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STOCHASTIC PROPERTIES OF THE BRAIN –

Implications for Psychiatric Diagnosis and Treatment

The systems and functions that occur within the brain actually are independent variables or systems. They are all inter-related and inter-dependent, such that modeling brain functioning as a linear system is only a very rough approximation that may lead to totally false implications.

Such is the simple notion of psychopathology being due to a "chemical imbalance" as if you just need to "balance out" a few neurotransmitters, and voila! Or that controlled studies can produce "evidenced-based" results that are then universally applicable. The brain is neither a linear nor a closed or static system - which means that the most accurate modeling would have to be based upon partial differential equations, resulting in stochastic-like patterns of functioning and responses (not to mention implications that there may be even more complex deep functioning on a quantum level) – which require a dynamic (in the engineering sense, not in the sense of "psychodynamic") intervention or treatment procedure, i.e., the nature and intensity of the appropriate treatment will probably fluctuate over time and cannot be definitively and "statically" determined simply by diagnosis or categorization of symptomatology; not only between different subjects but even over time in the same individual subject. In fact, in such systems, the "flow" over time is "nested" – there may be a pattern that occurs over months can be observed (and therapeutically addressed); a somewhat different pattern occurring over weeks, or over days, or over hours – or even within a single therapy session.

There is very questionable validity to describing unique variants as anything more than an approximation, when actually dealing with a system that is in an ever-changing state with chaotic properties.

This, IMO, leads to the conclusions: learn as much as you can, understand as much as possible, do the best you can - and humbly acknowledge that we are only scratching the surface and all theories that we have are at best intermittently-useful approximations.

Sadly, that reality is often used to demean psychiatry - when the reality is that psychiatry is more complex, more complicated and more difficult to practice effectively than many other branches of medicine.