Limbic connectivity and sympathetic neural balance: the primary psycho-physiological locus of affect, Part 1

In these three essays I will take the opportunity to introduce a new piece of neuroscience which will allow quantitative assessment of the most fundamental axis of affect regulation in man. This psycho-physiological nexus if rightly defined is sure to have implications which will benefit not only the discipline of psychology itself by way of allowing real psychometric demonstration of the central circuitry which sets the tone for personal perception and expression, but, a nexus with far reaching implications that may well include diverse benefits beyond defining psychological balance, such as adjunctive augmentation of immune function in cancer treatment and possible applications in the delay or curtailment of Parkinsonian onset. Here, we see psychology revealed as physiology, revealed as psychology—*monism.*

Analysis of Schore's dopaminergic ventral sympathetic, and noradrenergic lateral parasympathetic limbic circuits, and their relation to alpha function:

Schore has discovered a piece of neuroscience which along with some symbolic analysis, has allowed me to entirely alter the balance of my world. I will admit here at the start, that I am no fan of the intersubjective processes and the subjective approach to mental illness and health. I have studied it, and have yet to eliminate even one real symptom with these ideas. Read (Balsamo, 2011) and discover why I am so deeply unimpressed. However, not all of the ideas of Bion are beyond demonstration, and some few practitioners of the intersubjective method are most skilled and highly knowledgable of many techniques (Brown, 2011). Some patients require such a method as they are simply not suited for free association, and one can see new therapeutic alterations emerge in competent therapists to accommodate these situations (Kaplan-Solms & Solms, 2002, pp. 120-126). Indeed, I have been able to make clear demonstrable sense of the intersubjective idea of "borrowing" alpha function (Brown, 2011, p. 165), evidenced in certain dreams which I have been able to provoke in a subject I was attempting to analyze, and more importantly, the notion of alpha function itself, which I have seen as clearly deficient in some subjects. One friend who was quite ill and requested my intervention, is a prime example: a man most highly intelligent with great mathematical competence, who outside of this one prized symbolic domain, was incapable of even rudimentary symbolic analysis or symbolic function in general, his world locked in the concrete physicality of alpha function deficient reality. Alpha function is demonstrable, and although the intersubjective use of this phenomenon is in my opinion, questionable, the phenomenon is not. I believe Schore has discovered the circuitry, and its developmental mechanism, which parallel Bion's ideas quite closely. Its practical usage however, is entirely another matter.

Schore has discovered two circuits which are primary in development, and function in opposition to each other: the dopaminergically modulated sympathetic ventral tegmental limbic circuit, and the noradrenergically modulated lateral parasympathetic tegmental limbic circuit (Schore as cited in Kaplan-Solms & Solms, 2002, p. 234-235). The sympathetic circuit is formed, much as Bion had supposed, as a function of the dyadic

exchange between infant and mother of glance and gaze, and I will add my own inference which is quite obvious and easily supported (Keverene, et al., 1989; Montagu, 1978; Panksepp, 1998, p.272) as infants engaged in the exchange of maternal glances are usually being held, that *maternal touch* and the subsequent addition of neuropeptides/endorphins also has a part to play in creating the result:

> "It is hypothesized that maternal regulated high intensity socioaffective stimulation provided in the ontogenetic niche, specifically occurring in dyadic psychobiologically attuned, arousal amplifying, face to face reciprocal gaze transactions, generates and sustains positive affect in the dyad. These transactions induce particular neuroendocrine changes which facilitate the expansive innervation of deep sights in orbitofrontal areas, especially in the early maturing visuospatial right hemisphere, of ascending subcortical axons of a neurochemical circuit of the limbic system—the sympathetic ventral tegmental limbic circuit." [Schore as cited in Kaplan-Solms & Solms, 2002, p. 234]

The famous studies from the 1940's conducted by Spitz (Spitz in Bowlby, 1980; Panksepp, 1998, p. 262) may well imply the primacy of this developmentally innervated brain circuitry extends to include the most basic dependance: that of life itself. Specifically: if deprived of maternal touch and gaze, the infant may well die. The sympathetic tegmental limbic circuit is dopaminergically modulated, and can rightly be thought of as a primary manifestation of libidinal excitation and discharge (Kaplan-Solms & Solms, 2002, p. 237). It should be noted that the dopaminergic and opioid systems and circuitry which respond to create the good feelings which reinforce socially mediated behavior, both involve many of the same areas, such as the ventral tegmental area, where the A-10 meso-limbic dopamine cells are located (Panksepp, 1998, p. 118). Neuropeptides such as the endogenous opioids including beta-endorphin which is triggered by social cues and touch, have a primary role in creating social bonds, quelling pain, both physical and mental, are key in alleviating separation distress, creating sexual reward, and addictive reinforcement (Panksepp, 1998, p. 255, 264). So we can see here, in the formation of the sympathetic ventral limbic circuit triggered by maternal exchanges of glance, sight and touch, a source of libido, an energetic dopaminergic circuit which up-mediates arousal and shapes behavior, formed presumably by way of allocating both endorphins, and those neuroendocrine functions involved with encouraging the substantial innervations of dopaminergic projections into orbitofrontal areas. Here, in the activity of the completed circuit, along with the peptide systems, dopamine and opioids serve their reward and motivational functions as social and energetic contributors.

The contrary circuit, the parasympathetic lateral limbic circuit, is to be thought of as a balance, a cut off, a competing inhibitory system to counter the rewarding energetic expression of the sympathetic circuit (Kaplan-Solms & Solms, 2002 p. 237). This circuit functions to stop our energetic libidinal expression: functional, conditional, affect regulation in response to social cues (Kaplan-Solms & Solms, 2002, pp. 234-238) and so, can best be understood as the physiological structure triggered by social disapproval: *by shame and guilt.* Both of these circuits are innervated into the orbitofrontal areas, which mediate social cues and functioning, just as one would expect (Gazzaniga et al., 2009).

These two circuits form a fundamental axis around which personality can be assessed as to its balance. Here, we see the basic essence of health and neurosis exposed at the most fundamental level. First I will assess the implications from the cause, from neurological and psychological standpoints, then from the effect, from the perspective of philosophy and ethics.

The notion of dopaminergic/sympathetic predominance:
I used to demonstrate in my personal psychology, a particular state of balance between these two competing circuits, and have devised a method, re-polarization theory, which will alter that balance. As a neurotic with OCD, I had little co-anesthesia, which means I always felt the constant activity of, and was painfully aware of, my inner visceral bodily sensations, eg., I always had a sick stomach, and poor appetite. I would vomit often. My sensitivity to loud noise was part of this common cluster of neurotic symptomatology. A state of continuous negative arousal, anxiety and irritation at a low and continuous level, were in the main, a constant I kept under control with rage, and drugs. I never experienced pleasure, unless I had achieved a huge success which would often take years of constant work, or, if I was on a drug. A small man, my tolerance for quantities of drink and drugs was astronomical. I felt no pleasure from life. I had no *interest in* life or the world, instead, I was entirely *determined*, enraged, a furious raging determination to crack the world open and splinter it to pieces—to bend it to my will, crush it and dominate it. Only this, would find my mood softened, and relieve me enough to smile. I never smiled…never. If I let my rage falter, depression would swallow me up, so, I never let it falter…not even once. I was never depressed, I was furious instead. I had little choice…life hurt too much to do otherwise.

Here in this description, we can see the near absence of opioid and dopaminergic activity, the libido is all but entirely repressed, *the primary process thinking bound and curtailed from expression* as is the very function of the lateral parasympathetic circuit (Kaplan-Solms & Solms, 2002, p. 237). Primary process thinking, libidinal expression itself, is forced under repression. This is the result of thinking processes which are dominated by parasympathetic/noradrenergic balance in these limbic orbitofrontal circuits, rather than a state of general activity and balance which favors dopaminergic/sympathetic circuitry. Co-anesthesia, as we will see, is a function of libidinal expression *and opioid activity*, which decrease the effects of felt emotional and physical pain and discomfort. Dopamine facilitates pleasure and systemic arousal characteristic of the SEEKING system (Panksepp, 1998, p. 156), and fosters interest in the world, and, opioids inhibit pain, both emotional and physical, and in the case of those such as beta-endorphin, they quell separation distress, and shift the peptide system toward pleasure and calm, and away from the effects of the competing peptide which facilitates negative arousal and stress: corticotrophin releasing factor (Panksepp, 1998, p. 112). The vital functioning of the ventral sympathetic limbic circuit in distributing dopamine to facilitate what Schore labels, "elation," (Schore as cited in Kaplan-Solms & Solms, 2002, p. 236) is curtailed by the parasympathetic lateral limbic circuit, which responds to social cues and circumstances (disapproval) that invoke guilt and shame. So a state of general psychical balance across the entire of life experience, our reaction to changing circumstances is created in no small part, as a function of our interpretation of life events which flows

from the contributions of these two circuits in their respective affective predominance. If the parasympathetic circuit is predominant, the subject will have little libido to grace life experience, and will have their energies in the main repressed into the unconscious, affection and libido re-polarized and made unconscious, perhaps regressed into hatred. If a state of sympathetic balance is predominant, the subject will have low anxiety, a high sense of pleasure and reward from life experience, and find all of life to be rewarding, pleasurable and inviting. Before advancing a vital neuroscientific experiment which will make this most basic and informative axis of personality available to quantitative assessment, I will first detail a sure hypothesis, which my a-priori successes have amply supported countless times. Please return next week for more of this new and vital information.

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Limbic connectivity and sympathetic neural balance: the primary psycho-physiological locus of affect, Part 2

Ethics vs. morality—Of ethic and threat: empathy vs. obedience

As the infant progresses through the initial 18 month period during which the sympathetic and parasympathetic limbic circuits are fully formed, the infant masters several stages of differentiation. It is now accepted through the work of Klein (1952) and empirical demonstration, that a developmental/behavioral correlation at the age of four months, exists between infants categorized as attachment secure or disorganized, "dis-coordinated" [disorganized in the sense of being unable to properly integrate the intermeshed and exclusive psychical manifestations of separation RAGE and FEAR as they conflict and inhibit SEEKING and CARE] (Hopkins, 2013, p. 47). The infant at this stage singles out the mother as a separate object which is essential for CARE, and that this fact is then made evident by the manifestations of separation-RAGE and stranger-FEAR, which become manifest at 7-8 months of age (Hopkins, 2013, p. 47). To observe first hand, the interactions between mother and infant, the effect is obvious to casual observation: *the mother's face is the infant's entire world*, once indistinct as an object, now, *once engaged in the exchange of gaze, touch and glance, only semi-distinct from himself*, her face responds to his affects *and anticipates as if part of himself, as if the world itself were a loving extension of the infant*, a responsive and inclusive extension of himself. Here, we see the essence of all which is of the higher in man, the heart of hope itself, the nexus, the first and most primary impression of *identification with the world.* Note that I make no mention of the less important distinction, identification with mankind, which is a small and far less important aspect of this most vital and needful result, the essence of human hope, identification with the entire of the world, identification with all things, the fount of the highest of all traits, the fount of ethics themselves—Empathy. Here is how I put the idea in my Prometheus paper (Norman, 2013 Prometheus):

> "I propose that this series of circuits in the brain, in their development or lack thereof, correspond to the potential empathetic capacities of the individual. In the affective dynamic of these two circuits we see the essence of ethical development, which is not borne upon the back of threat, *which is a dissociative factor*, but is created here, in the structures which are responsible for empathetic dynamism: The sympathetic circuit allowing what is surely a reward of pleasure and libido as self is experienced integrated into the world, this circuit using a dopaminergic neuromodulator, and the parasympathetic circuit which uses noradrenergic neuro-modulation, a response to shut off our pleasure as a feedback mechanism sensitive to social conditions of rebuke and reproach (shame). Between the two circuits, we see the orbitofrontal cortex connected to the limbic system, the OFC operating in its familiar role as a mediator of

social cues and response. In this dynamic opposition we may even see, on the most fundamental level, the functions of libido and repression——anxiety serving its psychoanalytic role as a repressive agent, brought on by an increase in noradrenergic modulation of the "parasympathetic lateral limbic" circuit to repress our pleasurable drives, when they conflict with the feedback we receive from the world and others. I propose: These two circuits working in tandem are the neural substrate upon which empathy, and so, ethical conduct and sentiment are founded.

There is considerable support for this idea within current neuroscience. This support comes from two avenues: 1. Studies of people with brain lesions and damage to the orbitofrontal areas, and, 2. Studies on "Antisocial Personality Disorder," or APD. Studies detailing the physiological changes and characteristics endemic to APD, a condition estimated to affect 65 to 80 percent of the prison population (Gazzaniga, et al., 2009, p. 629), indicate a volumetric reduction in the prefrontal grey matter, and reduced glucose metabolism in the orbitofrontal cortex of the subjects as revealed in PET (Raine, 2002). This condition is demonstrated by Raine, to be a product of not only genetic, but also environmental factors. In studies involving patients with damage to the orbitofrontal cortex, the patient is unable to properly monitor and assess the responses of others, and so, the patient with OFC damage will believe they have done well, and be quite proud of their interactions in social situations, even though those interactions were inappropriate (Beer, et al., 2006; Gazzaniga, et al., 2009, p. 605). Ergo: The proper development and function of the neural circuitry connecting the emotional (limbic), and orbitofrontal regions, and those prefrontal regions themselves which are volumetrically altered as a function of environmental and genetic factors, are crucial for proper affective functioning and reality testing. Plainly: If the "alpha function" circuitry is faulty, and the OFC is not doing its job, ethical development and social function are impaired.

This allows a specific neurological/psychological prediction: In those cases where a reliable personality inventory or other trustworthy test indicates the heightened presence of Empathy as a fundamental constituent of personality, a positive correlation will be demonstrated between the character trait of Empathy, and the robust innervations and demonstrable structural development and functional activity of both the dopaminergic "sympathetic ventral tegmental limbic" circuit, and also, the noradrenergic "parasympathetic lateral limbic" circuit.

Now we must remember that all of our experience of the world is subjective, colored and defined not by the particular experience itself, but in how we interpret that experience or perception. Think of how one person will find beauty in a desolate desert landscape, and another, an empty and barren view most uninviting. Perhaps here, we have found a non-genetic developmental clue as to the mystery of optimism and pessimism, the expectation that the world will or will not be a welcoming place, whether it will be responsive to our needs, or cold and refusing of them. Here we may have a piece of the puzzle shrouding the source of ethics and morality as well, for throughout history, laws and rules, many most pungent and barbaric, have attempted to enforce and create ethical sentiment and behavior as a function of external threat, to poor result. Think of the Twelve Tables of Rome, with its code of mutilation, so deeply symbolic of castration and the threat of the father, casually proclaiming how much a creditor may cut from the debtor's body: "si plus minusve secuerunt, ne fraude esto" [If they have

> secured more or less, let that be no crime] (Nietzsche, 1989, p. 64), or our own capitol punishment—both so deeply ineffective! It seems that ethical sentiment and behavior are not born under threat, but instead the entire of ethical law is but manifestation of a single simple principle: *Empathy*. Perhaps we have found the source of empathetic feeling and hence, ethical action as well, might both be born in this golden moment, here where the world is the self and the self the world, and so, we can dispense with any external "golden rule" or "categorical imperative" proclaiming our actions must be reducible to a moral maxim, or equal to what we ourselves would desire. How could one desire to hurt or exploit the world, once connected to, and inseparable from it? How could one consider such a thing, to harm the world is to harm ourselves! The canon of ethics: threat and rule are ineffective because the truth which foster them is no longer available to *feel*. It is clear that morality and ethical conduct are not a function of threat, but of internal security, healthy connection and balance…ethics are never created as a function of threat and rule, they are born from within. Ethics are a manifestation of health, a function of happiness. It is conscience itself, our modern "morality," super-ego itself, functioning as a masochistic, punitive and threatening agency which has caused the dissociation around which we have all become so deeply unethical, so very..."moral." Empathy is ethical, and so—Empathy is amoral. Our modern ethic is an ethic of obedience, an internal structure crystalized around the threat of castration, forming an immoral, and deeply unhealthy dissociation." [Norman, 2013, Prometheus]

So I will ask you to make a sharp new distinction in your mind between the notion of morality, the basis of modern personality, crystalized around a masochistic structure (super-ego) which is based upon obedience to the father under the threat of castration, and the concept of ethics, which are created as a function of identification, of empathy. These two structures are often inversely related. Ethics are amoral. Morality is often unethical, and pathogenic. Morality… will make you sick. Remember: it is guilt which instates repressions, *and the return of the repressed causes symptoms*. Morality encourages nothing akin to ethical behavior, which is independent of the idea of submission and obedience to authority. Please read the *Prometheus* paper for a demonstration of the difference, as a hypothetical character is transformed from moral predominance, to ethical predominance. Note how obedience and immorality are exchanged for a situationally specific ethical response. [It is to be understood at this juncture, that most of the ugly platitudes with which we are indoctrinated into this culture, are but advocations of immoral submission to the superior will of the father, such as, "A man's got to do, what a man's got to do." What war, what immorality against self and/or others, what base stupidity free of empathetic consideration has *not* been justified under this immoral maxim? Every one, in every war, falsely believes "God" (in this case meaning a projection of the father) is on their side…now you can see why. Ethics are situationally specific, morality is blind, dumb and obedient…in a word—fearful.]

So how are we to encourage the better result? Is there a way to alter our perceptions and basic personality so as to become ethical, and increase mental functioning by transforming the structure of personality from a moral, repression based paradigm, to one of ethics, and sublimation by integration? Yes there is. Please read below, and follow these last few necessary steps, before I reveal the answer.

A necessary piece of neuropsychological engineering:

First, I will advocate a simple piece of neuroscience, which would greatly aid the assessment and treatment of neurotic illness. If psychology is to claim its place as a real hard science, its instrumentally demonstrable practices must be supplemented and supported by objective quantitative assessment (Norman, 2013 quantitative).

Although much work in cognitive neuroscience has been accomplished regarding the affective value assigned to facial expression (Adolphs & Tranel, 2004; Blair et al., 1999; Killgore & Yurgelun-Todd, 2004), and, much work has been done which reduces the idea of empathy to that of human imitative response involving mirror neurons and responses to human bonding with other human objects (Gazzaniga et al., 2009), this is a false, narrow and egocentric definition of empathy, which is *properly* understood as a state of world/environmental identification, of which other humans are only a small and less significant part. This empathetic identification is formed as a function of the overall functional development, and, active balance between the sympathetic and parasympathetic limbic circuits, which create alpha function, yield the general optimistic or pessimistic tone of personality, and correspond to the potential level of neurotic predisposition, manifestation, and co-anesthesia. For these reasons, the following test should be constructed to assess the overall state of functional activity in this system, and categorize its prevailing affective balance as reflected in these fundamental competing circuits and their relative dopaminergic/noradrenergic—sympathetic/parasympathetic activity.

Once situated in an fMRI, MEG or PET, one has the subject look at a series of faces and scenes, each with a distinct affective element, or no such element: i.e., some faces are negative, some positive, some neutral, just as the scenes of cityscapes and nature, etc. As each person has individual prejudice and different affective definitions for *all* stimulus, this test is a baseline marker for that subject. (The addition of a personality inventory and/or test for neuroticism at this point will provide a basic snapshot of personality type and its correlation to the overall state of sympathetic/parasympathetic balance in these primary circuits, and further clarify the results). One then observes the state of activity in the system, and assesses the circuitry as it delegates affect to the various stimuli. If the dopaminergic circuitry is predominantly activated, an up-mediated SEEKING response (Panksepp, 1998) is demonstrated and one may infer the subject has a positive state of active systemic balance; and conversely, if the subject demonstrates little libidinal dopaminergic activity, and the parasympathetic circuit is predominant, we have demonstrated the reverse, that little libido is delegated to experience, and that super-ego or another dissociative factor (such as social degradation/cruelty causing adaptive libidinal/empathetic dissociation) has obtained a place of dominance in the psychical hierarchy. This single cluster of factors, this parameter: *the overall state of functional development, balance and activity of these two circuits*—may well be the single most telling axis around which the entire of personality might be assessed. It is possible to positively alter this most primary affective axis of systemic function and balance.

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Limbic connectivity and sympathetic neural balance: the primary psycho-physiological locus of affect—From Parkinson's to cancer, Unexpected implications and verification

This final section in the series will draw some unexpected conclusions from the previous information offered concerning limbic connectivity and fundamental sympathetic vs. parasympathetic neural balance. I will first state some hypothetical conclusions offered up some months ago, and then offer several lines of reasoning to extend those ideas in the context of an empirical framework.

A few basic ideas must first be understood:

a. Tourette's and OCD, in some instances, are associated with volumetric changes in the basal ganglia. The basal ganglia is an unusual cluster of nuclei, which instates and removes inhibitions (Gazzaniga, 2009). It appears to me, to act as a physiological corollary to the repressive processes. In my self-analysis I have discovered that the illness, OCD, was caused by the repression of libido into the unconscious. This was accomplished in two ways: 1. Regression and subsequent repression of libidinal ideations first changed into aggressive ones, and, 2. Repression of overt sexual ideations.

b. The ascending activating system provides cortical tone to the mental system as a whole, and is rightly thought to be the source of the *undifferentiated libidinal energy* which powers thought and mental activity in general (Kaplan-Solms & Solms, 2002, p. 267). This ascending activating system, which works on but few neurotransmitters, is to be understood as undifferentiated potential, the particular configuration of elements in which, define all of our emotional states, which may appear as opposites, but are in fact formed by physiological recombinations of the same internally intraconnected substrate: undifferentiated libido. When a *hateful*, or a plainly *libidinal/sexual* ideation, is brought to consciousness *and analyzed*, in both cases the result of the fixation being disbanded is identical: the release of the system to its unbound state of potential—undifferentiated libido is released in all cases (Norman, 2011).

c. Some of the most basic and primary neural circuitry formed in development, the sympathetic and parasympathetic limbic circuits formed via maternal interaction, which connect the limbic and orbitofrontal areas, are respectively, a sort of pleasure center and cut off for the same, the sympathetic dopaminergically modulated, the parasympathetic noradrenergically modulated, which respond dynamically to internal and social

conditions (Schore as cited in Kaplan-Solms & Solms, 2002, pp. 234-237; Norman, 2013 Prometheus). The sympathetic is our pleasure, libido, dopamine, energetic expression and pleasure, the parasympathetic is as an early prototype of repression, as shame.

d. The brain is a *causally bi-directional* electro-chemical system. Our thoughts are created within a physiological substrate—the nervous system, and in turn, we can see that our thoughts are but patterns of dynamic electro-chemistry, and the dynamic electro-chemistry of the nervous system is in turn, nothing but our thoughts. Therefore our thoughts can affect the electro-chemical configuration of processes which is the physiology of the brain, and vice versa.

OK—now for the idea:

I believe the mental system *in its overall energetic distribution* can be seen as noradrenergic or dopaminergic in its distribution of overall balance. This balance can be encouraged one way or the other. The therapeutic goal is a reversal of repression, both in terms of a redistribution of noradrenergic energetic potential to unrepressed dopaminergic, and also, in terms of the removal of unconscious libidinal ideations from under repression to affect the system as to increase its dopaminergic constituent, and alleviate active Parkinsonian symptomatology. If I am correct, the onset of symptoms may be delayed or curtailed entirely, depending on the level of physical degradation, or lack thereof. The system in its state of function *can be assisted* so as to achieve a better outcome, or, prevent the emergence of full-blown symptoms. There are two avenues of support for this notion:

I base this assertion on the following a-priori experiment, carried out many, many times:

1. A self-psychoanalysis is not a simple proposition which is finished cleanly. Basic patterns of internal orientation must be altered, a proposition which entails much time and effort—a long back and forth. This circumstance allows one to observe the difference between the two states, one ill and repressed, one well and accepting of the ideations which were under repression, as they exchange places in consciousness. When the illness reinstates itself, my hand develops a tremor, distinctly Parkinsonian in its slow rhythmic oscillations. My mood plummets and I am ill. I use a technique called the "open emotional posture" to access the hidden sexual ideation, and it is always either an angry violent ideation, sadistic, or overtly sexual, *always,* and then, release the idea to consciousness. At this point the idea must be analyzed. If sexual or sadistic, the resistance must be removed, the distortions clarified, or the symptom, the tremor, worsens. The tremor symbolizes the vacillation between the two wishes, the punitive moral wish for repression, and the id wish, which inhibit each other as a paralysis in a dream, which also works thusly, or an hysterical symptom, which again is formed by suspension between two opposite wishes. Once the inhibition, the punitive, has been removed, the sexual or aggressive wish can be removed from shame…repression lifted. The sexual is then easily admitted into consciousness, the aggressive then is revealed as but a frustrated libidinal wish, and that wish is then admitted into consciousness, and the system responds with a flood of pleasurable sensations, and the tremor stops. Here we

see the removal of a repression and the redistribution of the mental system to a state of dopaminergic predominance, of sympathetic predominance.

I suggest that there will be a correlation of negative value between the predominance of sympathetic dopaminergic neural balance, and Parkinson's. Put another way: There will be a negative correlation between Parkinson's and psychoanalysis. Or: Psychoanalysis offers a prophylactic service of some proportion against the onset of Parkinson's. The mechanism of therapeutic efficacy is an increase in dopaminergic predominance. The brain and mind form a causally bi-directional system.

2. Another bit of proof leading toward this idea can be found in an analysis of the conditions of schizophrenia, and hysterical psychosis. In our hypothetical therapeutic model, we are seeking the removal of repressions to increase dopaminergic modulatory balance in the brain. This idea can be supported as we look at those conditions which are characterized by hallucination, which to a great extent indicates the return to consciousness of repressed libidinal content (Freud, 1911 pp. 1- 82…citations abound here). In this case, the case of schizophrenia or hysterical psychosis with hallucination, the treatment of choice is Haldol, Thorazine, or another anti-psychotic, which as you are probably aware, works by *inducing first stage Parkinson's* via a blockade of the dopaminergic neuronal system (Goodman & Gilman, 1985). So repression is instituted, and unconscious sexual ideations curtailed from emergence into consciousness by the same means—dopaminergic modulatory alteration. So we can see, that to allow a sexual ideation up from under repression is a function, at least in part, of a relative increase in dopaminergic activity in the system (5-HT is involved with repression as well), as those with hallucinatory illness *have just such an excessive dopaminergic balance*. Schizophrenics display just this sort of dynamic, with heightened limbic activity, and reduced frontal activity, reduced repressive activity from the dorsolateral prefrontal cortex (Hobson, 2002).

So I believe that symptoms of Parkinson's and the syndrome in general, may be wholly or partially responsive to psychoanalytic intervention. Much of dopaminergic balance is subject to influence by purely mental factors, and may demonstrate no small measure of flexibility and adaptive dynamism to combat the onset of this condition, should the subject be willing to take an unvarnished and severe look into their own mental processes, and in so doing, liberate the unbound libido associated with the now properly allocated ascending activating system, and, limbic-orbitofrontal circuitry, and hence, the dopaminergic constituent, which is under the sway of repressive and analytic influence.

This hypothesis is testable. To rightly define the active mechanism of influence, one must attribute the theorized efficacious therapeutic activity to the psychoanalytic creation of sympathetic predominance in overall balance between the two primary limbic circuits. So to test the theory, first, one would look to the predicted situation, and assess its statistical verifiability.

1. Subjects are gathered with known mutations to the LRRK2 gene associated with the 12th chromosome. These subjects demonstrate a substantially increased risk for

developing Parkinson's. The greater number of test subjects, the more reliable the result. A detailed survey of personal habits is administered, to allow any later correlations between lifestyle choices or other unrelated factors to be taken into account.

2. These subjects are tested as indicated in the previous article in this series so as to assess their state of sympathetic/parasympathetic balance in the fundamental ventral sympathetic and lateral parasympathetic tegmental limbic circuits in response to a wide variety of stimulus.

3. The life span of these subjects, and the date of Parkinsonian onset symptomatology is then recorded.

4. The theory predicts a demonstrable positive correlation will be present between length of lifespan, delay or curtailment of symptoms, and sympathetic/dopaminergic neural balance between the ventral sympathetic and lateral parasympathetic tegmental limbic circuits.

As the editor of *Mind Magazine* I am in the lucky position to be in communication with some of the most highly expert scientists in a variety of disciplines. Dr. Martin Broome is one of them, and I have learned much from him about the immune system and its influence on cancer, cancer prevention and treatment. It seems that the cancer patient is locked in a difficult psychological and physiological conundrum. As is widely known, the immune system is responsible for keeping cancer in check, and, the immune system is compromised in its efficiency by stress. To discover you have cancer is stressful, and hence, the diagnosis itself may hinder the progress of recovery. [Music therapy is often a compensated form of therapeutic intervention, and music affects us by way of maternal attachment circuitry (Panksepp, 1998)].

To understand the role of the neuropeptide systems in this situation, reveals much. Please recall the previous sections in this series, where it was established that the sympathetic dopaminergic circuitry in question was encouraged to begin its formative innervations via the exchange of maternal glance and gaze, and that this exchange is accompanied by maternal touch, which releases beta endorphin into the system. Endogenous opioids such as beta endorphin, if you will recall, act to quell anxiety, increase analgesia, and mediate social reward and conditioning as reinforcement. So, here in the initial infant mother dyad, we see the production of endemic opioids associated with the creation of our basic affective regulatory system. Beta endorphin is balanced against corticotrophin releasing factor in our system of affect regulation—CRF is associated with stress, beta endorphin with security and reward (Panksepp, 1998, p. 112).

Next please recall that all the world is given its quality and definition by way of symbolism (Norman, 2013 quantitative). Remember also, that symbolism is the mind's intra-systemic means of communication, ie., the unconscious becomes available to consciousness once symbolized in dreams (Freud, 1900). The mother, has undergone much additional layering in her symbolic meaning and impression since we were 18 months old! For this reason, to imagine her face involved in the infantile exchange of

maternal gaze and glance is ineffective, as she means many things now symbolically beyond the early formative impression. The solution is to craft a symbolic image which is directly resonant to the *initial* impression of the circuitry's formative process. To engage the circuitry, and I use this each day to excellent result, *the following symbolic image must be formed in the mind's eye, and, entered into as if a dream.* The result is a peaceful, safe, content state indicative of beta endorphin activity, formed by manually engaging the sympathetic circuitry which connects the orbito-frontal areas with the limbic. We should observe that as beta endorphin activity is increased, pain response is decreased, and other empirically testable responses will be found, like a characteristic EEG associated with secure low stress states, rather than the easily defined activity of mentation associated with fear, and anxious stress. Here is the symbolic key, symbolized from the source formative impression which caused initial innervation, that in turn, activates the circuitry:

Can you picture it? The sun pouring down upon your face, shining and warm, golden and loving is this light, a light you are folded into, and have created, shining, pouring back up into the arch of heaven, spilling from your glad face, and again down to fill you, the trees nodding as you dream them, the sky golden and warm as you have poured it—and back around—for it has dreamt you…now as the world, of the world, nourished and warmed, our circle complete, a circuit of golden warmth and light spilling the world into being and returning again, unto you, and again, you unto it…and all the world is eternal, safe, now and again nourished and nourishing, the earth and life, now and again, but a single warmth, a round, a circuit, a circle of happiness, pouring down and returning, warm and sweet, the world now glad and warm, complete, born out and eternal, the human circle glowing, as life spilled round into warmth—and golden light.

Enter into the image as if into a dream and meditate. That should supplement immune response, particularly in those cases which are deficient in the balance and activity of the sympathetic circuit. Other uses of this circuitry include the amelioration of trauma, and the conversion of fixated pathogenic unconscious content into healthy undifferentiated libido. Please ask for details.

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