we might have been quite good players, our baseball skills are weakened as the baseball nerve networks in the brain are gradually dismantled – transferring uses of the unused brain cells to currently-active tasks.

Though I'm well aware of how my brain carefully economizes its allocations of unused nerve cells, I was still startled by how awkward I was when I experienced this in personally. I had played racquetball, squash and tennis from my teen years into my early thirties and was a pretty good player. But when I went out on a court with my eight year-old grandson, Sammy, after three decades of not having played racquet sports, it was like I was starting over from square one. I was embarrassed at how awkward I was on the tennis court. I could remember having swung my racquet in forehand and backhand strokes, but was now incredibly awkward with both of these. My eye-hand/arm coordination was that of a crass beginner on the tennis court. This was a clear reminder to me about disuse atrophy.

What happens in our brains when we lose our well-practiced skills in sports and in other physical activities? Modern neuroscience is clarifying that our brain structure and functions change in accordance with the intensity and frequency of our engagements with outer and inner world experiences. Frequent practice of any actions will lead our brain to increase the numbers of

neurons that are assigned to coordinating our perceptions and muscle actions that are required for that activity. Decreasing how often we practice these actions will lead our brain to contract the number of neurons engaged in these activities. The processes of these buildups and atrophies are called *neuroplasticity*.

Similar neuroplastic disuse atrophy occurs with cognitive skills. One example we all experience is when we learn to speak.

Neuroplasticity with language

We learn our language in infancy from those around us, coming to comprehend the sounds we hear and mimicking them ourselves. Each language has its spectrum of included and excluded sounds. Infants in every culture are born with a capacity to produce the full spectrum of vocal sounds appropriate for any language. Children learn to mimic the sounds they hear. An infant will mimic his parent's speech. An infant who grows up in a culture different from that of her parents will also learn to mimic the sounds of the local language she hears – even though these may include a different spectrum of sounds from those of the parents' spoken language. Japanese children growing up in an English speaking community will learn to pronounce the sound of 'R' accurately, even though their parents, born and raised in Japan, may have difficulty pronouncing this sound.

Neuroplastic disuse atrophy
When we grow past our early years, it becomes increasingly difficult to learn new languages. After the age of five, our brain plasticity for mimicking sounds gradually diminishes, narrowing the range of comfortable verbalizations. By the middle to late teen years it becomes difficult to acquire and use sounds that are not common in the language(s) a person is used to using.

So we are all born with the capacity to acquire any language, but through using the sounds of our local language(s) exclusively, we gradually come to limit our abilities to make sounds that are included in other languages but are not included in our own language(s). The parts of the brain that had the capacity to make the sounds that we've never used will gradually lose their abilities to do so. This is another form of neuroplastic disuse atrophy, similar to motor skills disuse atrophy.

It is logical and reasonable that the brain should function in these ways. This enables the brain to divert less used and unused nerve cells to take on the currently active tasks, while letting go of functions that are not being used.

Problems with neuroplastic disuse atrophy

Neuroplastic disuse atrophy and dissociation
The loss of well-practiced skills can occur quite rapidly and strikingly. Even activities we take for granted and had managed all of our lives can suffer from neuroplastic disuse atrophy. Dr. Oliver Sacks provides an interesting example of how this can happen. Dr. Sacks was a neurologist with a marvelous gift for observation and narrative. In a remarkable book called *A Leg to Stand On,* he described how he suffered a severe tear to a tendon in his thigh while mountain climbing, underwent surgical repair, and then slowly and painfully recuperated.

After fifty days in a cast, Sacks was startled to discover he had dissociated from his injured limb. He simply could not connect his mind to his leg. This appeared to result from a combination of pain, enforced immobilization and sensory deprivation in a small hospital room. When it came time to begin walking again, he felt he literally didn't have a leg to stand on. He simply could not feel a connection with the 'white bit' that hung from his hip.

When two physiotherapists stood him up to take his first steps, Sacks said, "I can't move... I can't think how to. I have no idea whatever how to take the first step."

One of the physiotherapists had to move his leg for him in order to get him into a mode in which locomotion was even conceivable. Next, he had to look at the leg and calculate visually each movement in his head, because he had no sensation in the leg and no awareness of its position without his visual inputs. This was not simple, because his visual depth perception was severely distorted when he tried to connect with this limb that had not been within his awareness or under his control for seven weeks. This was awkward and resulted in what he called a 'pseudo-walking.' He had to carefully calculate each movement of his leg, which he managed only with enormous difficulty.

> And suddenly… came music, glorious music, Mendelssohn, *fortissimo*! Life, intoxicating movement! And, as suddenly, without thinking, without intending whatever, I found myself walking, easily, *with* the music. And, as suddenly, in the moment that this inner music started, the Mendelssohn which had been summoned and hallucinated by my soul, and in the very moment that my 'motor' music, my kinetic melody, my walking, came back – in this self-same moment *the leg came back*. Suddenly, with no warning, no transition whatever, the leg felt alive, and real, and mine... I *belonged* in the leg. I *knew* how to walk... (Sacks, p. 108)

Sacks later researched the medical literature, finding only rare clinical notes on psychological paralyses following prolonged immobilizations of people's limbs. This appears to be a common phenomenon, but very few doctors are aware of it. The first recorded note on such neuroplastic atrophies came from Hippocrates, who observed that if people's limbs were immobilized for more than 50 days, they might never again regain their use – even though there was no apparent residual injury that prevented them from moving (Sacks, 1984, p. 99).

While still in the hospital, Sacks asked other patients on his orthopedic ward whether they had had any experiences like his own. Several replied that they had encountered very similar difficulties in reconnecting with their limbs, after being immobilized for several weeks. Yet none of them had mentioned these issues to their doctors, and none of their doctors inquired about them.

These observations strongly suggest that areas of the brain responsible for perception and activation of an immobilized limb are quite rapidly diverted away from their assignments to manage the limb that is not being used. No one has yet used neuro-imaging techniques to identify changes in the brain that may correspond with this dissociation that occurs with disuse of a limb. However, it appears so likely that this mechanism is at play that I invite you to consider further, similar phenomena that appear to be explainable through what I label here as *neuroplastic disuse atrophy.*

Perceptual and conceptual neuroplastic atrophy

Neuroplastic atrophy occurs also for thought processes. Oliver Sacks was kept in a small, windowless room for several weeks. He observed that his visual connectedness with broader spaces also atrophied. It was initially disorienting for him when he was moved into a room with a window looking out of the building. Being in a small, windowless room had very quickly conditioned him to a sense of the world around him being limited by the four walls of his room. At the same time, he had very quickly started to lose his sense of relationship with the broader world outside. His normal sense of connecting with wider vistas returned much more rapidly and readily that did his connectedness with his leg. For this discussion I will call such perceptual changes *neuroplastic blindness*.

Neuroplastic blindness such as the above occurs when what we perceive contradicts our past experiences, beliefs and/or expectations. Our mind does not absorb what we perceive because the

perceptions do not fit in the patterns and categories we are familiar with or upon which we have been relying, and we continue to be narrowly focused within our more familiar boundaries. Sacks developed a neuroplastic blindness after just a few weeks in a windowless room. His mind had grown unfamiliar, to a limited extent, with the broader world outside his room.

Neuroplastic blindness may also occur when something we have never seen before, or something we have seen before but don't expect to see in the present context appears unexpectedly before our eyes. Our brain blanks out items within our visual field because it does not understand them or does not expect them to be there.

Here are several further examples of such neuroplastic blindness:

1. A classical example is a video of three people with white shirts and three with black shirts passing basketballs to each other. You are told to count the number of passes that are made by the team with white shirts. Selective perception leads many viewers to be blind to images on the screen that are, objectively, grossly apparent (Selective perception video, Web reference). It has yet to be clarified why some viewers of this video experience selective blindness and others do not. I invite you to check this out for yourself.
2. An apocryphal historical example is reported regarding natives of a Pacific island who were visited for the first time by Europeans in their galleons. The natives allegedly reported they did not see the European ships. We may speculate that the galleons were so much larger than anything they had ever seen before that their minds balked and would not or could not absorb what their eyes were perceiving.

Extending our awarenesses of neuroplastic atrophies further, we find common blindnesses to emotions that are outside our comfort zones.

3. Grief is a particularly painful experience. We grieve the loss of a family member, friend, home, job, or of other sources of love, caring, support and stability in our lives. We are also reminded of the potential impermanence of everything in life, including the impermanence of our own lives. One of the early stages of grief is *denial*. We look for every possible way to deny or exclude the possibility of our loss. This is a rather primitive way of dealing with unpleasantness, and one that rarely works for long before we absorb the sad reality of our situation and feel the grief. In the normal course of grief, denial of the death usually lasts only a day or two at most.

   But some people continue to deny the depths of their grief, which may include the spectrum of hurt/sadness/mourning plus anger and/or guilt. This psychological maneuver puts blinders on their awareness. In and of itself it is not a neuroplastic loss of awareness, but rather a diversion of awareness away from the feelings. However, when people repeatedly practice such diversions and denials of feelings, they can develop a generalized neuroplastic void for the awarenesses of having feelings of grief. In more severe cases, they may even lose awareness of having feelings in general (Benor, 2004; 2015b).

4. Trauma can leave residues of post traumatic stress disorder (PTSD). This can involve fears, phobias, temper outbursts, insomnia, and avoidance of stimuli and situations associated with the trauma (DSMIV, web ref). As with grief, a habitual avoidance may develop for feelings involved in the original trauma. This can lead to neuroplastic unawarenesses of and unrespon-siveness to these emotions in particular or to blunting of emotional awarenesses in general.

   Here is an example of such avoidances of emotions:

   - Sophie was a student psychotherapist under my supervision in a mental health clinic. I

regularly reviewed her intake interviews and generally had found her to be a thorough and conscientious therapist. I was surprised when she presented the history of Laura, a new client who was having serious difficulties in her marital relationship, following the promotion of her husband to a more demanding position. Laura was irritable and often explosively angry with her husband, George, for coming home late and for bringing office work home with him. This was completely atypical for her, as she had always been very supportive of George in previous stressful job situations.

Sophie's suggestion was to invite the couple in for marital counseling. While this was a reasonable option in principle, I was struck by Sophie's overlooking the possible relevance of the fact that Laura had suffered the loss of her mother to cancer when Laura was 14 years old. This had been preceded by two years of her mother's advancing illness, terminating with multiple hospitalizations and hospice care. During that time, Laura's father had been absent from the home a lot and brought home paperwork from his job to complete at home. It appeared likely to me that the emotional residues of stress, trauma and grief during that period may have been triggered by Laura's current stresses due to George's behaving in ways that resonated with her earlier life experiences.

Sophie readily agreed with my speculations. She disclosed that in her own childhood, her older sister had died after a prolonged hospitalization following an auto accident, and that both of her parents had been absent a lot from the home over many weeks. Sophie was surprised at the depth of emotions that came up as she related this.

So here was a double example of residues of grief being triggered by a current stress. In both Sophie's and Laura's situations, these teenage girls had found their fathers unavailable and had buried their feelings at the time of their grieving in order to be more supportive to their families.

These buried feelings were outside their conscious awarenesses, but still very much present. Both women found these emotions triggered back into awareness by Laura's current stresses. This was a repression of feelings, not a neuroplastic blindness. The feelings were there and both Laura and Sophie were able to release them with the help of therapeutic interventions.

- My personal background includes strong roots in Jewish history and culture. Both of my parents were born into families that had left different parts of Poland because of very repressive and oppressive attitudes and behaviors towards Jews. These included harsh religious oppressions, restrictions on employment and travel, and periodic outbreaks of murderous violence.

My father was a typical example of the intellectualized, scholarly person who lived through his thoughts and rarely demonstrated any emotions. He truly had a profound neuroplastic atrophy for feelings. I once discussed this with him when he was in his mid-70s. He admitted he had wondered about this himself. He rather poignantly observed, "I see that other people have feelings and express them, but I don't have either of these experiences."

He had suffered the death of his mother in infancy and of his older sister, who had been his surrogate mother, when he was ten. So it is impossible to know how much of this was based on personal trauma, how much on cultural factors, and how much might have been a genetic disposition to a stronger connection with intellectual than with feeling functions. Other than in not displaying his emotions, he was a kind and compassionate person. There is certainly a strong tradition of not expressing emotions among Jewish survivors of European pogroms and the holocaust. In order to survive, many had to bury their feelings along with the dead and with those who were left behind when they fled these horrors, or when they did whatever was

necessary in order to survive the concentration camps.

Many of the children of these survivors grew up in tight-knit communities where their parents and other survivors in the Jewish community were very focused on practical issues of earning a living and providing for their families. Among the men in particular it was common to find a lack of emotionality, and in many cases this remains so even in those who are several generations beyond the tragedies that led those who fled from Europe to just bury their feelings along with the dead and move on.

This avoidance of emotions leads to a familial neuroplastic atrophy for emotions. Many people in these families grow up without the models in the older generations nor the personal validations of their own emotions that would have enabled them to consciously experience them. They appear to have grown up without building an inner library of memories and of emotional reflexes to emotionally evocative situations. As with verbal language disuse atrophy, they appear to have an emotional language disuse atrophy.

To summarize: A neuroplastic blindness involves the exclusion of perceptions from our awareness, as in (1) and (2) above. Issues of examples (3) and (4) may involve rejections of perceptions based on psychological defense mechanisms. With time and repetitive avoidances of painful emotions, or when we grow up in families where the language of emotions is muted or unspoken, we may develop neuroplastic blindness to our emotions and to those of others.

Every man takes the limits of his own field of vision for the limits of the world.
- Arthur Schopenhauer

Let us consider how the concept of neuroplastic atrophies and blindness may explain many further problems that we are facing in our world today.

More on emotional neuroplastic hypertrophies and atrophies

When we experience uncomfortable feelings our tendency many times is to avoid consciousness of them. Our negative emotions are buried outside our awareness because our inner self wants to protect us from the unpleasantness of these feelings. The good news is that this is frequently a successful short-term strategy that prevents us from getting upset. The bad news is that the negative feelings that are buried tend to fester inside us, much as pus pockets do when dirt isn't cleared out of a wound. As illustrated above, the buried emotions may later get triggered when we have further, similar, negative experiences. When the buried feelings are released, they worsen the current situation. That is how many people become habitually angry or depressed – without a conscious understanding of what is happening.

Just as we lose our capacities to vocalize sounds that are outside our everyday vocabulary, we may also lose our awareness of, conscious connections with, and abilities to communicate through our emotions. We then continue through life with decreased awareness of our own and of others' emotions.

With neuroplastic atrophy of emotional awareness, our emotions then remain outside our conscious, linear awareness. If we experience problems that stir up our feelings, we may then have difficulties in our relationships because we are unable to recognize what is going on emotionally in ourselves and in others. We may not understand why we get grumpy; may blame our uncomfortable feelings on others – who we believe are 'making us feel bad;' or may resort to comfort eating, drinking or drugs in order to further dull and avoid conscious awareness our unidentified discomforts.

The problems of neuroplastic hypertrophy and atrophy are well illustrated in the differences between people who live their lives with a strong preference for left brain hemisphere (LH) dominance, contrasted with people who live their lives more strongly through their right brain hemisphere (RH) experiences. See Table 1 for comparisons of the differences between LH and RH consciousness.

Table 1. Right and left brain hemisphere functions

LEFT HEMISPHERE	RIGHT HEMISPHERE
Awarenesses built upon bits of chosen and researched information	Awarenesses perceived directly
Explicit	Implicit
Rational	Intuitive
Favors objectively measurable data	Favors subjective experiences that provide direct awareness of the world.
Favors sight and appearances	Favors the experienced essence of the world, including all sensory details
Static, fixed, inflexible in theoretical orientation	Moving, changing, constantly innovating and evolving in new ways
The world is composed of inert particles	The world is alive in every aspect of its essence, including the spiritual
The body is composed of interacting but inert particles	The body is a whole that includes emotional, psychological and spiritual aspects
Words and ideas define facts about the world	Metaphors, imagery, myths, music and other creative arts convey experiences that invite direct awarenesses of the world
Logical constructs *about* the world, "re-presentation" of the world, is what is real	Embodied experiences provide knowledge about the world
" 'Knowledge' and 'truth' … [is] impersonal, static, complete, a thing" (p. 170)	" 'Knowledge' and 'truth' … [is] personal, provisional, a matter of degree, a journey." (p. 170)
Favors a static worldview	Accepts an ever-changing world
The world is here to be used to serve human needs	We feel "a desire or *longing* towards something, something that lies beyond itself, towards the Other." (p. 171)
Seeks to control the world	Accepting being part of an uncontrollable, ever-shifting world
The world is just a bunch of resources, to be enjoyed and exploited by humanity	Every element of the world must be respected
Words and ideas define facts about the world	Metaphors, imagery, music and other creative arts convey experiences that invite direct awarenesses of the world
Linear, sequential	Circular, parallel
Utilitarian in ethic	Concerned for the good of all
Over-confident in its understanding of reality	Questioning its own views and seeking consensual validations
Lacking insight into its problems	Self-reflective
Excludes and dismisses RH awarenesses	Is inclusive of LH awarenesses.

LH thinking is linear, built on axioms that are put together in logical sequences from combinations of small bits of information. LH builds models explaining the world through its understandings *about* the

world. These theories are formalized as hypotheses. Life experiences and experimental observations test these assumptions, and reasoned, logical conclusions are derived about the world through these deductive processes.

One of the best discussions of LH and RH brain functions is presented by Iain McGilchrist, an English psychiatrist who came later in life to the practice of medicine and psychiatry (Benor, 2012).

McGilchrist points out that LH people live in a world of their own creation. They have an either/or mindset and seek information to support their "re-presentation" of the world that they have built. They often prefer to not pay attention to details in the world that might bring into question or contradict their theories. In fact, they often systematically avoid evidence that is contradictory to their theories and beliefs. McGilchrist reviews research on the frontal lobes, providing extensive evidence that these portions of each hemisphere serve to suppress brain activity and awarenesses in each hemisphere. This may explain some of the mechanisms the LH has at its disposal for ignoring RH awarenesses. While McGilchrist does not state this directly, he is clearly describing a process of neuroplastic hypertrophy in LH thinking, with accompanied atrophy of RH awarenesses.

McGilchrist points out that people who are LH dominant innately and/or through acculturated preferences often denigrate, dismiss and even persecute people who do not adhere to their LH articles of faith – much as people in religious communities behave. This is true despite the avowals of LH dominant people who claim to adhere to principles of scientific investigation – which require modifications of basic hypotheses when new research evidence is presented that contradicts them.

If what it is that exists comes into being for each one of us through its interaction with our brains and minds, the idea that we could have a knowledge of it that was not also an expression of ourselves, and dependent on what we brought to the relationship, is untenable…

> …We have to be able to recognise (‘re-cognise’) what we experience: to say this is a ‘such-and-such,’ that is, it has certain qualities that enable me to place it in a category of things that I have experienced before and about which I have certain beliefs and feelings. This processing eventually becomes so automatic that we do not so much experience the world as experience our representation of the world. The world is no longer ‘present’ to us, but ‘re-presented,’ a virtual world, a copy that exists in conceptual form in the mind (McGilchrist, p. 37-38).

McGilchrist's observations are not criticisms of LH thinking based just on alternative brain function preferences. They are strongly reasoned arguments that are extensively supported, in great detail, from neuroscience research on the one hand, and on the other hand from human behaviors demonstrated throughout recorded history. This is the other enormous strength of McGilchrist’s presentation. He brings us a very broad and detailed summary of the presence and shifts between RH and LH predominance of expression in Western society from early Greek history to modern times. His credentialed university expertise in English Literature enables him to weave a tapestry of understanding of social changes through the past two and a half millennia – reflecting ever-tightening adherence to LH constructs of the world that increasingly plague and threaten the very existence of all life on our planet today.

McGilchrist brilliantly musters historical, psychological and social observations of a shift from RH to LH preferences over the course of recorded history. An interesting supporting finding comes from a very different source, namely archeology. Over the past 10,000 years, the human midbrain, which deals with emotions and sensory information, has shrunken (Grandin, 2005).

We have people in charge of our educational institutions, government, corporations and banks who are almost exclusively trained and experienced in LH functions. They have been raised in a society that is increasingly focused on LH functions in its educational system, from first grade through

graduate university studies. There is a clear neuroplastic individual and collective hypertrophy of LH functions that is occurring in modern society, with a corresponding atrophy of awareness and acceptance of RH functions.

The extremes of this process of neuroplastic LH hypertrophy and RH atrophy can be seen in numerous callous dismissals of caring concerns for our planet and for all who dwell upon her.

- Murdering hundreds of thousands of civilian men, women and children during the war in Iraq is dismissed as "collateral damage."
- Disposing of nuclear waste by incorporating spent uranium in bullets and shells, with the excuse that this creates ammunition with greater ability to penetrate armor, has left Iraq with vast areas seriously contaminated with America's nuclear waste (Westerman, 2006). Never mind that there are now uncounted numbers of people in Iraq developing cancers because of this, and American troops demonstrating radiation poisoning as well (US Dept. of Veterans Affairs, Web reference).
- There is a growing evidence that the same is being done with coal fly ash, a highly toxic waste that costs at least a billion dollars annually to dispose of legally in the US. Though the Environmental Protection Agency (EPA) has declared coal fly ash to contain recognized hazardous materials (Appendix A), the EPA has given approval for coal fly ash to be used to create chemtrails that encourage development of clouds, and this process is alleged to promise a contribution towards lowering of global temperatures. And never mind that the toxic chemtrail chemicals fall on the US and Canadian populations.
- Rainforests are being cut down for various profit-driven reasons, including lumber and clearing land for farming and animal grazing (largely for cattle for hamburger meat for fast food chains). Rainforests absorb huge amounts of carbon dioxide and produce oxygen. They also release an enormous amount of water into the atmosphere that is a major contributor to rainfall. In Brazil, where the rainforests are being cleared very rapidly, the two major cities, São Paulo and Rio de Janeiro, have suffered years of drought that are severely limiting availability of water. Yet the clearing of forests continues. Again, the profit motive of powerful corporate interests are taking precedence over the lives of millions of people suffering from the drought.
- Global warming has been an acknowledged danger for decades, yet governments have been unable to develop anything resembling a coherent, effective plan for dealing with this threat to survival of all life on our planet as we know it today. It appears clear that corporations and banks influence governments to delay, weaken and abandon any actions that would lower their profits.

Here, in the broader context of human history and modern day, ongoing experiences, we see examples of neuroplastic hypertrophy, with adherence to LH ways of conceptualizing and relating to the world, and the complementary avoidance and denigration of RH ways of relating to the world.

Conceptual neuroplastic disuse atrophy

Oliver Sacks also reported experiences of conceptual neuroplastic disuse atrophy. Shortly after being discharged from the hospital to a convalescent home, he was invited to an event that he dearly wanted to attend – an anniversary celebration of the late W. H. Auden's poetry. He reluctantly gave his excuses, saying that the walking that was required to get there made this outing simply inconceivable. The next day, his physiotherapist scolded him soundly for having denied himself a pleasure like that. He had demonstrated during his convalescence that he was perfectly capable of managing such an outing – in terms of the required walking. Sacks was startled into the realization that he had displayed a constriction of his conceptual range of what was possible for him to do.

Sacks came to understand that his habitual physical confinement during his hospitalization and recuperation in the rest home had led to conceptual constrictions due to what I am labeling as 'disuse atrophy.' At the time that he had been invited, his reflex response had been one of great anxiety. He

felt very strongly that there was simply no way he could leave his protected environment and venture into the wider world outside.

So it appears that when our physical and perceptual experiences are narrowed or restricted, we adapt fairly rapidly to interacting differently with the world around us – within the new confines of our more limited experiences. We then forget rather rapidly what it is like to experience and how to navigate the broader world we used to inhabit. After a period of confinement, when we are no longer constricted in our experiences, the broader horizons to which we are exposed may feel strange to us and we may feel we cannot manage them.

People who are confined to bed or incarcerated in prison (particularly in solitary confinement) also report these sorts of discomforts upon release from confinement. It may take longer to get over these when the confinement has been over greater periods of time.

In summary: When we experience perceptual constrictions over a period of time, we may become used to narrower boundaries in our lives – developing neuroplastic atrophies for perceptions, conceptualizations and actions. We may then find it difficult to adapt to wider horizons. Let us consider several such scenarios in a variety of situations.

The phantom limb phenomenon, an enigma perhaps related to neuroplastic persistence

Some people who have lost a limb report that they continue to perceive that their missing limb is still present and attached to their body. The most common report is that they feel they have pain in the portions of the limb that are no longer present. This suggests that these people either have a persistent neuronal remnant of awareness in their brains or a failure of neuroplastic atrophy.

One study showed a difference in the brain scans of people with phantom limb pain, compared to the scans of people with intact limbs (Lotze, et al., 2001). It would be interesting to see whether there are changes in the scans of people with phantom limb pain after treatments which eliminate such pains, such as Therapeutic Touch – per research (Leskowitz, 2006; 2014) and also by Energy Psychology, per anecdotal reports (Leskowitz, 2014).

Collective neuroplastic hypertrophies and atrophies

Within our educational systems and within the various professions, there are varieties of factors that encourage neuroplastic hypertrophies and atrophies.

Educational neuroplastic hypertrophies and atrophies
The vast majority of the US and Canadian educational systems are focused on linear, logical, LH reasoning. Reading, writing and math are the primary subjects emphasized in elementary and high school curricula. History and science are taught as rote learning, with little to stimulate creative thinking. Most public school exams rely on memorizing facts and figures. Logic and reasoning generally are not topics that are taught. Under pressures of limited budgets, school districts have chosen to cut topics, classes and extracurricular activities that involve creative arts, creative thinking, social awareness and skills. The portions of students' brains that facilitate emotional, intuitive and artistic functions fall into disuse. Gradually, they lose some or many of their abilities to connect with and exercise these functions.

These limitations in extracurricular activities also narrow the range of students' opportunities to explore their personal potentials in academic and social clubs, sports and creative arts. Many students today have lost broad ranges of opportunities to develop their social, negotiating and

leadership skills; creativity; and initiative. Likewise, teachers are burdened today with heavy requirements to prepare students for standardized, cookie-cutter tests.

Teachers also struggle under the burden of the inclusion of seriously handicapped students who are mainstreamed into their classes without adequate supports. Many teachers haven't the time or resources to bring creative awareness into the class curriculum. So here is another contributor to atrophy of creativity that leaves students short-changed in their educational experiences. It is no surprise that the US educational system is falling far behind the educational systems in other countries. All of these factors create serious individual and collective neuroplastic atrophies in RH consciousness.

Modern medicine's neuroplastic hypertrophies and atrophies

I knew I was in for a hard time in medical school when my clinical instructors and resident supervisors would give me directions such as "Go check out the interesting, lumpy liver in bed #3." or would ask questions such as "How would you treat this schizophrenic?"

I had worked very hard to get into medical school, and harder yet in my pre-clinical medical studies. My sights were firmly set on a career in psychiatric psychotherapy, which I believed would give me the most thorough available understanding of the human condition. I also trusted this would provide me with the tools of understanding and clinical skills to help people with psychological problems.

I didn't have the concepts in those days to articulate what was then very wrong with modern medical approaches, attitudes and teachings. The focus is on treating the medical or psychiatric diagnosis, not on treating the person who has the problem. Sadly, the same situation continues today. This is based on several hundred years of dissecting the body into ever-finer pieces and analyzing these pieces with ever more refined instruments.

What a wonderful example of neuroplastic hypertrophy this is! Doctors spend four years in medical school, a year in internship, and three to five years in specialty trainings to hone their diagnostic and therapeutic skills. Then they spend their years in medical practice, applying what they learned, supplemented by annual continuing education courses and specialty exams. And their patients' reports of improvements in their physical conditions confirm that all their years of studies and practices are validated.

What is also evident, however, is the neuroplastic atrophy of awareness. Doctors develop dense disconnects from the man connected to the liver that has lumps in it and the woman upon whom they bestow their diagnosis. Most doctors are hugely distanced from their patients. Patients acknowledge this with the complaint that "My doctor doesn't listen tome." The people who pass through the doctors' clinics and hospitals are largely ignored. I believe this is due to the doctors' unrecognized neuroplastic hypertrophy of focus on the physical body, with a corresponding atrophy of awareness of people's emotions, mind, relationships and spirit. It is little wonder that as many as one third of the prescriptions for medications that doctors write are rejected and never filled by their patients (Tamblyn, et al., 2014).

More importantly, people in the US have been willing to pay more per year for complementary and alternative care (out of pocket) than they pay (largely through insurance) for medical care (Pelletier, 1993; Pelletier & Astin, 2002). This indicates that people are voting with their feet and dollars for many sorts of care that doctors do not offer and in many cases are no longer able to provide.

People are seeking caregivers who care for them as human beings, rather than addressing them as physical bodies in need of fixing with medications, hormones, radiation or surgery. And they find what they are seeking – under the care of complementary and alternative care practitioners who listen carefully to their clients and have a wholistic approach, addressing issues of mind, emotions,

relationships (with other people and the environment) and spirit – in addition to tending to the person's body (Benor, Web reference).

Neuroplastic blindness in the crisis of global warming

Why has the world not rallied to deal with this crisis, when the consequences are so serious? Global summits on climate change have produced nothing more than hollow recommendations with no consequences for ignoring them. Naturally, politicians have almost universally pursued the easiest, politically expedient (in the short term) course of action – namely, to ignore the recommendations or to offer only token conformance.

Common excuses have included a dismissal of the dangers and of predictions of dire consequences, and token emissions limitations that are inconsequential to governmental budgets and to producing meaningful environmental changes.

Global warming has been acknowledged as a clear and present danger by 97% of climate scientists (NASA, web reference). Many people balk at accepting that this is happening. The disasters that are predicted because of global warming are so far outside anything that humans have experienced that they appear unlikely to happen. Furthermore, they are difficult to absorb because they lie in the zone of neuroplastic lack of experience. This makes people blind to these possibilities – in ways similar to those who view the video in (1) and miss grossly obvious changes that occur in front of their eyes..

Some of these people look at variations in local weather as their validation for holding onto their beliefs and disbeliefs. Those who live in parts of the world which experienced a 2014 winter that was colder than they had seen in recent years reject the global climatology reports that the 2014 worldwide average temperature measurements showed this was the warmest year in recorded history.

Others have been swayed by some of the covert infomercials that are foisted on the public by broadcasts and newspapers that have been bought out by wealthy advertisers and who pander to their corporate supporters. A typical ploy is to have a discussion between a scientist who warns about global warming and another who dismisses it as gross exaggeration. This may appear to the uniformed public as a fair debate, what is often omitted is that the scientist raising the alarms about impending global disasters represents 97 percent of the environmental scientists, while the one minimizing the problems represents only 3 percent this group.

Others balk at thinking about the possibility of massive global extinctions that are predicted to result from unchecked global warming – again due to fears of death. It is distressing and painful to think that our children or grandchild may not live out their lives, and in fact may experience very unpleasant deaths due to severe effects of climate change. By denying or rationalizing away the observations about progressively worsening climate change we may avoid or postpone our conscious awareness and distress about our children's and grandchildren's impending fates. We may also avoid these awarenesses out of guilt about how we might answer our children's or grandchildren's questions, such as "Why didn't you do something to prevent or stop our planetary extinction?"

Again, through habits of repeated avoidance of these awarenesses, we may develop a neuroplastic blindness to the possibilities of global warming and massive extinctions.

The neuroplastic atrophy promoted by the concept of neuroplasticity and by related brain research

Many people take the wonderful lessons we have learned about neuroplasticity and other brain functions as evidence that the mind is a product of brain activity. This misperception has been

strengthened by advances in brain imaging, with ever more detailed mapping of nervous system functions. The good news is that these enhanced understandings of brain functions increase our abilities to diagnose disabilities due to malfunctions in the nervous system, which in turn helps us to offer drugs, surgery and other treatment interventions. Support is also presented, based upon neuro-imaging, for the belief that malfunctions of neurological structures may create emotional abnormalities (Wager, Feldman Barrett, Bliss-Moreau, Lindquist, et. al., Web reference).

The bad news is that the materialist view of the world is becoming ever more entrenched in modern western society. Consciousness that extends beyond the body is ignored, dismissed and/or denigrated. Because memories arise when portions of the brain cortex are stimulated, it is assumed that thoughts and memories arise in the cortex. Because stimulation of portions of the midbrain stimulates emotional awarenesses, it is assumed that emotions originate in the brain structures.

This circular reasoning over the last 100 years has built and strengthened a belief in mind as the product of brain and has led to the collective neuroplastic exclusion of masses of evidence that demonstrate the mind is active independently of the brain.

> *When our maps do not fit the territory, when we act as if our inferences are factual knowledge, we prepare ourselves for a world that isn't there. If this happens often enough, the inevitable result is frustration and an ever-increasing tendency to warp the territory to fit our maps. We see what we want to see, and the more we see it, the more likely we are to reinforce this distorted perception, in the familiar circular and spiral feedback pattern.*
>
> - Henry L. Weinberg

Many have pondered the question of how mind and brain are related. Most have come away with the admission that they could not resolve this question. Larry Dossey (2015) discusses a wonderful array of these explorations – all of which ended in the conclusion that there was no way to prove any theory on this subject definitively. I believe this problems is due to a neuropathic exclusion of masses of evidence that mind is not a product of the brain, but rather that brain is a transducer or channel for the expression of mind *through* the brain.

A fascinating pair of observations appears to seriously challenge the view of the brain as the source of our thoughts. There are people who have grown up with unidentified hydrocephalus (water on the brain), which has left them with such large ventricles (fluid filled-spaces within the brain) and such a thinned cerebral cortex, that they should be imbeciles - since it is assumed that an intact cerebral cortex is required for thinking. Yet two such people have been identified who have been successful university students (Lewin, 1980). To insist that the minds of these two people reside in their brains would appear to be stretching this particular example of conceptual neuroplastic hypertrophy (quite literally) beyond reason.

Masses of more direct evidence support the existence of the mind outside of the body. Conventional scientists frequently denigrate and dismiss the possibilities of psychic phenomena, including spiritual healing. They totally ignore or dismiss without examination great masses of fascinating research confirming the existence of consciousness that manifests outside of the body (Benor, 2006):

- Out of Body Experiences (OBE), sometimes also called *traveling clairvoyance*, occur – where people perceive their consciousness to be outside their body and can observe aspects of their environment from perspectives that are clearly beyond those of their physical body. For instance, research has shown that people in OBE can identify objects on a shelf near the ceiling in a surgical suite (while they are under anesthesia), when the objects on the shelf are not within the range of vision of anyone physically in the room.
- Near Death Experiences (NDE) are reported – in which people are declared medically dead but then return to life. They report that they conversed with spirits, angels and an incredibly loving

and totally accepting 'Being of Light.' They experience a detailed review of their lives, without being judged (by anyone other than themselves). Then, either they are told by the Being of Light that they must return to complete their life purpose, or they themselves request to return in order to complete unfinished business. And they wake up, radically transformed. They no longer fear death; they have a clear sense of their mission in life; and they show much more loving and caring for others. This is clearly an opening into greater RH awarenesses, as illustrated by reports of doctors and others who had previously been strongly entrenched in LH neuroplastic hypertrophy

- Apparitions (ghosts, spirits) have been reported throughout recorded history. People on their deathbeds often report they see the spirits of deceased relatives and close friends coming to greet and reassure them that their transition to the spirit world is coming and that they need not fear that death is a dead end of consciousness or existence (Morse & Perry, 1994; Wills-Brandon, 2000). Two thirds of relatives of people who die report they have either seen, heard or just sensed the presence of the departed (Vargas, et al. 1988; Alexander, 2012; Amatuzio, 2007; Baden & Hennessee, 1989; Longman, et al. 1989; Rees, 1975). There are psychics who specialize in helping ghosts release their attachments to earthly existence in order to complete their full transition into spirit life. Research has validated information transmitted by spirits to the living
- Mediums channel the consciousness of spirits who wish to communicate with living people. Research has confirmed the accuracy of mediumistic reports (Anderson & Barone, 2000; Gauld, 1984; Guggenheim & Guggenheim, 1999; Schwartz, 2002).
- Possession (spirits attaching themselves to living people) has been reported for many centuries, in popular and religious literature (Prince, 1969; Stone, 2016; Wickland, 1968; Wilson, 1987a; 1987b).
- Reincarnation memories, including body memories that manifest birthmarks and other somatic manifestations of wounds in previous lives have been researched and validated (Stevenson 1974a; 1974b; 1987; 1997; Wambach, 1978). Psychotherapy, addressing issues of traumas in past lives, has proven effective (Netherton & Schiffrin, 1978; Weiss, 1994; 1995; 1996).

In the face of all of this evidence, claiming that the brain is the source of consciousness is like saying that a television set demonstrates there are little people inside the TV and that these little people have been generated by the TV. However, the clear evidence demonstrating specific areas of the brain associated with specific cognitive and emotional functions is so captivating that, as a collective consciousness, the majority of people in mainstream science will not consider the evidence for consciousness outside the body. And individual disbelievers in mind being independent of brain rely on other disbelievers to validate their beliefs and disbeliefs.

This is a neuroplastic atrophy of RH intuitive functions through disuse, dismissal and disparagement by LH dominated science. Even strong proponents of 'non-local consciousness' may experience this neuroplastic atrophy.

> *I have been much more accepting of the possibility that someone else could do these things than that I could. It's okay for you to be able to perform incredible and unexplainable miracles; I can be completely serene in accepting that. But for whatever reason, I am very uncomfortable with the thought that I might mediate the same act.*
>
> - Larry Dossey

Some would claim that other, well-researched phenomena of transpersonal consciousness (telepathy, clairsentience and consciousness of past and future events) and of consciousness interacting with the physical world from any distance (clairsentience, psychokinesis) are also proof of the primacy of consciousness that is independent of the physical body. This is not logically supportable, because it can be argued that the physical brain is capable of consciousness and actions from a distance.

But there is a wonderfully telling psychic phenomenon speaking to the postulated neuroplastic awareness atrophy discussed here. Skeptics in psychic phenomena demonstrate significant psychic abilities themselves. Research shows that skeptics perform *significantly* more poorly than chance on tests of psychic abilities (Lawrence, 1994). They apparently use their psychic abilities unconsciously to identify the correct answers to the research questions – but then, completely without awareness that they are doing so, they respond with a wrong answer. They do this so well that they score way above chance on wrong answers, and way below chance on right answers. This appears to be a clear demonstration of neuroplastic conceptual and awareness atrophy in the conscious mind. Unconsciously, however, these skeptics still possess and are able to demonstrate their psychic abilities.

If the neuroplastic disbeliefs of the western world that dominate modern thinking could be overcome, there is a possibility that humanity might yet come together to deal collectively in effective ways with the problems that are threatening the survival of all life on our planet as we know it today. This is not a new observation, as witnessed by the teachings of Pierre Teilhard de Chardin close to a hundred years ago.

> *We are . . . moving forward towards some new critical point that lies ahead, a harmonized collectivity of consciousnesses equivalent to a sort of super-consciousness. The idea is that of the Earth not only becoming covered by myriads of grains of thought, but becoming enclosed in a single thinking envelope so as to form, functionally, no more than a single vast grain of thought … the plurality of individual reflections grouping themselves together and reinforcing one another in the act of a single unanimous reflection.... Beyond all conflict of empires, peace in conquest and work in joy await us in an interior totalization of the world on itself-in the unanimous building up of a spirit of the Earth."*
>
> - Pierre Teilhard de Chardin

In summary: Neuroplasticity and other mental functions appear to be manifestations of how the brain acts as a transducer for consciousness, which exists outside the brain. The brain appears to channel the mind into physical reality. Limitations of the brain may, out of neuroplastic hypertrophy and neuroplastic atrophy, distort or block various awarenesses from rising to conscious awareness and may bias and distort the perception of reality.

> *Perhaps the only limits to the human mind are those we believe in.*
>
> - Willis Harman

Blocks to overcoming our neuroplastic hypertrophies and atrophies

Educational neuroplastic hypertrophies and atrophies
The mindsets created by today's schools were mentioned above. The millennial generation that is graduating from today's school programs are extremely limited in their capacities for problems solving that requires abstract or creative thinking.

Vested interests with profit motives resist changes that threaten their profits and power
This is another variation on the theme of LH neuroplastic hypertrophy, on the one hand, with total focus on outer world achievements, acquiring and pyramiding money and investments, and achieving and maintaining positions of power and influence. And on the other hand, there is neuroplastic atrophy for any RH concern for personal or social values, returning any percent of earnings or gains to the community, or concern for pollution that is contributing to global warming that is threatening the continuation of all life on our planet as we know it today. And it's not like we haven't seen robber barons or abusive royalty before, and suffered the consequences of their abuses.

The most dangerous part of this grossly unbalanced shift of resources to the 1% of the population, which owns half the resources of the world (BBC, 2014) is that they, through the multinational corporations, are buying the votes of governments around the world. And they are creating powerful, secret multinational, corporate cartels that are negotiating secret deals that must be to their benefit – as witnessed by their secrecy. And a whistleblower like Edward Snowden who reveals evidence of illegal abuses of governmental powers and surveillance has to flee from the US to Russia and remain hidden for safety (Snowden, 2014).

Socially accepted consensus
"We all know that…" is an introduction to a statement that is assumed to need no proof or corroboration. However, these consensus statements are developed in circumscribed cultural and temporal settings, and clearly differ from one locality to another. Here are but a few of endless such beliefs:

- Men are smarter/ more responsible/ entitled to greater privileges and freedoms/ etc. than women - Worldwide.
- The state has a clear interest in supporting a high standard of living for all of its citizens – Norway, Sweden, Denmark and Holland.
- Dogs and cats are an accepted food item – e.g. China, Viet Nam

Yet many such self-assured statements from the past, both gross and subtle, have been proven completely false.

- Men are smarter/ more responsible than women.
- Non-white people are inferior in mental capacities and moral fiber than white people.
- The world is flat, and if you travel too far across the ocean you will fall off.
- The sun goes around the earth.

Social consensus is extremely resistant to change, even in the face of logic and researched evidence. In my introductory week in medical school I was informed that half of what I would be taught in the next four years would come to be proven as untrue, but no one could predict which items these would be. Even in the face of this awareness, medical consensus opinions are no more given to change than any other.

- Ample research demonstrates that acupuncture can help reduce pains of all sorts, yet most western doctors and their patients dismiss this as nothing more than folklore.
- Many western countries follow the model of the US in promoting capitalism as the best way to motivate people to achieve a healthy and happy lifestyle – in the face of growing evidence that the US itself has a steadily declining ranking in healthcare, education, social justice (witnessed by far larger prison populations than anywhere else in the world) and overall wellbeing compared to socialist countries such as Norway, Sweden, Denmark and Holland.
- The vast majority of global popular opinion is that some (as yet unknown) solution will be found to prevent cataclysmic extinctions due to climate change and that no serious action is needed to deal with this, despite the fact that climate scientists warn us about irreversible processes of global warming that are now inevitable.

Conclusions

Neuroplasticity of the brain may help us to use the transducer that is our brain in an economical manner. It may, however, distort our perceptions of reality and may make it difficult for us to perceive aspects of our world that are outside our habitual frames of reference.

This may help us to understand some of the reasons for the slowness of humans to respond to global warming and other threats to the survival of life on our planet as we know it today. Other reasons, including the unidentified and unresolved effects of serious trauma and grief in the collective consciousness of humanity that are also contributing to the human march to collective suicide are discussed elsewhere (Benor, 2014; 2015a; 2015b).

I am not hopeful that humanity will awaken to the dangers facing our planet in time to avert the sixth mass extinction on our planet. This would be known as the human extinction – if humans were to survive (Benor, 2014; 2015a). I am deeply disappointed, though far from surprised, that the 2015 global conference on climate change in Paris, produced no more than any of the many previous climate conferences. There was a unanimous agreement that climate warming is a clear and present and immanent danger, and promises were made to reduce carbon emissions. However, no binding promises were made and no consequences were agreed for those who did not abide by their promises.

In a future IJHC article, assuming we gather sufficient resources to continue publication, I will suggest various ways the individual and collective neuroplastic hypertrophies and atrophies may be constructively addressed.

My personal approach to all of this is to help to lighten the load of emotional and physical pain on this planet to the extent that I can. I invite you to join me in this endeavor. My personal way of approaching this daunting task is to send healing to those in need, using a simple invocation at the end of any healing in which I engage – for myself or others (Benor, 2015a):

I invite anyone and everyone,
Anywhere and everywhere,
Anywhen and everywhen,
Who is ready to [clear/ release these pains/ traumas] with me,
To come along and do so.

> *Our duty, as men and women, is to proceed as if limits to our ability did not exist.*
> *We are collaborators in creation.*
>
> - Pierre Teilhard de Chardin

References

Alexander, E. (2012). *Proof of Heaven: A Neurosurgeon's Journey into the Afterlife.* New York: Simon & Schuster.

Amatuzio, Janis. *Forever Ours: A Forensic Pathologist's Perspective on Immortality and Living – A Collection of Real-Life Stories*, Minneapolis, MN: Midwest Forensic Pathology, P.A., 3960 Coon Rapid Blvd., LL21, Coon Rapids, MN 55433 www.foreverour.com

Anderson, George, and Barone , Andrew. Lessons from the light: Extraordinary Messages of Comfort and Hope from the other Side (Berkley New York)- well-studied mediums., devoted to obtaining information that can be validated empirically 2000.

Baden, MM/ Hennessee, JA. *Unnatural Death: Confessions of a Medical Examiner*, New York: Random House 1989.

BBC, Top 1% 'own half global wealth' - Credit Suisse report, Oct 16, 2014. https://www.youtube.com/watch?v=mYYs8VmgadI. (Accessed Dec 10, 2015.

Benor, D. (2004). Death has a bad reputation, International J Healing & Caring, 4(3), 1-11.

Benor, D. (2006). Healing Research, V. 3, *Personal Spirituality: Science, Spirit and the Eternal Soul*. Bellmawr, NJ: Wholistic Healing Publications.

Benor, D. (2012). Right and left brain dominance: Thinking outside the box. International J. Healing and Caring. 12, 1, 1-25). [Portions of this article are excerpted in the present article.]

Benor, Daniel. (2014). The sixth mass extinction and the monkey grasping trap: Human addictions

and our march to collective suicide. International J Healing & Caring. 14(1), 1-10.
Benor, Daniel. (2015a). Healing the Collective PTSD of Humanity. . International J Healing & Caring 2015, 15(2), 1-21.
Benor, D. (2015b). Good Grief! Why are we not addressing the threats to our planetary survival? INTERNATIONAL J HEALING & CARING, 15(3), 1-17.
Benor, D. web reference. Wholistic Healing: Body, Emotions, Mind, Relationships and Spirit. http://ijhc.org
Card trick https://www.youtube.com/watch?v=ndloTr-HSgo
Larry Dossey. (1996). Prayer is Good Medicine. New York, NY: HarperCollins, p. 121.
DSM-IV-TR Criteria for Posttraumatic Stress Disorder http://www.ncbi.nlm.nih.gov/books/NBK83241/ (Accessed Oct 14, 2015)
Gauld, Alan. (1984). Mediumship and Survival: A Century of Investigations (Academy Chicago) – history of scientific research on mediumship.
Grandin, Temple. (2005). *Animals in Translation*. NY: Simon & Schuster.
Guggenheim, Bill, and Guggenheim, Judy. (1999). Hello from Heaven: A New Field of Research. New York: Bantam.
Herndon, JM. (2015). Evidence of Coal-Fly-Ash Toxic Chemical Geoengineering in the Troposphere: Consequences for Public Health. *Int. J. Environ. Res. Public Health 2015, 12, 9375-9390; doi:10.3390/ijerph120809375* (Retracted article)
Hvistendahl, M. Coal Ash is More Radioactive than Nuclear Waste. http://www.reboundhealth.com/cms/images/pdf/NewspaperandArticle/coalashismoreradioactivethannuclearwaste%20id%2016693.pdf (Accessed on 29 June 2015). http://www.scientificamerican.com/article/coal-ash-is-more-radioactive-than-nuclear-waste/ (Accessed October 30, 2015)
Lawrence, Tony. (1994). Bringing home the sheep: a meta-analysis of sheep/goat experiments. *Proceedings of 36th Annual Parapsychology Convention 1993*, Fairhaven, MA: Parapsychological Association.
Leskowitz, Eric. (2014). Phantom Limb Pain: An Energy/Trauma Model. *Explore.* 10(6), 389–397.
Leskowitz E. (2000). Phantom limb pain treated with therapeutic touch. Arch Phys Med Rehabil.81:522–524.
Lewin, Roger. Is your brain really necessary? *Science 198*0, 210, 1232-1234.
Longman, AJ/ Lindstrom, B/ Clark, M. Sensory-perceptual experiences of bereaved individuals, *American J Hospice Care* 1988, July/August, 42-45.
Lotze, M. Flor, H. Grodd, W. Larbig, W, et al. (2001). Phantom movements and pain. An fMRI study in upper limb amputees. Brain.124(Pt 11):2268-77.
McGilchrist, Iain. *The Master and his Emissary: The Divided Brain and the Making of the Western World. New Haven: Yale 2009.*
Morse, Melvin with Perry, Paul, *Parting Visions: An Exploration of Pre-Death Psychic and Spiritual Experiences*, New York: Villard/Random House 1994.
NASA. Scientific consensus: Earth's climate is warming. http://climate.nasa.gov/scientific-consensus/
Netherton, M/ Shiffrin, N. *Past Lives Therapy*, New York: Ace 1978.
Pelletier, Kenneth. A review and analysis of the health and cost-effective outcome studies of comprehensive health promotion and disease prevention programs at the worksite: 1991-1993 update, *American J of Health Promotion* 1993, 8(1), 50-62.
Pelletier, Kenneth R/ Astin, John A. Integration and reimbursement of complementary and alternative medicine by managed care and insurance providers: 2000 update and cohort analysis, *Alternative Therapies* 2002, 8(1), 38-48.
Prince, Walter Franklin. Two cures of 'paranoia' by experimental appeals to purported obsessing spirits, *Psychoanalytic Review* 1969, 56, 57-86.
Rees, WD. The bereaved and their hallucinations, In: Schoenberg, B et al., eds. *Bereavement and Its Psycho-logical Aspects*, New York: Columbia University 1975.

Sacks, O. (1984). *A Leg to Stand On.* London, UK: Picador/Pan.
Schwartz, Gary E. The Afterlife Experiments: Breakthrough Scientific Evidence of Life After Death, Atria Books, New York, NY, 2002. pg. 361-353
Selective perception video https://www.youtube.com/watch?v=IGQmdoK_ZfY. (Accessed Nov 20, 2015)
Stevenson, Ian. *20 Cases Suggestive of Reincarnation*, Charlottesville, VA: University of Virginia 1974(a).
Stevenson, Ian. *Xenoglossy: A Review and Report of a Case*, Charlottesville, VA: University of Virginia 1974(b).
Stevenson, Ian. *Children Who Remember Previous Lives: A Question of Reincarnation*, Charlottesville, VA: University of Virginia 1987.
Stevenson, Ian, *Where Reincarnation and Biology Intersect*, Westport, CT: Praeger 1997.
US Department of Veterans Affairs http://www.publichealth.va.gov/exposures/depleted_uranium/index.asp (Accessed October 30, 2015)
Stone, Barbara. (2016). A Multi-Dimensional View of Psyche: Psychosis or a Very Intuitive Person? *International J Healing and Caring, 16(1), 1-11.*
Tamblyn, R. Eguale, T. Huang, Winslade, N. et al. (2014). The Incidence and Determinants of Primary Nonadherence With Prescribed Medication in Primary Care: A Cohort Study. Annals of Internal Medicine. 160(7), 441-450.
Snowden, Edward. Ted Talk. (2014). Here's how we take back the internet. http://www.ted.com/talks/edward_snowden_here_s_how_we_take_back_the_internet (Accessed Nov 9, 2015)
Wager, TD. Feldman Barrett, L. Bliss-Moreau, E. Lindquist, K., et. al. The Neuroimaging of Emotion. http://www.columbia.edu/cu/psychology/tor/Papers/Emot_ch_R1_opt.pdf (Accessed Nov 8, 2015)
Wambach, H. *Reliving Past Lives: The Evidence,* New York: Harper & Row 1978. (*1,100 reports of past life hypnotic regressions analyzed by gender, geographical distribution, etc.*)
Weinberg Henry L. (2011). Quoted in: Krygier J, Wood D. Making maps. 2nd edition. New York, NY: Guilford Press; 2011: 120; Quoted in Dossey, Larry. (2015). The sandy island syndromes: on seeing what is not there and not seeing what is there. *Explore.* 11(4), 239–248
Weiss, Brian. *Many Lives, Many Masters*, New York: Simon & Schuster 1988/ London: Piatkus 1994.
Weiss, Brian. *Through Time into Healing*, London: Piatkus 1995.
Weiss, Brian. *Only Love is Real*, New York: Warner/ London: Piatkus 1996.
Westerman, Doug. (2006) *Depleted Uranium – Far Worse Than 9/11. Depleted uranium dust - public health disaster for the people of Iraq and Afghanistan.* Global Research, *May 03, 2006 http://www.globalresearch.ca/depleted-uranium-far-worse-than-9-11/2374 (Accessed October 30, 2015)*
Wickland, Carl A. *Thirty Years Among the Dead*, London: Spiritualist 1968 (Orig. 1924). (Quotes by permission of Psychic News, London.)
Wills-Brandon, Carla. *One Last Hug Before I Go: The Mystery and Meaning of Deathbed Visions*, Deerfield Beach, FL: Health Communications, Inc. 2000.
Wilson, Colin. *Afterlife: An Investigation of the Evidence for Life After Death*, London: Dolphin/ Doubleday 1987.
Wilson, CWM. The association between allergic disease, entities, multiple personalities, and medical dowsing, *Alternative Medicine* 1987(a), 2(3/4), 215-227.
Wilson, CWM. Entity possession: a dcausative factor in disease, *Psionic Medicine* 1987(b), 6(23), 4-21.

Appendix A

It [coal fly ash] contains low-dose radioisotopes which can have profound, severe chronic adverse health effects several orders of magnitude higher than present toxicological risk assessments account for. Herndon states, "Coal fly ash has been described as being more radioactive than nuclear waste (Hvistendahl, 2014)."

Table 1. Average chemical composition of the 23 un-leached and leached (leachate) European coal fly ash samples from Moreno *et al.* [10].

Element	Un-Leached µg/kg	Leached (Leachate) µg/L	Element	Un-Leached µg/kg	Leached (Leachate) µg/L
Aluminum	7.00×10^{4}	5.37×10^{3}	Molybdenum	1.10×10^{1}	3.66×10^{-1}
Antimony	1.20×10^{1}	3.60×10^{-2}	Nickel	1.22×10^{2}	1.68×10^{-2}
Arsenic	7.06×10^{1}	8.35×10^{-2}	Niobium		6.22×10^{-4}
Barium	1.38×10^{3}	5.34×10^{-1}	Phosphorus	1.22×10^{3}	2.22×10^{2}
Beryllium	9.66	3.00×10^{-4}	Potassium	1.43×10^{4}	
Boron	2.38×10^{2}	3.32	Rubidium	1.04×10^{2}	3.04×10^{-2}
Cadmium	1.87	7.61×10^{-4}	Scandium		4.32×10^{-3}
Calcium	4.03×10^{4}	3.48×10^{5}	Selenium	2.24×10^{1}	8.12×10^{-2}
Cesium		2.78×10^{-3}	Silicon	2.27×10^{5}	6.57×10^{3}
Chromium	1.54×10^{2}	2.99×10^{-1}	Sodium	2.98×10^{3}	1.51×10^{4}
Cobalt	4.13×10^{1}	2.30×10^{-3}	Strontium	1.09×10^{3}	5.09
Copper	9.94×10^{1}	6.97×10^{-3}	Sulfur	3.78×10^{3}	1.57×10^{5}
Gallium		2.24×10^{-2}	Thallium		4.61×10^{-4}
Germanium	1.18×10^{1}	6.20×10^{-3}	Thorium	3.25×10^{1}	9.83×10^{-4}
Hafnium		1.01×10^{-3}	Tin	8.48	6.96×10^{-4}
Iron	2.89×10^{4}	1.22×10^{2}	Titanium	7.01×10^{3}	4.27×10^{-2}
Lead	1.29×10^{2}	1.30×10^{-3}	Uranium	1.34×10^{1}	4.65×10^{-4}
Lithium	1.95×10^{2}	1.18	Vanadium	2.53×10^{2}	1.18×10^{-1}
Magnesium	1.02×10^{4}	2.85×10^{3}	Zinc	1.90×10^{2}	2.70×10^{-2}
Manganese	4.84×10^{2}	4.35			

As Herndon states, "The consequences [of coal fly ash exposure] on public health are profound, including exposure to a variety of toxic heavy metals, radioactive elements, and neurologically-implicated chemically mobile aluminum released by body moisture in situ after inhalation or through transdermal induction."

Disturbingly, the EPA recently ruled that coal fly ash is not to be considered a "hazardous waste,"[2] despite overwhelming evidence that contains dozens of compounds that individually present a serious enough environmental and human health risk to be classified and regulated as hazardous to health.

When you consider that the EPA requires coal firing electrical plants to sequester the coal fly ash due to its known toxicity as a pollutant, the hypocrisy here is astounding. Of course, this ruling would protect those orchestrating the behind-the-scenes geoengineering agenda of using the electrical power industry's toxic byproduct: millions of tons of coal fly ash, as a "beneficial" substance used to "combat global warming," even though the end result is the same: releasing a highly toxic material directly into the troposphere.

Daniel J. Benor, MD, Editor-in-Chief, IJHC

Dr. Benor is author of *Seven Minutes to Pain Relief,* of *Healing Research, Volumes I-III* and of many articles on wholistic healing.

IJHC – www.ijhc.org
WHEE Book - www.paintap.com
DB@WholisticHealingResearch.com