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The Neuropyrosis Theory of Depression and Alzheimer's Disease

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Abstract:

Alzheimer's disease is the costliest disease to society, and is rapidly increasing in prevalence, especially given the increasing number of ageing people. With only a few weak hypotheses, the cause is not understood, and all proposed medicines have either failed clinical trials or have proven largely ineffective. Dopamine's mononconditional and Norepi's multiconditional quantum neuropsychology was derived. Dopamine's characterization as foreign in the Upper Brain was derived. It becomes clear that higher electric signal density in brains with more grey matter -- i.e., brains with more dendrites/Dopamine and less Axons/Norepi in the PFC, hippocampus etc. -- is associated with higher electrical loss through over-heating -- which can be described as a Neuropyrosis method of disease progression; that is the cause of Alzheimer's dementia. As more grey matter corresponds to (mutable) psyches having the traits shown in Column 1, Table 1 (shown at the end) -- we now have a sure method for preventing Alzheimer's disease -- by training the person at risk, so that his psyche becomes more Norepic (like Column 2 of Table 1).

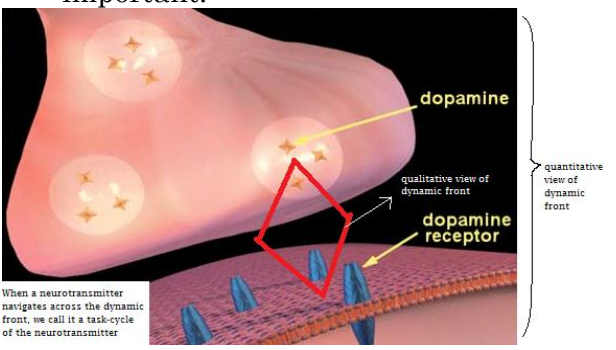
Key words: brain, evolution, dopamine, Norepi, Alzheimer's disease, dementia, depression, neuropyrosis

The importance of studying the quantum role of the 3 classical monoamine neurotransmitters

The layouts and activities of Dopamine (D), Norepi (N), and Serotonin (S), the three "Classical Monoamine neurotransmitters", are particularly important in the

psychology and physiology of the Central Nervous System, because:

1. Activities involving these neurotransmitters coincide with major mental events e.g.: thought
2. These neurotransmitters occur in a super-system which we define as the dynamic front. This makes them important, as the dynamic front is important.



The dynamic front is a set which includes 2 neuron sections. The D or S or N receptor and transmitter are attached in these 2 sections respectively; considering each neuron section a separate system unto itself -- taking as the analogue male and female systems -- as the example of *impregnation resulting in major biological event* (pregnancy) shows -- the dynamic front it generally important.

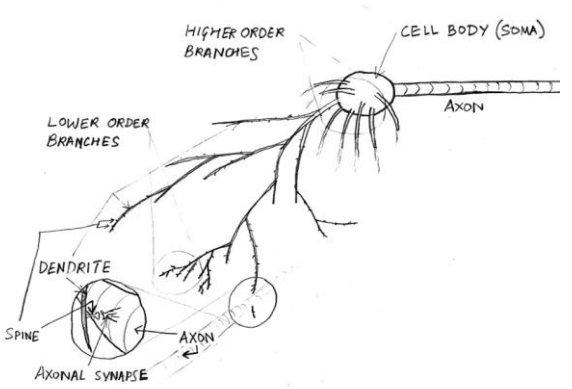
3. Of particular importance are the largest neurotransmitters which operate in the dynamic front, which are the 3 monoamine neurotransmitters D, S, and N. The presence of the amine makes them important as unleashers of energy (Nieuwenhuis, Aston-Jones, and Cohen 2005).

Thus we start with the premise that the layouts and activities of Dopamine (D), Norepi (N), and Serotonin (S), the three "Classical Monoamine neurotransmitters", are particularly important in the quantum psychology of the Central Nervous System.

Our understanding is summarized: D, N, and S are central; rest of the neuronal items that occur within the dynamic front, are merely support systems. Studying the evolution of D, N, and S is therefore sufficient to understand

the evolution of the dynamic front super-system, whose central components are D, N, and S; all other chemicals and neuron sections involved are merely dependent support systems which came later, as support systems always chronologically succeed the central system's evolution. In other words, before proto-neurons became complex like modern neurons, and got the shape and features of the sub-systems (neuron sections) arrayed out as they are today -- there were still D, N, and S task-cycles, which (psychologically) are the same as in modern neurons. That is, for these classical monoamine neurotransmitters, the proto-neuron-involving *proto-inter-neuron dynamic front* task-cycle had a quantum neuropsychological function which is the same as their quantum neuropsychological functions amid the modern neurons, whose other complexities we can ignore in our quest to find this eternal, critical quantum neuropsychological function of the D/N/S task-cycle. Some support for drawing such conclusions, is the ancient creature sponge, in which sperm cells exist and have the exact same role as what sperm cells have in higher creatures, showing thus the immutability of the interaction of the dynamic front's central aspects which in our case are D and N task-cycles (studying S is beyond the scope of this thesis).

Brief introduction to the basics about D and N task-cycles -- their signal boosting nature



As signals progress through the nervous system's *signal cables* (the slender parts of neurons i.e. axons and dendrites),

they either die out due to transmission loss, or, if regarded as valid, they are boosted by D or N's signal boosting characteristic, about which it is said:

1. "Intracortical currents are triggered by the release of neurotransmitters", in particular, that "neuromodulators like noradrenaline, dopamine or serotonin have Indirect modulating effects" - Frodl-Bauch et al., 1999, as quoted in the Nieuwenhuis et al. Paper (Nieuwenhuis, Aston-Jones, and Cohen 2005).

1. "Enhance the synaptic responses of cortical neurons to their other inputs, in effect increasing the gain of cortical neuronal activity", thus N "might serve to amplify signal conduction" (Nieuwenhuis, Aston-Jones, and Cohen 2005).

Actually, these neurotransmitters boost signals, if valid (D and N have different conditionalities for determining which signals are valid, and to be boosted); we can ascribe it to the presence of the energy-carrying monoamine in D/N/S, surely? And the presence of Melanin in the areas that manufacture D (SN) and N (LC) is also related to the high energy of these neurotransmitters, which prolong signals by serving as sources of potential energy.

Now let us study the conditionality for boosting, which will tell us the quantum neuropsychological role of these neurotransmitters.

Studying the evolution of D, N, and S to find the (eternal) quantum neuropsychological details of the Central Nervous System

Dobzhansky's comment is worth citing: "Nothing in biology makes sense except in the light of evolution".

Thus we study evolution of D, N, and S, in a bid to understand their task-cycles' (eternal) quantum neuropsychological functions, which will lead us to understand the quantum neuropsychology of the Central Nervous System.
We'll now study the key stages in the evolution of the nervous system (life-form).

Life forms are ultra-complex chemical reactions, and neurotransmitters are "stable ranged chemicals" defining their

deepest aspects. Let us define the dynamic front of the CNS or proto-CNS as *base of reactions*… let us say, *base of reactions* means the central class of chemical reactions in the multifaceted chemical reaction "life-form".

Now S (Serotonin) has a specific unique structure which puts it on a league of its own, whereas D (Dopamine), O (Octopamine), and N (Norepinephrine) have similar structures which means that all three can be clubbed as similar, on the other hand.

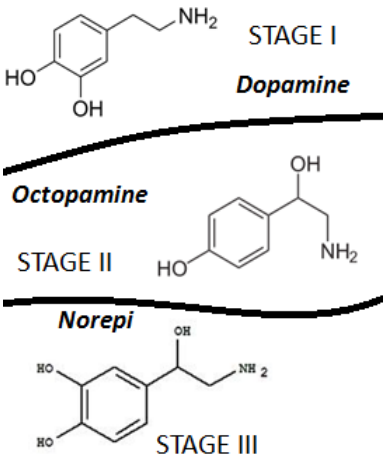
S is found in plants as well… where it guides major operations; S is thus one of the most ancient molecules in life-form. D is also found in plants, and though both D and S may be found in plants, they don't occur in the relevant "D-S system" format, because of which we can define the plant as a *S base of reactions*.

As opposed to Lamarckian incrementalist or minor view of evolution -- in the science of major aka disruptive evolutions, which by definition occur in the dynamic front -- the theory is, to see evolutions as accidents.

At one such accident, D and S entered into a highly specific reaction (D-S interactions set), which was the birth of the D-S base of reactions.

It is well-established that S plays a major role in modulating D systems; we call it a D-S interactions set, which is the key aspect of what we call D-S base of reactions; the rise of which was the first complexity in life-form evolution.

We might choose to reserve the term *animal* for bilaterally symmetric vertebrates and invertebrates, so we call the D-S-base of reactions-based life-form, as "planimal".



An example that can be cited is the *sponge*, in which Dopamine (Liu et al. 2004) and Serotonin (Weyrer, Rutzler, and Rieger 1993) have been found. That is worth analysis. The sponge has long been superficially recognized as the "missing link" between plant and animal, and where else but, of course, the dynamic front, could be the area where the difference arises! Soon we will further vindicate our view that *the sponge is a D-S base of reactions*. The *planimal* – a life-form defined by how the D-S base was chief in its hierarchy of reactions – evolved when the plant bodily molecule of Dopamine (D) entered into this highly specific *D-S interactions set* with S – thus giving both D and S the pioneering status of neurotransmitter, starting the career of the proto-CNS/planimal, whereby cells collaborated in a lifestyle more complex than that of plant -- the planimal was the first quasi-animal.

For another disruptive evolution, another accident occurred -- D somehow evolved into O (Octopamine) in some domains.

In some Planimals, D turned into O in what can be called accidental mutation reactions; some of the accidents were successful mutations i.e. O-involving reactions which were accepted by the old D-S base of reactions – the law of entropy allowed it to thrive. However, O and D are chemically similar, and, to an extent, can be likened to capstones competing for control of the same adjunct molecule pyramids, with which they carry out similar reactions. There must be a wide range of such

adjunct molecules. This was, then, the rise of the O-D-S (or D-O-S) base of reactions, with O-D-S defined by the primacy of O in the local or total reactions pyramid (life-form), and D-O-S defined by the primacy of D in the local or total reactions pyramid (life-form). The D-O-S/O-D-S creature is called animant, not any longer planimal like the sponge.

Sometime after this was the fusing accident, when a pre-trilobite creature emerged as the D-O-S + O-D-S creature -- i.e., the bi-brained invertebrate animal that had bilateral symmetry; it is a most successful design; nearly whole of animalia is like this; excepting a few planimals like Jellyfish and hydra, which are radially, not bilaterally symmetric. The Left Brain was D-O-S, where D has primacy (the neural correlates of such primacy are yet to be found), and the Right Brain was O-S-D (and then N-S-D), where O (and then N) had primacy; and thus Left brain can generally be called the "RS", similarly right brain can generally be called "GS" (Generative System). However, in hyper-RS condition, right brain starts getting left brain-like characteristics (most visibly in memory structures) and vice versa, thus it is better to talk about 'RS' and 'GS' as concepts centred in but separate from the Left Hemisphere and Right Hemisphere respectively.

There was, furthermore, another disruptive evolution when O changed into the similar N (Norepi). Merely on the basis of how *vertebrates have N whereas invertebrates have O*, we can say that N brought into the picture a new ability for the nervous system to be decentralized, as borne out by the presence of spinal cord (which is the main detail, beyond the vertebra). Otherwise, psychologically, O and N seem to have similar task-cycles. Now we further justify the above statements by trying to isolate the nature of D and O/N task-cycles.

Isolating the essential nature of the D task-cycle

It was found that, generally, D works in a fixed *stimuli*-reactive manner (which we therefore call "receptive" type task-cycle), whereas O/N works in a different manner which can be called "generative".

The *stimuli*-reactive (receptive) nature of D was found from examples (note the consistent presence of characterizable *stimuli*):

1. In plants, D handles browning (Mayer 2006) in response to injury (i.e., injury is a type of *stimuli* – occurrence of which triggered a D Task-Cycle).

2. D is released by alga Ulvaria obscura during anti-herbivore defense mechanism (Van Alstyne et al. 2006) (herbivore represented as *stimuli* received by the alga leading to a reaction, initiating which was the role of D task-cycle).

In complex creatures, despite the presence of more complex bases of reactions, D activity is observed to be necessarily involved in automatic reaction to *stimuli*:

3. In insects, D "acts as a punishment signal necessary to form aversive memories" (Schwaerzel 2003) (of external objects represented as *stimuli*, such reaction to which exemplifies the D task-cycle's isolatable nature as reactive to *stimuli*)

4. Or, D (task-cycles are observed when) the creature gets aroused (Schwaerzel 2003) (as a response to external objects represented as *stimuli*)

5. In animals, D task-cycles are found to occur as responses to various *stimuli* (money, prospect of sex, food etc.)

6. In particular, the sponge, which, according to our theory, gives an example of a pure D-S nervous system:

> "Sponge lacks nervous, digestive or circulatory systems; instead the water flow supports all these functions. However most species have the ability to perform movements that are coordinated all over their bodies, mainly contractions squeezing the water channels and thus expelling excess sediment and other substances that may cause blockages [whose presence were *stimuli* which caused action, thus it was a reaction] . Sponges may contract to reduce the area vulnerable to attack [a response conforming to "attacker" *stimuli*]. The mechanism is unknown, but may involve chemicals similar to neurotransmitters." Actually, the mechanism involves D Task-cycle(s) in the sponge's D-S proto-CNS (a D task-cycle supported by a very basic form of support system. One of the details is that sponge lacks cell walls; the S-base of reactions (plant) had cell walls. Thus the vanishing of cell walls represents a great leap forward in the idea of dynamic front).

The sponge's type of reactive behaviour vindicates our earlier assumption that sponge is home to no more than the D-S base of reactions.

Isolating the essential nature of the O/N task-cycle

We had already stated that, while physiologically N and O are different, psychologically they are the same. While D-S is involved in reactive behaviours, O-S (or N-S) system seems involved with far more than knee-jerk reactions.

1. "In the locust jump, O modulates muscle activity, making the leg muscles contract more effectively".

This is not directly a reaction to any given stimuli, as we could say in the case of D-S.

2. Similarly, O "is widely used by invertebrates in "energy-demanding [novel, not autonomous or stimuli reactive] behaviors" – like flying, egg-laying, and jumping". All these are not dependent on any isolatable stimuli.

3. "In the firefly, Octopamine release leads to production of light in the lantern".

A definite pattern is seen – O, the precursor of N, is involved with contrived actions which are not direct stimuli-responses.

Fire-fly puts on a lantern depending on, say:

- Whether or not it is night (a "1" value, conveyed as a signal)
- Whether or not a female is nearby (or something else that is known as a signal)

Thus both must be true, so O/N seems like an AND gate, from this perspective. N, the psychological equal of O, is also similarly handling complex activations (complex, in the sense, not directly reactive to stimuli):

"In 1964, Chapman and Bragdon (1964) found that ERP responses to visual stimuli differed depending on whether the stimuli had meaning or not. They found that the responses contained a large positivity [*a signalling event, called "P300 event potential", and later proven to involve N*] that peaked around 300 ms after the stimulus appeared. They speculated that this differential response, which came to be known as

P300, resulted due to how the [stimuli] were meaningful to the participants". In this case, the N-involving P300 was dependent on multiple inputs -- that is the meaning of the term *meaningful* which they use.

This P300 wave was subsequently associated with the "LC-NE neuromodulatory system" by researchers (Lutzenberger, Elbert, Rockstroth 1987; Pineda, Foote, and Neville 1989; Johnson 1993).

"In later studies published in 1967, Sutton and colleagues had subjects guess whether they would hear one click or two clicks. They again observed a positivity around 300 ms after the second click occurred - or would have occurred, in the case of the single click... They also had subjects guess how long the interval between clicks might be, and in this case, the late positivity occurred 300 ms after the second click".

Thus, in case of Norepi task-cycle, whatever the answer to be solved, *multiple relevant signals* add up to solve it:

4. *"They again observed a positivity around 300 ms after the second click occurred".*

N-calculated solution = "2 clicks", solved out of 2 signals (click1 AND click2) -- thus 2 input signals (quasi-stimuli) were used to generate output.

5. "*Or would have occurred, in the case of the single click".*

N-calculated solution = *signal "1 click"* AND *signal "no more clicks"* = "only 1 click".

6. "The P300 is thought to reflect processes involved in stimulus evaluation or categorization". "Evaluation/categorization" implies stimuli being weight *in context of some other data*, which again upholds the multi-input nature.

What happens in the Norepic task-cycle is that the N-task-cycle site (Axon) adaptively calculates from various signals and gives the type of output required – thus this output is generated out of *multiple signals* – which is felt as the "P300", which occurs 250 to 500 ms after all stimuli needed for the output are at hand.

The differences between Dopaminic and Norepic type of processing

Thus the difference is between D's simple stimuli-reactive aka monoconditional signalling, and N's complexly reactive multiconditional signalling.

N has ability to consider signals from multiple directions, not just one (as seems to be the case in D trigger process) i.e. Ability to choose whether to fire signal or not fire on the basis of specifics of various parameters.

Another very interesting detail is that Norepi task-cycle sites are axons (13) of neurons; Dopamine task-cycle sites are dendrites; Yao et al.: "Dopamine receptors are present throughout the soma and dendrites of the neuron, but accumulating ultrastructural/biochemical evidence indicates that they are concentrated in dendritic spines" (Yao, Spealman, and Zhang, 2008).

We have, then, enough proof to state: the rise of the O-S-D was when, from the sponge democracy (which is unable to adopt good ideas difficult for the intended beneficiary to understand) – emerged the proto-Axon, having a talent of using the O/N-centric base of reactions to discriminatingly relay orders to other cells (rather than tyrannically declaring, *always be on*) – those cells then gladly adapted to the great leadership, taking on roles in a post-insular true democracy. That brought about the rise of organs, and evolutionary intelligence, in O/N-S system.

The "organ master" role of Axons and N is apparent: N triggers the release of glucose from energy stores, increases blood flow, heart rate, or oxygen supply etc. in the fight-or-flight situation (which is not a direct reaction to stimuli).

"Axons are the primary transmission lines of the nervous system. At synapses, axons make contact with other cells, usually other neurons but sometimes muscle or gland cells [i.e. here, axons give orders with discriminating ability]"…

The link between Axons and O/N is confirmed in how Livingstone et al. observed that injecting O into a lobster and crayfish resulted in limb and abdomen extension (Livingstone, Harris-Warrick, Kravitz 1980).

This also clarifies why sponges, who lack O/N, do not have specialized organs. Because, for specialized organs to work, the discriminatory signalling nature of O/N is required (no organ systems can function at the "always on" mode). We can refer to this property of O/N, by the term "localized evolutionary intelligence". *Localized evolutionary intelligence* is absent in the sponge, which "lacks nervous, digestive or circulatory systems" -- by this detail, our characterization of sponge as a merely D-S base of reactions, is further vindicated.
O is found in plants having what one may call "localized evolutionary intelligence" e.g.: bitter orange (7). But, similar to the plant D seen in fruit browning, O in plants is not in that specific interplay with S which defines "CNS".

D and N as logic gate constituents of behavioural neural networks

The neurotransmitters themselves are at the center of the life-form, as the dynamic front theory had suggested. In the D or N-involving events, which can be called signal transformative events -- the neurotransmitter, not its generator (Locus Coeruleus or Substantia Nigra) -- is central in the quantum level signal-modification event; every other brain system associated with the process, despite having a relatively quantitative presence, is more likely merely a support system. Thus the quantum episode is about Dopamine or Norepi's modification of neurodata, how this modification follows, in either neurotransmitter's case, different but consistent logical laws. It is about how the neurotransmitter reacted to neurodata i.e. converted neurodata (signals) to another logically following neurodata… it is not about an *advanced neural control system which gave input to the LC-NE modulatory system, which then wisely juggled the Norepi molecules in the brain* – which is a current misconception probably inspired from the popular but similarly misleading myth about the "overly centralized Dopamine reward system". That false view imagines the Locus Coeruleus as a great system that releases Norepi according to various inputs – and not merely a minor refilling system – which is what it actually proves to be. Thus when the LC generates Norepi, it is not about it releasing Norepi on the basis

of any other input apart from the input provided by the vesicle which said "My Norepi molecules were spent in local reactions, refill me", or something (the particulars of these mechanisms themselves, are beyond the scope of this thesis).

In summary, if stimuli "fits" (i.e. if signal comes from right direction) the D task-cycle is tripped, and the signal is boosted into a predefined direction. Smoking is a well-known involver of D task cycles, let us see what happens there.

The smoker's smoking-cycle related dendritic (smokers have longer dendrites), dopaminic neuron areas – are such that, on receipt of valid signals through meta-spinal cables – they automatically trigger D Task-cycles – causing a relatively autonomous impulse to smoke. Sight of cigarette, smell of smoke, drop in body Nicotine levels, are "valid signals" – to be, the dopaminic AI has learnt – boosted, redirected into *impulse to smoke*.

Journey of some "red" data through retinal cables is felt by a huge number of areas; if relevant to dopaminic trigger (as in the bull who gets angry on seeing red), that trigger, being associated with local D check-posts, will be "tripped". Or similarly apple, if seen, may cause "eat" by unconscious D mechanism. In case of D, it is a basic cause-effect/triggering mechanism… the life-form design is using D's trigger mechanism to build complex neuronal arrangements (circuits). The D trigger element of the circuit is comparable to simple falling dominos.

This style in which D or N acts is used by *stimuli-->action neural circuits* – both *more D-reliant, less N-reliant* circuits and *more N-reliant, less D-reliant* circuits. Such are the circuits which colour the nature of one's personality, which is all about how the myriads of D or N are arrayed, so that a person will behave in a particular way depending on stimuli.

The dopaminic process, as it is more stimuli dependent, is called *receptive* process, and circuits more dependent on dopaminic processing belong to the Receptive System (RS). For N, similarly, we speak of the Generative System (GS).

Thus, surely, if one asks, "What makes a brain different from the other brain"? The answer is the layout of D and N check-posts, which are arranged in different permutations and combinations representing different behaviours. If there is any

central arrangement coding in the brain, which one can analogize to DNA, it is this D/N coding, much of which seem changable. There are hundreds, if not thousands, of different characterizable human behaviours, the vast majority of which are largely similar from human to human.

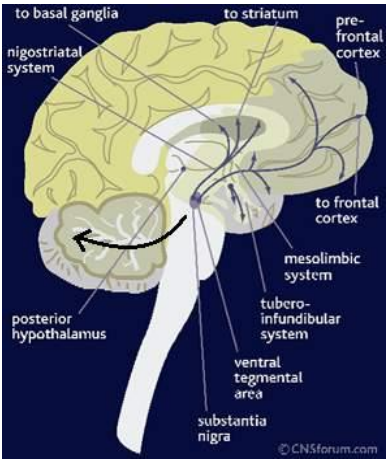
The DL-PFC, which is heavily innervated by Dopamine mechanisms, plays a large part in the largely receptive (stimuli-dependent) human processes like social judgement, executive memory, intentionality, and the act of deception and lying.

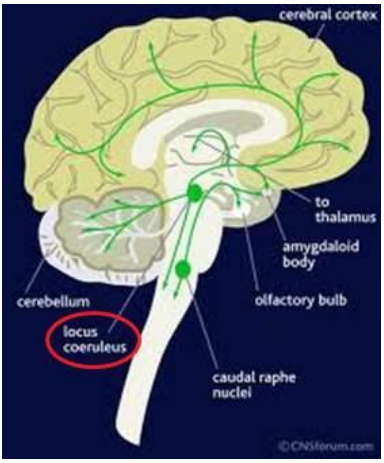
Some behaviours can be called largely dopaminic (thus housed mostly in the left brain, which takes up such tasks) and the rest can be called largely Norepic (and thus housed mostly in the right brain, which takes up such tasks). Table 1 carries an attempt to segregate behaviours into these 2 types is. For now, it suffices to say that, generally, behaviours which are cut-throat hyper-competitive (competition for its own sake with a negative emphasis on cooperation) -- are more reliant on D task cycles; on the other hand, behaviours which more involve logical refinements (which results in cooperation) are generally more Norepi-involving. That can generally be said. Now, in what might amount to an apologetic for the former type of cut-throat behaviours, we are presented with the *Dopaminergic mind hypothesis* -- "Dr. Previc presents the provocative theory that, approximately 80,000 years ago, high levels of dopamine led to the profound developmental leaps that most set modern man apart from his human and primate relatives".

This "pro-Dopamine" school of thought ascribes *intelligence* to hyper-Dopamine mentality ("A general theory is proposed that attributes the origins of human intelligence to an expansion of dopaminergic systems in human cognition" (Previc 1999); "Dopamine is postulated to be the key neurotransmitter regulating six predominantly left-hemispheric cognitive skills critical to human language and thought: motor planning, working memory, cognitive flexibility, abstract reasoning, temporal analysis/sequencing, and generativity" (Previc 1999). The reason for pro-dopamine stance may have been the same as why excess Grey Matter (a more dendritic brain doctrine) was declared to be the indicator of intelligence -- this feature was more common in the families of the biased scholars! However, an unbiased study is important. A different viewpoint on

Dopamine seems very necessary given how several disorders have been associated with Dopamine hyperactivity -- to name a few, Schizophrenia, Kannerian Autism, obsessional compulsive disorders, and ADHD. A paradigm shift is required -- the theory now presented sees Norepi as the post-planimal's primary neurotransmitter, and sees Dopamine as an outsider (to an extent) in the brain, an organ absent in sponges where D is indeed primary; an organ whose rise began with the rise of the multiconditionally signalling N.

The Neuropyrosis theory of dementia progression in hyper-Dopamine brains





Above are shown the pathways of Dopamine (black) and Norepi (green) respectively. That the upper brain is the natural ecology for N, is seen in how N travels farther, i.e., has greater range of operation... But, apart from ancient areas of the brain (cerebellum and basal ganglia), D is found only in relatively insignificant amounts in the rest of the brain. Notably, D is found in the Pre-Frontal Cortex, where it has, beyond the basic extent that is necessary -- an anomalous existence, according to the present theory of neuropyrosis.

The theory of excess Dopamine having an anomalous presence in the upper brain, is reconfirmed by how Morón et al., who specifically characterize the prefrontal cortex as a "region with low levels of the dopamine transporter", note: "In the

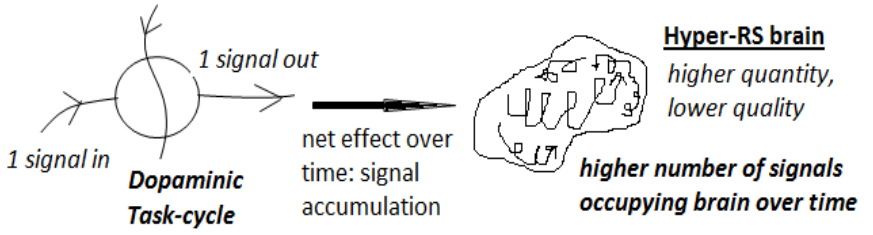
striatum and basal ganglia, dopamine is inactivated by reuptake via the DAT. In the prefrontal cortex [where excessive presence of monoconditional signalling is anomalous], however, there are very few DAT proteins, and dopamine is inactivated instead by reuptake via the Norepi transporter, presumably on neighbouring Norepi neurons, then enzymatic breakdown by COMT" (Morón 2002).

Yavich et al. (2007) give us another rather interesting observation: "The DAT pathway is roughly an order of magnitude faster than the NET pathway: in mice, dopamine concentrations decay with a half-life of 200 milliseconds in the caudate nucleus (which uses the DAT pathway) versus 2,000 milliseconds in the prefrontal cortex."

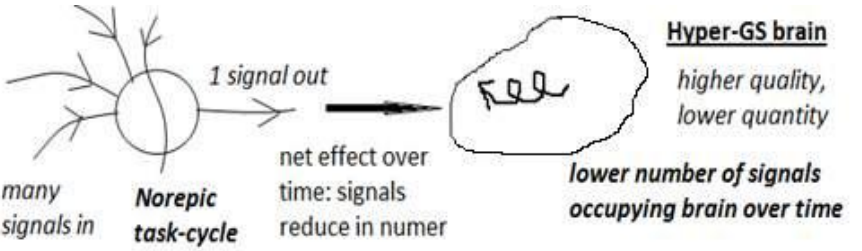
The longer lifespan as well as the cuckoo characteristic shown by Morón et al., implies that D is actually thriving (in a calculative role) due to an upper-brain style, advanced Norepic neuroecology -- where the over-activity of D causes problem, according to the Neuropyrosis theory, which will now be described at length.

The increased activity of Dopamine, and lesser activity of Norepi (it is always a Yin Yang, here), in the brains of Alzheimer's disease patients, is found by Heneka et al., who say "AD individuals show ~ 70% loss of locus coeruleus (LC) cells" () and "Degeneration of the locus coeruleus might be responsible for increased Aß deposition in AD."

A brain in which Dopamine is predominant, so that there is more dendritic development (more grey matter) -- suffers damage from overheating. Why? A brain/Prefrontal Cortex which is more dependent on Dopaminic monoconditional processing, by nature has greater signal density, because of the reason shown below:



The above implies hyper-RS activity, with quantitative QRR (Kumar 2013) barrages forming in the LT-area.



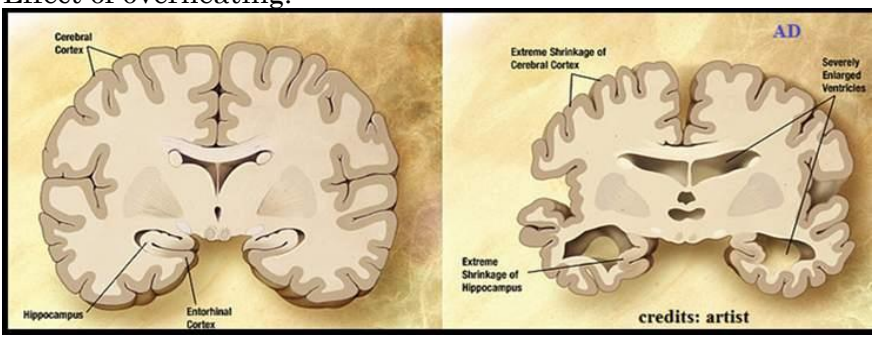
Now, beyond above pictures, the second thing is that, in the hyper-RS brain, D task-cycles occur in much greater quantity than N task-cycles, as the D-dominated lifestyle involves quantitative neuroactivity (see Table 1).

The increased signal density (which is due to more dopamine task-cycles) in case of Alzheimer's disease, is discussed by Alice Walton of *Forbes*: "The famous culprit in Alzheimer's disease, amyloid-beta plaques, is found to accumulate following increased [*receptive*] brain cell activity. Specifically, there's evidence that people who have more activity in their default mode networks may have increased risk for Alzheimer's disease. As researcher David Holtzman of Washington University told me last year, "people whose default mode networks have an average increase in activity relative to others may be at increased risk to get Alzheimer's disease later in life and the converse may also be true (less activity in this network, less risk)."

The increased signal density in case of Alzheimer's is further confirmed in how the lateral ventricles, which carry ventricular fluid to support neural activity, are enlarged in AD…. which again shows excess signalling activity.

And quantitative existence of signals in the brain is a very devastating thing for brain tissue. Each time a signal passes through a neuron, some loss occurs on the way. This loss is converted to heat (the electrical equivalent of friction). Primacy of dopamine (i.e. left brain dominance) implies greater local signal densities (see App. 1) and thus overheating. Overheating causes neuronal collapse and neuroinflammation repair reaction in key areas (hippocampus, which handles conceptualization, EC, PFC).

Effect of overheating:

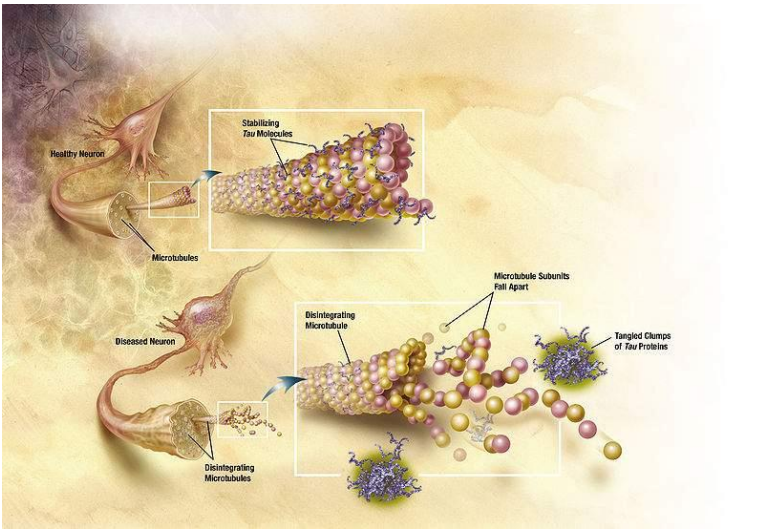


Increased volume of current pass through areas critical to thinking, which are consequently destroyed in AD:

Memory transfer area "Entorhinal Cortex", one of the first to show damage in AD (Desikan 2010)

Memorization area: "ITG hippocampal loss in AD" (Desikan 2010)

Thus, just how thermocol shrinks if exposed to heat, or how the plastic covering of an electrical cable melts if too much current passes through it, hyper-signalling associated with the nature of D, destroys the substrate i.e. neuron dendrites and axons.



The neuropyrosis i.e. Overheating Theory of dementia, best explains AD, depression etc., and should be taken as superseding weak current hypotheses like:

"Herpes simplex virus type 1 has been proposed to play a causative role".

"The tau hypothesis is the idea that tau protein abnormalities initiate the disease cascade. In this model, hyperphosphorylated tau begins to pair with other threads of tau. Eventually, they form neurofibrillary tangles inside nerve cell bodies". However, it is obvious though that collapse due to overheating occurs first and the rubble comes later.

"In 1991, the amyloid hypothesis postulated that beta-amyloid (ßA) deposits are the fundamental cause of the disease". That reflects the same misguided methodology as the tau hypothesis -- black beads result from burning of thermocol, rather than causing its burning! They are only incidentally located in the damaged brain.

Thus "an experimental vaccine was found to clear the amyloid plaques in early human trials, but it did not have any effect on dementia".

"Another hypothesis asserts that the disease may be caused by age-related myelin breakdown in the brain". Hypo-myelin is a hypo-GS condition that could surely coincide with AD, but the root cause of AD is hyper-RS (general dopamine hyperfunction seemingly best captured in the term *left brain dominance* in the person).

"The oldest, on which most currently available drug therapies are based, is the cholinergic hypothesis, which proposes that AD is caused by reduced synthesis of the neurotransmitter acetylcholine. The cholinergic hypothesis has not maintained widespread support, because medications intended to treat acetylcholine deficiency have been ineffective". Su, Wang, Nunomura, et al. implicate oxidative stress in AD (Su et al. 2008), but the root cause is the neuropyrosis activity related to dopamine hyperfunction and Norepic hypofunction.

Dementia is bad by itself. But what is worse about neuropyrosis, is that people suffering from Alzheimer's disease, also suffer depression. Depression seems a very specific signal of the brain affected by neuropyrosis, as the same observations are visible in the depressed and demented brain: "Default mode network shows greater activity when depressed participants ruminate" (Cooney et al. 2010). Further, Depression involves enlargement of lateral ventricles (Kempton 2011), like AD.

The idea that it is a hyper-RS state that causes Alzheimer's disease by neuropyrosis, is confirmed in how, "In Alzheimer's disease (AD), brain atrophy has been proposed to be left lateralized" (Derflinger 2011) (i.e. more in the left hemisphere) -- in the light of the detail that the left brain hemisphere is dominated by D, relative to the right hemisphere.

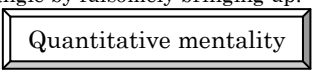
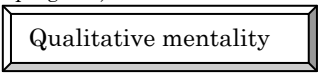
As shown by Magda Ilcewicz-Klimek et al., who show that depression involves increased connectivity between the default mode network and the subgenual cingulate (2011) -- one cannot generally say that depression is only because of more Dopamine – rather, increased dopamine, less Norepi in the PFC, which makes up a (not immutable) personality of the type shown in Column 1 of table 1 -- is associated with hyperfunction in the brain system known as Receptive System; Generative System is hypoactive, thus qualitative brain areas (e.g.: the Non linear thinking area just behind the middle of the eyes (kumar 2013)) are not utilized. That is associated with excessive D activity in critical areas (e.g.: the EC, hippocampus, and receptively oriented areas in the PFC), which end up as the sites of neuropyrosis and neuroinflammation – such areas work at a high thermal burden. This neuropyrolytic activity occurs under a wrong RS super-process that doesn't involve qualitative areas thus quantitatively burdens many critical areas. These areas get fatigued, and are like over-burdened marchers slowing down the whole brain; overall activity may drop. Thus the depressed are known for motivation deficit, failure to engage, fatalism, pessimism etc.

Table 1: Below, "Nx" means involving largely Norepic (many-in-1-out) style of signalling (*more of right-brain dependent GS activities*) *, which involves more qualitative signalling*. "Dx" means involving largely dopaminic (1-in-1-out) style of signalling (*has more left-brain dependent RS activities, more quantitative signalling*).

To differentiate between Dx and Nx, there are at least 3 methods:

a.) Look at generated signal/data volumes (a high volume of data generated can often be ascribed to Dx)

b.) Ask: To what extent is the behaviour a function of stimuli (to that extent it can be called Dx)?
c.) understand the type of processing carried out in the GS/Nx-linked NLT-area and RS/Dx-linked LT-area (Kumar 2013).

Examples of Dx	*Examples of Nx*
Reactive argumentation (Justificationism). Its components can be: Dx1: Get a good idea of what opponent is thinking Dx2: Fetch opponent of that idea from a hive-mind Dx3: Syllogically elaborate upon D2 from every angle by fulsomely bringing up:  Dx4: innate dictionary Dx5: interplays of words Dx6: Irritant (saying what would irritate the listener), confusing, and/or obscurantist additions (e.g.: filibuster) Dx7: "Basically", or "like" etc. added in for smooth delivery Dx8: Incorporation of threats or threatening props for persuasion Dx9: Modulates facial expressions while talking (trigeminal, basal ganglian. Neuralgia results from overuse?)	Thoughtful dialectic (logical talent). Components can be: Nx1: Thinking using NLT-area (The NLT-area is described (Kumar 2013). Dx1: Use Syllogical talent to express thoughts into words Dx2: Talk loudly and angrily if one's logic proves unable to infiltrate the audience (as far as exceptions go, this is a good example -- relatively rare dopaminic process found in many Aspergians)  *Examine these processes by breaking them into their Dx and Nx components*
Rote learning; basic math (commerce, statistics); empirical, experimental science; syllogic involves a LT-area-based (Kumar 2013), non-deductive associative skill.	Learning concepts; Lakatosian math and science (goes from metaphysical/theoretical to proofs, in a *research program* cycle)
Male lion killing cubs by other males	Leopard strategically falling upon prey from tree
Herd behaviour e.g.: formation of herds of "friends" in classes (schools may discourage) and corporations. Propagation of predictable agendas or prophetic dogmas under excuses ethnic, nationalist, "religious", or sectarian in character (e.g.: racism); trying to live off the socio-economic results of such propagation; tribal reinterpretation of object-oriented groups etc.	Individualist behaviour ("2 is company, 3 is a crowd")
More emphasis on "friendship" (e.g.: marriage)	Equal camaraderie with strangers (*Xenia*)
Following other peoples' mental states. Such data is used in "Games" (for a review, see *Games People Play* by Eric Berne). Such data is processed by	Refining self's mental state (thinking)

several hard-set, largely Dx-type calculators (for a review, see Humphrey's Paper on primates' *homo psychologicus* skills, which differ from logical talent/IQ, and come under "Receptive Quotient").	
Measuring what (not) to say depending on the listeners and their socio-economic properties	Speaking your mind/heart
Involvement in syllogically justified (modern competitivist) ecology engages and encourages Dx	*Involvement in logically justifiable (natural or utopian) ecology engages and encourages Nx.*

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