

Turning the Corner to the Stalemate in Mental Science and Psychopathology

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Abstract

*The cumulative sum of problems in Mental Science in general, and Psychopathology in particular are discomfortably many, in fact too many at this point [14], not the least of which are different conceptions of mental abnormality between the subfields of Mental Science, lax and faulty categorizations of mental disorders, lack of cultural discriminating in the definitions of disorders, overpathologizing, etc. It is at very least a decade-long crisis [6] that sees almost all the major institutional actors in the field at odds with one another: professional organizations, governmental health institutions, and the drug maker conglomerate. The crisis reverberates at all orders of the science. However, what seems to be indicated is a remediation effort going back upstream to address head on the major theoretical problems haunting clinical development of Mental Science. That is the reason why I recently co-authored and published the monograph: **FUNCTIONAL ARCHITECTURE OF THE HUMAN MENTAL – A Reference Psychophysics Treatise of Human Mentation and its Disorders**, in the making for several years as a publication. “Amazing work for which you deserve a good reward!” praised a highly authoritative voice in institutional Psychiatry at highest levels. This writing aims at not only presenting the work but discussing the polemic discrepancies and deficits of the Science, as much as explaining how this research greatly contributes to overcome the crisis by unambiguously resolving the many polemic issues.*

Keywords: neuroscience, DSM-5, DSM-IV, APA, psychiatry, psychology, clinical, mental disorders, RDoC, Research Domain Criteria, psychopathology, mental health, monism, psychotherapy, self-awareness, comorbidity, mental diagnostic, disorders, psychopharmacology, psychotropic drugs, pharmaceuticals, cognition

1. A Persistent Divergence between Psychology and Psychiatry

Despite the fact that Psychiatric science upholds a biomedical approach to the understanding of and applied therapy to the Human Mental, whereas Psychological Science entertains an intrapsychic approach to these questions, most would agree that they should be on the same continuum of apprehension of the Human Mental and applicable remediation to its tional trends and syndromes. These two sciences used to



tain a congenial relationship with one another, firmly devoted as they are to relieving human pain and ailments. However, in the last five decades they have increasingly and significantly grown apart

from one another due to important differences in their conceptions of psychopathology, both analytical and clinical [13]. In our view, the putative imperative for each of the two fields to maintain their separate medical identity is not necessarily responsible for this conceptual divergence.

Psychologist Gary Bakker [11] sums it well when he writes of the DSM-5 compiled and published by the American Psychiatric Association (APA):

So the concept of 'mental disorders' is inadequate to supplant that of Clinical Psychological Problems (CPP) because it is descriptive only – not at all explanatory. But such disorders are therefore also inevitably vaguely and arbitrarily defined and demarcated. "Diagnostic criteria [in psychiatry] shift and sway like in no other area of medicine". The DSM meanders between at least seven different criteria in distinguishing non-problems from problems-deserving-therapy (mental disorders)... One or two clear conceptual criteria to distinguish CPPs from 'normal problems in life' would be much preferred... This conceptual vacuum has left 'mental disorders' as merely social constructions, 'open concepts', or 'practical kinds' without a true defining essence, and has resulted in intractable and interminable debates among psychologists and psychiatrists as to what ultimately defines a mental disorder.

There has been a plethora of psychologists' critics of the diagnostic approach to mental disorders in psychiatry since the controversial release of the DSM-5 by the American Psychiatric Association in 2013. From this dissension stems the entire stream dubbed the *transdiagnostic movement* in today's clinical psychological science which is geared to approach mental dysfunction from a so-called *case formulation* standard based on the identification of intrapsychic *Problem-Maintaining Circles (PMC's)*. The ambition of this standard is to outcompete and substitute the DSM in the practice of clinical Psychology. Says psychologist Gary Bakker:

A PMC taxonomy overcomes almost all of the problems clinical psychologists have with DSM. Its only comparative drawback is its relative complexity... The proposed PMC coding system can communicate more psychologically-relevant and treatment-relevant information than can DSM's.

The tension between the two professions in their approach to psychopathology seems to be there to stay, if one ought to credit the view expressed by the British Psychological Society thru its Division of Clinical Psychology to the effect that *"there is a clear rationale and need for a paradigm shift in relation to functional psychiatric diagnoses."* This conclusion is further pointed by Gary Bakker's assertion that:

... to date, no universal, radical, cohesive alternative to DSM or ICD for psychologists has arisen. It is proposed that the next logical step in the scientific development of the discipline of clinical psychology is the formation and dissemination of a taxonomy of CPP's based on its own conceptual scheme and operating primarily at a psychological level. The independent conceptual, research, and clinical development of the profes-

sion has advanced sufficiently for this critical step. In fact, it is overdue; seemingly delayed by the hegemony of another profession's corresponding taxonomy – psychiatry's nosology of mental disorders.

2. Chasing Granularity in Clinical Psychiatry

As a branch of biological medicine, psychiatric medicine must approach psychological problems from a strict diagnostic perspective established over nosologic reports of observable behavior. If there is ever a mandate, per the Hippocratic Oath, imposed on psychiatric science to take good care of the mentally ill, not just those who still have a sense of reality, but also those that are out of self-control in the turmoil of psychosis or semi-psychosis, it is also a mandate to categorize, diagnose and treat duly identified abnormal human behavior. An inescapable and unrevokable mandate.

One must never lose touch with this clarity when analyzing the categorization of mental dysfunctions by the APA, despite the justifiable objections one might raise against a handful of diagnostic entities and even the inflationist spirit of the DSM-5 [9]. The nosological diagnosis trend, which is at the forefront of the practice of medicine in general, is chiefly and justifiably responsible for this quest for granular diagnostic entities in clinical psychiatry [1].



Along that line, a major problem confronting the science is the enormous amount of symptoms which are common to a great many heterogeneously typified mental disorders, a problem otherwise denoted comorbidity or multimorbidity. In fair appreciation, almost every psychiatrist is uncomfortable with this classificatory problem which has real therapeutic consequences in clinical practice. In this case, granularity and heterogeneity seem to work as two inverse classificatory functions, which the APA works thus far have been quite unable to satisfactorily resolve.

Setting aside any possible influence [10] of the psychopharmaceutical industry in the multiplication of inopportune diagnostic entities [7][8][9], the deeper problem remains the hitherto intractable contradiction between desirable discriminat-

ing heterogeneity and undesirable confusing comorbidity in the psychiatric nosology and taxonomy of mental disorders.

3. RDoC: Nice Try!

When the NIMH expressed understandable dissatisfaction with the DSM-5 classificatory trend in 2013, thru its then Director Dr Thomas Insel, and announced that NIMH would “re-orient” its clinical research toward RDoC (Research Domain Criteria), one would tend to believe in an ensuing divorce between the order of taxonomic criteria at RDoC and the decried DSM inflationary and loose categorization. Henceforth, grant proposals would expectedly no longer be issued along the line of the published diagnostic entities proposed in the DSM-5 and only cater to the multi-disciplinary and genomic vision fostered by the RDoC Initiative.



In fact, it was never quite so. Nearly all the NIMH studies, since the first 2012 grant issuances, involve varying combinations of RDoC approaches and DSM disorders, and approximately 50% of funded translational studies in 2017 still employed the traditional DSM-only denomination [14], per the RDoC grant listings exposed by their RePORTER tool.

The ambition of the RDoC as a topmost research group was to provide the high-level definitions or primitives required to drive the entire Mental Science enterprise to effective therapeutic outcomes, at the end for the benefit of public health. It specifically stipulates that “*The RDoC initiative expands **precision medicine** to all areas of mental health research. RDoC enables clinical investigators to think outside the box of current diagnostic categories, and encourages basic scientists to identify **mechanisms of specific domains of mental function.***”

In a 2017 *Wired* interview, Dr Thomas Insel, on his way out of the NIMH, revealed that \$20 billion spent in genetic and neurobiological research had only produced “*cool papers published by cool scientists*”, and amounted to nothing at all in terms of clinical outcomes:

“I spent 13 years at NIMH really pushing on the neuroscience and genetics of mental disorders, and when I look back on that, I realize that while I think I succeeded at getting lots of really cool papers published by cool scientists at fairly large costs—I think \$20 billion—I don’t think we moved the needle in reducing suicide, reducing hospitalizations, improving recovery for the tens of millions of people who have mental illness.”

A fair conclusion is that the mentation primitives that they were after were not where they were looking for them! The focus has not much changed since then at RDoC.

4. Pharmaceutical Companies Disengage From Research for New Psychotropic Agents

In the US, Health Care is a \$3⁺ trillion industry dominated by Pharmaceutical companies the likes of Merck, Pfizer, Sanofi, Glaxxo, Eli Lilly, Purdue Pharma until its recent demise, etc.

It is interesting to note that despite all reasonable expectations, the pharmaceutical industry has completely disinvested in research for new psychopharmacological agents for the last few decades [5], having cut down in research programs by 70% already at end of 2016. “*In general the larger companies have walked away from psychiatry,*” says Harry Tracy from NeuroPerspective [16]. “*There are a few companies who have maintained efforts in the area but 70% tells you it’s been a pretty remarkable departure. Many withdrew from neuroscience entirely.*” This research has not resulted in the sought-after profitable outcomes, reason why the industry switched focus to the recycling of preexistent pharmacological agents and/or extending their use to other disorders than their original specific prescription. “*It’s quite a long time that no new medicines were introduced to the market,*” says Marcin Rodzinka in a 2019 interview with One in Four Mental Health [15]. “*Companies very often are trying to resell and promote old medicines [as] they don’t see hope in investing in Psychiatry and research in psychiatry.*” Marcin Rodzinka is Advocacy and Policy Officer at Mental Health Europe (MHE), a European non-governmental network organization working for the promotion of positive mental health, prevention of mental distress, improvement of care and community-based recovery, per statute stipulation.

The psychotropic drugs that are being sold and used today are essentially the same ones that have been around since at least the 1980’s (Selective Serotonine Reuptake Inhibitors). Most new drug attempts fail in clinical trial as they are mired by the same problems that affect psychotherapy, notably the comorbidity problem. When it comes to specifying target engagement and relating target engagement to outcomes, heterogeneity poses great difficulty and oftentimes contributes to the inconsistent results in clinical trials [5]. As widely acknowledged, these factors have played in general a major role in the squint number of new compounds approved for market in recent years and the nearly complete withdrawal of pharmaceutical companies from development programs for mental disorders, in spite of the great need for new effective drugs.



Furthermore, older drugs are oftentimes confronted with the problem of patent expiration. Richard Friedman, professor of clinical psychiatry at Weill Cornell Medical College in New York qualifies the psychopharmacological industry as “*risk-averse*” and informs us that “*They have basically been making minor tweaks of existing drugs as soon as the patent runs out.*” Prozac presented an interesting case of the kind. Just as its patent protection was about to expire, its maker Eli Lilly introduced a new trade name for it, “Sarafem,” and markets it for treatment of Premenstrual Dysphoric Disorder (PMDD).

It is clear that the pharmaceutical industry has and ought to have a biologic approach to psychotherapy in clinical psychiatric settings. As previously mentioned, there is an absolute need for effective pharmacological agents to properly manage or cure the morbid commotion, disruptions and distress unleashed by mental illness at the individual and social levels. Not to mention the need to drastically diminish or ideally eliminate at the same time the sum of inconvenient side effects and health risks invariably caused by psychotropic medications to patients. If the experience at the RDoC has shown anything, it is that the fundamental primitives of Mental Science must be uncovered before any research process can assertively identify target engagements, susceptible to translation into successful clinical outcomes. More than a research platform, the science is primally in need of a towering axiomatic framework to drive its entire proceedings. Despite the judicious interdisciplinary directive, the RDoC has not gone far enough, if at all, in that direction.

The needed axiomatic framework must be one that can show the direct organic links between the architecture of the Human Mental on the normalcy plane, verifiable Human Characterology and the Dysfunctional trends of the Human Mental, both in a quantitative or mathematical-physics manner and from a rich and broad taxonomic perspective.

Many may remember that the decade of the 1990’s had been declared “Decade of the Brain”, at the end of which human brain mentation was expected to be fully unraveled. It was all but. By end of year 2020, three long decades of vigorous neuroscience research had been completed, most of which publicly funded, from which we returned empty handed once again. Who can blame Big Pharma for having been watching these developments from the sidelines and conservatively saving themselves \$Billions? Further, it is only fair to report their advocates’ objection to the charge of “*risk-averse*”, arguing that the industry has heavily invested in other quite risky areas “*where they have placed huge bets on candidates with tremendous uncertainty.*” [17].

5. Why a Psychophysics and Mathematical-Physics Framework for Human Mentation?

The one and only way to establish the objective and sure-fire Primitives for Mental Science is to uncover the natural laws that govern the architecture and dynamic processes of human mentation. Everything else strictly amounts to dispensable speculation. Furthermore, if we can show that from the same laws that govern the physics of the natural world equally emerge the quantitative normative basis for Mental phenomena, we will have thoroughly warranted the authenticity of the constructs undergirding this sought-after axiomatic framework of the Mental.

6. Mathematical-Physics Symmetry as a Mold of Human Consciousness

Symmetry is a paramount concept in Differential Geometry. We can exemplify it with the topology of our planet earth as it spins on itself and orbits the Sun star. Our planet is constantly taken in at least three important astrophysical motions: its rotation on itself over a polar axis, its precessional motion about a precession axis, akin to a whirligig, and its elliptic orbital about the Sun star which develops in different velocities along that path. This makes up for a very complicated set of transformations as our globe travels thru the zenith. Despite all these transformations, globular Earth and in particular its topology, its superficial foliate or manifold, that is, remains invariant and completely transparent to these transformations. In Differential Geometry, we characterize this phenomenon as a Symmetry: a set of continuous rotational transformations undergone by the terrestrial globe while its topological foliate remains invariant. We owe it to mathematician Emmy Noether to have extirpated the symmetry axiom that characterizes this expression of the natural world [4]:

“Every differentiable symmetry of the action of a physical system has a corresponding conservation law.”

In simple terms, there is a conservation constraint or invariance associated with every continuous action or transformation of a physical system. The theorem had been numerically expressed in the category of the integral of an action in time, the latter being translated in a Lagrangian representation (I), such that:

$$I = \int L(q, \bar{q}, t) \cdot dt,$$

where q is the coordinate set, $\bar{q} = \frac{dq}{dt}$ and L the Lagrangian notation.

A Lagrangian may otherwise be simply viewed as the sum of all energies making up a dynamic system. Our humanist readers may close their eyes on the mathematical code formulation of the principle. In catering to the definition of a Symmetry, what is essential is to realize is that it perfectly applies to the Self-Awareness entity of the Human Mental. That realization led us to propose, within our psychophysics framework of Human Mentation, the following definition of Self-awareness [4]:

Self-Awareness is the invariant discrete bundle of sense of self and adjunct self-effector which remains preserved under emotional alterations, exercise of reason and purposeful activity as well as across changing developmental stages during the lifecycle. It is expressed both during the mental states of arousal and during the phases of nocturnal sleep eliciting dreaming activity.

There is nothing personal, subjective, social or of ethnic nature in this definition. But it is an emanation of natural physical law on the mental plane and represents one of the foundational axioms of the proposed psychophysics framework of Human Mentation. No clinician needs to be learned in Differential Geometry to understand it, although Differential Geometry is evidently implicit in its formulation. We make it our own challenge in the development of our framework to save the clinician from usage of the integral or lagrangian mathematical code for its application in any circumstance, and, for all that matter, none of the mathematical-physics constructs of the framework will pose this requirement in the medical setting.

It is important to reckon that the Sense of Self is a fundamental invariant. It pertains to deepest ontology and is independent of phenomenology. The Self or individual person is appealed to engage in a countless set of transformations day and night. Nevertheless, the Self-Awareness which we keep of ourselves or our own person is monolithically pre-severed throughout the lifecycle. In particular, even when our physical ontology engages in physiologic and anatomic transformations across

the developmental stages of the lifecycle, our Self-Awareness remains monolithically invariant: we always think of ourselves as the same person! Never as someone else. Self-Awareness is thus a fundamental symmetry of the Mental Body. As an infant, you knew you were the one you are. As a teenager, you are for yourself still the same person. As a young adult, you are still the same person for yourself. As a mature individual, you continue to think of yourself as the same person. And finally as an elderly, you will remain the same person for yourself until you forever close your eyes.

It is of import to reflect about this Symmetry as it involves the transformations occurring within the anatomic and physiological Self across the biological stages of development. Note that Self-Awareness involves both the perceptive sense of Self and a motional trigger entity that we dubb Self-Effector. It is an amazing fact that the entire Monolith of Self-Awareness remains preserved or invariant under the tremendous amount of changes occurring to the body, which are all self-perceivable:

- From barely being able to walk as an infant or toddler.
- To the formidable secondary sexual characteristics emanating from the body both in terms of new perceptive elements and capacities, and new libidinal effectors, particularly at the pelvic level.
- Muscles masses protruding on females' chests and butts, and muscular enhancement of males' limbs for greater strength and projective capacity, with a hairy population covering the body and face and altering their hitherto appearance, along with notable changes in vocal expression.
- To the maturation of these elements at the adult phase of the body.
- To the visible anatomic decline of these elements as the body progresses to the elderly stage.
- To the senile appearance and frail constitution characteristic of the elderly, in particular in overall vitality of the body (barely able to walk, hair decay and color degradation, skin wrinkling, etc).

Everything is given for our Self-Awareness to significantly and continually change across the lifecycle. Nonetheless, it strictly does not. That artifact therefore constitutes an authentic constraint and a sensible knowable that must be formalized or coded. When we do the work of properly constraining it to codification, we avail ourselves by the same token of the possibility to uncover even more of the knowledge domain to which this artifact pertains. It is an outcome that stems from the very fact that mathematical science is a world of formal categories that are intimately connected to one another. In geometry, there exists a hierarchy line between Euclidian Geometry, Analytic Geometry also known as Functional Analysis, and Differential Geometry. At the same time, all of Geometry is intimately connected to what in our larger mathematical-physics framework [12] we designate the Primitive Number Stack, the properties of which in conventional mathematical science are viewed as Number Theory.

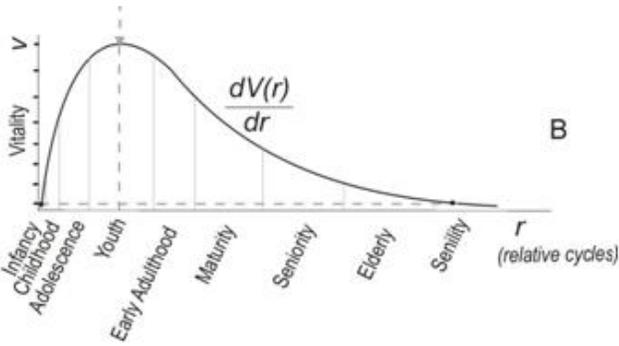


Fig. 1 Developmental phases through the human lifecycle as a function of correlational astrophysical cyclicality

As an example, let us consider the above-mentioned anatomic and physiologic evolution of the biological Self, well known as developmental stages of the Human body. We find that this developmental activity responds to an Analytic Geometry derivative function, as shown in Fig.1.

The independent variable of the function is r , which is to be understood as a line representing the astrophysical orbital correlation between our planet Earth and the Sun star, and $dV(r)/dr$ or v being the dependent variable or the function itself in representation of the Vitality level of the human body. For simplicity, think of r as the number of orbital cycles of planet Earth around the Sun. As to the *vitality* figure, you may think of it as a combination between metabolic capacity and reproductive-regenerative capability of the human body.

Analytically, there is one and only one maximum to the function, which gives us maximum vitality at the youth stage, consistent with all educated expectations. Likewise, the graph of the function is consistent with the fact that there are two minimal points of vitality of the body, which are the phases of infancy and senility, as indicated. The graph instructs us at the same time that there is a par symmetry in the Vitality function around and about the vertical line that goes through the maximum point, if we never thought of it. As such, there are always two phases of development, one at each side of that line, where the levels of vitality of the body are similar or paired, i.e. between the maturity phase and the lower half of the adolescence phase. One can expediently see the similarity in frailness, a low vitality level, between an infant crawling and struggling to keep upright balance and an elderly person forced to constantly use a cane in order to keep her/his upright balance.

Should you ask the question “What is $V(r)$ itself, the function of which $dV(r)/dr$ is the derivative?”, the short answer for the circumstance is that it is a universal Eigenfunction [12], that is to say a root function which is the solution to a great many dynamic systems in the physics of Mother Nature. In the context of Human Mentation, it is a 2-variable function that plays the special role of providing the 3-dimensional Manifold of the Mental Body or Mental Self [4].

Having started with the trivial inquiry about Self-Awareness, we have come to learn, by association or implication, quite a few things!

7. Do Not Trust the Obvious

Now, let’s go back to the RDoC domains. This proposal builds on the truism that all Mentation activity exclusively takes place within the central nervous system with the brain as the major orchestrator, as posed in all-time neuroscience. In philosophy or epistemology, this assumption has been dubbed *monism*, to mean that human mentation and the central nervous system are one. Monism has been perhaps the most ubiquitous primitive in all of Science of the Mental. Nevertheless, despite all the mentation research that has taken place in neuroscience over the last two centuries, this principle has never been formalized in any ways but assumed or posited.

7.1 Deterministic Trend of Neural Processes

The only one token of circulation within the nervous system is the electric potential whereby an electric impulse travels from one nerve cell to the next thru electrically-active distal synaptic joints. Every other form of activity occurring within the system has no other purpose than to sustain, block or arbitrate the electric response of a part of the system. From an engineering signal processing vantage, it is not an “*analog*” system based on continuous change of states, but a construction based on the *binary number system* that functions between two and only two states: cutoff and saturation. It concerns the consecrated “*all or nothing*” response of the excited nerve cell: either a 1 or a 0, basis of the binary number system. As every electrical engineer will agree, the nervous system achieves in that particular manner a much higher level of fidelity and stability in impulse signal processing, as opposed to vulnerability to spurious noise effects and instability an analog system would inevitably subject it to. The central nervous system is therefore the most reliable deterministic system yet realized by Mother Nature in the complex ontology of the living. Stress the word *deterministic*. To the binary property of signal processing, Mother Nature further adjoins the *somatotopic* organization in the topologies of the system from spinal cord to cerebral cortex [2][3]. If the objective was efficiency in processing, somatotopia is not the shortest path to that goal but clearly heterogenous distribution of circuit elements, whether they are single nerve cells or cell nodes. Anyone who can knowledgeably look into the internal architecture of a binary digital microprocessor chip and the larger embedding circuits around it can tell what efficiency thru heterogeneity, as pursued in modern technology, looks like!

What’s more, there is also a space constraint that works against the somatotopic form of organization, which becomes clearly visible in the manifold geometry of the cortex (Fig. 2): *somatotopia is a topological arrangement requiring more superficial space and only an insufficiently finite amount is available in a volumetric shape.*

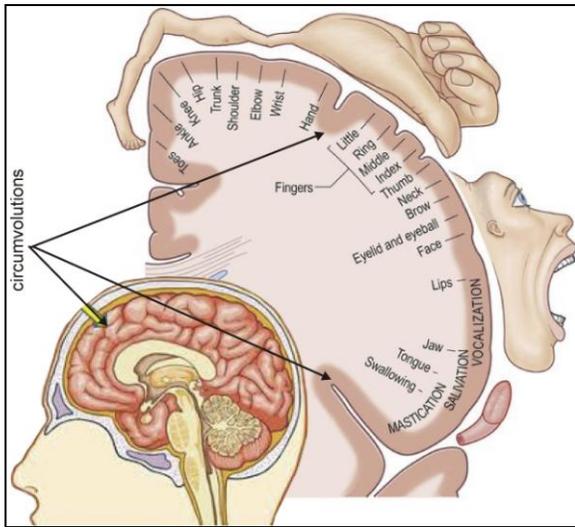


Fig. 2 Circumvolutions and somatotopic organization of the human cerebral cortex

So therefore, the imperative of the somatotopic topology imposes on the histological arrangement. It is clear that the design of the central nervous system is striving for simple, direct, unequivocal one-to-one responses as in mirror imaging. Thus, we must conclude that in this case the *deterministic* mandate is so great that it widely trumps construction efficiency.

7.2 Stochastic Trend of Mental Body Processes

Let us now consider yet another mentation artifact that most of us, learned and laymen alike, we generally do not pay attention to, which is how our flow of thoughts develops thru the continuous thread of daily activities. Whilst we are cognizant that our flow of thoughts does not ever stop in the conscious state, for the most part we ignore the fact that we do not decide what the phenomal quality of our thoughts as much as the objects of our thoughts are. If it is true that we can plan actions which are to be executed further in the day or in the next moment, we do not control the second-to-second jets of our thoughts that lead to these actions. Let alone cases when we forget to realize or execute something that was duly in the plans. We do not decide to be sad or anxious in this or that moment, we simply find ourselves in those mind fits, sometimes as a result of presence of or interaction with objects or events in our immediate environment, at other times simply as a result of psychogenic triggers. We are not even evoking here the instances of evolution of our thoughts when we are in direct interchange or intercommunication with others, in which cases our minds are literally jumping from one thing to another across the exchange. To believe that volition develops in a deterministic self-controlled fashion is a blatant misrepresentation, ultimately of a cultural bias order, we must say: you will never be able to map human volition as a well-behaved Analytic Geometry function as known. From the above, we must therefore forcefully conclude that the flow, emission and nature of thoughts that animate the Human Mental Body are eminently *stochastic*.

Then the big question for us as monists to answer is: Why does the Nervous System abtrated by the Brain orchestrate a *deterministic dynamic system* whereas the Mental Body orchestrates a *stochastic dynamic system* instead? What is this fundamental disjunction telling us? Note well that we are equally here in a full-throttle mathematical-physics approach to the question of Mind.

8. Ameliorating Psychopharmacology and Psychotherapy

The emergence of the concept of Mental Body in psychiatry has been an imperceptible significant step from our analytic perspective. It caters to the realization that even if the Mind should be a product of neural nodes and circuitry, it has shown to develop a bundle of functionalities and an essence that are unique to itself. It apparently exists in the order of an ultra-structure that is relatively independent of the neural substrate. The question of elucidating the nature of the Mental Body is not a philosophical question, but a physics question pertaining to Psychophysics. However, Fundamental Physics has been experiencing a long-last deep crisis of its own, yet unable to offer desirable and firm answers regarding the physical foundations of the natural world. Consequently, the Sciences of the Mental have been left thus far to fend for themselves on the question relating to the nature of the essence of the Mental Body, whatever it may be.

Fortunately, we do not have to resolve this unknown in order to significantly ameliorate psychopharmacology and evolve psychotherapy. What is needed is to axiomatize Mental Science by uncovering the natural physical laws that govern the architecture and dynamics of the **Mental Body**, and seriously quantify the Science beyond the usual psychometric tests. That means pulling the Science, once and for all, out of the realm of speculations and the obvious alike, and seating it on rigorous mathematical-physics grounds.

The most important caveat to date in Psychopathology is not, in our judgment, unsatisfactory classification schemes and ambiguous nosological entities, despite all the concerning antagonisms and controversies. It is instead to be identified as the complete absence of etiologies for the vast majority of classified mental disorders. On the basis of the discussed primitives, this paramount caveat will rightly be cured. With the advent of this quantitative etiological tool, Mental Science is deemed to acquire a barometer for three consequential tasks:

1. In Psychology, redimension the psychoanalytic and other psychotherapeutic methods for the realization of effective and demonstrable cures and in a reasonably set number of psychotherapeutic sessions.
2. In Neuroscience, reevaluate neural circuits, network and nodes along the directives of the new framework to the aims of correctly aligning the biochemistry and functional architecture of the brain with the organic taxonomy and etiology of all psychogenic mental

disorders.

3. In Clinical Psychiatry and Psychopharmacology:
 - Produce the mapping between the sum of existing pharmacological agents and the discrete architecture of the Mental Body thru the new implicated Disease Model and Etiological directives.
 - Design the clinical trial protocols for the targeted repurposing of the current inventory of psychotherapeutic agents.

9. What We Bring to the Table

With [this Monograph](#) [4] (Fig. 3), in addition to furnishing the tools to accomplish all of the above, we wish to have effectively contributed to:

1. Deep grasp and visualization of psychodynamic processes for every mental disorder in the repertory, and a complete redress of the polemic DSM-5 diagnostic entities, by showing how the Human Mental and psychopathology emerge from natural physical law within a mathematical-physics framework.
2. Assertive clinical diagnoses by prospecting the Human Mental within a unique, clear and rigorous multidimensional canvas of mental morbidity.
3. A solid footing to psychopharmacological innovation, by uncovering from rigorous psychophysics application the most thorough architecture of human mentation, along with the extensive array of mentation categories and psychodynamic derivatives representing the target primitives for chemotherapeutic agents.
4. A constellation of research avenues, both for the clinical and theoretical approach, to all of the related fields, namely psychology, neuroscience, cognitive science and psychophysics, in order to further deepen the knowledge brought about by this long-running research.

10. Conclusion

In closing this presentation, it is opportune to remind all actors in the field of Mental Science that the public represents the end target for all of the endeavors and realizations in the field. Due to the global reach attained by the internet during the last three decades in regards to the flow of information, the public all over the world has become more aware and savvy than ever before concerning of whole series of issues in human endeavor, in particular health care and mental health medicine. This new awareness and public education have crystallized in the existence of a large network of mental health advocacy

groups, and an ever growing number of private donors and endowments for the cause of human health. It is to no one's benefit that the long-running crisis in mental health research continues to feed discontent, suspicion and distrust of the science among the public at large as it has. By speaking to the many different actors, disciplines and institutions in the field, and offering the proper analytic and clinical tools to bridge the differences and fill the voids, this book has taken a momentous step toward defusing the crisis at last.

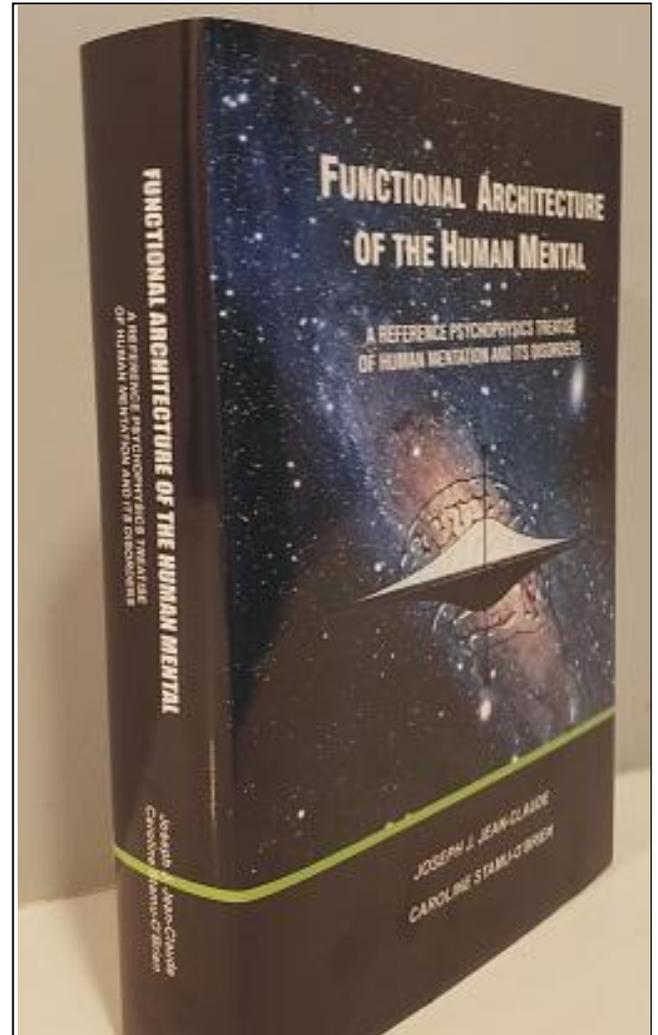


Fig. 3 An 800-page breakthrough monograph to overcome the decade-long crisis in Mental Science

CONFLICTS OF INTEREST

The author has no conflict of interest to declare. Own personal opinions expressed by the author in this article are to be strictly attributed to the article's author.

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