

# Finding the connection between psychosocial factors and the immune system through art psychotherapy

*Christina Virago*



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*Art. I have a long and abiding interest in myth and ritual, self-actualisation, and facilitating the discovery of meaning within the individual experience of illness and trauma, my own included, through image making. After running a private practice for ten years I have been granted a scholarship to pursue my Ph.D. research studies, at the University of Newcastle. Art Psychotherapy is my passion. I am mother to four remarkable young people, and have been granted the delight of four grandchildren who know that fairies are real.*

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“The Mind is not just in the brain, but is part of a communication network throughout the brain and body.”

Candace Pert, Peptide Research, Rutgers University, Rockville, Maryland, USA<sup>1</sup>. This statement of Candice Pert’s is of tremendous significance to our present endeavours; those of bringing the whole person into view in the medical setting through an integration of the influence of aesthetics on the well being of hospitalized members of our community. The statement recognizes a different reality from that which accompanied and supported the Industrial Revolution; that of mechanistic reductionism through which Reason (housed in the brain) would find the ultimate solutions to all impediments to social progress; social progress being measured quantitatively by benchmarks inevitably pinned to financial gain, each member of society being a productive unit,

where illness becomes an industry and paradoxically unacceptable. It is a reality within which Freud was able to “demonstrate” that psychic energy was contained in a closed cerebral system, akin to a hydraulic system, whereby “Id”, “Ego”, and “Superego”, sluced, altering in dominance according to any given situation. True, there appeared to be holes in this system, which Freud explored in his earlier work on hysteria, where the psyche had a demonstrable effect on the body to the point of apparent paralysis. The shift, recognized in Pert’s statement, heralded at the beginning of the twentieth century by quantum physics, changes the constraints of accepted wisdom: part of the shift in the basic post Cartesian paradigm of Scientific thought. The medical sector of the scientific community, in the main, unfortunately, still clings tenaciously to the reductionist paradigm, when a person is viewed as a conglomerate of systems and symptoms.

Within this “new” paradigm there is the possibility of accommodating the experiential (not necessarily replicable) reality of out of body experiences, of past life recollections, spontaneous remission and cure of illness and the so called hallucinogenic experiences of the oneness of life accepted as the norm by all preliterate societies, and so, we return to a place once known, to realize that it and we are no longer the same; the never-ending spiral dance of growth.

During the making of a series of television programmes exploring the connection between the mind and the body, Bill Moyers interviewed David Felten,<sup>2</sup> Professor of Neurobiology and Anatomy at the University of Rochester School of Medicine. David Felten relates his astonishment at discovering neuronal structures, where

they were previously thought not to exist. “I started looking at blood vessels and some of the surrounding areas in the spleen. And there, sitting in the middle of a vast field of cells of the immune system, was a bunch of nerve fibres. I looked at them and thought, what’s this? Nerve fibres aren’t supposed to talk to cells of the immune system. What are they doing here? So we cut some more sections, and looked \_\_\_ and there they were again.

We and others eventually discovered nerve fibres going virtually into every organ of the immune system and forming direct contacts with the immune system cells.”.....

”The (study of the) two systems (immunology and the neurosciences) grew up ignoring one another... they clearly do not exist in isolation. Now there is overwhelming evidence that hormones and neurotransmitters can influence the activities of the immune system, and that products of the immune system can influence the brain.

The higher centres of the brain can generate signals that very clearly influence hormonal outflow. What we hadn’t contemplated before is that some of these signals that leave the brain when we feel certain emotions may well have an impact on the immune system.

They’ve found that one factor contributing to a diminished immune response is whether or not an individual is in control of the situation; another factor is whether or not the individual feels lonely.”

So here we have this great defence system, which has a wonderful memory, and can generate responses to past insults that have come in again. And we have the brain with its wonderful memory of past experiences. We had thought these two great memory systems were independent. Now it turns out they’re not ----- they talk to each other extensively.”<sup>iii</sup>

David Felten.

In these early days of research into the mind /body connection there was surprise and exhilaration to discover that indeed there is a physically demonstrable component which appeared to

belly the idea that we are a conglomerate of disparate systems apparently controlled by the brain alone. That there was scientific support to age old wisdom which states that a despairing youth may well die of a “broken heart”, and that a grieving widow must be protected from further shock lest she also die, and from what, in the twentieth century was intimately experienced by Victor Frankl as an unwilling participant in a heinous mass experiment in the human tolerance for extreme stress and deprivation, when he recognised that those of his fellow prisoners in the concentration camps who felt completely betrayed, not only by their fellow human beings and the world at large, but also by God, succumbed to the “Musselman syndrome”, turned their faces to the wall, and died. It became obvious to him that mere physical stress was not sufficient to kill a man; there was a psychological aspect to survival; the need for hope and more importantly, a need for meaning to both the event, and the person’s life<sup>iv</sup>.

**In the years following Felten’s discovery that neuronal involvement in hormonal regulation it became apparent that:**

- Neuropeptides and their receptors mediate intercellular communication.
- Emotions mediate between thought and physical response.
- Neuropeptides and their receptors are the biochemicals of emotion.
- There are endorphins (the “feelgood” and trauma management neuropeptide) in both the brain AND the immune system.
- Monocytes are covered in neuropeptide receptors, and secrete IL-1 (Interleukin 1, a cytokine/neuropeptide; immunological intercellular messengers);

increased levels of IL-1 can trigger an increase in levels of ACTH (adrenocorticotrophic hormone, the “fight- flight hormone”),

triggering an increase in corticosteroids (the hormone which suppresses inflammation and pain receptors),<sup>v</sup>

which reduces production of IL-1; an elegant feedback control system, conceptualised by Hans Selye<sup>w</sup> in the 1930's as the hypothalamic-pituitary-adrenal cortex axis when he observed that stress, either positive or negative, perturbed homeostasis, while recognizing that negative stress engaged the HPAC axis ( the difference between the pleasant glowing palpitory anticipation of the arrival of a lover, or the dry mouthed, gut torsioning anxiety of the furor accompanying discovery of an illicit teenage tryst by

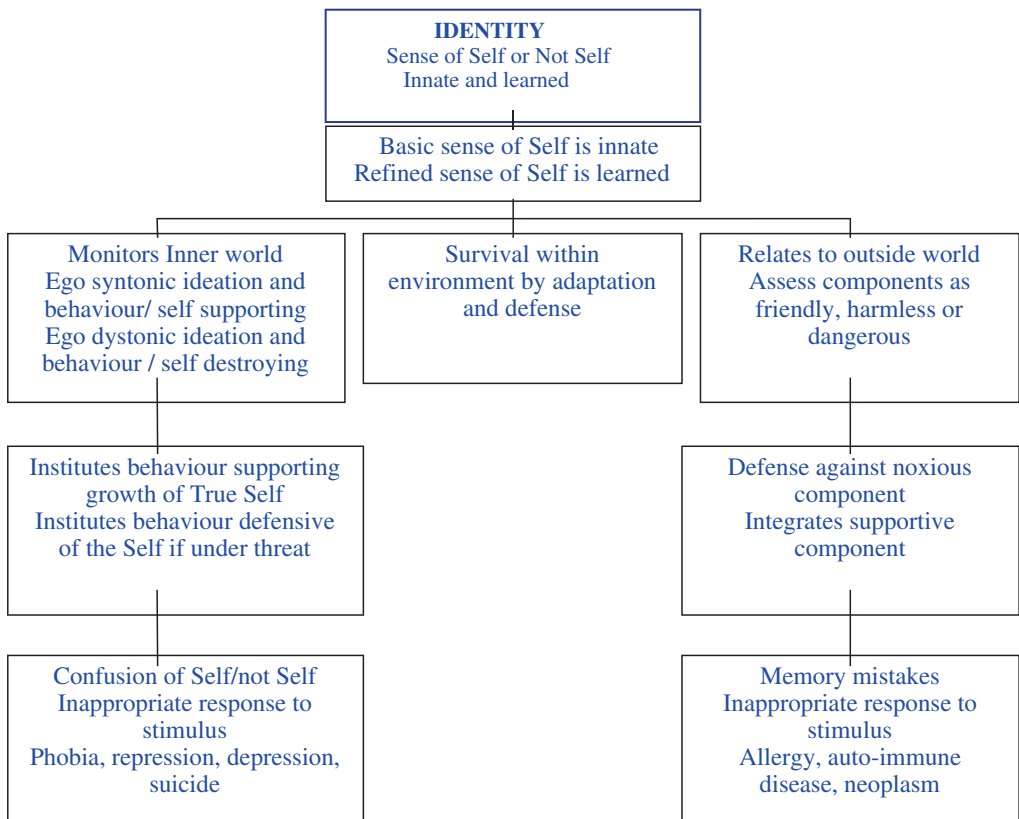
the untimely return of parents, engaging a total fight /flight response.)

Neuropeptides are immunoregulatory.

ergo - There must be a demonstrable connection between emotions and immunoregulation.

It is therefore proposed that by addressing one system consciously, the system governing cognition, memory and emotional responses, in a process of therapy designed to improve function in the world, the other, the immune system, may also benefit.

An outline of the commonality of both systems:



- Vaccination is based on the understanding that the immune system learns through experience. A small amount of protein, either live or dead (antigen), from an infective agent is introduced to the immune system. T cells (from the Thymus) in collaboration with B cells (from Bone marrow) form a recognition reaction to the antigen, which is used if the immune systems encounters the same protein again, and enables it to mount an early effective response, preventing a full blown infection. The learning/response is specific to the antigen.<sup>vii</sup>

- All social interactions and emotional coping strategies are learned through experience, engaging sensory imaging.

The infant human sees, hears, smells and feels the interpersonal dynamics within which it is embedded, long before he or she is able to put names to the actions or the actors within the dynamic, and it may in fact be decades before the specific components of a dynamic are named and understood. The images, however, are keyed into the infant's memory at the time of the action, and the infant learns through mimicking the dynamics watched. All of the senses are engaged in the creation of a memory of an action.

- Korneva<sup>viii</sup>, demonstrated that lesions created in the (anterior) hypothalamus, depressed immunity, while lesions in the amygdala or hippocampus stimulate immune activity.

It also appeared that firing in the hypothalamus directly parallels activity in the immune system and the adrenal cortex, seen by shift in noradrenalin output and serum concentration.

- Ader and Cohen<sup>x</sup> paired saccharin with cyclophosphamide administered to NZ mice and demonstrated that the mice responded as if cyclophosphamide were administered, when administered only saccharin, with resultant immunosuppression.

The corollary amongst humans suffering cancer is the nausea experienced with many chemotherapies. It is now recognized that it is such a noxious stimulus that anti-emetics are given almost routinely, par-

ticularly for the first infusion; I am not aware, however of the other side of this coin being explored, where an inert substance is administered after an initial dose of chemotherapy.

- Blalock and Smith<sup>x</sup> demonstrated that lymphocytes synthesize ACTH and beta-endorphin.

Thus demonstrating that the immune system is actually capable of hormonal regulation, not simply a system for attending to invasion, and that it is a part of a regulatory system which is as intricately woven as a Celtic knot, with no one part independent of the others.

- The Australians, Bartrop et al<sup>xii</sup>, identified a correlation between bereavement and lowered lymphocyte count.

While I was researching the literature on the connection between cancer and emotional state as an art therapy student in Sheffield, this was the first paper that I found, and therefore has of significance for me far beyond that of scientific interest, as I was an Aussie far from home, doing pioneering research in my field. The ramification of this research was that there appeared to be a quantifiable reason for the increase in illness and death of recently bereaved widows and widowers, and thus also a path into the woods of psychoneuroimmunology.

- Kübler-Ross<sup>xiii</sup> identification that patients have an unconscious appreciation of both disease state and process, which she recognised through the images that they created.

This is borne out by an image made by a boy in Melbourne. The child had a diagnosis of leukemia and had recently attended the funeral of his grandfather. He was illustrating his experience of grief at the loss of his grandfather through a painting of an open grave. Around the grave he carefully painted 11 flowers. He counted them, and said "I don't think I can make 12". He died just short of his twelfth birthday.

- Spiegel's<sup>xiiii</sup> now seminal research into the effect of prolonged group psychotherapy amongst a group of women with incurable breast cancer.

In 1983 Spiegel and Bloom engaged a group of 50 women diagnosed with incurable breast cancer in a programme of group therapy. What surprised the researchers was that at the end of the twelve months their survival time had increased in comparison to a group of 36 women with the same diagnosis who were given no psychological intervention, at the same time as better coping strategies were adopted and mood disturbances decreased. This is in line with what David Feldman is quoted to have said above, and what Victor Frankl recognized amongst his fellow prisoners, that people who have a perception of being alone and abandoned disengage from life. The diagnosis of cancer is arguably, war and incarceration aside, one of our times most frightening and alienating experiences.

### **The connections between art therapy and psychoneuroimmunology:**

Jeanne Achterberg<sup>iv</sup> has spent several decades researching and exploring the connections between imagery and healing. She spent time with the Simontons<sup>v</sup> who first popularized the concept of relaxation and visualization in the late 1970's and early eighties as a way of engaging the individual's own capacity to overcome disease, and carried their work further to explore the physiological response to imaging, down to the cellular level. In one experiment she asked university students to visualise white cells in the act of crossing from the capillaries into the surrounding tissue. This activity involves the cell becoming more viscous, sticking to the capillary wall, and passing between the cells which make up the wall. The students were able to influence the activity of single cells which they couldn't see and whose activity was prior to the experiment, a total mystery. Her work, and that of Elizabeth Kübler-Ross have had a profound influence on my direction of study. The following is a diagrammatic version of the pathway connecting the two areas under consideration.

THREE REASONS IDENTIFIED BY LARRY le SHAN AS GIVEN FOR NOT WANTING TO DIE

- 1.The fear of the circumstances of death.
- 2.The desire to live for others, to fulfill the expectations or needs/demands of others.

3.The desire to "sing the unique song of his or her personality."

*"The body will not mobilize its' resources for either of the first two reasons. Only for the third will the self-healing and self-recuperative abilities of the individual come into play."*

*"The Mechanic and the Gardener."*

*Larry le Shan.*

*Balantyne press 1989*

It is through a process such as art therapy that this "unique song" can be recognized and accepted.

The content of the picture Above is an image, which well illustrates many strengths of art therapy: the revelation of unconscious content, so called "hysterical symptom conversion" and emotional release, and perhaps most important in psychotherapy the capacity to cross intellectual and linguistic boundaries.

The painting was made by a woman in her seventies, who was admitted to hospital for the insertion of a cesium implant. The woman had a diagnosis of cervical cancer, the treatment of which necessitated the implantation of a radioactive pessary; the cesium, and a period of supine, immobile rest and isolation of 24 hours.

The woman's treatment was being delayed because she had an intractable cough; she could not be placed in the required position if she continued to cough as it was imperative that she remain still, and there was an obvious risk that she may choke. There was no apparent organic reason for the cough and at the Friday staff meeting it was decided that the woman would require sedation as her hospitalization could not be prolonged any further. Her treatment deadline was the following Tuesday. The House Officer suggested that I see the woman prior to sedation, and this was agreed upon.

During our first meeting it became apparent that the woman was very anxious about the prospect of immobility, while lying on her back after an anaesthetic. We discussed her experiences of anaesthesia, which was restricted to the memory of having



<sup>i</sup> Pert.C Neuropeptides: the emotions and the bodymind. Noetic Sci. Rev 2:13-17

<sup>ii</sup> Felten, D L, Felten S Y, Carlson S, Olschowka J A, Livrat S. Noradrenergic and peptide innervation of lymphoid tissue. J Immunol 135:755-765

<sup>iii</sup> Felten, D L The Brain and the Immune System, interview with Bill Moyers in Healing and the Mind Doubleday press 1993

<sup>iv</sup> Frankl,V. The Will to Meaning. 1969

<sup>v</sup> Downing, J .E.G. & Minyan, J.A. neural immunoregulation: emerging roles for nerves in immune homeostasis and disease. Immunology Today Vol.21 No.6 281 June 2000

<sup>vi</sup> Selye H The Stress of Life Mc Graw Hill 1976

<sup>vii</sup> Immunology 4th Ed

<sup>viii</sup> Korneva E A Beginnings and main direction of psychoneuroimmunology Int.J.Psychophysiol 1989 Mar.7(1) 1-18

<sup>ix</sup> Ader R Cohen N Behaviourally conditioned immunosuppression, Psychosom Med 37:333-340 1975

<sup>x</sup> Blalock J E The Immune System as a sensory Organ J.

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<sup>xi</sup> Bartrop R, Lazarus L, Luckhurst E, Kiloh L, Penny R, Depressed lymphocyte function after bereavement. Lancet April 16 1977

<sup>xii</sup> Kübler-Ross E. personal correspondence 1983

<sup>xiii</sup> Spiegel D, Bloom J R, Kraemer H C, Gottlieb E. Effect of psychosocial treatment on survival of patients with metastatic breast cancer. Lancet 2:888-891 1989

<sup>xiv</sup> Achterberg J Imagery and Healing New Science Library 1985

<sup>xv</sup> Matthews-Simonton S, Simonton C psychology of exceptional cancer patients: a description of patients who outlive predicted life expectancies. Psychotherapy; theory and Practice Vol.14 1977

<sup>xvi</sup> Fawzey F I, Kemeny M E, Fawzey N W, Elashoff R, Mortin D, A structured psychiatric intervention for cancer patients II. Changes over time in immunological measures. Arch Gen Psychiatry 47:729-735

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