

Can Biology Help Us to Understand Psychopathology?

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Abstract

Can Biology help us Understand psychopathology? I believe it can. We presently face a historical moment of mental health crisis worldwide, with reflections both in science and politics. It is a clear that the current paradigm of modern biology, namely Neo-Darwinism and its application to Medicine and public health, show alarming signs of exhaustion and iatrogenic damage to humans and to planetary ecology. In no other field this contradiction becomes so blatant as in public mental health. We are witnessing the growing of a pandemic of mental illness that the scientific system itself helps to construct and is unable to manage. The excessive, widespread, worldwide use of psychotropic medication, the alarming reports of severe iatrogenic side effects; the growing levels of violence, genocide; wars emerging in every corner of the planet, are telling us that our understanding of the world, including its dominant scientific biomedical model is blatantly wrong. Our “scientific” understanding of reality that decisively inform government actions that ultimately induces the population to act with violence and rupture of important biological relationships from which our existence depends. Grossly unnoticed, a new biological paradigm has been proposed and developed in the last decades. This is evident in experimental phenomena observed in practically all fields of biology and medicine, specially, when they show the socio-economic determination of mental health, and major impacts of environmental health, education and level of income. Herein, I present a comprehensive model of human biology and psychopathology rooted in the pioneering scientific works of several important thinkers and therapists such as: the Chilean neurobiologist Humberto Maturana; the psychiatrist Carl Jung, illustrated by contemporary scientific experiments of the American psychiatrist John Weir Perry and the Brazilian woman psychiatrist Nise da Silveira, in the promotion of mental health. I also shortly describe our own documented and published experience in mental health promotion working under this new paradigm, in order to make sense of our current apparent contradictions, and heal our ideas and practices.

Keywords: *Biology, Mental Health; Evolutionary Theory, Epigenetics; Psychopathology; Psychiatry; Psychology; Transcultural Psychiatry; Mental Health Promotion; Theatre and Arts; Public Policy; Culture and Health; Socio-Economic Determinants of Mental Health; Carl Jung; Humberto Maturana; Nise Da Silveira; John Weir Perry*

“Mental Diseases are diseases of the brain” was the axiom, and told one just nothing at all. Within my first months at the Clinic, I realized that the thing I lacked was a real psychopathology, a science that showed what was happening in the mind during a psychosis. I could never be satisfied with the idea that all that the patients produced, specially the schizophrenics, was non-sense and chaotic gibberish.”

Carl Jung

The Self in the Psychotic Process by John Weir Perry, preface, 1953 [1].

Introduction

How does human mind work? What is the psyche? That seems to be the greatest questions of our time, particularly, if we put into perspective the current mental diseases pandemics we are facing, with rising levels of violence, wars, suicides, homicides and several psychiatric syndromes that persist and increase despite of the growing and widespread use of psychotropic medications. This should

raise the reflection that there's something out of place in our current science and medicine. There are disturbing evidences that mental health is actually in decline in the last 20 years worldwide. Out of a global population of seven billion inhabitants, 450 million people are estimated to be currently affected by a mental or behavioral disorder [2], with 100 million of them taking psychotropic drugs [3,4]. In USA, suicide rates per 100,000 people have increased to a 30-year high. Substance abuse, particularly of opiates, has become epidemic [5]. In economically exploited countries like Brazil, where social welfare and democracy are still distant political realities due to historical unconscious traumas of colonization, frightening and rising numbers of homicides (59,627 in 2014) remind us that violent unconscious behaviours are part and priority of this same global crisis we are all facing [6]. In parallel, another line of evidence well established is the so called 'socio-economic determinants of mental health', a World Health Organization report published in 2014 demonstrates systematically how economically vulnerable populations have lower levels of mental health, with more mental diseases like depression and anxiety [7]. Costello has published in 2003 how an income supplement intervention changed the occurrence of psychiatric symptoms in poor children in North Carolina, USA [8].

We live in a capitalist world

Of course also we must take into account the economic constraints that produce the current international mental health policies, with the growing profits and disease mongering of Big Pharma worldwide arresting the process of scientific evolution of psychiatry, as so clearly puts Nise da Silveira (1905-1999), the great revolutionary woman scientist of Brazilian psychiatry in the XX century:

"The madness industry is a profitable application of capital, the powerful drug multinationals well demonstrate it". "What matters, therefore, is the profit provided by the individual admitted or readmitted. As more hospitalizations happen, the better". "Even public hospitals in poor countries allocate much of their precarious funds to the purchase of neuroleptics, which are given in excessive doses most of the time " (Nise da Silveira, 1992, *O mundo das imagens*, p.14).

Working in Brazilian psychiatric hospitals where corruption in the public sector and bad management show us of the socio-economic determinants of health in its most dramatic pictures:

"Dr. Luiz Cerqueira writes: "If drugs, shocks, and lobotomies really healed, madness would have been eradicated from the face of the Earth. What is happening among us is that, despite psychotropic drugs, more and more patients are hospitalized and re-hospitalized in psychiatric hospitals " (Nise da Silveira *O Mundo das Imagens*, pag. 12 e 13, 1992).

The New Zealander author Bruce Cohen just published an impressive book entitled: "Hegemonic Psychiatry: a Marxist theory of mental illness" where he extensively discusses the economic and political contradictions of the international mental health policy" (Cohen 2016).

We must face the crisis of the practiced scientific model and its methods, a necessary step towards a more rationale explanation of mental health and psychiatry:

"The crisis of current psychiatry reveals, evidently, the inadequacy of the psychiatric hospital and its actual therapeutic methods" [9].

Looking for biology

The key debate in current psychopathology, and medical biology, relies on genetic determinism and evolution by natural selection theories. The hegemonic biomedical thought that still prevails is the vision that genes and DNA are the centre of the organism, to put it simply, "we are our genes", we are governed by selfish genes that drive our struggle for survival and therefore, propagation of our genetic material [10]. In this theoretical frame, genetically determined organisms are originated and evolve as species (phylogenesis) and individually (ontogenesis) by means of natural selection in according to Darwinian evolutionary theory originally published in 1859, and later reformulated and added with the concepts of genetic inheritance in the first half of the XX century [11].

Genes and Competition

This was know as "Neo-Darwinism" and still is the hegemonic paradigm in international biomedicine. It is important to note that this theory served as inspiration for more aggressive politics and pseudo-scientific theories like eugenics and socio-Darwinism, known to be

conceptual basis for the Nazi holocaust in World War II and many of “survival of the fittest” politics such as wars and ethnic genocides. This is the old concept that you have to annihilate the inferior, the enemy, the abnormal fated to oblivion in biological evolution throughout history. Regarding our contemporary world it is correct to say that we rejected Nazi imperialistic politics and humanitarian crimes but we didn't reject its conceptual and scientific basis such as Neo-Darwinism [12].

Proposals of new biological theories

Critical biologists have been arguing in the last few decades that this manner of explaining biological evolution and development is at least incomplete, not to say wrong [11,13-15]. Pioneers like the Nobel Prize winner Barbara McClintock [16] and the biologist Conrad Waddington (Waddington *The Epygenome* 1942) have pointed as early as the 1940's that genes are not so determinant in biological evolution and development. Further, the term epigenetics was coined by Waddington referring to the fact that developmental embryologic process could not be properly described by the idea of gene determinism [17,18]. In one of new synthesis published more recently, it has been proposed that the process of biological evolution occurs in four intermingled dimensions: genetic, epigenetic, behavioural and symbolic [14]. The great intellectual and anthropologist of psychology Gregory Bateson has made significant contributions to psychiatry and psychology precisely because he was able to perceive the lack of true biological knowledge in medical models, and elaborated theories on the pathophysiology of schizophrenia and alcoholism because he could relate those phenomena in a wider, more ecological and biological perspectives, this is synthesized by his books' titles: “Steps to an ecology of mind” and “mind and nature: a necessary unity” [19,20].

Quoting Bateson from *Mind and Nature*:

“If you want to understand mental process, look to biological evolution and conversely, if you want to understand biological evolution, go look to mental process.” [20] (Bateson G. *Mind and Nature*, appendix, 1977).

Understanding biology?

Therefore, when we are inquiring about the nature of psychopathological process, in fact, we are raising questions about human biology. In a sense, without a proper understanding of the human organism and biological systems in general it will be very difficult to produce a theory rooted in living and healthy mechanisms to explain psychophysiology and psychopathology.

Or as put recently by Maturana in a reflection about ‘understanding social systems’: “What aspects of our daily living do we want to evoke when we use the word ‘social’ or speak of ‘social systems’ and about which we may wish to expand our understanding by asking are social systems autopoietic systems?” [21]. Throughout his lifework Maturana stated the necessity of comprehending the basic mechanisms of living systems to describe them properly, and finally be able to describe mechanisms related to, for instance, psychopathology. It is a biological challenge:

Perception and Illusion

“We human beings, as all living systems do, live as valid whatever experience that we live in the moment that we live it, and act accordingly: our living follows the path that arises with what we live as valid. At the same time, we human beings (as all living systems do in the flow of their living) do not know whether an experience that we live as valid in the moment that we live is one that we shall continue to accept as valid in relation to further experiences we choose not doubt; we do not know whether we shall validate the first experience as a perception or invalidate it as a mistake-illusion, according to whether we think that the second experience confirms or contradicts it. That is we do not know in the moment that we experience something whether we are experiencing a perception or an illusion, according to whether we think that the second experience confirms or contradicts it. And this is not a limitation or a failure of the operation of our nervous system, and this does not mean that we, living beings are fallible, but it is our condition of biological existence as structure-determined systems; instruments are the same” [21].

This comprehension about our own perception will help us to glimpse that biological descriptions should take the great care of not attributing cognitive properties, names, that are creation of human imagination and language, into biological behaviour, into biological

performance, that should be regarded by a systemic-historic approach that is precisely what Maturana describes succinctly but densely, in his typical circular mode of discourse:

“I act under the understanding that whenever we make a distinction what appears in our living is an operational entity together with its domain of existence as a totality that arises as an operational-conceptual abstraction of what is happening in our living with features specified by what we do as we distinguish what we distinguish, and not as some pre-existing entity with features that are not determined by what we do in our distinction of it” [21].

Immersed in subjective life

That is, reality is not a pre-existing entity; we are immersed in our subjective life, creating names, making distinctions, literally creating and recreating our mode of life and culture. So, the act of giving a psychiatric diagnosis changes the life and reality of human beings and its societies. A proper description of mental health and psychopathology must take that into account to minimize the dangers and properly inform public policies and individuals. He continues the proposal:

“As we human beings live our daily living in the coherences that arise as we do what we do as biological beings, we trust the domains of sensory, operational and relational coherences that arise with our distinction to be aspects of the realization of our living. And we do so reflecting on them and correcting our errors or mistakes as we find them as we live our living as languaging beings. As we live in this manner, we put names to what we distinguish but since we do not distinguish independent entities, but distinguish sensory-effectors configurations in our living, what we name are sensory effectors configurations that pertain to the coherences of our living.”

Coherence of our daily living

Accordingly, what we call psychopathology, or psychiatry, or mental health is necessarily an aspect of the coherences of our daily living. Therefore when we want to understand the system that we call “psychiatric diseases” what we want to do is to abstract the configuration of sensory-operational-relational coherences of our daily living that we wish to evoke under that name, not something alien to our daily life that we may define in some arbitrary way [21].

He goes even further when he reveals the origin of his biological theory on neuroscience, his experimental and phenomenological starting point back in the 1950's, from experiments with the neurobiology of colour perception in birds, Maturana and later Francisco Varela will formulate the “autopoietic theory” (When I say that living systems are molecular autopoietic systems, I am not making a definition. Rather, I am making an abstraction of the configuration of the processes that constitute living systems as autonomous molecular systems that exist as discrete sensory-operational-relational entities in integration with their ecological niche as this arises with them” [21]) that evolved into more general biological theory, namely development and evolution, Evo-Devo [15,22].

Configurations of configurations

“Our nervous system operates abstracting configurations of relations and configurations of configurations of relations of sensory-operational-relational coherences that happen in the realization of our living in our sensory-operational-surfaces” [21].

Thus, if we are seeking to explain mental health, it can be put as follows: what configuration of sensory-operational-relational coherences am I abstracting when I name “mental health” to some particular aspect of the realization of my relational living? We must understand the mechanisms of the living process if we want to make sense of biological systems, specially, the human living, ago a particular mode of existence that has such a relation with language, that Maturana formulated the term “languaging beings”. We humans were created through language, we exist inside language in a cooperative mode of living that started at least three million years ago with our hominid ancestors.

The expression “mental illness” arises historically in the course of conversations about our human relational living, in a attempt to visualize some regularities that occurred in it, thinking that if we could grasp them we would be able to solve some difficulties that we were encountering in our living together, thinking that we could do so through formalizing them with some adequate theory that we would

invent. However, to do that, we have to abstract those regularities in our living together first; we must respect ourselves accepting that naming is not a trivial aspect of what we do in our living: names have arisen in our history of living together as operational elements of coordination of our doings, and reveal regularities in that living.

In this epistemological perspective, If I want to understand how we do what we do I would begin by asking: “What configurations of sensory-operational-relations are realized and conserved in that aspect of the flow of our living that we call human relations, and that prompt us to speak of mental health when we see them occurring in some community of living beings?”

Biomedical revolution

This synthesis that Maturana and collaborators propose was known as “Biology of Cognition and Language” and has generated impact in such a wide range of disciplinary fields, from immunology and medicine [23-25], to bioethics [26] and language sciences [27]. We believe his theoretical approach is an advance in the understanding of general and human biology since it offers clear concepts about the organization of living systems, a more rational vision on the neurobiological activity, a more coherent model of perception and cognition. With these basic concepts at hand we may evolve to other issues in biology and medicine.

Evolutionary theory synthesis

Maturana and Mpodozis have published a central contribution for biological theory in 1992: “The origin of species by means of natural drift”. It is a new evolutionary synthesis that displaces the widely accepted mechanisms of “natural selection” and “genetic determinism” by those of “natural drift”, “epigenetics” and “structural determinism”. A proper explanation of these concepts can be found in the paper whose English version was published in 2000 [15]. This formalizes a paradigmatic change in the evolutionary theory and reinforces the emergence of the ecological-developmental-evolutionary perspective of living systems.

Palaeolithic history of human communities

One of the key consequences of a wider biological and medical theory is the broader understanding of paleo-anthropologic fossil evidence that documented our earliest hominid ancestors, dating from around three million years in African savannah due to the extinction of part of the tropical forest due to climate changes. These co-evolutionary drifts originated our ancestors.

In the 1969 Pulitzer Prize winning book ‘So human an animal’, the great scientist René Dubos, points to the need of looking into human history as a way to envision our physiological mode of living. Human species were formed throughout the last three million years, most of the Palaeolithic period when we descended from primate ancestors common to chimpanzees, gorillas and orangutans from the forest to bipedal, savannah walking hominids. This period of the last three million years is of critical importance for understanding human biology, its habits, diets and cultures, and therefore, its psychic activity [28].

Maturana, too, reached the same concepts by other approaches:

“We, human beings, were originated in the history of bipedal primates to which we belong, at least, for the last three million years with the origin of language and the living in the entanglement of the “languaging” and emotions that we call conversations” [29].

The comprehension of our species history in a more ecological, cooperative, interdependent biology, may allow us to see the mode of living that we developed in small collectives, hunting and gathering food from the ground and from the forest, having to unite and cooperate intensely to survive in the eventually dangerous natural landscape. Having this biological framework in mind, we may evolve to restore the history of humankind and its biological ancestors. Different authors point interesting theories about the ritual origins of humanness, the beginnings of “languaging” in Palaeolithic period.

Rituals: Image and Action

Primatologist Jane Goodall wrote the following remarkable report about a collective ritual of a chimpanzee group she observed:

“At about noon the first heavy drops of rain began to fall. The chimpanzees climbed out of the tree and one after the other plodded up

the steep grassy slope towards the open ridge at the top. There were seven adult male in the group... several females, and a few youngsters. As they reached the ridge the chimpanzees paused. At that moment the storm broke. The rain was torrential, and the sudden clap of thunder, right overhead, made me jump. As if this were a signal, one of the big males stood upright and as he swayed and swaggered rhythmically from foot to foot I could just hear the rising crescendo of his pant-hoots above the beating of the rain. Then he charged flat-out down the slope towards the tress he had just left. He ran some thirty yards, and then, swinging round the trunk of a small tree to break his headlong rush, leaped into the low branches and sat motionless.

Almost at once two other males charged after him. One broke off to a low branch from a tree as he ran and brandished it in the air before hurling it ahead of him. The other, as he reached the end of his run, stood upright and rhythmically swayed the branches of a tree back and forth before seizing, and continued down the slope a huge branch and dragging it farther down the slope. A fourth male, as he too charged, leaped into a tree and, almost without breaking his speed, tore off a large branch, leaped with it to the ground, and continued down the slope. As the last two males called and charged down, so the one who had started the whole performance climbed from his tree and began plodding up the slope again. The others, who had also climbed the bottom of the slope, followed suit. When they reached the ridge, they started charging down all over again, one after the other, with equal vigor.

The female and youngsters had climbed into trees near the top of the ridges as soon as the displays had begun, there they remained watching throughout the whole performance. As the males charged down and plodded back up, so the rain fell harder, jagged forks or brilliant flares of lightning lit in the leaden sky, and the crashing of the thunder seemed to shake the very mountains.

My enthusiasm was not merely scientific as I watched, enthralled, from my grandstand seat on the opposite side of the narrow ravine, sheltering under a plastic sheet... I could only watch, and marvel at the magnificence of those splendid creatures. With a display of strength and vigor such as this, primitive man himself might have challenged the elements" [30].

In the last million years, our ancestors organized in small groups of naked big monkeys, dominated the fire, danced, communicated through mimics, voice sounds, developed rhythmic voicing and gestures, started to develop and conserve rituals, like so many animals do, but we have evolved those rituals to symbols, images, representations, abstractions, language, religions, mythologies, cultures, narratives and dreams of reason [31]. Doctor Nise da Silveira remarks this important phase of our human history and evolution of our mental processes: "The first forms of rituals consisted of dances. The gestures, rhythmic movements constitute a language that stems from the most profound unconscious and precedes the word as a mean of communication. By means of dance, humans reacts to the exterior world, tries to apprehend their phenomena, simultaneously, putting him into contact with the deepest of his being. Rhythmic movements allow creating and integrating the representations originated in dreams and imaginations. In its dynamism, archaic images manifest itself adequately through the oldest forms of expression, which are gesture and dance" [9 p.98].

From our historical biological evolution, and all that has been debated in this article, we must confer to subjectivity, cultural and symbolic practices, ritual performances and collective organization a central importance in our nature and mode of living. Understanding that we are not machines originated from nowhere, that our individual, collective and symbolic organizations have a long history, the history of life on earth, even the known history of cosmos.

The works of psychiatrists like Carl Jung, Nise da Silveira and John Perry assume a very interesting perspective on human psychic activity, placing in mythology and early human rituals a priming role in our development. Perry proposes the term Affect-Images, to explain the analytical psychology concept of 'archetype', that are primordial images that were formed through ritual dramas in the origins of humankind and were conserved through emotions, gestures, representations; later stories, narratives, cultural and social systems. As Perry puts so well in his classics on the study of the meaning of psychotic processes, *The Far Side of Madness* published in 1974 and *Roots of Renewal in Myth and Madness* in 1976- *The Meaning in Psychotic Episodes* [32,33].

Ritual Drama of Renewal

"The inner world of the psychotic does not look like the one we know outwardly, but it is recognizable as a view of the cosmos familiar in myth and ritual forms since ancient times" [32 p.9].

In this perspective rituality acquires a central value for mental health, because:

“At the end of the last century, Robinson Smith, in his studies of the culture of the Semites, was the first to make the observation that not only did myth and ritual belong together but in all probability ritual was primary. He found ritual to be more conservative, stable phenomenon, while myth tended over generations to be modified and altered, finally becoming rather free literary expression” [33 p.79].

He explains the vital functions of ritual for human nature with brilliance:

“Two features attest to the importance of any myth for the culture that produced it. The great ritual drama to which the myth belongs is staged for the participation of the entire corporate body of the community. Also, the proper accomplishment of the drama is considered necessary to the proper functioning of the community and of nature” [33 p.80].

This comprehension opens the way to observe the ritual imagery that forms our psyche, our visions of the world, our collective organization and cultural manifestations, our very own mode of living and mode of relating to us and to the other. Therefore, it is of vital importance for human healthy affective and cognitive development.

The World of the Images of the Unconscious

Da Silveira's pioneer and systematic experience resulted in the Museum of Images of the Unconscious, founded in 1946, the largest museum in the world dedicated to art and madness, today with a technical archive of more than 350 thousand artworks in more than 70 years of continuous work, applying the method acquired in her studies with Dr. Carl Jung in his institute in Zurich. In her first letter to him in 1952, him, she reported that in a atelier in a suburban psychiatric hospital, patients painted with complete freedom, without direction and she could observe the appearance of structured symbols in chronic psychotic and schizophrenic patients of low socioeconomic status, very severe diseases. He replied the letter inviting her to work in the Jung Institute of Zurich. Later, Da Silveira will clearly state that painting occurred through improvisation, she later will cite Kandinsky to explain the formation of the unconscious images, “impressions of inner nature”, “improvisations” [34, p.35].

John Weir Perry reached the same conclusions regarding the origins of the unconscious Affect-Images in the depths of history, comparing them to organs with evolutionary history throughout the generations:

“For the psyche is an organism in process of growth, the primordial images show themselves to be organs that operate to carry this out just as those of the plant or body do; they apparently represent entities as existent in themselves as the heart or the liver, and as interdependent” [1 p.5].

Constructivist Psychiatry

Evolutionary history of psyche

This evolutionary perspective applied to psychology and psychiatry certainly will offer a more scientific and practical explanation about psychopathology and psychiatric syndromes. As the Jungian American psychiatrist John Weir Perry puts:

“In respect to the physiological and biochemical elements in the schizophrenic syndrome, I do not mention them in this study because I take them for granted. I adhere to the holistic view of the human organism that would see all processes both psychic and somatic as being absolutely interwoven. I see the organism acting as a whole and am not inclined to see any question of primacy if either the psyche or the soma over the other in the causality of schizophrenia. Especially in respect to the emotions this is true, for in an emotion or its disturbance the psychic, the neurophysiological, and the endocrine and other chemical elements are all bound together in a one single phenomenon” [32 page 3-4].

Jung himself has approached the subject quite clearly as early as 1908:

“The ancient clinicians concentrated their attention in the psychological motive of mental disease, just like lay people still do due to a true instinct. We tried through this way, most carefully, the earlier history of the patient. This is a rewarding work, for we frequently found, for our surprise, that mental disease erupts in a moment of great emotion aroused by, let's say, normal reasons. Furthermore, that

in the origin of mental disease several symptoms appeared that could by any means be comprehended from an anatomical point of view. Nevertheless, these very same symptoms became immediately comprehensible when considered regarding the earlier individual history. In this sense, the fundamental investigations of Freud about the psychology of hysteria and of dreams gave us the greatest stimulus and support for our own work" [36 p. 182-183, paragraph 333].

Constructive method and subjectivity

In psychiatry, the comprehension of this biological theory may help us to adopt more constructivist methods in approaching the patients, particularly those whose rational language is very compromised, with great amount of introspection, such as schizophrenics and chronic psychotic patients and the sensitivity of clinical observation and comprehension of the psychopathological process must necessarily go deeper than stereotyped nosological classifications and automatic therapeutic schemes:

"There exists another mode of understanding that is not of analytical-reductive nature, but symbolic or constructive. I call this kind of comprehension a "prospective comprehension" and the method that corresponds to it is the constructive method" [36, page 202 paragraph 391].

If perception, as demonstrated above, is undistinguishable from illusion, and subjectivity, images, histories and ancestral biological evolution play a central role in mental health and human development and can't be treated as secondary or undesirable phenomena by mental health professionals, the concern about the meaning of human existence and about a healthy cultural mode of living should occupy a fundamental place in the challenge of understanding mental health.

"If we intend to know more profoundly the psychological question, we must have in mind that every knowledge, in ultimate analysis, is conditioned by subjectivity" [36, page 203 paragraph 397].

History and anamnesis

In truth, we are underlying and reinforcing very simple and elementary principles in medical art and science of all times, the importance of history and anamnesis (joining the memory), the sense of rescuing notions of human development instead of human repression, consideration and respect by the other, with the aim to know the history of each person, their culture and symbolic universe:

"The constructive method, in order to be faithful to its nature, must adjust to the cues given by the very own system of the delirium. The patients must be taken seriously and accompanied in a consequent manner. Therefore, the investigator puts himself in the point of view of psychosis." [36 page 213 paragraph 422]

Restoring the art of healing: contemporary practical strategies involving Mental Health Promotion under the new paradigm Expression, creativity and psychic healing, there's method in it

Experience has demonstrated that the expression of those unconscious Affect-Images emerge in situations of psychic suffering. On varying degrees, the field of awareness is invaded by autonomous unconscious contents that compromise the integrity and proper function of consciousness.

From the long series of images painted by her patients, Nise and her team were able to decipher hundreds of cases of many traumatized personalities that found a way of development through art and symbolic expression, executing the ritual dramas of renewal expressed in images through different languages, that develop our process of individuation. This work demonstrates the immense importance of symbolic expression in psychopathology and psychiatry. Symbolic manipulations in physical space, images and relationships have immense symbolic importance, such as stated by many psychiatrists and therapists like Ronald D. Laing (United Kingdom) [37], Lula Wanderley (Brazil) [38], Gina Ferreira (Brazil) [39], Jacques Arpin (Switzerland) [40], Blythe Corbett (United States) [41], Laurence Kirmayer (Canada) [42], Frederick Hickling (Jamaica) [42] and also the North-American performance/ theatre scholars like Richard Schechner [44] and the psychophysicologist and dancer Paula Thompson [45].

Da Silveira explains clearly this methodology, reflecting her whole life clinical experience of work with Brazilian poor people, diagnosed as chronic psychotic and schizophrenics in the Engenho de Dentro Psychiatric Hospital: "Instead of archaic impulses be exteriorized violently, we offer the ramp that human species sculpted throughout millennia to express them: dance, mimic representations, painting, modelling, music. It will be the simplest and most efficient" [34 page 102].

BOX 1: Space Open to Time, contemporary art and relational objects

"The world reconstructions, performed by those who suffer the devastation of a psychotic crisis, sometimes resemble the reconstruction of the world contained in the experience of art. Although the suffering does not determine art, the concern about the real and imaginary, of fragmentation and of unity, the experimentation of a new code of communication with the world approximates both experiences" (Wanderley L. The Dragon landed in Space: Contemporary art, mental suffering and the relational object of Lygia Clark, Rio de Janeiro, 2002) [38].

DyoNises Theatre, Madness Hotel and the People's University for Art and Science, Rio de Janeiro, Brazil

My own experience in the psychiatric hospital started in January 2009 getting to know the experience of Nise da Silveira's Museum of Images of Unconscious. After two years of intense research and study of her extensive scientific work, in February 2011 we decided to start the theatre workshop under the inspirations that this paper debates retrospectively. The results started to amaze me and my team, we established a language and a relation through theatrical rituals performed in the open and closed spaces of the hospital, as well as pageants and regular public performances. This process is still in progress, although in a public square outside the Engenho de Dentro Psychiatric Hospital, since local authorities in Rio de Janeiro discontinued this successful public policy in May 2016. Fortunately, we have the whole seven year experience documented in hundreds of documentary films and more than 18 thousand pictures. We train the patients to become actors under a method described through universal dramaturgy [46], with some papers published about this experience [47-51]. In 2012 we occupied abandoned psychiatric wards of the old hospital and founded the so called Madness Hotel, which intensified our work in the community with free collaborative engagement of patients, artists, physicians, psychiatrists, family doctors, researchers, anthropologists and a huge amount of articles, movies and news were published. [52-59]. In spite of our success and acceptance amongst patients and professionals, the Public Health Office of Rio de Janeiro closed the Madness Hotel in a totally authoritarian attitude, and we presently are struggling by all means to restore it and reopen it. The DyoNises Theatre Rio de Janeiro group keeps rehearsing twice a week in the public square beside the hospital.

The continuous experience of theatre and performance in the last eight years in Rio de Janeiro, Brazil and in the last year also in Montreal, Canada in the environment of mental health sector has provided us a reliable method of mental health promotion inspired and guided by the theories and scientific principles debated in this paper. Science is explanation of the phenomena through generative mechanisms, that is, recipes that if you execute them the phenomena shall occur in an observable and reproducible manner by the community. Therefore, science has a profound commitment with reality, with communities, with life in motion, with culture [60]. We believe that the visions and strategies here discussed help us to act more responsibly in accordance to our knowledge that, in a cybernetic view as proposed by Pickering, knowledge is performance [61].

DyoNises Theatre, Montreal, Canada

Through collaborative projects involving the Division of Transcultural Psychiatry of McGill University, the mental health community movement of Quebec, the community organism PRISE II and the collaborative effort of artists and patients, we started in December 2015 a theatre workshop in a radically different culture from Brazil, with a different climate and anthropological matrixes to play the repertoire and methods accumulated in the Brazilian DyoNises Theatre. In the last year we published several papers, one of particular importance that was written by Louise Rosenberg one of our actress under training [62,63] that I consider a first hand report, in English and French, of the psychic and physical effects of the actor training we practice in human health. Also, several essays, and visual pieces had been published reflecting and reporting the experience that is succeeding into the second year with significant developments to be reported soon.

Conclusion

The experiences of all authors here debated are published, available for the community and may help us to advance more efficient mental health policies that are urgently needed today in our sick global society. It is possible, as science and art experiences demonstrate. There remains the political and collaborative obstacles to the adoption of those scientific theories with the test and practice of its mechanisms, that's why we must keep publishing, researching, promoting, lecturing and disseminating this vision about nature.

CODA: Goethe once again

"Until now, music, dance, and parties played a limited part in your family. Do you think the deadly silence you maintain now is of any advantage to you or to the sick one? Diversion is a golden cloud that helps man – if only for a short time – to forget his misery. All of you, if you return to your happy part of your family life, will be like people who, returning to their home country, recover at once from sickness and sorrow" J.W. von Goethe, 1818 [64].

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Conflict of Interest

I declare no conflict of interests.

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