**NEURO - SIGNATURES IN C-3 ECONOMIC DECISIONS**

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**Abstract**

*Neuroentrepreneurial management sciences have allied incongruent fields of management and psychology. Leeway of this field complements interface between entrepreneurial business and brain sciences. Neuroentrepreneurial discoveries posture challenge to usual management viewpoint. The foundation of stimulus has been neuroentrepreneurial decision explorations as an inter-disciplinary determination to bridge this gap as to stipulate precise representations of decision making. Notwithstanding considerable expansions, erecting a decision that infers an alternate choice to be factored, enquiry of how we make choices posture significant trials for methodical explorations. Research issues attempted in this paper are: How does an entrepreneur choose via. Neuro-feedback? Which part of the brain performs in decision making? Primary aim is to archetype neuroentrepreneurial neuro-feedback by using brain waves (EEG). Objective is to monitor undercurrents of neurobiological ‘motorists’ in appreciating ‘mental sounding’ in entrepreneurial decision making. As regards exploration methodology, EEG conductors are used to record electrical activity of brain via EEG (electroencephalogram). These waves afford evidence about circumstances and cognitive processes in light of debating theories and applications in decision making. Physiological responses have been recorded to appreciate neural activity and how brains respond to soundings. Rationale of this paper is that it advances theoretical models, grounded on axiomatic groundwork of neurofeedback, to entrepreneurial decision. As regards contributions, these paper delibeproportions inferences in direction of understanding neuro - design in entrepreneurial preference undercurrents. Research attempts open new panoramas for future replicative scholarships. Being an innovative study, present attempt provides theoretical outline for coxswaining neurofeedback - management investigations, measurement of neurofeedback at stretch of decision and designate inter - disciplinary prototype for neurofeedback-based choice construction.*

**Key Words**: ***Neuro - Signatures, Economic Decisions, Chaos, Confusion and Economic Catastrophe***

**Introduction**

The 21st Century has been baptized to experience marriage of management with neuroscience and being an important cog, the entrepreneur or (entrepreneur, hereafter for the purpose of this study) is programmed to play a significant role. Studies and evidences lend credence to the fact that there appears a socio - economic - biological connect in all entrepreneurial activities, whether in production or in creation of wealth. Therefore, there is an undisputed inclination of neuro-sciences in comprehending the tools or ‘neurobiological ‘motorists’ that aid mapping a link between molecular bionetwork, psychology, cognition and decision-making apparatuses. This can route research and investigation towards calibrating whether cognito - wiring provides an alley forward towards advent of a new vista which is scientifically vigorous and empirically sound. In the dynamics of Collecting, Assimilating, Collating, Interpreting, Synthesizing and disseminating these inputs, there appears in the neuromanagement horizon, an element of neuro soundings in data - driven entrepreneurial decisions. It is conjectured that in the bargain, entrepreneur would be the key ‘catalyst’ in the inter - play between management and neuroscience.

Derivative of cognitive and behavioural sciences, branded as multi - fanged and multi - rational science, neuroentrepreneurial dynamics, as an emerging force to reckon with, is a new paradigm in the realm of entrepreneurial sciences, per se. This is reflected in the emerging scientific evidences, via. Biological experimentations, in the indices like entrepreneurial attitudes, temperament, tactic, judgement, viewpoint, standpoint, spot, capability mentality and heuristic plus posture. From a perception of entrepreneurial philosophies fixated on thought outlines and image explanations, research tactic lies in addressing the neuro - cognitive framework of entrepreneur’s mind patterns, that help to overcome forces of volatility, capricious, intangible, inconsistent, fleeting, unquantifiable, uncertainty, hesitation, dubiety, wariness, skepticism, suspicion, complexity, complication, intricacy, ramification, convolution, elaboration, entanglement, involvement, multiplicity, not clearly understandable and ambiguity.

With reference to undercurrents of action, management skills, capacity to perceive prospects, skill to act in settings of entrepreneurial decision - hazard and ambiguity, the field of Neuroentrepreneurial management sciences is still in its nascent stage and sub - field of neuro soundings in data - driven entrepreneurial decisions (with emphasis on entrepreneurial behaviour) is still in its embryonic stage where there is an inter - disciplinary attention to fully develop it into its fetus outline. Neuroentrepreneurial management sciences have allied incongruent fields of management and psychology. Leeway of this field complements interface between entrepreneurial business and brain sciences. Neuroentrepreneurial discoveries posture challenge to usual management viewpoint. The foundation of stimulus has been neuroentrepreneurial decision explorations as an inter-disciplinary determination to bridge this gap as to stipulate precise representations of decision making. Notwithstanding considerable expansions, erecting a decision that infers an alternate choice to be factored, enquiry of how we make choices posture significant trials for methodical explorations.

But, not all change is uncertain. Some complex cognito - economic capacities via neuro - signatures (fluid intellect), present a challenge for explanations constructed by using this theoretical structure. If another economic crisis is coming, people like quant or those who call themselves economist and ignore behavior should realize how wrong they are! Economics is the study of behavior! It is the study of us, humans! And not some ‘genius’ fabrication wanting to show the world how ‘smart’ it is! Those people can regurgitate all they want, but it won't change the fact that behavior matters! (Jang W Park). Kahneman, Nobel Laureate (2002), describes: ‘the most important characteristic of a human being is not that he reasons poorly, but often acts instinctively; and the behavior is not guided by the calculations that can be made, but by what is seen at the moment when the decision has to be made’.

Why do some use ‘good’ behavior to justify ‘bad’ behavior? Why do some often mistake root causes of feelings and experiences? Why do some have trouble estimating odds of rare events? This is a case of ‘*parametric tectonic decision shift’ tending towards a ‘decision - subsidence’.* How to make important decisions when time is scarce and stakes are high? One mental shortcuts people commit is making snap based on limited neuro - signatures. It makes intuitive sense fluid intellect) to judge decision based on its results. However, is it true that good decision leads to good conclusion and vice versa? Why is it complicated to separate correlation from causation? When psychology and economic decisions got ‘connubial’, result was behavioural economic sciences (fluid intellect) with an off - spring baptized as neuro - signatures. Although this discipline has elevated theoretical and practical understanding of human behaviour to beforehand unseen heights, recent scientific developments have produced insight in understanding and predicting actions that supplement traditional tools of behavioural science. The future of behavioural economic science will, as a result, depend on how effectively behavioural economic researchers can strap up developments (fluid intellect) in technology to understand neuro - signatures and change the way people operate.

Making a decision relies on dissimilar processes and tends to produce diverse results. Paul Samuelson writes that ‘due to the complexity of human and social behavior we cannot hope to have the precision of the physical sciences, chemists and biologists’. As Economists, one ought to content with observing. But, there is a nagging temperament to overestimate abilities and exactness of predictions. Is it in good health to have well-calibrated confidence beliefs? Arrogant Economists, opines Jang W. Park, should stop thinking of themselves as cult leaders and stop indulging themselves as Sages who can handle so much economic power! Where were they when all previous crises affected so many people suffering? As in most dynamic sciences, conjecture and line of attack are not motionless in neuro-economics. These are not fixed boundaries for neuro - signatures. The boundaries are relatively fluid. What is being proposed is a perception required for fluid intellect with cognitive and behavioural constraints due. This is a perceptive awareness quite different to simply relying or explaining behaviours in terms of neuroscience. The gap in literature appears. Economists have picked up on neuro-economics. They are dependent on Psychologists for interpretation of impact of neuroscience on decision making. The weakness is seldom actually understood by many.

In recent years, two significant developments have been infusions from related behavioural sciences (or, natural science) into theories and concepts, together with growth of neuro - signature experimental method. In a fast globalizing world, economic organizations face 'unruly' economic factors viz. economic Curiosity, economic Creativity and economic Complexity (C3) conditions. This is coupled up with near - cousins; Chaos, Confusion and economic Catastrophe (C3, for a second time). Fast-changing technology and neuro-economic models ride on wave of digital revolution. This is creating new challenge and opportunity for judgements. In contemporary world of economics, conventional neuro-economic paradigms are cracking up giving place to new judgements and approaches based on understanding of C3. Conversely, expansions of neuro-economic science have bridged contrasting fields that congregate into single, unified discipline in which C3 conditions operate. There is a call for understanding the chess - board dynamic conditions matrix processes (fluid intellect). This is a course of action that connects impression and action by revealing neuro-economic mechanisms as a result of which fluid intellect (ability to rationale and explain new tribulations autonomously of previously acquired knowledge) are coded. Such codes pose challenge to standard perspective in normal economics. Neuro-entrepreneurial fluid intellect making has emerged as an inter-disciplinary effort that integrates ideas to specify accurate models.

*‘New methods in brain imaging technologies have motivated neurobehavioural economics studies of the internal order of the mind and its links with the spectrum of human decision from choice among fixed gambles to choice mediated by market and other institutional rules. We are only at the beginning of the enterprise, but its promise suggests a fundamental change in how we think, observe and model decision in all its contexts’.*

…….. Vernon Smith

If we locate neuroscience in world of economic decision making, it is suspected that much will be revealed. To date two things emerge. First, committing to use of fluid intellect in decision making environment must be planned. Second, absence of neuroscience may be responsible for not solving riddles of economic failures. The puzzle that appears to exist (from Kent, and Beer et al.) is switching from largely rules based contextual ‘gc’ to ‘gf’. Yet, Sweller (1988) and Jaeggi et al’s work (2008) cautions that while there is a correlation between gc and gf, it is difficult to learn (unlike ‘gc’). Knowing when and how to switch, when confronted with say C3 conditions, must also be part of the problem, i.e., mistaking conditions and using replication logic when it is simply inappropriate. Creative economic decisions run at moderate level of cognition and positive level of autonomic balance. The issues are; what happens when entrepreneurs change minds in an air of C3? What computational mechanisms allow neurotransmitters in brain to adapt changing C3 circumstances? To what extent do utility computations generalize to fluid intellect? How do systems that focus on immediate fluid intellect interact? What counts as causal evidence in entrepreneurial choice? What role is played by neuro - signatures? How does neurotransmitters in brain muddle through with C3? How do we make ‘argentate to green’ decisions when faced with inestimable stream of C3 - signatures?  Such propositions are now scanned under lens of neurobiological C3 prisms. Issues like how preference processes transgress in neurotransmitters in brain pathways, how neurotransmitters in brain considers sources of data and what intrinsic processes embody conflicting values are explored to design ‘rational’ preferences. Neuro-economics has evolved as dynamic conditions sciences supported by C3 disciplines to obtain complete framework for study of complex issues.

**Problem Statement**

*‘We are not going to falsify all of traditional economics, but we are going to point to a whole range of biological variables that traditionally have not been included in the analysis. In economics, that is a big change.’*

… Colin Camerer

Specifically, researchers are interested in assumptions, beliefs, habits, and tactics. Research suggests that neurotransmitters in brain consider various sources of neuro - signatures before making an economic decision. Result is that neurotransmitters in brain sometimes argue with itself. However, how does it do this? In addition, why does the process sometimes go skewed, causing impulsive, indecisive and confused decision; that can lead to risky and potentially dangerous behaviours? Paul Samuelson believed: ‘Funeral by Funeral, Theory Advances’. C3 of neuro-economic expectations is common in heretical economics. Emerging neuro - economic science suggests that sound or rational fluid intelligence economic decision depends on prior precise arousing processing. In mainstream neuro-economics, it is unspecified that individuals are rational and use neuro-economic intellects to capitalize on utility. This serves as foundation of neo-classical economic models. However, heretical theories reject the design in that individuals may not always act to maximize utility. Neo-classical thought is grounded in human psychology assuming alternative understandings of how fluid intellects are made or how human psychology operates. Heretical theories reject these, arguing that models involving equilibriums are inaccurate that do not reflect real-world conditions.

**Issues**

Little fluid intellect is made with absolute certainty. This is because complete knowledge about all alternatives is seldom possible. Thus, involves certain amount of economic risk. Making fluid intellect implies that there is an alternative to be considered. Notwithstanding considerable advance, inquiry of how we make economic decision continue poses imperative challenge for methodical research. What are the limitations and possibilities in atmosphere of C3? Does C3 offer new opportunity? Does C3 lead to rigorous restraining circumstances, configuration, arrangement and process? How to cope/deal with C3 in process of technique of future, forecasting and foresight? What are the heretical approaches can be injected to counter C3? The idea of approaching neuro-economics by presentation neurotransmitters in brain waves is first-rate from point of view of scientific economic decision to explain functional responsibility. Doing so, one discovers that Alpha waves are interesting for understanding ‘mindful’ perspectives. This approach becomes new approach to essence of neuro-economic decisions in complexity. This study concentrates on Alpha Waves in scientific economic decision methodology

The issues that crop up are;

* What algorithms allocate sensorimotor (brain waves / neurotransmitters) behaviours?
* What mechanisms permit neurotransmitters (brain waves / neurotransmitters) adapt circumstances?
* Under what conditions brain waves / neurotransmitters track computations?
* To what extent do brain wave / neurotransmitters computations generalize to decision?
* Is there a prediction wave signal?
* How do (brain waves / neurotransmitters) interact?
* Under what circumstances do (brain waves / neurotransmitters) cooperate or compete?
* Do higher-level brain waves / neurotransmitters rely similarly on multiple mechanisms?

**Aim and Objective(s)**

Quantification of choice has baffled decision makers for decades. This is due to ‘Matching Law’ (relative response rate on concurrently available alternatives ‘match’ available relative reinforcement rates). This theoretical construct describes response allocation in complex situations. When faced with complex decisions, one engages in simplifying strategies. Adaptive decision making in real-world contexts relies on strategic simplifications of complex decision problems. Nevertheless, neural mechanisms (brain wave / neurotransmitters) that silhouette these strategies and implementation remain largely unfamiliar. Although neurotransmitters in brain encode specific decision factors, much less is known about how neurotransmitters select among multiple strategies for computational demands of complex decision-making.

1. Purpose is to probe into implicit, multiplicity of mediating conditions or auxiliary hypothesis to elucidate principles and fluid intellect - making mechanism of neurotransmitters in brain.

1. Principal aim is to model neuroentrepreneurial fluid intellect, by irrigating knowledge of evidences from neurotransmitters (Electroencephalograph).

This aims at, first, incorporating neuro-entrepreneurial science and psycho - neuro-economic modeling approach. Aim is to have an impression at crossroads of investigational / behavioral, and computational economics. Endeavor is to expand groundwork for using computational models and replication to complement and/or explain results from human subject experiments (capturing regularities observed in experimental data). Objective is to monitor dynamics of neurotransmitters in brain wave drivers in understanding chess - board dynamic conditions matrix with ideas (a) that frogspawn patterns of heretical appraisal and, (b) link methodological differences (aim to flicker a channel of communication about decision making under real-world constriction of narrow time, information, and calculation command. ).

Focal point is to understand;

* Neural processes underlying complex cognito - economic capacities via neuro - signatures,
* Understand mechanisms using functional neuroimaging methodologies.
* Integrate inter-disciplinary neuro - signatures.

**Neuro - Signatures**

How are organizational and behavioural economics decisions to making processes carried out in neurotransmitters in brain? Do researchers interpret research findings when neurological results conflict with self-report? Knowing how neurotransmitters explain little about what mind produces; what we think, what we believe and how we craft decision to. What are the general implications of neuro behavioural economics? Neuroscience techniques permit to look inside neurotransmitters while it experiences outcomes and crafts decision. Neurobehavioural economics uses techniques to examine implications. Neurobehavioural economics seeks to ground behavioural economics in detailed neural mechanisms expressed mathematically and predictions. Neurobehavioural economics uses knowledge about neurotransmitters in brain mechanisms to inform behavioural economics theory. It opens up ‘black box’ of neurotransmitters, much as organizational behavioural economics opened up theory of economic organization. The key insight is that neurotransmitters composed of multiple systems that interact. Controlled systems (‘executive function’) obscure standard assumptions about basic preference in ambiguous choice and strategic interaction. Central argument of this proposal is that neuro - behavioural psychology and neuroscience each benefit from taking account of insights that other disciplines offer.

Most basic decision in form of choices or effort allocation can be traced back in structure of macro-scale neurotransmitters in brain activity. Such responses involve regions in neurotransmitters (from mid neurotransmitters in brain to prefrontal cortices, through parietal and basal ganglia structures), who’s precise function in terms of motivational processes depends upon context. This expresses through (induced) specific plasticity of neurotransmitters in brain networks. Neuro - signatures has inspired change within behavioural economics. Neurobehavioural economics has challenged standard behavioural economics assumption. Despite substantial advances, question of how we make decision continues to pose important challenges. Goal is a mathematical theory of how neurotransmitters in brain implements decision tied to behaviour. This is likely to exemplify some conjecture to provide deeper level of distinction among competing neuro alternatives and provide empirical inspiration for behavioural economics to incorporate more nuanced ideas about endogeneity of preferences, individual difference, emotions, endogenous regulation of states, and so forth. Integration of disparate theoretical approaches and methodologies offer exciting potential for construction of near - accurate models of decision making.

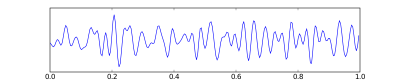
**Theoretical Backdrop**

A broad assortment of academic disciplines seeks to explore algorithmic decision making, such as Cognitive Neuroscience, Psychology, Organizational Studies and Economics. Each of these conducts research from comparatively thin archetypes, and with that develops the boundaries consequent with pure disciplinal research. The incipient arena of neuroeconomics seems to offer a mutual philological, model and exercise from which to better comprehend this humanoid behaviour. A scientific understanding of the mind is not conceivable only from a corporeal understanding of the brain. The initial step encompasses neutral explanation and scrutiny of how the concentration works within the home or within the context of society and linking this to the brain functions. Algorithmic decision-making is critical for entrepreneurs. Reasoning and molds that reinforce algorithmic decision making is substantial when constructing and implementing stratagems.

In the above scenario, the pertinent issues are; How to shape reasonable and explainable representations that can aid decision-making? How to ensure that models and their elucidations are vigorous to confrontational spells? How to train and gauge replicas in the existence of misplaced counterfactuals? How to spot and correct fundamental inclines in decisions and algorithmic calculations? Nevertheless, substantial expansions, question of how we make algorithmic decisions stays to spot substantial trials for logical investigations. Instituting an algorithmic decision conjecture that there is a substitute optimal to be factored. And in such a situation, we want not only to perceive as many of these switches as plausible but hand-pick the one that (1) has crowning panorama of competence and, (2) best fits with goal line, requirements, routine and integrities.

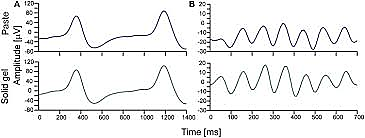
Brain waves emanate in the structure of electrical activities, repeatedly firing and emanating some impulses in varying degrees. These have been categorized into four classifications; Beta Waves, Alpha Waves, Gamma Waves, Theta Waves and Delta Waves.

Beta Waves (rhythm) is a string ofneuronal alternation exhibiting an incidence of between 12.5 and 30 Hz (or, 12.5 to 30 sequences per second. These waves can be further dissected into three segments: Low Beta Waves (12.5 - 16 Hz or Beta 1), Beta Waves (16.5 - 20 Hz or Beta 2) and High Beta Waves (20.5 - 28 Hz or Beta 3). These are connected to energetic, eventful or apprehensive thoughtful impulses and lively attentiveness.



Courtesy: Wikipedia / Images

Alpha Waves (rhythms) are string ofneuronal alternation in frequency range of 8–12 Hz initiating from synchronic mode and comprehensible electrical motion of thalamic pacer compartments in human body. Brain harvests alpha waves, as it is in a milieu that is calm and soporific. This is wherefor one experiences these when undertaking anxiety releasing actions.



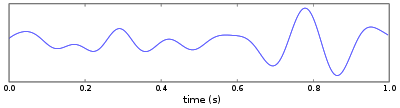
Courtesy: Wikipedia / Images

A Gamma Wave (or Rhythm) is a neuronal configuration of swings that exhibit a frequency range between 25 and 140 Hz. These swings are interrelated with large gauge brain grid motion and cerebral singularities such as perceptual assemblage,



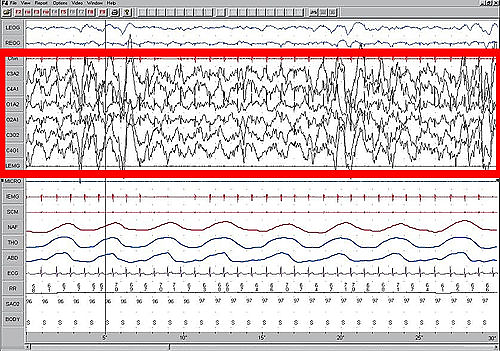
Courtesy: Wikipedia / Images

Theta Waves (or rhythm) isa neuronal outline (classified as “leisurely” action) of swipes that display a frequency range of 4 -7 Hz range. Such curves are observed in a state of worry, behavioural stimulation and behaviour self-consciousness.

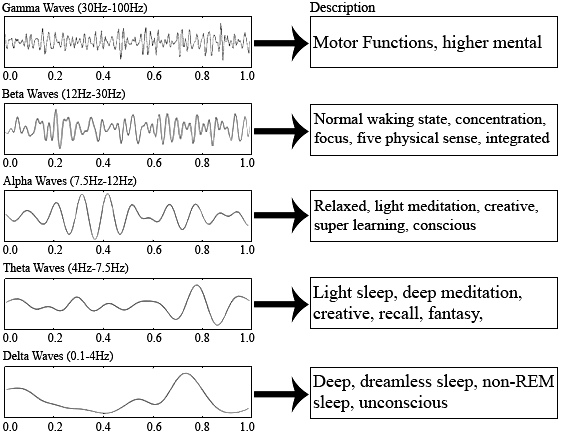


Courtesy: Wikipedia / Images

Delta Waves (or rhythm) isa neural framework portraying oscillations with occurrence between 0.5 and 4 Hz. These rhythms are associated with subterranean slumber phases.



Courtesy: Wikipedia / Images



Courtesy: Wikipedia / Images

**Design / Methodology / Approach**

Economists and psychologists are providing rich conceptual tools for understanding and modeling behaviour. Neurobiologists provide tools for study of mechanism. Source of inspiration has been neuro judgment research. This can, in turn, be seen as incorporation of ideas from cognitive science and behavioural economics. The assumption about high rationality of economic agents is key to construction of modern economic theory (Jevons, Walras, etc.). In words of Lakatos, ‘all Sciences have a hard core, which is very difficult to refute, to modify, and in which there are certain premises that nobody usually discusses, and all accept them as basal foundation from where the current models start’.

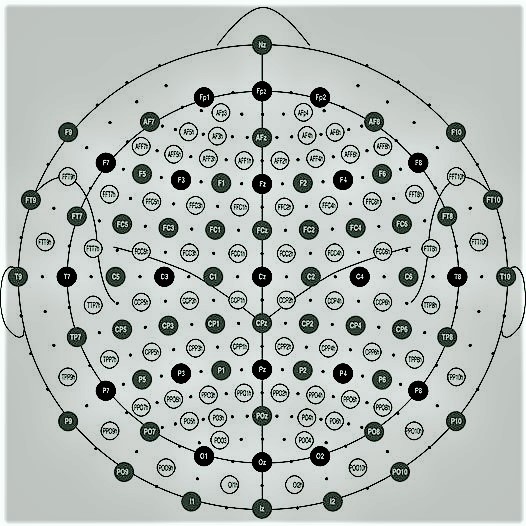
On contemporary level, physiological responses have been measured by observing neural activity viz. Alpha Waves and how neurotransmitters in brains respond to stimulus presentation. With fluid intellect procedure via EEG, conductors have been used to record electrical activity of neurotransmitters in brain. These waves provide evidence about ‘Exploratory’ and ‘Arithmetical’ task circumstances (cognitive processes) in fluid intellect. In light of debating theories and applications, physiological fluid intellect responses have been measured to appreciate neural activity and how neurotransmitters respond to sounding. Neuro-based pointer presents an effective and scientifically based method of treatment. With neuro-based methodology via EEG, electrodes were attached to cranium to record electrical activity. The method comprised of amplifying targeted behaviour corresponding to composition of neurotransmitters. As regards population and sample size, it was estimated that a population of 15 respondents was a fair and subjecting to clinical test lead to fair results.

Uncertainties are often underestimated. Competing analyses can contribute to gridlock. Misplaced concreteness can blind decision makers. Can a robust and flexible strategy perform well under a range of future conditions? What uncertainties are most important? What actions do we need to take?  What actions can we postpone to future? Which options to deploy first? What options to deploy next? How do we make our choices less vulnerable to uncertainties? Research demonstrates that neurotransmitters cannot encode all neuro - signatures contained in a signal. This methodology had two advantages. Primarily, evidence provides precise guidelines for constraints imposed on complex decision making processes. Decision is triggered when ‘enough’ neuro - signatures supporting one alternative is obtained, and neurotransmitters use variety of biological mechanisms to filter neuro - signatures in a constrained optimal way. The second is that by explicitly modelling physiological properties, it is possible to provide foundations for elements of preferences traditionally considered exogenous. Choices involving risk and uncertainty require complex trade-offs.

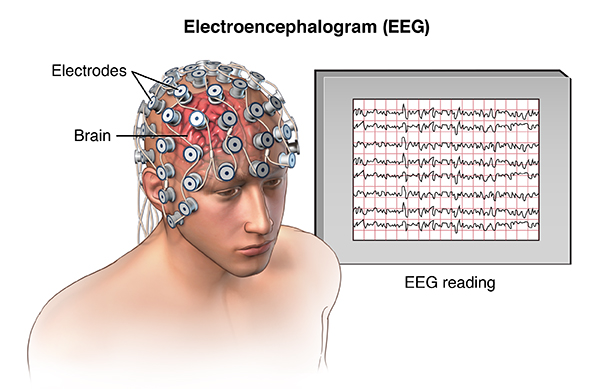
Research directions include;

* Modeling and simulation objective support,
* Fundamental graph model and network analysis,
* Numerical optimization and modeling,
* Evidential reasoning and fusion to model neuro - signatures,
* Algorithms and simulation into modeling of decision to -making.

**Experiment: Results and Discussions**

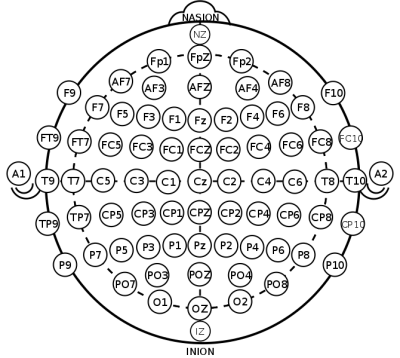


A single - subject (single case experiment) model, with the first author as the subject, has been adopted. This was with a perception that the single subject would assist his / her own controller as the degrees of sensitivity was involved. The experiment was to respond to varying degrees of prediction / prognosticate verification, authentication, confirmation, corroboration, substantiation, validation, and replication and reflectivity. This study acknowledges the fact that “Single subject research designs are “weak when it comes to external validity…. studies involving single-subject designs that show a particular treatment to be effective in changing behaviour must rely on replication–across individuals rather than groups, if such results are be found worthy of generalization” (Fraenkel and Wallen, 2006, Pp: 318).



**Representative Setting: EEG**

**Setting:** The conductors were sported on scalp to portion electrical activity of brain. The comeback values were experimented at 256 Hz (3.9-msec epoch) for 01 second. The subject was experimented with either single stimulus (S1) or to two stimuli (S1 and S2). When two stimuli were exposed, they were accessible in either a harmonized form where S1 was identical to S2 or in a non-matched condition where S1 differed from S2.



* EEG\_data.loc [EEG\_data ['cell spot'] == 'AF1', 'cell spot'] = 'AF3'
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* EEG\_data = EEG\_data[ (EEG\_data['cell spot'] != 'X')
* (EEG\_data ['cell spot'] != 'Y')
* (EEG\_data ['cell spot'] != 'nd')]
* F = Frontal
* Fp = Frontopolar
* T = Temporal
* C = Central
* P = Parietal
* O = Occipital
* A = Auricular (Ear Electrode)

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x="0 5.99472 12.09984 18.094561 24.089279 30.194401 36.189121 42.294239 48.28896 54.28368 60.388802 66.383522 72.48864 78.48336 84.478081 90.583199 96.577919 102.68304 108.67776 114.67248 120.7776 126.77232 132.87744 138.87216 144.86688 150.972 156.96672 163.07184 169.06656 175.06128 181.1664 187.16112 193.26624 199.26096 205.25568 211.36079 217.35551 223.46065 229.45535 235.45007">(Subject, sum)/Item + Item + Condition</tspan>

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y="0"

x="0 6.1051202 12.09984 18.20496 24.19968 30.194401 36.299519 42.294239 48.399361 54.394081 60.388802 66.493919 72.48864 78.593758 84.588478 90.583199 96.688316 102.68304 108.78816 114.78288 120.7776 126.88272 132.87744 138.98256 144.97728 150.972 157.07712 163.07184 169.17696 175.17168 181.1664 187.27151 193.26624 199.37135 205.36607 211.36079 217.46593 223.46065 229.56577 235.56049 241.55521 247.66032">Condition:Item + Path:Condition:Item,</tspan>

**Experimental Analysis**

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id="alphaPath86"

id="path84"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath98"

id="path96"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath110"

id="path108"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath122"

id="path120"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath130"

id="path128"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath142"

id="path140"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath154"

id="path152"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath162"

id="path160"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath174"

id="path172"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath182"

id="path180"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath194"

id="path192"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath206"

id="path204"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath218"

id="path216"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath230"

id="path228"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath242"

id="path240"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath254"

id="path252"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath266"

id="path264"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath274"

id="path272"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath286"

id="path284"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath298"

id="path296"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath306"

id="path304"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath318"

id="path316"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath326"

id="path324"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath338"

id="path336"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath350"

id="path348"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath362"

id="path360"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath374"

id="path372"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath386"

id="path384"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath398"

id="path396"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath410"

id="path408"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath><alphaPath

id="alphaPath422"

id="path420"

d="M 8.871e-6,0 H 595.32001 V 841.92 H 8.871e-6 Z" /></alphaPath></defs><g

transform="matrix(1.3333333,0,0,-1.3333333,0,1122.56)"

id="g10"><g

id="g12"><g

alpha-path="url(#alphaPath18)"

id="g14"><text

id="text22"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,775.32)"><tspan

id="tspan20"

y="0"

x="0 5.39856 11.62512 16.184641 21.704639">y=&quot;0&quot;</tspan></text>

</g></g><g

id="g24"><g

alpha-path="url(#alphaPath30)"

id="g26" /></g><g

id="g32"><g

alpha-path="url(#alphaPath38)"

id="g34"><text

id="text42"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,760.68)"><tspan

id="tspan40"

y="0"

x="0 5.52 11.74656 16.30608 21.82608 28.65984 34.058399 36.818401 42.338402 47.858398 53.378399 58.898399 64.418404 71.130722 76.650719 82.170723 84.930717 90.450722 95.970718 101.49072 106.88928 112.40928 119.1216 124.6416 130.16161 132.9216 138.4416 143.96159 149.4816 155.0016 160.52161 166.0416 172.75392 178.27393 183.79391 186.55392 192.07391 197.59392 202.99248 208.51248 214.03249 219.55247 226.38625 231.90623 237.42624 240.0648 245.58479 251.1048 256.62479 262.14481 267.66479 273.18481 280.01855 285.53857 291.05856 293.69711 299.21713 304.73712 310.25711 315.77713 321.29712 326.81711 333.52945 339.04944 344.56943 347.32944 352.84943 358.24799 363.76801 369.28799 374.80801 380.328 387.16177 392.68176 398.20175 400.96176 406.48175 411.88031 417.40033 422.92032 428.31888">x=&quot;0 5.99472 12.09984 18.094561 24.089279 30.194401 36.189121 42.294239 48.28896 </tspan></text>

</g></g><g

id="g44"><g

alpha-path="url(#alphaPath50)"

id="g46"><text

id="text54"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,746.14)"><tspan

id="tspan52"

y="0"

x="0 5.52 11.04 13.8 19.32 24.84 30.360001 35.880001 41.400002 44.391842 49.911839 55.310398 58.0704 63.590401 69.110397 74.630402 80.150398 85.548958 91.068962 94.060799 99.580803 105.1008 107.8608 113.3808 118.77936 124.29936 129.81937 135.33936 140.85936 143.8512 149.3712 154.8912 157.6512 163.1712 168.69119 174.08977 179.60976 185.12976 188.1216 193.6416 199.16161 201.9216 207.4416 212.84016 218.36015 223.88016 229.40016 232.392 237.79056 243.31056 246.07056 251.59056 257.11057 262.63055 268.15057 273.67056 279.19055 282.1824 287.70239 293.10095 295.86096 301.38095 306.90097 312.42096 317.94095 323.33951 328.85953 331.85135 337.37137 342.89136 345.65137 351.17136 356.56992 362.0899 367.60992 373.12991 378.64993 381.64175 387.16177 392.68176 398.20175 400.96176 406.48175 411.88031 417.40033 422.92032 428.31888">54.28368 60.388802 66.383522 72.48864 78.48336 84.478081 90.583199 96.577919 102.68304 </tspan></text>

</g></g><g

id="g56"><g

alpha-path="url(#alphaPath62)"

id="g58"><text

id="text66"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,731.62)"><tspan

id="tspan64"

y="0"

x="0 5.52 11.04 16.559999 19.32 24.84 30.360001 35.880001 41.400002 46.919998 49.911839 55.310398 60.830399 66.350403 69.110397 74.630402 80.150398 85.548958 91.068962 96.588959 99.580803 105.1008 110.6208 116.1408 118.77936 124.29936 129.81937 135.33936 140.85936 143.8512 149.3712 154.8912 160.41119 163.1712 168.69119 174.08977 179.60976 185.12976 190.64977 193.6416 199.16161 204.68159 210.2016 212.84016 218.36015 223.88016 229.40016 234.92017 240.31873 243.31056 248.83057 254.35056 259.87057 262.63055 268.15057 273.67056 279.19055 284.71057 290.23056 293.22241 298.62097 304.14096 309.66095 312.42096 317.94095 323.46097 328.98096 334.37952 339.89951 342.89136 348.41135 353.93137 359.45135 362.0899 367.60992 373.12991 378.64993">108.67776 114.67248 120.7776 126.77232 132.87744 138.87216 144.86688 150.972 </tspan></text>

</g></g><g

id="g68"><g

alpha-path="url(#alphaPath74)"

id="g70"><text

id="text78"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,470.74,731.62)"><tspan

id="tspan76"

y="0"

x="0 5.52 11.04 16.559999 19.32 24.84 30.360001 35.75856 41.278561 46.67712">156.96672 </tspan></text>

</g></g><g

id="g80"><g

alpha-path="url(#alphaPath86)"

id="g82"><text

id="text90"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,717.1)"><tspan

id="tspan88"

y="0"

x="0 5.52 11.04 16.559999 19.32 24.84 30.360001 35.880001 41.400002 46.919998 55.431839 60.951839 66.350403 71.870399 74.630402 80.150398 85.670403 91.190399 96.588959 102.10896 110.6208 116.1408 121.53936 127.05936 129.81937 135.33936 140.85936 146.37936 151.89935 157.41936 165.9312 171.4512 176.97121 182.4912 185.12976 190.64977 196.16975 201.68976 207.20976 215.7216 221.24159 226.7616 232.2816 234.92017 240.31873 245.83871 251.35872 256.87872 262.39871 270.91055 276.43057 281.95056 287.47055 290.23056 295.75055 301.27057 306.66913 312.18912 317.70911 326.22095 331.74097 337.26096 342.78094 345.54095 351.06097 356.45953 361.85809 367.37808 372.89807 381.40991 386.92993 392.44992 397.96991 400.72992 406.24991 411.76993 417.28992 422.80991 428.32993">163.07184 169.06656 175.06128 181.1664 187.16112 193.26624 199.26096 205.25568 </tspan></text>

</g></g><g

id="g92"><g

alpha-path="url(#alphaPath98)"

id="g94"><text

id="text102"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,702.46)"><tspan

id="tspan100"

y="0"

x="0 5.52 11.04 16.559999 19.32 24.84 30.360001 35.880001 41.400002 46.798561 55.188961 60.708961 66.228958 71.748962 74.38752 79.907516 85.427521 90.947517 96.467522 101.86608 110.25648 115.77648 121.17504 126.69504 129.45505 134.97504 140.49504 146.01505 151.53503 156.93359 165.32401 170.84399 176.364 181.884 184.644 190.164 195.56256 201.08257 206.60255 212.12256 220.39153 225.91151 231.43152 236.95152 239.59007 245.11008 250.63008 256.15009 261.67007 267.19009 271.62817 277.85471 281.5752 287.71344 293.0899 298.48849 301.71216 306.51456 311.41632 314.54065 317.1792 325.56961 329.86417 335.38416 343.80768 347.51712 350.6304 354.108 357.22128 362.12305 370.54657 378.93695 385.16351 393.6864 397.164 400.27728 405.17905 413.60257 421.99295 428.21951">211.36079 217.35551 223.46065 229.45535 235.45007&quot;&gt;(Subject, sum)/Item + Item + </tspan></text>

</g></g><g

id="g104"><g

alpha-path="url(#alphaPath110)"

id="g106"><text

id="text114"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,687.94)"><tspan

id="tspan112"

y="0"

x="0 7.31952 12.83952 18.35952 23.87952 26.9928 29.99568 33.108959 38.62896 44.027519 50.254082 53.268002 56.381279 60.675838 66.195839 71.020317 76.540321">Condition&lt;/tspan&gt;</tspan></text>

</g></g><g

id="g116"><g

alpha-path="url(#alphaPath122)"

id="g118" /></g><g

id="g124"><g

alpha-path="url(#alphaPath130)"

id="g126"><text

id="text134"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,673.42)"><tspan

id="tspan132"

y="0"

x="0 3.59904 7.3084798 10.90752 14.61696 18.216 21.92544 25.524481 29.233919 32.832958 36.5424 40.141441 43.85088 47.449921 51.159359 54.7584 58.467838 62.17728 65.776321 69.485764 73.084801 76.794243 80.39328 84.102722 87.701759 91.411201 95.010239 98.719681 102.31872 106.02816 109.6272 113.33664 116.93568 120.64512 124.24416 127.9536 131.55264 135.26208 138.86111 142.57056 146.1696 149.87904 153.47807 157.18752 160.78656 164.496 168.09505 171.80447 175.40352 179.11296 182.8224 186.42143 190.13087 193.72992 197.43936 201.03841 204.74783 208.34688 212.05632 215.65536 219.36481 222.96384 226.67328 230.27232 233.98177 237.5808 241.29024 244.88928 248.59872">---------------------------------------------------------------------</tspan></text>

</g></g><g

id="g136"><g

alpha-path="url(#alphaPath142)"

id="g138"><text

id="text146"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,341.59,673.42)"><tspan

id="tspan144"

y="0"

x="0 3.70944 7.3084798 11.01792 14.61696 18.326401 21.92544 25.63488 29.233919 32.943359 36.5424 40.251839 43.85088 47.560322 51.26976 54.868801 58.578239 62.17728 65.886719 69.485764 73.195198 76.794243 80.503677 84.102722 87.812157 91.411201">--------------------------</tspan></text>

</g></g><g

id="g148"><g

alpha-path="url(#alphaPath154)"

id="g150" /></g><g

id="g156"><g

alpha-path="url(#alphaPath162)"

id="g158"><text

id="text166"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,658.9)"><tspan

id="tspan164"

y="0"

x="0 5.39856 11.62512 16.184641 21.704639">y=&quot;0&quot;</tspan></text>

</g></g><g

id="g168"><g

alpha-path="url(#alphaPath174)"

id="g170" /></g><g

id="g176"><g

alpha-path="url(#alphaPath182)"

id="g178"><text

id="text186"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,644.38)"><tspan

id="tspan184"

y="0"

x="0 5.52 11.74656 16.30608 21.82608 28.65984 34.058399 36.818401 42.338402 47.858398 53.378399 58.898399 64.418404 69.816963 75.33696 82.170723 87.69072 93.210716 95.970718 101.49072 106.88928 112.40928 117.80784 123.32784 130.16161 135.68159 141.2016 143.96159 149.4816 155.0016 160.52161 166.0416 171.44016 178.27393 183.79391 189.31392 192.07391 197.59392 203.11392 208.51248 214.03249 219.55247 226.38625 231.90623 237.42624 240.0648 245.58479 251.1048 256.62479 262.14481 267.66479 273.18481 280.01855 285.53857 291.05856 293.69711 299.21713 304.73712 310.25711 315.77713 321.29712 326.81711 333.52945 339.04944 344.56943 347.32944 352.84943 358.24799 363.76801 369.28799 374.80801 380.328 387.16177 392.68176 398.20175 400.96176 406.48175 411.88031 417.40033 422.92032 428.31888">x=&quot;0 6.1051202 12.09984 18.20496 24.19968 30.194401 36.299519 42.294239 50.80608 </tspan></text>

</g></g><g

id="g188"><g

alpha-path="url(#alphaPath194)"

id="g190"><text

id="text198"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,629.74)"><tspan

id="tspan196"

y="0"

x="0 5.52 11.04 13.8 19.32 24.84 30.360001 35.880001 45.230881 50.62944 56.149441 58.909439 64.429443 69.94944 75.469437 80.989441 86.388 91.907997 101.25888 106.77888 112.29888 115.05888 120.45744 125.97744 131.49744 137.01744 142.53745 148.05743 157.40833 162.92831 168.44832 171.08688 176.60687 182.12688 187.64688 193.16689 198.68687 204.08543 213.43633 218.95631 224.47632 227.23631 232.75632 238.15488 243.67488 249.19489 254.71487 260.23489 269.58575 275.10577 280.62576 283.38577 288.78433 294.30432 299.82431 305.34433 310.86432 316.38431 325.61377 331.13376 336.65375 339.41376 344.93375 350.45377 355.85233 361.37231 366.89233 372.41232 381.76321 387.2832 392.80319 398.32321 401.08319 406.48175 412.00177 417.52176 422.92032 428.31888">56.8008 65.312637 71.307358 77.302078 83.407204 89.401917 95.507042 101.50176 </tspan></text>

</g></g><g

id="g200"><g

alpha-path="url(#alphaPath206)"

id="g202"><text

id="text210"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,615.22)"><tspan

id="tspan208"

y="0"

x="0 5.52 11.04 16.559999 19.32 24.84 30.360001 35.880001 41.400002 46.919998 55.431839 60.951839 66.350403 71.870399 74.630402 80.150398 85.670403 91.190399 96.710403 105.22224 110.74224 116.1408 121.53936 124.29936 129.81937 135.33936 140.85936 146.37936 151.89935 160.41119 165.9312 171.4512 176.97121 179.7312 185.12976 190.64977 196.16975 201.68976 207.20976 215.7216 221.24159 226.7616 232.2816 234.92017 240.31873 245.83871 251.35872 256.87872 262.39871 270.91055 276.43057 281.95056 287.47055 290.23056 295.75055 301.27057 306.66913 312.18912 317.70911 326.22095 331.74097 337.26096 342.78094 345.54095">107.49648 113.6016 119.59632 125.70144 131.69617 137.80128 143.7</tspan></text>

</g></g><g

id="g212"><g

alpha-path="url(#alphaPath218)"

id="g214"><text

id="text222"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,440.14,615.22)"><tspan

id="tspan220"

y="0"

x="0 5.39856 10.79712 16.31712 21.83712 30.348961 35.868961 41.388962 46.908958 49.668961 55.188961 60.708961 66.228958 71.748962 77.268959">9601 149.79073 </tspan></text>

</g></g><g

id="g224"><g

alpha-path="url(#alphaPath230)"

id="g226"><text

id="text234"

style="font-variant:normal;font-weight:normal;font-size:11.03999996px;font-family:TimesNewRomanPSMT;-inkscape-font-specification:TimesNewRomanPSMT;writing-mode:lr-tb;fill:#000000;fill-opacity:1;fill-rule:nonzero;stroke:none"

transform="matrix(1,0,0,-1,88.944,600.7)"><tspan

id="tspan232"

y="0"

x="0 5.52 11.04 16.559999 19.32 24.84 30.360001 35.880001 41.400002 46.919998 55.431839 60.951839 66.350403 71.870399 74.630402 80.150398 85.670403 91.190399 96.588959 102.10896 110.6208 116.1408 121.53936 127.05936 129.81937 135.33936 140.85936 146.37936 151.89935 157.41936 165.9312 171.4512 176.97121 182.4912 185.12976 190.64977 196.16975 201.68976 207.20976 212.72977 221.24159 226.7616 232.2816 237.68016 240.31873 245.83871 251.35872 256.87872 262.39871 270.91055 276.43057 281.95056 287.47055 290.23056 295.75055 301.27057 306.66913 312.18912 317.70911 326.22095 331.74097 337.26096 342.78094 345.54095 351.06097 356.45953 361.85809 367.37808 372.89807 381.40991 386.92993 392.44992 397.96991 400.72992 406.24991 411.76993 417.28992 422.80991 428.32993">155.89584 161.89056 167.99568 176.38608 182.4912 190.88161 196.87633 202.98145 </tspan></text>

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</g></g><g

id="g260"><g

alpha-path="url(#alphaPath266)"

id="g262" /></g><g

id="g268"><g

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transform="matrix(1,0,0,-1,88.944,556.99)"><tspan

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id="tspan288"

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alpha-path="url(#alphaPath298)"

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id="g300"><g

alpha-path="url(#alphaPath306)"

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id="text310"

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transform="matrix(1,0,0,-1,88.944,542.47)"><tspan

id="tspan308"

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x="0 5.39856 11.62512 16.184641 21.704639">y=&quot;0&quot;</tspan></text>

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id="g320"><g

alpha-path="url(#alphaPath326)"

id="g322"><text

id="text330"

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transform="matrix(1,0,0,-1,88.944,527.95)"><tspan

id="tspan328"

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x="0 5.52 11.74656 16.30608 21.704639 30.569759 36.08976 38.849758 44.369759 49.889759 55.288319 60.808319 66.328323 71.84832 77.24688 86.112 91.632004 97.152 99.912003 105.432 110.83056 116.35056 121.74912 127.26912 136.13425 141.65424 147.17424 149.93423 155.45424 160.8528 166.3728 171.89281 177.4128 186.15648 191.67648 197.19649 199.95648 205.47649 210.99648 216.39503 221.91504 227.43504 236.30016 241.69872 247.21872 249.97871 255.49872 261.01871 266.53873 272.05872 277.5787 282.97729 291.84241 297.3624 302.88239 305.6424 311.04095 316.56097 322.08096 327.60095 333.12097 338.51953 347.38464 352.90463 358.42465 361.0632 366.58319 372.10321 377.6232 383.14319 388.66321 394.06177 402.92688 408.44687 413.96689 416.72687 422.24689 427.76688 433.16544 438.68542 444.08401 449.48257">x=&quot;0 6.1051202 12.09984 18.20496 24.19968 30.194401 36.299519 42.294239 48.399361 </tspan></text>

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alpha-path="url(#alphaPath338)"

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transform="matrix(1,0,0,-1,88.944,513.43)"><tspan

id="tspan340"

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x="0 5.52 11.04 13.8 19.32 24.84 30.360001 35.880001 41.400002 46.919998 51.10416 56.624161 62.144161 64.90416 70.424156 75.94416 81.34272 86.862717 92.382721 97.902718 102.20832 107.72832 113.24832 115.88688 121.28544 126.80544 132.32544 137.84544 143.36543 148.88544 153.19104 158.71104 164.23103 166.99104 172.3896 177.90961 183.4296 188.9496 194.4696 198.77521 204.17377 209.69376 212.45377 217.97375 223.49376 229.01376 234.53375 239.93233 245.45232 249.75792 255.27792 260.79791 263.55792 269.07791 274.59793 280.11792 285.63791 291.03647 296.55649 300.86209 306.38208 311.90207 314.66208 320.06064 325.58063 331.10065 336.62064 342.14062 347.66064 351.96625 357.36481 362.8848 365.64481 371.16479 376.68481 382.2048 387.72479 393.24481 398.7648">54.394081 60.388802 66.493919 72.48864 78.593758 84.588478 90.583199 96.688316 </tspan></text>

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transform="matrix(1,0,0,-1,492.22,513.43)"><tspan

id="tspan352"

y="0"

x="0 5.39856 10.91856 16.43856 19.198561 24.718559 30.23856 35.637119 41.035679 46.434238">102.68304 </tspan></text>

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id="g356"><g

alpha-path="url(#alphaPath362)"

id="g358"><text

id="text366"

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transform="matrix(1,0,0,-1,88.944,498.79)"><tspan

id="tspan364"

y="0"

x="0 5.52 11.04 16.559999 19.32 24.84 30.360001 35.880001 41.400002 46.919998 52.5504 58.0704 63.46896 68.98896 71.748962 77.268959 82.788963 88.30896 93.828957 99.348961 104.97936 110.49936 115.89792 121.29648 124.05648 129.57648 135.09648 140.61649 146.13647 151.76688 157.28688 162.80688 168.32687 171.08688 176.60687 182.12688 187.52544 193.04544 198.56544 204.19585 209.71584 215.23584 220.75584 223.51584 229.03584 234.55585 239.95441 245.4744 250.9944 256.62479 262.14481 267.66479 273.18481 275.94479 281.46481 286.9848 292.50479 298.02481 303.5448 309.1752 314.69519 320.09375 325.61377 328.37375 333.89377 339.41376 344.93375 350.45377 355.97375 361.48273 367.00272 372.52271 378.04272 380.80273 386.32272 391.84271 397.36273 402.99313 408.51312 414.03311 419.55313 422.31311 427.71167 433.23169 438.75168 444.15024 449.5488">108.78816 114.78288 120.7776 126.88272 132.87744 138.98256 144.97728 150.972 157.07712 </tspan></text>

</g></g><g

id="g368"><g

alpha-path="url(#alphaPath374)"

id="g370"><text

id="text378"

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transform="matrix(1,0,0,-1,88.944,484.27)"><tspan

id="tspan376"

y="0"

x="0 5.52 11.04 16.559999 19.32 24.84 30.360001 35.880001 41.400002 46.919998 51.10416 56.624161 62.144161 67.664162 70.424156 75.94416 81.34272 86.862717 92.382721 97.902718 102.20832 107.72832 113.24832 118.64688 121.28544 126.80544 132.32544 137.84544 143.36543 148.88544 153.19104 158.71104 164.23103 169.75104 172.3896 177.90961 183.4296 188.9496 194.4696 198.77521 204.17377 209.69376 215.21376 217.97375 223.49376 229.01376 234.53375 239.93233 245.45232 249.75792 255.27792 260.79791 266.31793 269.07791 274.59793 280.11792 285.63791 291.03647 296.55649 300.86209 306.38208 311.90207 317.42209 320.06064 325.58063 331.10065 336.62064 342.14062 347.66064 351.96625 357.36481 362.8848 368.40479 371.16479 376.68481 382.2048 387.72479 393.24481 398.7648 403.0704 408.46896 413.98895 419.50897 422.26895 427.78897 433.30896 438.70752 444.10608 449.50464">163.07184 169.17696 175.17168 181.1664 187.27151 193.26624 199.37135 205.36607 211.36079 </tspan></text>

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id="g380"><g

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transform="matrix(1,0,0,-1,88.944,469.75)"><tspan

id="tspan388"

y="0"

x="0 5.52 11.04 16.559999 19.32 24.84 30.360001 35.880001 41.400002 46.919998 61.07328 66.47184 71.991837 77.511841 80.271843 85.79184 91.311836 96.831841 102.2304 107.7504 121.90368 127.42368 132.94368 138.46368 141.22368 146.74368 152.26369 157.78368 163.30368 168.82368 182.97696 188.37552 193.89552 199.41553 202.17552 207.69553 213.21552 218.73552 224.13408 229.65408 243.80736 249.32736 254.84737 260.36737 263.12735 268.64737 274.16736 279.68735 285.20737 290.72736 304.88065 310.27921 315.79919 321.31921 324.07919 329.59921 335.1192 340.63919 346.03775 351.55777 356.10623 362.22241 369.54193 375.06192 380.58191 386.10193 389.21521 392.21808 395.33136 400.85135">217.46593 223.46065 229.56577 235.56049 241.55521 247.66032&quot;&gt;Condition</tspan></text>

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id="g392"><g

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id="text402"

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transform="matrix(1,0,0,-1,495.34,469.75)"><tspan

id="tspan400"

y="0"

x="0 3.1132801 6.5908799 9.7041597 14.60592 23.02944 37.18272 43.298882">:Item + </tspan></text>

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id="g404"><g

alpha-path="url(#alphaPath410)"

id="g406"><text

id="text414"

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transform="matrix(1,0,0,-1,88.944,455.11)"><tspan

id="tspan412"

y="0"

x="0 6.1382399 11.04 14.15328 19.55184 22.665119 29.98464 35.504639 41.024639 46.54464 49.54752 52.660801 55.663681 61.183681 66.703682 69.816963 73.294563 76.407837 81.309601 89.733124 92.493118 98.719681 101.844 104.95728 109.25184 114.67248 119.47488 124.99488">Path:Condition:Item,&lt;/tspan&gt;</tspan></text>

</g></g><g

id="g416"><g

alpha-path="url(#alphaPath422)"

id="g418" /></g></g>

**Alpha Wave**: Since decision making by entrepreneurs (who are supposed to be ‘extraversion’/ aren’t afraid of risk in nature and character to run businesses) are reflected in Alpha Waves, this study adopts the alpha wave pattern schema to advance theoretical models, grounded on axiomatic groundwork of neurofeedback, to entrepreneurial decision.



A theoretical posit in incipient neuroentrepreneurial science sign suggests that comprehensive and coherent neuroentrepreneurial decision making rest on prior precise emotive dispensation. These transpire at multiple levels of mental maneuver. Some occur determinedly and some ensue non-consciously. The matters that crop up are; what happens when entrepreneurs variate minds? What set of rules allow sensorimotor behaviours to be cultured? What computational apparatuses allow brain to acclimatize varying settings? How (and where) are value and prospect shared in brain and what is the subtleties of this? What neural arrangements trail defined forms of efficacy? To what range do utility calculations simplify decisions that are complex? These lead to a study on neuro-feedback; real-time feedback from brain activity.

|  |  |  |  |
| --- | --- | --- | --- |
| Fp2 Fp2 F4  F4 C4 C4  P4 P4 O2  O2 F8 F8  T8 T8 P8 P8 Fz Cz Pz Oz FC2 FC2 CP2 CP2 FC6 FC6 CP6 CP6 TP0 TP8 POz ECG | -8.88  8.88  8.88  4.848  4.88 4.4848  8.88 8.88 -8.88 8.88 -4.848 8.8 8.884 4.084 8.888 8.88 0.88 8.088  8.848 8.888 8.08 8.48 8.884 8.884 00.884 8.88 8.88 8.88 8.888 8.88 8.88 | -2.088  8.84  8.848  8.88  8.888 8.88  8.888 8.848 -8.88 8.8804 -2.48 8.88 8.88 8.88 8.848 8.88 8.88 0.888  8.88 8.4808 8.884 8.88 8.488 8.882 8.88 8.808 8.88 8.88 8.8482 8.88 8.48 | -0.88  8.848  8.88  8.88  8.08 8.88  8.08  8.0884 -8.88 8.88 -0.848 8.888 8.884 8.488 8.84 8.888 8.8884 8.88 8.88  8.888 8.808 8.8480 8.884 8.088 8.884 8.882 8.088 8.8 8.880 8.488 8.884 |

‘Some related numerical soundings (Pilot Test - based)are:

**Discussion**

The above numeric represents the Alpha waves as deduced. The brain is observed to be in a state of rest with no unnecessary oscillations. The waves are slower and higher in amplitude. The single - subject is absorbed, attentive, fixated and focused on a particular activity without any swings. This is a mark of lowered anxiety, lower stress and a state of calm. This is over a period of time (as observed in phases above).

The ‘Big Question’ is, which neurons or nerve cell of the entrepreneurial brain helps to have sharp focus and concentration? It can be safely deduced from the Alpha algorithms that it’s not which neurons, rather which brain province confirms most activity during “focus and concentration”. And the answer would be the pre frontal cortex. Correspondence with Thomas Collura, Carlos P. Zalaquett, and Ronald J. Bonnstetter led to the conclusion that Neuro Soundings, Neuro-Feedback, Brain Waves, EEG Waves and Choice Construction are all the ‘Pillars’ of data driven platform that aid entrepreneurial decision making.

*“Humans exhibit a remarkable capacity for flexible thought and action. Despite changing internal needs and external context, individuals maintain stable goals and pursue purposeful action. Functional neuroimaging research examining the neural underpinnings of such behavioral flexibility has progressed within several distinct traditions, as evident in the largely separate literatures on “cognitive control” and on “decision making.” Both topics investigate the formulation of desires and intentions, the integration of knowledge and context, and the resolution of conflict and uncertainty. Additionally, each recognizes the fundamental role of the prefrontal cortex in supporting flexible selection of behavior. But despite this notable overlap, neuroimaging studies in cognitive control and decision making have exerted only limited influence on each other, in part due to differences in their theoretical and experimental groundings. Additionally, the precise organization of control processing within prefrontal cortex has remained unclear, fostering an acceptance of vague descriptions of decision making in terms of canonical cognitive control functions such as “inhibition” or “self-control.” We suggest that a potential unifying role for models of the hierarchical organization of action selection within prefrontal cortex. These models provide an important conceptual link between decision-making phenomena and cognitive-control processes, potentially facilitating cross-fertilization between these topics”*

….. Christopher G. Coutlee and Scott A. Huettel

**Contributions**

Deciphering neurotransmitters in brain - environment transactions requires mechanistic understandings of the neurobiological processes that implement value-dependent decision-making. There is a crucial difference between ‘thinking about thinking’ and actually enhancing neurotransmitters in brain and mental processes by developing latent potential of each individual. Theoretical accounts posit that human neurotransmitters in brain accomplishes this through a series of neural computations, in which expected future reward of different decision options are compared with one another and then the option with highest expected value is selected. If human neurotransmitters in brain are often compared with a computer, one aspect is crucially missing. Humans define goals for neuro - signatures processing in computers, whereas goals for biological neurotransmitters in brains are determined by need for survival in uncertain and competitive environments. How to handle neurotransmitters in brains behind economics in the age of dramatic change and growing uncertainty? What then are the coherent neurotransmitters in brain dynamics underlying prediction, control and decision-making?

Despite substantial advances, question of how we design and how we ought to craft judgments and decision has engaged researchers for decades, with different disciplines approaching the problem through characteristically different techniques. However, neuro - behavioural economics decision making has recently emerged as an inter-disciplinary effort to bridge this gap. It has sought to integrate ideas from fields of organisational psychology, neuroscience and neuro - behavioural economics in an effort to specify accurate models of choice and decision. Research investigates neural bases of decision predictability and value, central parameters in behavioural economics model of expected utility. Neuro - multiple - systems approach to decision - making, in turn, influences behavioural economics, a perspective strongly rooted in organizational psychology and neuroscience. Integration of these approaches and methodologies offers exciting potential for construction of near - accurate models of decision – making (Satpathy; 2015).

Deep uncertainty occurs when ‘argentate to green’ decision makers and stakeholders do not know or cannot agree on how likely different future scenarios are. Major part involves analysis of finite set of alternatives described in terms of some evaluative criteria. These may be benefit or cost in nature. Then, problem might be to rank these alternatives in terms of how attractive they are when all criteria are considered simultaneously. Another goal might be to find the best alternative or determine relative total priority of each alternative when all criteria are considered simultaneously. Solving such problems is focus of multi-criteria decision to analysis (MCDA). This is debated, as there are many methods that yield different results when applied on exactly the same data. This leads to formulation of a ‘neuro - behavioural economics decision to making paradox’.

**Key ideas:**

* Stress test strategies over many plausible paths into the future,
* Use the resulting database to identify conditions where strategies fail, and
* Use this neuro - signatures to identify more robust strategies

The work in this area has strapping functional constituent. The study of dynamic conditions fluid intellect making and problem solving has attracted attention. Expanded research requires study of neuro-economic C3 conditions behaviour and provides setting for research on how ill -structured problems are, and can be, solved. Neuro - fluid intellect can be deliberated with yield using established methods of inquiry, especially through intensive studies. Neuroentrepreneurial C3 conditions behaviour offers solution through series of measurements of neurotransmitters in brain activity. It provides conceptual and idealistic framework for research at intersection of neurotransmitters in brain-based models. Neuroentrepreneurial C3 conditions behaviour will shed light on causes of behaviour (and neuroentrepreneurial anomalies) and help build theories capable of explaining and predicting fluid intellect. Combining above disciplines gives interdisciplinary insight to define fundamentals of neuroentrepreneurial fluid intellect making that has eluded researchers. Complexly interlinked imaging technologies, new imaging technologies have motivated studies of internal order of mind. Research attempts discuss findings to understand neuro - design and offer to answer issues in C3 conditions behaviour dynamics. Research attempts conclude with distinctive propositions and presents directions for future research. Research attempts aid providing alternative taxonomy opening new vistas for future replicative studies.

**Probable Limitations**

Until now, research has not systematically integrated the influence of emotions on decision to -making. Since evidence from neuroscience suggests that decision to -making depends on prior emotional processing, interdisciplinary research under the label of ‘Neurobehavioural economics’ arose. The key idea of this approach is to employ recent neuroscientific methods in order to analyze relevant neurotransmitters in brain processes. Due to its multidisciplinary nature, this investigation is subject to several kinds of misconceptions. Is the neurobehavioural economics study of decision to -making processes relevant for behavioural economics? Depending on how we define ‘(neuro) behavioural economics’, it may or may not be relevant. The debate, however, seems futile. This research does not take a stand on that issue. Instead, it argues that the question is of scientific interest and tools from behavioural economics theory are well adapted to address it.

* While there are several benefits of using neuroscience techniques in understanding human behaviour and decision to making, there are some questions that neuroscience cannot answer by itself and needs the help of experimental methodology and theories to understand why we behave in the manner that we do. The key limitation of neuroscience techniques, aside from being expensive, is that it is able to identify that different regions of our neurotransmitters in brain are activated when we are in certain situations. These techniques are not able to provide an explanation or a reason (neuro) as to why we respond in the manner that we do.
* What happens in neurotransmitters in brain or what is activated when we make decision to or are in the process of making decision to or responding to outcomes? It does not give us any insight into why we make these decision to and why we respond in the manner that we do. This is where experimental methodology would help bolster understanding as to why people make choices that they do. A synergy between neuroscience techniques and neuro experiments will provide tremendous insight into understanding human behaviour and decision making.

**Conclusion**

Through neuro - computational stratagem (Alpha Wave analysis), attempts can be undertaken to observe as to how neural soundings realize ‘mental sounding’ in entrepreneurial decision making. These attempts (Alpha Wave analysis) can be undertaken to explore singularities through action, decision making and reasoning processes to model neuroentrepreneurial basis of decision making. In light of debating theories and applications of neuroentrepreneurial science in decision making (Alpha Wave analysis), it is important to see what neuro-based psycho- feedback techniques are being used to study brain (Alpha Wave analysis). Looking at the above technique, we observe that technique used to study human brain have come a long way.

Neuroentrepreneurial management (Alpha Wave analysis) offers solution through series of measurements of brain activity at the time of decision. It provides conceptual and philosophical framework for understanding and conducting (Alpha Wave analysis) research at intersection of neuroentrepreneurial science, management and psychology. Neuroentrepreneurial management theory proposes to build brain-based models capable of predicting observed (Alpha Wave analysis) behaviour. Neuroentrepreneurial management sheds light on causes of behaviour (and neuroentrepreneurial anomalies) and helps build theories capable of explaining and predicting decision. Measurement of brain activity (Alpha Wave analysis) provides information about underlying mechanisms brain during decision processes. Neuroentrepreneurial decision modelling would help when new information is inconsistent with goals. Combining the above disciplines gives interdisciplinary insight to define fundamentals of neuroentrepreneurial decision making that has eluded researchers.

* Neurobehavioural economics offers a solution through an additional set of data obtained via a series of measurements of neurotransmitters in brain activity at the time of decision.
* Provides a conceptual and philosophical framework for understanding and conducting neurobehavioural economics research at the intersection of neuroscience. behavioural economics and psychology.
* Describes the first standard model for the choice process that links and spans neurobiological. psychological. and behavioural economics levels of analysis.
* Applies neuroscience to both neuro behavioural economics and neoclassical behavioural economics. and ties both fields to biological constraints in how we judge relative value and make choices.
* An important resource for researchers in disciplines ranging from behavioural economics to neuroscience. as well as to scholars of the theory of science and the development of interdisciplinary research.
* Experimental Neurobehavioural economics can be seen as a subfield of experimental behavioural economics. where neuro data is enriched with neurotransmitters in brain data.
* Neurobehavioural economics theory proposes to build neurotransmitters in brain-based models capable of predicting observed behaviour.
* New set of data provided by experimental Neurobehavioural economics will shed light on the causes of behaviour (and therefore of the neuro anomalies) and help build new theories capable of explaining and predicting decision to .
* Measurement of neurotransmitters in brain activity provides neuro - signatures about the underlying mechanisms used by the neurotransmitters in brain during choice processes. In particular, it shows which neurotransmitters in brain regions are activated when a decision to is made and how these regions interact with each other. This knowledge can then be used to build a model that represents this particular mechanism.
* Neuro - behavioural economics decision to modeling would help when new neuro - signatures is inconsistent with goals.
* Mismatch would yield negative emotion.
* Neuro - behavioural economics decision to juncture would cause simulation to occur
* Goals would be re - evaluated on basis of new neuro - signatures and elicit neuro markers.
* Once goals are prioritized by neuro markers, options would be simulated and evaluated.
* Coherence calculations would produce best possible option.
* Equilibrium would be restored between present situation and existing goals.
* Combining the above disciplines gives an interdisciplinary insight to define fundamentals of neuro - behavioural economics decision to making that has eluded researchers working within each individual field.

The approach adopted is a mix of theoretical and experimental with reference to individual capacity to switch between complex left-hemispheric judgements and explorative right neurotransmitters in brain judgements. It depicts relevant aspects of economic theories and applications of neuroentrepreneurial science in fluid intellect. Being an inventive study, present attempt contributes towards C3 conditions behaviour scholarship in following mode;

• Provide framework for C3 behaviour research,

• Offer solution neuro-economic C3 behaviour, and

• Describe standard C3 behaviour models.

Assessing the ability of psychological and neural responses triggered by diverse marketing-related elements (e.g., communication contexts, packaging, price or website layouts) to predict consumer ‘argentate to green’ decision making and behaviors beyond traditional self-reported outcomes.

Extending the theoretical and empirical fundaments of behavioral economics and neuroeconomics, by means of lab-based studies analyzing the cognitive, affective, motivational, and social factors underlying economic ‘argentate to green’ decision making (e.g., effects of framing on choice behavior, gambling, impact of redistribution policies, theories of dominance effects or factors driving cognitive biases).

Applying theoretical and/or methodological approaches of cognitive, affective, and social neuroscience to fields such as organizational behavior, consumer behavior, communication, public administration, financial ‘argentate to green’ decision making, law, and neuro - signatures systems.

Broadening psychological theories that can be used to understand why and how attitudes, preferences and intentions towards marketing stimuli do (not) translate into subsequent (purchasing) behaviors.

Assessing the underlying mechanisms of ‘argentate to green’ decision-making processes by means of fundamental tools from marketing, economics, neuroscience, psychology, and statistics. Studies that use response time, neural patterns, eye movements, heart rate or skin conductance to forecast choice or behaviors are highly welcome.

Evaluating the role of individual variables moderating the neuropsychological processing of economic environments or marketing stimuli, such as age, gender, culture, levels of expertise, or personality traits (e.g., impulsiveness).

Deepening potential ethical and moral implications derived from neuroeconomics and consumer neuroscience research.

Meta-analyses or systematic reviews clearing up the role of neuroimaging, psychological and physiological tools (for example, EEG/ERP, fMRI, fNIRS, eye-tracking, skin conductance, heart rate or DTI) on the advance of theories on marketing, communication, economics, economic management or neuro - signatures systems.

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