

The Integration of Quantum Physics in the Transformation of Consciousness in Individuals, Couples and Organizations

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Abstract: This paper explores the role of the dynamics and principles of quantum physics in the transformation of consciousness. Quantum entanglement, momentum, the uncertainty principle, Dirac's creation and destruction operators, and the role of opposites are discussed in the contexts of the implied directive, group theory, and the transformation of resistance with individuals, couples, and organizations. The appreciation of novelty, the role of focusing attention, and the needs for depth and containment are explored in the context of recent developments of neuroscience. These developments are explored in the context of applications from set and group theory. Erickson's resistance protocol is utilized as both a template and metaphor for the role of the consciousness of the professional and the integration of quantum principles and dynamics in the transformation of consciousness.

Keywords: Consciousness, quantum entanglement, momentum, creativity, opposites, uncertainty, permutations, set theory, group theory, grandiosity, victim.

INTRODUCTION

Consciousness refers to a subjective state of awareness. The transformation of consciousness refers to the changing of the state and/or level of awareness. As such, consciousness has been considered in terms of stages from both eastern and western perspectives. These stages have included developmental issues, phenomena, and levels of awareness [1-3]. Subjective experiences of sunsets, paintings, the weather, headaches, etc. are called qualia experiences of consciousness. From a medical perspective, consciousness is focused on the patient's level of arousal and responsiveness, in the context of a continuum of consciousness ranging from full alertness and comprehension on one end, through states of disorientation, delirium, loss of meaningful communication and ending in states of non-responsiveness. From a psychotherapeutic perspective the focus of consciousness varies depending on the therapeutic orientation being employed. For example, the cognitive behavioral perspective emphasizes consciousness around cognitive distortions while the psychoanalytic perspective emphasizes the facilitation of insight regarding the sources of experiences, symptoms, positions, etc. [4, 5]. Within the different subsets of psychodynamic therapy, the object relations perspective emphasizes the consciousness of recognizing, tracking, and challenging of the various forms of acting out in order to facilitate containment, and the subsequent separation of the false and real selves [6, 7]. Self psychology, on the other hand, emphasizes the consciousness of empathy and mirror-

ing, while working through the three different transferences; mirroring, idealization and twinship [8]. The Gestalt approach focuses on the consciousness of sensations in the present, in order to facilitate an awareness and dialogue between parts within each individual [9]. The Jungian approach, along with the Ericksonian approach is oriented toward increasing consciousness through the awareness of the unconscious mind and the resources within it and developing a conscious relationship with the unconscious [10, 11].

The philosophical perspective on consciousness has explored whether consciousness is coherent; whether consciousness can be explained mechanistically; whether non-human consciousness exists [12, 13]; can consciousness be explained without the mind-body duality [14-16]; and Chalmers' hard problem of consciousness which challenged why functions are accompanied by experience, and called for an explanatory bridge [14, 16].

This paper will address the transformation of consciousness from three main perspectives. The primary perspective is the reorientation of the processes for transforming consciousness around a subset of consciousness, mathematical consciousness. This reorientation will put consciousness and the professional's relationship with consciousness in the center of the process. The aspects of mathematical consciousness which will be addressed are those of set theory, group theory, and the quantum variables and principles found in the equations of Schrodinger, Heisenberg, and Dirac. Mathematical consciousness will then be addressed from the perspectives of the professional providing treatment and the patient/client in the context of the Erickson resistance protocol which serves as a

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template for the integration of these theoretical positions into practical applications.

The transformation of consciousness has been explored in many contexts from both eastern and western perspectives for over two thousand years. This has occurred within the context of the evolution of human consciousness, and explorations and debates about the sources, types, levels and functions of consciousness [14,16-21]. These contexts have included meditation, yoga, martial arts, alchemy, prayer, hypnosis, psychotherapy, etc. Within each of these approaches there are many subgroups or subsets of the set of all processes and variables relevant to the transformation of consciousness, which emphasize different aspects of the process. The sets that serve as a foundation for this process are; the set of all consciousness, the set of the sources of consciousness, the set of the types of consciousness, and the set of the levels of consciousness. The transformation of consciousness is dependent on a number of subsets of the types of consciousness, the most fundamental being the consciousness of appreciation. The transformation of consciousness carries with it a series of implications that need to be appreciated;

- A need for novelty; the transformation of consciousness implies the polarity and the integration of the polarity of the old vs. new [22, 23, 24]
- A need for creativity, and a valuing of the role of creativity [10, 24, 25].
- A need for a subset of creativity; the *creative* focusing of attention; the focusing of attention being one of the primary variables in the transformation of consciousness [25-27].
- A need to appreciate the role of opposites [9, 11, 28, 29].

The processes for transforming consciousness include, but are not limited to, the focusing of attention, containment, trust of resources, the role of a yes set for being, and relationships with space, time, and different aspects of the self [10, 19, 21, 23, 28-31].

The set of all of the transformations of consciousness of humans can be considered from the perspective of two fundamental subsets; the subset of the consciousness of the self, and the subset of the consciousness of the no self, which includes the empty self, which was formulated by Nagarjuna. Parallels

have drawn between descriptions of eastern experiences of no-self and empty self and the phenomenology of quantum states [32]. From an eastern perspective, the western notion of the self was considered less connected to harmony with nature, and the deeper levels of reality that are reflected by dynamics of quantum scales [3, 32]. Since western consciousness is rooted from the perspective of the self, the requirements and obstacles relevant to the transition from the subset of the consciousness of the self to the subset of the consciousness of the no-self, become significant.

Research around westerners' capacity and levels of functioning regarding the focus of attention has highlighted both [30, 33] the research identified a number of problems westerners tended to have while learning the practice of meditation. These problems included;

- Lack of intrapsychic structure for the self;
- Lack of solid grounding or yes set for being that is replaced by inordinate amounts of anxiety and pressure
- Underdeveloped capacity for focusing
- Fascination with content
- Tendency to analyze vs. attending to process

These conditions pointed to a need to resolve developmental issues of the self to allow for more connection and freedom to express core resources as opposed to being dominated by unhealthy developmental forces [7, 34].

The focusing of attention is one of the primary variables in the transformation of consciousness. The Hinayana approach of southern Buddhism advocates an emphasis on an allowing focusing of attention without pressure or judgment. This approach is known as Vipassana or mindfulness meditation. On the other hand, the northern Mahayana approach emphasizes either visualization, concentration on an idea or image, or the contemplation of spatial and temporal dynamics as they relate to the transformation of consciousness of the self [3, 21]. Hindu approaches to transforming include the focusing of attention on either chanting phrases or sounds, postures, visualization which may or may not be complemented with the coordinated focus on breathing [35, 36]. Other approaches, both from eastern and western perspectives have simply utilized logic, implication, and the appreciation of

opposites to facilitate the transformation of consciousness, especially around the subsets of the experience of the self [19, 21, 24, 26]. In addition to the utilization of the breath, and the focusing of attention, Taoist approaches and classical music composition theory incorporate the appreciation of the dynamics and variables of motion in relationship to space and time in the transformation of consciousness. Within these two processes the transformation of consciousness is designed around the concepts of rooting, centering and balance [25, 27, 37-39].

From a neuroscience perspective, the need for, and the capacity to utilize and integrate novelty [21-23, 31] appreciated implicitly the needs for depth, safety, and creativity in the contexts of set and group theory [27, 40-42]. This appreciation is supported by the explicit trust of the resources of the unconscious, which is represented by the various subsets of physiological resources which support the sequence of neurological processes leading to the activation of the creb cycle and activity dependent gene expression [10, 22]. Appreciation of the need for novelty implied a need to appreciate the role of opposites in the transformation of consciousness [10, 11, 28].

The role of opposites in the transformation of consciousness has been explored and utilized in depth by both eastern and western approaches since the time of Heraclitus and Lao Tzu [11, 26, 29, 32, 39]. Jung, who was influenced by the work of Nietzsche, Hegel, and Fichte, identified the transcendent function as the psychological mechanism that integrated the polarity between the conscious and unconscious minds [11]. Jung later went on to identify other pairs of opposites that played integral roles in the transformation of consciousness. These included light and dark, masculine and feminine, and the wise man and the fool. A fundamental component of Taoist practices, which include tai chi, a quantum process, is the appreciation and integrated utilization of the opposites of yin and yang, which represent passive, receptive and active, forceful energies [38, 39]. Contrary to western approaches, Taoist approaches, like Buddhist and Hindu approaches, utilized implicit trust of unconscious resources in the course of transforming consciousness.

The appreciation of the role of opposites has been a significant component of western approaches in transforming consciousness from a hypnotherapeutic perspective ever since Braid introduced the term 'hypnosis' in 1846. Proceeding in stages, similar to advances in

other branches of science, professionals explored the dynamics and processes of hypnosis. In the first stage the Salpetierre school of Charcot in France advocated that hypnosis was a passive state while Bernheim of the Nancy school argued that it was an active state [29, 43]. This was similar to physics' debate over the wave/particle duality of light [44-46]. Later, in the second stage in the early twentieth century, Pavlov argued that hypnosis was a passive state while Hull and his colleagues advocated that it was an active state [47]. Implicit in these efforts was a recognition and trust of resources within the unconscious that were supporting the transformation of consciousness, though the emphasis was mostly placed on direct suggestions, as opposed to resources. In the third stage, Erickson, in the course of developing an indirect, natural, utilization approach for communicating with, and facilitating unconscious processes, realized that hypnotherapeutic processes could and should include both active and passive processes [10, 48]. Erickson advocated that the unconscious should be trusted and that the locus of treatment should focus on the resources within the client, not on the suggestions of the professional. In the fourth stage, Rossi, drawing on advances in neuroscience demonstrated that it was the physiological resources and processes of the body and brain that were driving the processes of transforming consciousness. Rossi was implying that trust needed to be expanded beyond the general notion of the unconscious to the physiological resources and to nature which was providing them. Rossi identified components of molecular biology, chronobiology and chaos theory playing significant roles in activity dependent gene expression, one of the core aspects of the transformation of consciousness. Key roles were played by the ultradian rhythm, the hippocampus and RNA networks [23, 24, 29, 49-51].

Erickson and Rossi utilized the opposites of doing and being, and knowing and not-knowing in their hypnotherapeutic work to facilitate the transformation of consciousness [10]. Their appreciation of not-knowing and not-doing, complemented by their trust of the unconscious resources within the patient facilitated containment of developmental issues blocking yes sets for being and receiving, that in turn facilitated unconscious healing process, activity dependent gene expression and the transformation of consciousness [23]. Rossi highlighted the polarity of symptoms vs. resources during his integration of mind-body hypnotherapy with chaos theory, and chronobiology in the

context of expanding and appreciating trust, novelty and creativity [25, 29].

Regardless of the perspective, all eastern and western approaches designed to facilitate the transformation of consciousness implicitly worked with the polarities of; old vs. new, disease vs. comfort, fantasy vs. reality, and separation, isolation and alienation vs. connection. These connections, which reflected a transformation of consciousness, would be with inner resources, a deeper level of reality, or nature, depending on the depth or perspective of the experience. Ultimately, from an eastern perspective, this would culminate in an experience and consciousness of oneness, which has been called by different names, including Samadhi, suchness, the empty self, etc. Seen from a set theory perspective and the work of Cantor with transfinite cardinals, the experience of oneness is a connection with infinity [27, 52].

From a neuroscience perspective, the transformation of consciousness, involving permutations of the basic polarity subset of the old vs. new, is dependent on a series of steps [22, 24, 51] this series of steps implies capacity, and the need for bridges [10, 25]. These bridges may be between the steps in the processing of information within the hippocampus that integrates the old and the new, and the transmission of that information at various levels of depth that facilitates the experience of consciousness itself, in which the microtubules may play a significant part [20]. When discussing the need of patients in deep trance in the context of treating a harpist with sweaty palms, Erickson pointed out that bridges needed to be built to mediate the struggle between conscious and unconscious processes relative to consciousness, accessing of resources and reorganization of positions [10].

The need and capacity for bridges and depth are both implied by the various subsets of physiological resources and accompanying variables. It is the quantum processes and variables that reflect and express the bridges, and capacities at the most core levels.

ROLE OF IMPLIED DIRECTIVE IN THE EXPLORATION, VALUING AND TRANSFORMATION OF CONSCIOUSNESS

The implied directive utilizes the recognition of the implications of facts and relationships, which makes it primarily a cognitive process. It is the cornerstone of mathematical proofs and Erickson's indirect, utilization approach. With regard to mathematical proofs and the

development of equations, it was instrumental in the thought experiments of Galileo, Newton and Einstein in their discoveries of laws of motion and relativity [44, 45]. Greene recognized the significance of this when he commented in the *Elegant Universe* on the views of Richard Feynman, Nobel Prize winning physicist on Einstein's relativity work:

“Although Feynman expressed this view more than three decades ago, it applies equally well today. What he meant is that although the special and general theories of relativity require a drastic revision of previous ways of seeing the world, when one fully accepts the basic principles underlying them, the new and unfamiliar *implications for space and time follow directly from careful logical reasoning*” [53] (p. 87).

Erickson originally used it in the context of indirect contingency suggestions. It had three components; a time binding introduction; a suggestion that takes place within the patient; and a behavioral response that indicates when the suggestion has been internalized [48]. A few examples are:

- Would you like to go into a trance now or later?
- Would you like to go into a mind-body state lying down or sitting up?
- Would you like your mind-body experience to be a familiar form of comfort or a new experience that contains a measure of fascination?

The concept had wider applications, which were expanded by Erickson and Rossi in the following statement:

“An understanding of how Erickson uses implication will provide us with the clearest model of his indirect approach to hypnotic suggestion. Since his use of ‘implication’ may involve something more than the typical dictionary definition of the term, we will assume that he may be developing a special form of ‘psychological implication’ in his work. For Erickson, psychological implication is a key that automatically turns the tumblers of a patient's associative processes into predictable patterns without awareness of how it happened. The implied thought or response seems to come up autonomously within patients, as if it were their own response rather than a suggestion initiated by the therapist. Psychological implication is thus a way for structuring and directing a patient's associative processes when they cannot do it for themselves. The

therapeutic use of this approach is obvious. If patients have problems because of the limitations of their ability to utilize their own resources, then implications are a way of bypassing these limitations." [48] (pp. 59-60).

In terms of the exploration and transformation of consciousness, the implied directive has many applications which include:

- Appreciation of the need for novelty.
- Appreciation of the need and capacity for creativity.
- Appreciation of the need and capacity for depth.
- Appreciation of containment.
- The need to appreciate and trust resources.
- Consciousness of infinity implies capacity and metaphors for connection that complement the metaphors for connection of the quantum processes of superposition and entanglement.
- Consciousness of infinity implies the need for bridges.
- The need for bridges implies sets, subsets, and power sets for bridges, and a need for both the consciousness and appreciation of bridges, need for connection, connectedness, and the capacity for connectedness.
- Consciousness of opposites implies the capacity for separation and integration, and needs for containment, creativity and time.
- Sources of consciousness imply needs, needs for containment, attention, validation, the need to appreciate opposites, and the need to appreciate quantum variables.
- The need to appreciate and develop levels of consciousness of therapists, especially within the context of the need to appreciate the significance of the creative focusing of attention during processes that transform consciousness.
- Sources of consciousness imply that one of the subsets of consciousness is quantum consciousness, which implies the value of quantum variables and quantum dynamics.
- The consciousness of infinity implies the infinity of creativity, since creativity is a subset of a type of consciousness.

THE ROLE OF THE DYNAMICS AND PRINCIPLES OF QUANTUM PHYSICS

The foundations for quantum physics were laid by the work of Planck, Einstein, Bohr, Minkowski, and Lorentz, among others. Planck coined the term 'quanta' to represent a fundamental, elementary particle, and his equation, $E = hv$ (h = Planck's constant, and v the frequency of a light wave, carried by photons) was utilized by Einstein in his work on the photoelectric effect, which showed that light was also a particle. Bohr developed the equation for the quantum condition and introduced the principle of complementarity that was the quantum physics perspective on the fundamental role of opposites. Minkowski and Lorentz pioneered the mathematical formalisms of space-time, providing the foundations for Einstein's equations of special relativity. It was the integration of Einstein's special relativity with quantum mechanics by the Dirac equation in 1928 that launched quantum field theory, which is one of the cornerstones of the standard model of physics utilized today [45, 46, 52, 53].

Quantum physics was developed by four men in the 1920s; Schrodinger, Heisenberg, Dirac and Pauli, all of whom were awarded the Nobel Prize in physics for their contributions. Each of the four discovered different aspects of the behavior of the electron that were experimentally verified. Many of the quantum breakthroughs that have affected our understanding of reality, that have included the equations identified below, have utilized a subset of the consciousness of creativity identified by Poincare, a mathematician and physicist, whose name is attached to one of the most important groups regarding structure, called the Poincare group. Poincare identified four stages of the creative process; preparation, incubation, illumination and verification [29, 55]. The Schrodinger Equation, focusing on the behavior of the electron functioning as a wave, is a partial differential equation that describes how the quantum state of a physical system changes over time.

The Schrodinger wave equation mathematically validates the capacity for connection, and need for connection at the quantum level of depth (Figure 1). It complements the Heisenberg equation which treats the electron as a particle. When the professional trusts and appreciates the value and need for depth, he can creatively focus and pace the client's attention, providing the containment necessary to explore deeper sources of comfort and connection.

The Heisenberg equation described the behavior of the electron functioning as a particle, and utilized the

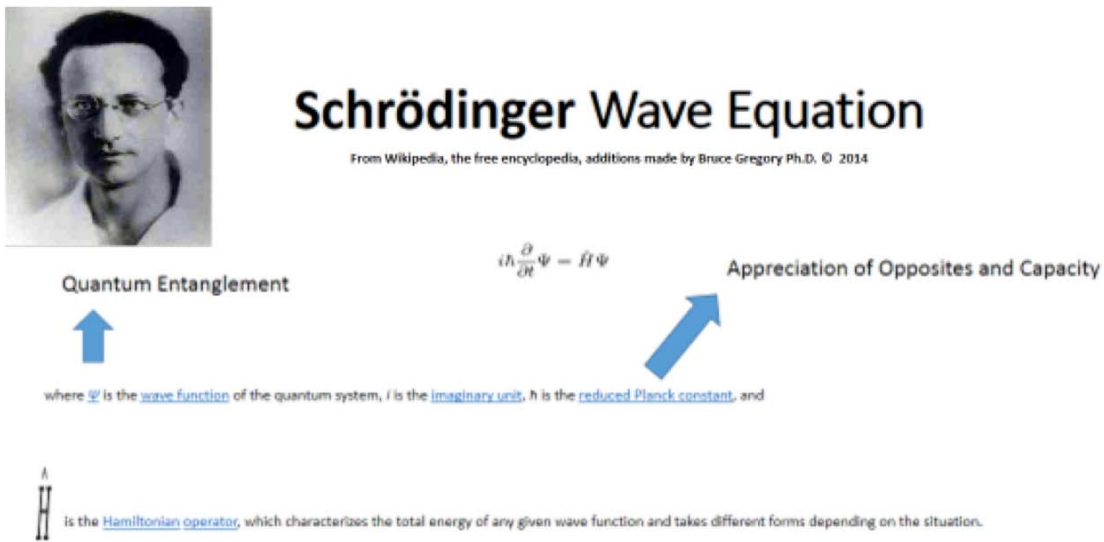


Figure 1: en.wikipedia.org/wiki/Schrödinger_equation, August 12, 1014 additions by Bruce Gregory Ph.D. © 2013.

mathematical tools of matrices and vectors, instead of the functions and operators that Schrodinger utilized (Figure 2).

$$\frac{d}{dt}A(t) = \frac{i}{\hbar}[H, A(t)] + \frac{\partial A}{\partial t},$$

Figure 2: en.wikipedia.org/wiki/Heisenberg_picture, August 12, 2014.

When seen as complementing the Schrodinger equation in treating the electron as a particle, the Heisenberg equation mathematically validates the capacity to address either/or issues of splitting which often interfere with conflict situations with couples and organizations. When the professional trusts its value, it can be utilized to expand trust in the capacity to explore and access creative alternatives to either/ or thinking at deeper levels.

The Heisenberg Uncertainty Principle showed that the more one knew about the electrons momentum, the less one would know about its position (Figure 3). This

$$\sigma_x \sigma_p \geq \frac{\hbar}{2}$$

(ħ is the reduced Planck constant).

Figure 3: The Heisenberg Uncertainty Principle en.wikipedia.org/wiki/Uncertainty_principle, August 12, 2014.

equation mathematically validates the need for uncertainty, thereby providing permission for not knowing at the quantum level of depth. In addition, it reinforces the importance of momentum, supplying support for appreciating its relevance in terms of the containment of resistance; a prerequisite for the transformation of consciousness.

The Pauli exclusion principle identified that two electrons could not occupy the same position simultaneously. The Dirac equation (Figure 4) was the first mathematical expression that integrated quantum mechanics and Einstein’s special relativity, which paved the way for the development of quantum field theory [56]. It also described the behavior of spin ½ particles, appreciating symmetry, predicted the existence of a new form of matter, and provided justification for Pauli’s theories of spin. Similar to the Schrodinger and Heisenberg equation, this equation provides validation for the need and capacity for connection, in addition to being a symbol for the capacity of integration at a very deep level. As a result of its utilization of the Lorentz transformation, it reinforces the need to appreciate and utilize space and time in transformation of consciousness processes.

The primary quantum concepts are superposition, quantum coherence, uncertainty, and quantum entanglement. Superposition refers to the fact that quantum particles can exist in two or more locations simultaneously. Quantum coherence means that the phases of the wave function are kept constant between the different particles. Uncertainty refers to the Heisenberg



Dirac Equation

Original Dirac Equation From Wikipedia, the free encyclopedia additions by Bruce Gregory Ph.D. © 2013

$$\left(\beta mc^2 + \sum_{k=1}^3 \alpha_k p_k c \right) \psi(\mathbf{x}, t) = i\hbar \frac{\partial \psi(\mathbf{x}, t)}{\partial t}$$

Momentum

Appreciation of Time

Capacity for Integration

Quantum Entanglement

Figure 4: en.wikipedia.org/wiki/Dirac_equation August 12, 2014, additions by Bruce Gregory Ph.D. © 2013.

principle regarding the relationship between momentum and position. Quantum entanglement refers to the capacity of electrons to stay connected even though they are separated by large distances (up to 10 km).

The primary quantum variables are time, space, momentum, position, and motion. These are the primary variables found in the equations of Schrodinger, Heisenberg and Dirac.

The relevance of the dynamics and variables of quantum physics in the transformation of consciousness can be understood in terms of their relationship to set theory and group theory. Group theory and set theory are part of a subset of consciousness, mathematical consciousness. It was mathematical consciousness that led to the development of quantum physics. Mathematical consciousness utilizes the integration of logic, intuition and creative thinking, which implicitly trusts the resources of the unconscious to explore and identify nature's laws with regard to space, time, structure, motion and forces, which are all significant components of resistance. As Pauli put it, "intuition and the direction of attention play a considerable role in the development of concepts and ideas, generally transcending mere experience, that are necessary for the erection of a system of natural laws." [56] (p. 204).

THE ROLE OF SET THEORY IN THE TRANSFORMATION OF CONSCIOUSNESS

Set theory was developed and utilized by Cantor in 1873 in his proof of transfinite cardinals. The language

of set theory relies on one fundamental relation, called membership. One result of set theory was that it became the basis for the definition of numbers, which included integers, real and complex numbers as well as functions, geometric and topological objects, and all objects studied in mathematics. As such set theory serves as a foundation of mathematics in that all questions of provability of mathematics are dependent on the axioms of set theory. One of the main tools utilized by Cantor in his proof was the principle of correspondence. The correspondence he utilized was between the sets of natural numbers and the set of real numbers of any finite interval; for example (0, 1).

Through his use of power sets Cantor showed that there were many levels to infinity. The steps he utilized in his proof provided a series of bridges that *implied* a consciousness of infinity. This series of bridges corresponded to the steps Erickson utilized in his resistance protocol which will be discussed in the next section (Erickson, 1964). It also provided a template for facilitating a consciousness of infinity through the holding of attention, which thereby created a yes set [10] and a platform for activity dependent gene expression [24, 29, 51]. It was the holding of attention that created a container for the transformation of consciousness, utilizing the same areas of the brain accessed when processing different forms of music, a quantum process [37]. Before this development, arguments using infinity, including Newton's calculus did not require the use of infinity. Even Gauss, one of the developers of non-Euclidean geometry, had referred to infinity in a minimizing manner [41].

Infinity becomes relevant in the transformation of consciousness when one considers the subsets of the types, levels and sources of consciousness that are related to the experiences of connectivity/ quantum entanglement and superposition on quantum levels [25, 53, 57]. These subsets represent the *opposite side of the polarity* of the symptoms patients bring to treatment in terms of alienation, isolation, abandonment, etc. Alienation, isolation and abandonment are some of the core group of issues that the transformation of consciousness needs to center around so that from a western perspective there is a more integrated sense of self. This integrated sense of self is what the eastern perspectives require as a foundation prior dealing with the deeper levels of anxiety, and needs for advanced focus that is part of transitioning from self to no-self experiences, which represent deeper levels of consciousness [3]. When this is considered alongside of the set, subsets, and power sets of the bridges to different types, sources and levels of consciousness, this leads to the recognition of the set of all consciousness, the set of all infinities, and the consciousness of infinity, which is referred to by a variety of terms in eastern philosophy. These include but are not limited to oneness, Samadhi, emptiness, sunyata. The consciousness of infinity can include, but not be limited to, the valuing of the role of infinity and infinities, and the *implications* of the application of infinities to empowerment and creativity in therapeutic contexts. The primary application of the consciousness of infinity is that it serves as a deeper metaphor for the *consciousness of connection, the need for connection, and the capacity for connection*, at a level deeper than the quantum metaphors for connection.

Once Consciousness itself is considered as a set, and a set with value, the subsets for consciousness can be considered and be divided into human, animal, plants, etc. Within the subset of human consciousness, which is a set by itself, there are an infinite amount of subsets, which include healthy, unhealthy, unconscious, mathematical consciousness, quantum consciousness, therapeutic consciousness, etc. A yes set for the consciousness of the professional can be established and valued as evidenced by Erickson's consciousness in his protocol [10]. The following can occur; the *levels* of consciousness of the professional, especially in terms of *trust, creativity, and appreciation*, and their relative subsets, can be put into a one to one correspondence with the set of numbers like Cantor did in his proof. These subsets, when integrated, represent

the level of consciousness of the professional. When this is considered in terms of the subsets of the sources of consciousness, and the subsets of the types of consciousness, *quantum dynamics and quantum consciousness being subsets of the sources and types of consciousness respectively*, the consciousness of quantum variables and processes (time, space, motion, position, momentum, uncertainty, entanglement, superposition, the collapsing of the wave function), and their role in treatment, can be integrated into treatment.

The capacity for electrons to be in multiple locations simultaneously (superposition) is described mathematically by Schrodinger's equation that represents the behavior of the electron as a probability wave function. This equation did not, however, address a fundamental conflict within quantum mechanics. This conflict was between two aspects of the process, the evolution of the quantum system, and the procedure which is adopted when the measurement/observation of the system has taken place. This has been called the measurement problem. The collapse of the wave function and the resulting measurement problem has been a source of intense controversy within physics circles for almost a century. According to the Copenhagen Interpretation put forth by Bohr and Heisenberg, it was the consciousness of the observer making the measurement that determined the outcome, meaning the change in the wave function and the measurement itself, and was therefore a primary variable in the process. The Copenhagen Interpretation advocated viewing the wave function as a 'book-keeping' apparatus as a way of avoiding addressing other unresolved aspects of the dynamics of the quantum world. This interpretation did not address the superposition problem of 'Schrodinger's cat, or the fact that the measuring device itself was made of quantum components. Other views have proposed a multiple worlds hypothesis [58], environmental decoherence or reduction [20].

Could the Copenhagen Interpretation correspond to, and be describing the critical effect the quality of Erickson's consciousness had on his therapeutic choices, given all the possible outcomes/ choices he had at his disposal, that other therapists because of their limitations in consciousness did not have.

Progression of Consciousness from a Set Theory Perspective describes a number of important stages in the transformation of consciousness utilizing set theory (Figure 5).

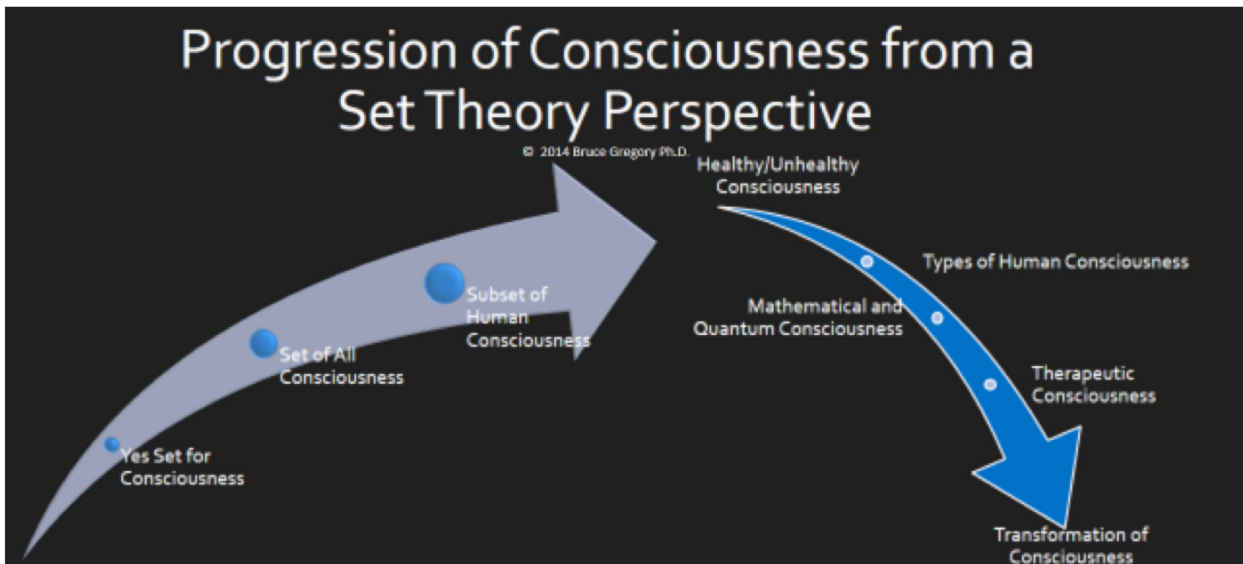


Figure 5: Progression of Consciousness from a Set Theory Perspective ©2014 Bruce Gregory Ph.D.

THE ROLE OF GROUP THEORY ON THE TRANSFORMATION OF CONSCIOUSNESS

Group theory was originally discovered by Everest Galois and later developed by Lie, Klein, and others [60, 61]. Group theory was discovered in the context of addressing the solution of the quintic equation, a problem that had been eluding and frustrating mathematicians since the mid sixteenth century when Tartaglia, Cardano and Ferrari came up with the solutions for the cubic and quartic equations (footnote here) and identified four main characteristics of any group which include:

The axioms (basic rules) for a **group** are:

1. **CLOSURE:** If **a** and **b** are in the group then **a • b** is also in the group.
2. **ASSOCIATIVITY:** If **a**, **b** and **c** are in the group then **(a • b) • c = a • (b • c)**.

IDENTITY: There is an element **e** of the group such that for any element **a** of the group **a • e = e • a = a**.

1. **INVERSES:** For any element **a** of the group there is an element **a⁻¹** such that

$$\circ a \cdot a^{-1} = e$$

and

$$\circ a^{-1} \cdot a = e$$

Any mathematical system that obeys those four rules is a group. The study of systems that obey these four rules is the basis of group theory.

Group theory involves hidden patterns of structure and numbers and an appreciation of opposites. It is the

language that describes the interactions of symmetries, actions between elements of a group that preserve its structure. Galois recognized that was an active process, which altered and expanded its original understanding that viewed it only as static, reflecting a balance between sides, without an appreciation of the hidden patterns and structure within. Galois also recognized that every equation had a unique composition of permutations which maintained the laws of the solution, and by analyzing them one could discover the secrets of the equation. In addition, what would be found inside the solution of an equation would be certain geometric structures. For quartic equations, equations containing exponents to the fourth power, often either a tetrahedron, the simplest of the Platonic solids, or a square would be found inside the symmetries, but for the quintic equation, it was a more complex structure; it was the icosahedron that was found. The different possible symmetries for groups are glide, reflection, and translational. Group theory was instrumental in the development of quantum physics, the solving of complex mathematical equations, and the Lorentz transformation which was an essential ingredient in the formulation of Einstein's equation of special relativity [40, 60].

By thinking in terms of group theory, a subset of utilizing cognitive processes mathematically, Galois' core realization that the interactions between the symmetries of a group determines and reflects its essential structure can be creatively applied to orient consciousness toward the core of the healthy side of the polarity within the patient. This is done by an *appreciation of the permutations* which is what Erickson creatively utilized in his resistance protocol.

Group theory was instrumental in the development of the Dirac equation that integrated quantum mechanics and special relativity. In the Dirac equation, and the equations of Schrodinger and Heisenberg, the variables of space, time, position, momentum, and motion played critical roles. At the deepest levels of our being, whether it be the electron's role in the ATP process, or the microtubules bridging quantum participation in the facilitation of consciousness, or the role of photons and electrons in the CO₂/O₂ processes in light synthesis in plants, these variables function as subsets for sources, types and levels of consciousness [20, 25]. As such, when the professional trusts the value of these quantum subsets, he can facilitate the exploration of and connecting to the sources of the transformation of consciousness at deeper levels, leading to a deeper sense of connection and well-being.

When principles of set theory, and group theory, are integrated with yes sets [10] or response sets [63], a major implication is the need for a type and level of quantum consciousness within the professional so that the utilization of trust, creativity, and opposites can be applied at a deeper level to facilitate the transformation of resistance. It is the quantum consciousness within the professional, which is the appreciation of the variables and processes that are most harmonious with the deeper levels of reality, which supports reorienting the focus of treatment. The consequence of this is to take feelings, thoughts, and behaviors from the center of the treatment process and put in the center the quantum variables and processes. Feelings, thoughts, and behaviors then are considered derivatives of position, motion, momentum, time and space components. This can be understood as the next stage in the evolution of Ericksonian approach. In the first stage Erickson developed indirect ways of communicating with and facilitating creative unconscious healing processes in the context of trusting the resources of the unconscious and reorienting the focus of treatment to resources in general. In the second stage Rossi extended and deepened the trust of the resources to include other branches of science, among them molecular biology, chronobiology and chaos theory, emphasizing the roles of the subsets of the hippocampus and RNA networks.

The second major application is the area of supporting the utilization and appreciation of the role of novelty, one of the fundamental aspects of the transformation of consciousness in that every transformation utilizes the opposite of old vs. new, implying the need for novelty [23, 24, 64, 65]. This need for novelty is

validated and expressed mathematically by Dirac's equations for creation and destruction operators [25, 54]. Novelty is a fundamental ingredient in the focusing of attention, a primary variable in the transformation of consciousness. The creative focusing of attention that Erickson utilized to facilitate novelty, containment, and unconscious healing processes in the resistance protocol to be discussed in the next section corresponds both to the permutations utilized in Galois' group theory and the inverse/opposites components of group theory. As a result of having a consciousness that appreciated quantum variables and processes, even without explicitly identifying this, Erickson was able to employ these type of interventions utilizing indirect associative focusing [10] and trans derivational searches [66], both of which operate beyond the limits of conscious awareness. In addition, quantum variables, processes, and consciousness can be applied in the following ways;

- The quantum variables can function as metaphorical bridges to deeper connections with nature and reality, addressing abandonment and comfort issues on deeper levels.
- The uncertainty principle, functioning at the depth of the quantum level, can function at a symbolic level, supporting the transformation of consciousness around issues of splitting with regard to knowing and not knowing, and the appreciation of momentum and position, which imply the needs for attention and time.
- Quantum entanglement and superposition validate the need and capacity for connection at very deep levels.
- Quantum dynamics and variables can function as metaphors for creativity, capacity in general, and the need for creativity in regard to both the consciousness of creativity and the creativity of consciousness.

THE ROLE OF THE ERICKSON RESISTANCE PROTOCOL AS AN EXPRESSION OF THE INTEGRATION OF QUANTUM DYNAMICS AND VARIABLES IN THE TRANSFORMATION OF CONSCIOUSNESS

The Erickson resistance protocol [26] was designed to serve as a template for the treatment and transformation of resistance, which is a subset of human consciousness, and an opposite of receptivity. The protocol recognized and appreciated nature's consciousness in developing mind-gene algorithms for the transformation of consciousness, while simultaneously

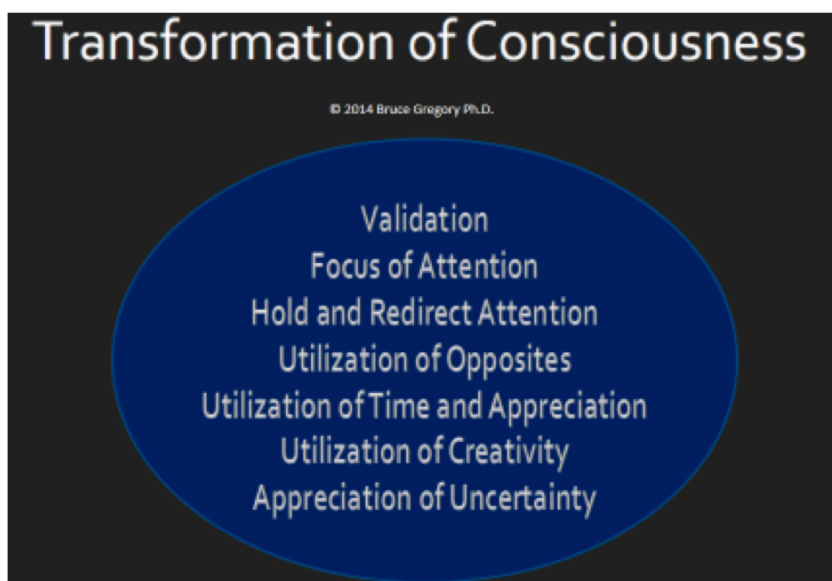


Figure 6: Transformation of Consciousness © 2014 Bruce Gregory Ph.D.

validating the role of quantum variables in the transformation of consciousness. In addition it implied the need for a sufficient level and type of therapeutic consciousness to appreciate the role of quantum variables [25].

The core stages of the protocol are identified in transformation of consciousness (Figure 6).

The primary aspects of therapeutic consciousness employed were an appreciation of creativity, trust, appreciation, the role of opposites, the role and dynamics surrounding attention, the needs of patients in the context of their uncertainties surrounding the transformation of their anxieties, and the quantum variables of momentum, position, time, space, and motion. Erickson's deep *appreciation* of the dynamics and variables involved in the getting, holding and redirecting of attention corresponded to the quantum processes of tai chi, and classical music composition theory [25, 37, 38].

Erickson demonstrated that the consciousness of the therapist could correspond to the measurement component in quantum mechanics that was responsible for collapsing the wave function. In mathematical terms, Erickson's level of consciousness allowed him to implicitly integrate quantum and mathematical consciousness in creatively permuting various aspects of trust, appreciation, creativity and validation in the focusing and redirecting of attention. The core guiding principles of this process were the trust and appreciation of opposites, and the appreciation of uncertainty, fundamental aspect of both the consciousness of group

theory and quantum physics. The two primary sets of opposites Erickson utilized were conscious/unconscious and knowing/not knowing. Corresponding processes are utilized in classical music composition theory and Tai chi [37, 38, 65].

Examples of the level of Erickson's consciousness are below;

Erickson's consciousness of the need to appreciate failure was an accompanying component of the treatment plan. Previous failures in treatment or in resolving the stated problem were identified and acknowledged a number of times in order to discharge hostility and provide a bridge to utilize motivation to redirect the patient's resistance through the utilization of the implied directive. Erickson's interventions at this stage are below [26].

"You have come for therapy, you have requested hypnosis, and the history you have given of your problem leads me to believe strongly that hypnosis will help you. However, you state more convincingly that you are a resistant hypnotic subject that others have failed despite prolonged efforts to induce a trance, that various techniques have been of no avail, and that reputable men have discredited hypnosis for you and as a therapeutic aid in and of itself. You have frankly expressed your conviction that I cannot induce a trance in you, and with equal frankness you have stated that you are convinced that you will resist all attempts at hypnosis and that this resistance will be despite your earnest desire and effort to cooperate." (p. 302).

Once Erickson had sufficiently validated the resistance and its momentum and time components (consciousness of quantum variables) he proceeded to the next stage of treatment applying his consciousness of appreciation around the focusing of attention [26].

“Since you have come for therapy and you state that you are a fault-finding, uncooperative patient, let me explain some things before we begin. So that I can have your attention, just sit with your feet flat on the floor with your hands on your thighs, just don’t let your hands touch each other in any way (p. 302).”

In this section Erickson demonstrated the application of the consciousness of creativity, creatively utilized language to facilitate the patient following him, creatively validated the patient, and creatively dealt with time, pressure, and the fear of failure.

This had the effect of setting the foundation for the creative depotentiation of the conscious mind. As in classical music composition theory, Erickson would then creatively replay various aspects of the conscious/unconscious polarity, while simultaneously creatively utilizing different aspects of time. These interventions validated and employed the principles of Dirac’s creation and destruction operators from quantum physics. Some examples of how he did this were [26];

“Now I don’t really care if you listen to me with your conscious mind, because it doesn’t understand your problem anyway, or you wouldn’t be here, so I just want to talk to your unconscious mind because it’s here and close enough to hear me, so you can let your conscious mind listen to the street noises or the plane’s overhead or the typing in the next room. Or you can think about any thought that comes into your conscious mind, systematic thoughts, random thoughts because all I want to do is talk to your unconscious mind, and it will listen to me, because it is within hearing distance even if your conscious mind does get bored. Just be comfortable while I am talking to your unconscious mind, since I don’t care what your conscious mind does (p. 302).”

The next component that Erickson employed in his treatment and transformation of resistance was an appreciation and respect for patients’ anxieties with respect to the uncertainties around the reduction of their defenses. This was a validation, utilization, and expression of appreciation of Heisenberg’s uncertainty principle, one of the cornerstones of quantum mechanics. This was done through the creative use of

language for multilevel communication to the conscious and unconscious minds, and the creative repetition of the themes of not knowing, and waiting comfortably. Examples of interventions Erickson used in this stage include [26];

“In other words, I will ask a question to which only your unconscious mind can give the answer, and concerning which your conscious mind can only guess if it does at all; maybe correctly, maybe wrongly, or maybe have only some kind of opinion, but if so, only an opinion, not an answer. Before I ask that question, I would like to suggest two possibilities. (1) Your conscious mind might want to know the answer. (2) Your unconscious mind might not want you to know the answer. My feeling, and I think you will agree, is that you came here for therapy for reasons out of the reach of your conscious mind. Therefore I think that we should approach this matter of the question I am going to put to your unconscious mind for its own answer in such a way that your own deep unconscious wishes to withhold the answer or to share the answer with your conscious mind are adequately protected and respected. Now, to meet your needs, I am going to ask that yes or no question, and be prepared to be pleased to let your unconscious mind answer, and in doing so either to share the answer with your conscious mind or to withhold it, whatever your unconscious mind thinks to be the better course. The essential thing, of course, is the answer, not the sharing nor the withholding. This is because any withholding will actually be only for the immediate present, since the therapeutic gains you will make will eventually disclose the answer to you at the time your unconscious minds regards as most suitable and helpful to you. Thus you can look forward to knowing the answer sooner or later, and your conscious desires, and well as your unconscious desires, are the seeking of therapy and the meeting of your needs in the right way at the right time. An unconscious mind response is different, because you do not know what it is to be. You have to wait for it to happen, and consciously you cannot know whether it will be ‘yes’ or ‘no’. It does not need to be in accord with the conscious answer that can be present simultaneously in accord with your conscious mind’s thinking. You will have to wait, and perhaps wait and wait, to let it happen. And it will happen in its own time and at its own speed (pp. 304-305).”

In the last section Erickson demonstrated an appreciation of the consciousness of group theory by creatively permuting the polarity between the conscious

and unconscious, knowing and not knowing, and the quantum variables (time, space, motion, momentum, position, uncertainty) operating in the treatment process [27]. Throughout the process Erickson maintained connection with the patient, metaphorically being in harmony with the principle of quantum entanglement through his appreciating the power of focusing attention, one of the core aspects of eastern philosophy's approach to increasing and transforming consciousness that is found in almost all forms of meditation. The purpose of Erickson's interventions was to facilitate yes sets [10], or response sets [61] in the patient in order to facilitate the transformation of the patient's consciousness from one of resistance to one of receptivity. These series of interventions corresponded to the quantum processes of Dirac's creation and destruction operators [25, 53]. Overall Erickson's interventions may reflect an expansion beyond what is normally considered therapeutic consciousness that primarily emphasizes a combination of empathy and logical thinking.

The consciousness that Erickson demonstrated implied needs for greater depth of trust, creativity, and appreciation of the quantum variables of opposites, time, space, momentum, motion, and uncertainty. This expansion is summarized below (Figure 7).

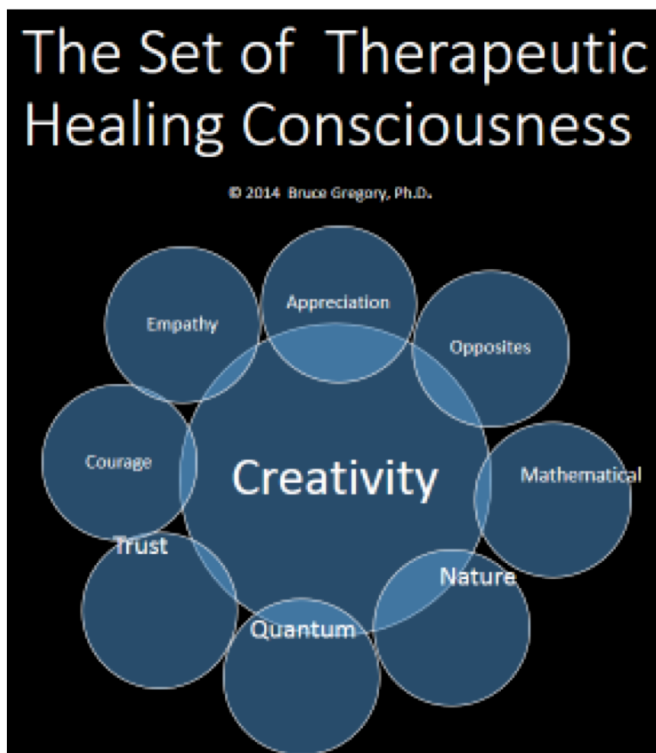


Figure 7: The Set of Therapeutic Healing Consciousness © 2014 Bruce Gregory, Ph.D.

THE APPLICATION OF QUANTUM PRINCIPLES AND VARIABLES IN THE TRANSFORMATION OF CONSCIOUSNESS IN COUPLES AND ORGANIZATIONS

The integration of principles and variables from quantum physics involves three core aspects of reorienting the focus of the consciousness of the professional providing the treatment in relationship to the transformation of consciousness. The first is the removal of feelings and thoughts from the center of the process and replacing them with the position of the self, and the momentum of the different components of the resistance needing to be contained and addressed. This may be complemented by the appreciation of the implications of quantum entanglement. The second is the utilization of two specific pairs of opposites; responsibility vs. victim, and healthy vs. unhealthy. The third is the appreciation of intent as both a force, and a primary subset of the containers used to transform the grandiosity's superiority and victim positions to empowerment from a heightened place of consciousness.

These three core aspects reflect creative applications of two subsets of group theory; permutations of the focus of attention, and permutations of the utilization of creativity.

The treatment of couples and organizations from a quantum perspective may be conceptualized as having four stages; assessment, containment, redirection of focus of attention and integration which may correspond to Poincare's four stage creative process [29, 54]. In the first stage, the professional assesses the presenting system and the varying degrees to which the system is significantly out of balance. This is reflected by the degrees of reactivity, and chaos operating. The imbalance has often persisted for quite some time, and there is often a strong force of negative momentum in the system. Individuals are often fixated in polarized positions and there is a lack of space and healthy motion which leave the individuals feeling frustrated, disconnected, discouraged and afraid that the situation is hopeless. Once these dynamics have been explored and assessed, a comprehensive, creative strategy may be devised to facilitate the transformation of the consciousness in the system. The goal is to create relationships which are more creative, proactive, effective, and functioning from a mutually satisfying and respectful position. The couple or organization is evaluated in terms of the degrees or magnitude to which the system is out of balance, the degrees of negative momentum of the different components of the resistance being acted out, and the needs for containment [7, 34, 46].

Components of the acting out assessed include, but are not limited to;

- Withholding
- Projecting
- Minimization
- Denial
- Avoidance
- Passivity

The acting out components and behaviors exist within the complexities of grandiosity and its subsets; superiority and victim positions in individuals and organizations (Figure 8).

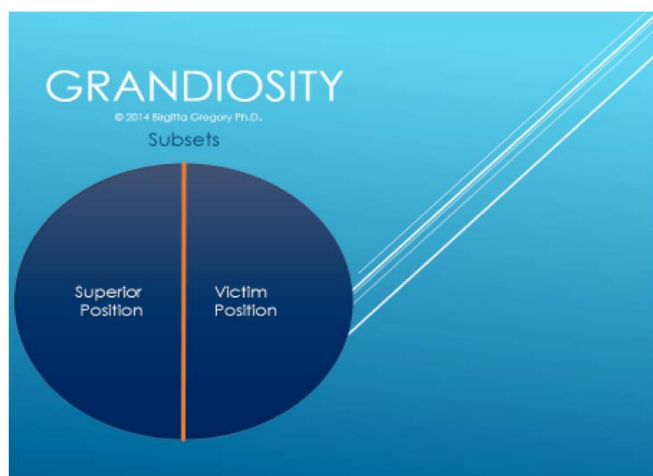


Figure 8: Grandiosity © 2014 Birgitta Gregory Ph.D.

These forms of acting out can be understood as second derivatives of the quantum variables of position, momentum with the first derivatives being the thoughts and feelings being presented. These derivatives need to be appreciated, mirrored [8,10], and validated in order to provide the containment that precedes, and then overlaps the seeding, pacing and creative focusing of attention that facilitates the transformation of resistance into receptivity [10, 66]. The appreciation and utilization of these variables is accomplished through a combination of focusing of attention, building yes sets, and the interspersal approach [10]. These processes may facilitate a number of experiences of novelty that may be fundamental to the transformation of consciousness [23, 24]. This transformation of the consciousness of resistance into the consciousness of receptivity may correspond to Dirac's creation and destruction operators [25, 53, 67].

From a quantum perspective, the assessment needs to appreciate the momentum of the defenses. This *momentum* also represents imbalances and disconnections with respect to other primary quantum variables such as *space* and *motion*. This appreciation may support the creative utilization of these quantum variables in later stages in order to engage, redirect and maintain attention, focus and establish reconnection.

Primary attention is given to recognizing and appreciating the degrees of influence of the defensive subsets of the grandiosity victim complexes which are the core of the defense structure, from which the other defenses manifest. The grandiosity victim complexes may be considered as forces with momentum [34, 67, 68, 69]. These defense complexes are reframed [10] as positions in order to utilize the implied directive to initiate the seeding of pairs of opposites to be utilized in the second and third stages. This seeding applies to intent, accountability and empowerment, the opposite poles of generalities, blame, and power and control struggles existing in the grandiose and/or victim positions.

Part of the assessment is the tracking of the grandiosity which primarily centers on the following; the intent to avoid responsibility for a number of experiences and behaviors, a deep sense of entitlement and an inflated sense of confidence communicated as superiority. The key to the tracking may be the level of the consciousness of the professional with respect to the integration of the workings of the grandiosity victim dynamics within the professional himself [71]. The degree of integration may be directly proportional to the depth of awareness the professional has of the grandiosity victim dynamics operating within the clients being treated [72].

The second phase of containment may involve a number of factors, the most essential being the professional's relationship and appreciation of the temporal components operating with regard to the momentum of the grandiosity victim complexes. The appreciation of the temporal components aligns the need to prioritize the fundamental necessity to slow down the pace of the exchanges. The slowing down of the pace functions both as a metaphor for the need for time, which is the opposite perspective of the need for immediate gratification of the grandiosity, and a redirecting of attention which by implication may deflate the grandiosity. The validation of the momentum facilitates the containment of different aspects of the

resistance. Another important feature of the temporal component is the length of time the grandiosity has been a dominating force controlling the system. Other components of the grandiosity needing to be exposed and contained are the certainty, and predictable patterns of its operations.

Examples of grandiosity processes which may operate from an unconscious superior position that may manifest in various ways in behaviors and communication:

- Behave in communication and behavior as if there will be no consequences for having negative intent to intimidate, manipulate, or control
- Behave in communication and behaviors as if limits do not apply due to being so special and superior
- Justify turning conversations around, shift the focus to other person or change direction of communication without transparency of doing so
- Avoid taking responsibility for actions and consequences and expect not to be challenged
- Expect others to do or take care of unpleasant or undesirable tasks without reciprocating
- Make and break agreements on a moment to moment basis without respect for others
- Act entitled by not adhering or respecting rules that will affect others
- Unilaterally changing any agreements and expect no negative consequences as a result

Examples of grandiosity processes which may operate from an unconscious inferior/victim position that may manifest in various ways in behaviors and communication:

- Not set up agreements and being proactive in communication that will support accountability, after the fact blame and complain instead of taking responsibility for the fact that no agreement had been established
- Not set up boundaries proactively, refuse to maintain boundaries by enforcing consequences and make excuses for being passive
- Minimize the need to develop skills to deal with feelings constructively and act innocent when feelings are out of control and acted out
- Avoid conflict and act surprised or disappointed when negative consequences arise as a result of the avoidance

- Reject support and suffer in isolation
- Ignore the build-up of resentment and avoid dealing with the resentment responsibly then act out irrationally or out of proportion to the event

The containment utilizes mirroring, validation, utilization of symptoms, quantum variables, logic, and questions to interrupt and depotentiate the grandiosity. The grandiosity typically operates in predictable patterns expecting and presenting as certain it is going to 'get away' with its intent to exploit, intimidate, and/or manipulate others. One of the primary sequences that may be fundamental for the professional to track during the assessment is when the grandiosity is responding with either innocence, or a combination of innocence and not knowing in response to questions. The professional needs to recognize that often underneath the innocence may be a force of withholding that is acting out either a need for power and control, and/or a need to punish. Further, beneath this layer, may be the grandiosity itself, expecting to get away with withholding by hiding behind innocence or not-knowing.

Once the professional exposes the withholding, the grandiosity may attempt to utilize fear as an excuse for withdrawing and not communicating. That is one example of how the grandiosity uses partial truths like fear to justify the acting out behavior. The fear is misrepresented and the intent to present the fear is to use it as an excuse to avoid taking responsibility. That portion of the truth, the fear that the grandiosity will be exposed and lose its power over the individuals and the system, is over looked and instead may be presented as innocence and not knowing which is intended to elicit an empathic response from the professional. It is important that the professional makes the distinction at this juncture between fear coming from the real self and fear utilized by the grandiosity [72]. If this distinction is overlooked, the professional may inadvertently validate fear coming from the unhealthy self instead of mirroring the intent of the grandiosity.

The effectiveness of the professional may be significantly increased by setting up polarities using the following opposites; grandiose/unhealthy part versus humble/healthy part. This may allow the removal of the fusion that exists within the individual and system to creatively open up space and momentum to generate consciousness and forward motion.

The appreciation and utilization of logic may be an effective tool to offset, challenge, contain and transform the grandiosity (Figure 9). The grandiose part of the individual often presents as clever, and within the

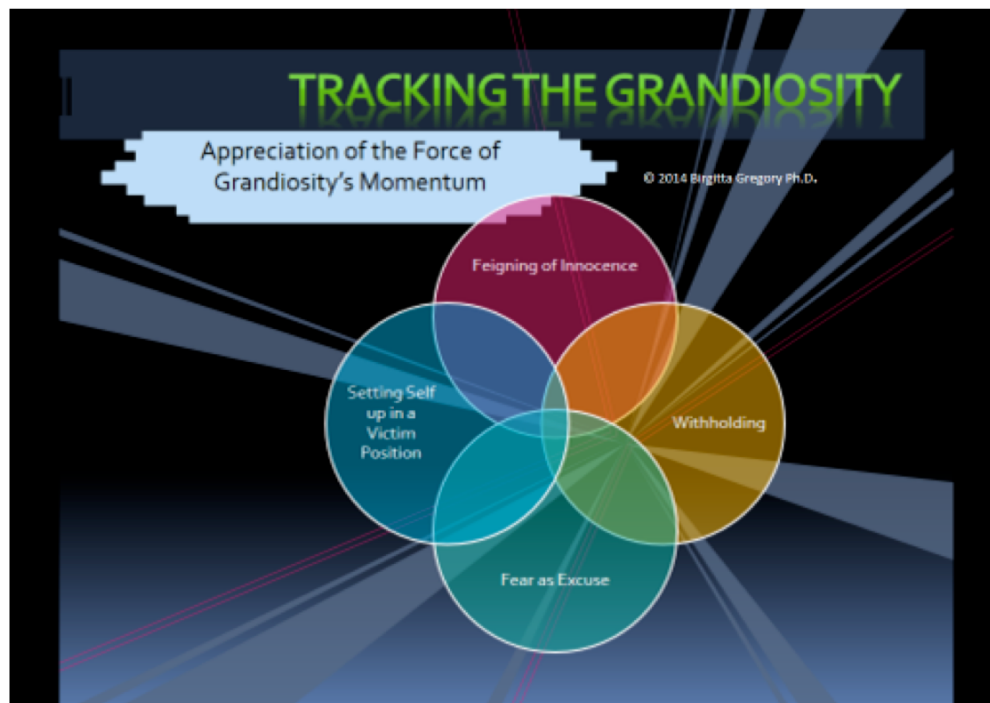


Figure 9: Tracking the Grandiosity © 2014 Birgitta Gregory Ph.D.

cleverness is a certain level of arrogance and superiority that has contempt for all the people it has manipulated. When the professional utilizes logic through a series of questions this can expose contradictions. When that transpires the grandiosity may not be sustained as the certainty and superiority may be deflated. In addition space may open up inside the individual, activating unconscious search algorithms which may result in curiosity, interest, respect, surprise, and hope, factors that may directly impact the transformation of the grandiosity and increase consciousness.

The professional needs to track, recognize and pace separating the different parts operating so that the grandiosity's strategy to masquerade and get away with the fact that it is setting the individual up to be a victim is seen. When this is exposed, the grandiosity may be deflated, and respect may be generated, along with the seeds of trust. Intuitively the healthy part of the individual may be given the opportunity through increased consciousness to recognize the grandiose unhealthy position. This seeds the setting up of opposites between the healthy and unhealthy parts which may facilitate unconscious healing processes, reducing internal states of anxiety and stress.

In addition, this intervention may facilitate an experience of novelty, while simultaneously interrupting the certainty of the grandiosity that is it is so smart and

clever that its psychological ploys will not be recognized.

Other signs of grandiosity which can be identified in communication patterns include;

1. Changing of the subject
2. Repetition- statements- and positions
3. Individual forgets questions asked
4. Increased rate of speed
5. Volume is often raised
6. All or none statements are used frequently
7. Black and white thinking and communication occurs
8. There is a loss of perspective in communication

Using a number of questions creates surprise, doubt, and uncertainty, all of which may facilitate a deflation of the grandiosity and generate momentum for change, some examples are:

1. What is your intent?
2. What is your strategy?

3. How is that working for you?
4. What skill sets for you have in place for dealing with your unhealthy part?

The third stage of the process, redirection of focus of attention, includes working with pairs of opposites to facilitate the transcendent function and activity dependent gene expression which are the cornerstones of the transformation of consciousness [9-11, 24, 25]. The three primary pairs of opposites utilized in this stage are;

Healthy Self/Unhealthy Self

Responsibility/Victim

Proactive/Passive

In terms of dealing with the first polarity, healthy/unhealthy self, the consciousness of the professional may support the transformation of harsh internal judgments associated with needing support which characteristically comes from either side of the subset of grandiosity, superior or victim positions.

Examples of questions asked to both contain the grandiosity, from a superior as well as victim position, and simultaneously initiate unconscious mind-gene search algorithms and the CREB cycle include:

- Have you ever considered this part of yourself as unhealthy?
- Have you ever wondered what your healthy self would do as an alternative?
- Have you ever had any dreams that you may or may not have remembered yet in which your unconscious was making distinctions between your healthy and unhealthy selves?
- In exploring distinctions between your healthy and unhealthy selves, have you ever had any memories, fragments of memories, or sensations that have attracted your attention?
- In dealing with a partner in a relationship, or a subordinate or superior in the workplace, have you ever had the feeling that something was not quite right in the communication, and wondered what the other person's intent might be, and asked him that question?

With regard to the second polarity, responsibility/victim, the following concepts may be utilized as

subsets of the healthy self for empowerment, facilitating the transforming of aspects of victim consciousness.

1. Accountability
2. Agreement
3. Choices
4. Closure
5. Follow through
6. Priorities
7. Perspective

In dealing with the third polarity, proactive/passive, the primary objective is to help transform the individual's consciousness and relationship with creativity, which may be at the core of proactivity.

Secondary pairs of opposites are the opposites utilized by Erickson in the resistance protocol; not-knowing and knowing, and conscious/unconscious. The work with opposites is complemented by an appreciation of the depth of anxiety connected with the uncertainties of new consciousness and new positions [26]. This need for appreciation implies the need for deeper levels of creativity and trust within the professional to hold attention while the opposites are being worked with.

The fourth stage integrates the work done in the previous three stages by reviewing each stage of process, acknowledging the various experiences that either the couple or personnel in the organization have had in order to reinforce yes sets [10], or response sets [63] and facilitate unconscious processes that integrate new learning and transform consciousness [22-24]. Attention is given to appreciating how the quantum variables of momentum, position, time and space have been influencing the system. The value of the role of uncertainty is reinforced to support learning to trust and utilize curiosity to contain and reduce reactivity. The opposites of proactivity/reactivity and victim/ empowerment are highlighted as a means of valuing creativity to strategically address problems.

SUMMARY

The integration of principles and variables of quantum physics in the transformation of consciousness may be a function of the level of consciousness of the

professional providing treatment with respect to the integration of trust, appreciation and creativity regarding the value of quantum processes and quantum variables. The implied directive, set theory, and group theory may be applied in the evolution of the appreciation of quantum variables. Utilizing the appreciation of resistance as a force with momentum may support interventions for containment and the utilization of opposites in working with the grandiosity complex and its subsets of superior and victim positions in couples and organizations. The core component of resistance, the grandiosity/victim complex, is discussed within the context of applying quantum dynamics and variables in facilitating activity dependent gene expression and transformation of consciousness in couples and organizations. One of the key components of transforming consciousness from resistance to receptivity may be the relationship between the momentum and validation. More research is needed to evaluate the effectiveness of the integration of quantum dynamics and variables in the transformation of consciousness.

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