

Random thoughts in Conceptual Decision Geometry

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Abstract

21st century is a complex playfield in business decision perspectives threatened by the forces of VUCA (Vulnerability, Uncertainty, Complexity and Ambiguity). Appreciable reflections have been directed toward decision making process that marks commitment to obdurate intention. Some issues that confront an entrepreneur are; how can entrepreneurs make an optimal decision? How can entrepreneurs influence entrepreneurial brain and eye(s) in business decisions? How can entrepreneurs bargain 'hot buttons' in entrepreneurial brain and eye(s)? This provides conceptual geometry for conducting neuro (entrepreneurial) research science. It raises few fundamental issues and offers solution through measurement of brain activity at management levels of analysis. Primary aim to undertake this piece of research was an article titled 'Is the Era of the Neuroentrepreneur upon Us' authored by James Heskett, 'Bringing Neuromanagement to the Business World' by Patricia Polischuk. The bottom contour was: Can there be a philosophy of neuroscience without a broad or successful theory? All these prompted to explore the links between entrepreneurial decision making and neuroscience. All the above led towards a conclusion that neuromanagement is a perfect platform to exhibit that neuroscience, on a parallel note with entrepreneurial sciences, can provide answer to issues in entrepreneurial decision dynamics.

Key Words: Decision Geometry, Neuromanagement and Neuro-Behavioural Underpinnings.

We are on the verge of a revolution in brain and eye(s) research. Researchers now realize that interdisciplinary dialogue is essential' (Prof Uri Ashery, Sagol School of Neuroscience, Tel Aviv). 'New brain and eye(s) imaging technologies have motivated neuro (Managerial) studies of the internal order of the mind and its links with the spectrum of managerial business decisions from business decision making among fixed gambles to business decision making 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 business decision in all its contexts'.

..... (Vernon Smith, Nobel Laureate; 2002).

Introduction

Civilisation is voyaging through challenging times. Last three decades has witnessed substantial explorations that provide valuable insight on dynamics that stimulate decision (Hirst, Knippenberg and Zhou; 2009), affect emotions (Amabile, Barsade, Mueller, Staw; 2005 and Fong; 2006) motivation (Grant and Berry; 2011 and Shalley; 1991), managership (Mainemelis, Kark, and Epitropaki; 2015), peer and inter - organisational networks (Ahuja; 2000) and cultural and institutional forces (Hargadon and Douglas; 2001. Shalley, Zhou, and Oldham; 2004, Tadmor, Galinsky and Maddux; 2012). Research has identified structures and processes that cultivate innovation (Hülshager, et al.; 2009. Miron-Spektor, Erez, and Naveh; 2011, Somech and Drach-Zahavy; 2013 and West; 1996). Nevertheless, more decision makers learn, more queries emerge, demanding that managers develop nuanced, multilevel and dynamic models that offer fine-grained understanding of processes and broader implications for management (Amabile and Pratt; 2016). As world becomes multifaceted, universal and vibrant, inventiveness and originality become increasingly significant for business performance and long - term effectiveness (Amabile; 1996 and Padgett; 2012). Advance of business takes place in problematic settings. In framework of cost-effective sluggishness and exterior agreements, it becomes imperative to cultivate effectual, reasonable businesses, generate businesses and reinforce optimistic doppelgänger of managership. Will impresarios, business frontrunners discover new means for business growth, profit from complications that business surfaces? This depends on proprietorship of business-psychological apparatuses and expertise intended at cultivating competence of establishments and industry. These are multi - level and embryonic singularities that necessitate dexterous managership, reassuring business situations and expedient operational siting (Anderson, Potonik and Zhou; 2014, Cattani and Ferriani; 2008, Gupta, Tesluk and Taylor; 2007 and Sgourev; 2013). There is an environment of edginess in business spectrum that one finds too scratchy. Managerial development does not occur within a vacuity. Reality is changing and evolving continuously faster than ever. Management is all - pervading diurnal life and work. Tempestuous environmental influences are repetitively bestowing fresh prospects besides intimidations. Shifts in global order have placed substantial effect on occupational patterns athwart cost - effective taxonomies spread over comprehensive economies. Managerial society is at a crossroad whether to continue to do what it has done from its comfort zone or step back to inventively progress human schema in a qualitatively diverse direction and path. New, information - intensive and profoundly inventive progressive exercise of fabrication has appeared in all economies. Reversals of business ideologies from liberal to intolerant frameworks are disrupting flows since mid - 20th Century. A serious deviation is obligatory to address mounting veracity. There is a strong requirement for new philosophies and methodologies to afford an all - encompassing basis for better informed decisions to cope escalating tasks. As these tests are general, interrelated and vigorous, systems thinking, coupled with enhanced expectation and reinforced pliability,

provides comprehensible approach and mandated tools to express and implement rational and operative strategies.

'One may wonder whether Adam Smith, were he working today, would not be a neuroeconomist[st]' ... Aldo Rustichini (2005). 'The birth of Neuromanagement has created one of those rare historical moments in which economists stop to reflect on the fundamental questions of our science: the interdisciplinary of the approaches to the economic problem, the frontiers of the economy, its objectives, questions of validity or refutation of theories, among others. If neurosciences allow us to correctly model human rationality when making economic decisions, neuroeconomists have a scientific (and moral) obligation to use such knowledge, although there is a possibility that the models become more complex. It is up to a question of 'tranquility of scientific conscience'. The debate is hot today, and is on the agenda of many significant economic congresses around the world, and the waters are partly divided, although generally more inclined in favor of this novel research programme'...

(SebastiánLaza; 2017).

All entrepreneurs have faced complex circumstances of hard events to take paramount decision, weighing optimistic / unenthusiastic aspects and obliged to accept some risk. Some selected inquiries adopted for inquiries are; How to account information about value, risk, ambiguity and timing? How does this criterion behave with reference to the chosen approach? What distinguishes criteria adopted is dissimilar? Are there direct correlations that exist between approaches? How identifiable variables affect selection of decision-making criteria? Is there a relationship between external variables and decision criterion used? What kinds of algorithms and computations underpin decision process? Which brain and eye(s) zones are involved and how do these implement at neural level? How are management business decisions made in complex environments? How can management sciences harness digital 'inferential' data for logical inquiry? What are the crucial geometric domains? What reciprocal relationships exist between cognitive and affective processes? What is the neuro - behavioural management underpinnings? How does valence of information affect decision making? How do emotional agents influence? How changes can be elucidated by neuro - behavioural management? What emotional models capture interactions in decision making? How do individual differences influence decision-making? How do motivation and goal - orientation influence? What neuro - systems support dissimilar motivational states? What neuro - behavioural management processes distinguish agents of decision capacities? How do contextual interactions influence, support or undermine decision making? How entrepreneurial status influence decision making? What are the effects of norms, pressures and stigma? What agents influence process and quality of decision making? How precisely are constructs supposed to be encoded in neuro - physiological structures? How can insights from neuromanagement be embedded? What has neuromanagement contributed on 'agents' not being rational? All these abetted to structure a set of research objectives

characteristically. How do entrepreneurs choose what action to take? How does the brain and eye(s) compute? What characteristics of alternatives make business decision difficult? What variables computed by brain and eye(s) relate to emotional outcomes? How does brain and eye(s) implement decision-making? This seeks explanations of emotion and decision making by considering these questions. These have been examined in this paper.

Problem Statement

The problem statement adopted for this inquiry is despite advances, question of how entrepreneur make business decisions continues to pose challenges. The problem statement encases; what is the character of entrepreneurial decision dynamics and how do they come around? How do entrepreneurial practices change over time? What agents influence (re) configuration of entrepreneurial practices? How do entrepreneurial practices transmit to entrepreneurial behaviour and abilities? How and why do practices relay implementation probability? How and why do entrepreneurs endorse decision making approaches Key questions that this paper attempts to evaluate are; Do the above issues raise and address compelling new questions in decision research? Have the above been neglected in other inter - related scholarship? Are the above likely to remain neglected? Will neural evidence add to understanding and how?

Problem contemplations adopted for this inquiry are;

Query 1. How does entrepreneur decide in a state of V - U - C - A and state of vacillation?

Query 2. How do prefrontal cortex and somatic markers aid in decision making?

Query 3. How do eye movements aid in (entrepreneurial) decision making?

Objective

Objective of this paper is to identify neural processes involved in entrepreneurial decision making. It aims to transport diversity of disciplinary backgrounds to probe into how business decisions are made. Attempt contributes to offer inter - disciplinary perceptions of brain and eye(s) activity at time of entrepreneurial decision making to include exploring anatomy of neuro - discourses to functions of 'neuro - biologism'.

Hypotheses

The hypotheses adopted for this study are: -

H 0: Entrepreneurial decision is based on neuroentrepreneurial underpinnings.

H 1: Neuroentrepreneurial 'Agents' influences entrepreneurial decision.

Research Methodology

The research methodology is based upon deductive inter - disciplinary review approach. As a dynamic between theoretical and applied entrepreneurial decision mechanism, paper attempts to combine theory and experiments to undertake task of disentangling subtleties and implications of distinction between risk, 'deep' uncertainty and ambiguity. Paper attempts to employ multi - method approach and triangulation. It draws on positivist and interpretive conceptual research paradigms. This paper likens methodology to building with 'foundation' (philosophical premises), 'pillars' (consisting of conceptual research approach / strategies / 'inferential' data collection / inquiry architecture) and 'subsidiary inclusive structure' (operational framework). This paper starts from theoretic inter - disciplinary review leading to specificities. It is a waterfall –

based ('top - down') approach. Conceptual research has been piloted with use of literature inter - disciplinary review method consisting of:-Selecting conceptual research questions,Literature inquiry in scientific 'inferential' databases, gathering and selecting relevant literature and summarising and synthesising. Pertaining to empirical journeys, methodology includes inter - disciplinary tests on: - empirical treatment of eye movement perspectives and establish linkage between entrepreneurial decision agents.

Neuromanagement

Neuromanagement is the study of biological micro - foundations of decision perception and comporment. Neuromanagement is a swiftly upward discipline focused on how and why managers make decisions they make sure of. Economic cognition embraces memory, predilections, reactions, mental representations, opportunities, expectation, erudition, 'inferential' data processing, interpretation, replication, evaluation and understanding of events. Neuroeconomic research pursues to classify and check biologically micro founded models that yoke cognitive structure blocks to economic comporment.

Each experience perceived by brain and eye(s) are unique. Coordinated shifts of neuronal activity in brain are associated with strategy adaptations in behavioural tasks. Brain and eye(s) need flexibility to constantly adapt. This is achieved by each event being perceived as new. It is advocated that evidence from neuroscience, inquiry of brain and eye(s) mechanisms, 'cannot refute (managerial) models because the latter make no assumptions and draw no conclusions about physiology of brain and eye(s)' (Wolfgang; 2005). Decision making, conducted by brain and eye(s) as part of higher - order-processing mechanism, is distinctive from mechanism of how decision is derived. Brain and eye(s) scanning technology adds a new dimension. This is conclusive in the words of Davidovich that, 'the world of business has become increasingly complex and competitive. Every business faces challenges ranging from how to manage and engage multiple generations at once, to dealing with far-reaching impact of digital revolution'. So how do managers manage complexity and thrive? The answer can be found in the study of neuromanagement. To supplement this inspirational journey was a research paper titled, 'The Cognitive Neuroscience of Human Decision Making; A Review and Conceptual Framework' by Lesley K. Fellows. The author has opined that process of choosing between options, is a fundamental human behaviour that has been studied intensively by disciplines ranging from cognitive psychology to management. Despite importance of this behaviour, neural substrates of decision making are only beginning to be understood. More inspiring works were observed in writings of Pter Drucker, Daniel Kahneman, Amos Tversky, Antonio Rangel, Antonio Bechara, Antonio Damasio, Agnieszka Tymula, Eileen Kowler, Fang Ying Yang, Guy Hochman, Jacob Orquin and others (listed in Acknowledgements section at the beginning of this paper).

The above standpoints prompted to trigger a consideration two interlocked issues. One, is there an exceptional position for neuromanagement. And, two, if the answer is in the positive, then what are its appropriate primary philosophies? This was an off - shoot of a mega question; what *is* a science and how is managerial decision dissimilar? Central motivation for an intellectual probe is to understand nature of that science regarded as broad and successful. Managerial neuroscience, in contrast, has few broad theories. It

might be argued that a few global frameworks, a crude physicalism and perhaps computationalism govern the field. These serve as fundamental or guiding assumptions rather than theories: They do, to some extent, provide neuroresearchers with appreciable predictive power in the way that physical theories do. Furthermore, assumptions of physicalism and computationalism are not proprietary to neuroscience. They are borrowed from other fields and applied to decision mechanisms. Given its lack of theoretical richness rather local character of theories, neuromanagement science looks quite dissimilar from both physics and evolutionary biology. Considering the above, based on neural underpinnings, raise the following questions: Is a theoretical framework lacking in neuroscience? Moreover, if not, to what extent does it have a theory? In what ways does the theory or conceptual framework it has compare to those of more mature sciences? What consequences might these differences have for a philosophy of neuroscience? The bottom contour issue is: Can there be a philosophy of neuroscience without a broad or successful theory? All these prompted to explore the links between managerial decision making and neuroscience.

Business Decision

Business decision philosophy is built on an assumption that managerial behaviour is rational and predictable. At its basic, decision making involves three steps; Obtain information regarding possible actions, evaluate those actions and choose between them. What is then the role of neuromanagement? What do brain and eye(s) tell about management? How is the big picture for neuromanagement going forward? Decision making involves forming a perceptual representation of choice base. Behavioural management has shown that managers do not always work in ways that economic theories predict. Managers, as humans, are capable of thoughts and emotions? Insights into mechanisms help understand what is actually happening. *What are the questions and methods of neuromanagement? How are brain and eye(s) systems responsible for decision making process?* Is it right to think of brain and eye(s) as computing device? Do separate neurons calculate and what should neuroscience inherit from computationalism? *How to create experiments to study decision making in V - U - C - A situations?* In particular, how does biology support and constrains decision making. These questions include psychology, behavioural management, and cognitive and affective neuroscience. Nevertheless, in each, decisions have been approached from dissimilar angle using dissimilar methodologies. What neuromanagement does, just continue to treat it as a black box? All the above leads towards a conclusion that neuromanagement is a perfect platform to exhibit that neuroscience, on a parallel note with managerial sciences, can provide answer to issues in managerial decision dynamics. It is substantial to arrive at a conclusion that neuroscience and neuromanagement follow '*Biological Plausibility*' (causal connection between presumed origin and outcome that is unswerving with prevailing biotic understanding).

Select Inquiries

All managers have faced complex circumstances of hard events to take paramount decision, weighing optimistic / unenthusiastic aspects and obliged to accept some risk. Managers face challenges of critical significance. They are accountable for technical and

scientific freshness in practices, driving economic transformation and trade. Managers create new methods and types of business methods. Despite indispensable landscape of contributions, significance of managers has not been fully recognised in neo - classical business models. Managers are central to 'equilibrium' as they set business in motion. They have to quickly decide on a course of action to steer business concerns. Their functions can be summed as; forming a vision, planning a strategy to realize vision, cultivating art of managership, establishing institutional excellence, building innovative organisation, developing managerial resources, building teams and teamwork, delegating, motivating and communicating and reviewing performance and taking corrective steps when mandated. Some of them are listed as under;

- How to account information about value, risk, ambiguity and timing?
- How does this criterion behave with reference to the chosen approach?
- What distinguishes criteria adopted is dissimilar?
- Are there direct correlations that exist between approaches?
- How identifiable variables affect selection of decision making criteria?
- Is there a relationship between external variables and decision criterion used?
- What kinds of algorithms and computations underpin decision process?
- Which zones of brain and eye(s) are involved and how do these implement at neural level?

- How is management business decisions made in complex environments?
- How can management sciences harness digital 'inferential' data for logical inquiry?

- What are the crucial geometric domains?

As regards cognition vs. emotion, some managerial predicaments are;

- What reciprocal relationships exist between cognitive and affective processes?
- What are the neuro - behavioural management underpinnings?
- How does valence of information affect decision making?
- How do emotional agents influence?
- How changes can be elucidated by neuro - behavioural management?
- What emotional models capture interactions in decision making?

As regards individual differences, some managerial predicaments are;

- How do individual differences influence decision-making?
- How do motivation and goal - orientation influence?
- What neuro - systems support dissimilar motivational states?
- What neuro - behavioural management processes distinguish agents of decision capacities?

As regards contextual influences, some managerial predicaments are;

- How do contextual interactions influence, support or undermine decision making?
- How managerial status influence decision making?
- What are the effects of norms, pressures and stigma?
- What agents influence process and quality of decision making?

- How precisely are constructs supposed to be encoded in neuro - physiological structures?
- How can insights from neuromanagement be embedded?
- What has neuromanagement contributed on 'agents' not being rational?

Managerial Challenges

Globalisation, glocalisation and cross-border activities are fabric of modern business. Managers are continually pressured to account for challenges and opportunities that exist in a boundary - less competitive environment. In a world of hyperactive - competition, managers get wedged focusing on elements of globalisation, while losing sight of long - term developments. Managers need to accept that change is often unpredictable, whether local or global. Making future neuro - based decisions, grounded on traditional considerations, becomes an unsafe foundation. Variables that affect prior quarters may be external (conditions considered constant) and internal (agents used to predict performance). Managers should be repetitively aware of external changes. Goal is to illustrate how dissimilar views evolved as understanding of managerial philosophy.

Over decades, researchers have been exploring and analysing psychology of judgment and decision making schemes, counterintuitive deductions, rational perceptions and practical endorsements regarding means by which one decides. Behaviour is based on perception of external physical world and of internal bodily milieu, which provide cues that guide decision making. Inquiries about what matters, why and what occurs are symptomatically rational. Responses are informed by how one forms or devises a plan or idea in mind. Restating the issue and identifying mandated information is the key. Behaviour comprises decisions made from minute to minute. Repeatedly, decision maker cannot be convinced of value to be ensued from decision. Decisions made under predilections value 'deep' uncertainty form basis of pecuniary framework of decision making. This represents divergence from managerial conduct practiced in pre - modern era. How to deal with this complex plus unstable environment and make effective decisions is of prime interest. Complexity and abundance of information lead to 'cognitive overload' ('mental effort'). Having too many selections to pick from can, incongruously, make it incontrollable to select. Research is looking into neurological ancestries of this influence, identified as 'choice overload' ('mental effort'). These provide map of 'path' less followed represented by complex, embryonic behaviour and multiple evolutionary equipose. This holds potential when making sense of a 'chaotic' decision world.

Business decision perspectives are concerned with intricacies. Complexity is a way of thinking about mode of working with (calculated) models. How managerial model can be improved by incorporating number of insights from evolutionary philosophy and complex systems philosophy? Insights may be better implicit from evolutionary and complexity perspective. It takes an integrated interdisciplinary approach to managerial phenomena. As managers move toward intricate business environment, they must be able to interconnect successfully, contemplate creatively and adapt indecisions of fluctuations besides transformations. How do parts of brain and eye(s) direct business decision making, synchronise, face inconspicuousness and engage in calculated explanation? New imaging

technologies have motivated studies of internal order of mind. Understanding complexities associated with generation of brain and eye(s) function is difficult. We are at beginning of a 'get - up - and - go' state that promises. Brain and eye(s) absorb information, recognise and frame problematic situations towards appropriate responses. Business decision making, based on multifaceted interlinked imaging technologies requires mental simulation. There is a variance between 'reflecting about thinking' and 'enhancing brain and eye(s) (mental) processes' by developing embryonic potential of decision making in a perception-based action cycle (Neisser;1967).

The effortlessness and promptness with which managers mark a choice contradicts convolution of procedures that trigger call of contemporary requirements, sensitivities, business environment and calculations. Managerial principles have conventionally been concerned in investigation of selections. Procedures by which managers grasp decisions have been discounted, because they had diminutive understanding of alleyways going from observation to action. Neuroeconomic research necessitates inquisitiveness about neurobiology. Neuromanagement breathers on two properties. One, expounding arrangements for describing choice behaviour that can be developed at psychological and economic levels. And two, there will be unswerving and comprehensible mappings among levels of clarification. If both of these are precise, studies of choice and decision at any of these levels can be used to notify and compel descriptive models caused at other stages.

With current expansions in procedures to quantify brain and eye(s) activity, neurobiology has upgraded understanding of biological apparatuses that transform insights into controlled engagements. These can be fused into prescribed managerial models of decision making. Managerial dissimilarity is a mounting concern; inexorably multifaceted, necessitating a concoction of practical and thematic methodologies. There is a prerequisite to pursue ambitions without endangering business setting. This has presaged new phase of understanding based on know - how that no entity can drive straight to future on cruise control approach without understanding nitty - gritty and authenticity of associated agents in totality. As business organisations are becoming 'Volatile' (liable to change rapidly and unpredictably, especially for worse), 'Uncertain' (not able to be relied, not known or certain), 'Complex' (consisting of dissimilar and connected parts, denoting / involving numbers / quantities containing both real and imaginary) and 'Ambiguous' (open to more than one interpretation or not having one obvious meaning), one does not know whether tomorrow will be an extension of past.

It may turn out to be 'series of discontinuities'; state of having intervals or gaps. When non-linear undercurrents are becoming resilient, linear thinking and approaches are gradually becoming 'mark of inquiry'. This manifests an objective or line of scholarly scientific inquiry designed to address specific gap in information - base. It is informal for one of judgment, to perceive a weak underpinning of systems, which have obtained credit and their pretensions highest to accurate and profound reasoning David Hume

Gary Becker claims about usefulness of economic approaches for understanding of decision - oriented questions. Becker states: 'I have come to the position that economic approach is a comprehensive one applicable to all managerial behaviour, be it behaviour, repeated or infrequent decisions, large or minor decisions, emotional or mechanical ends by 'economic approach' Becker means 'all managerial behaviour can be viewed as involving participants who maximise their utility from a stable set of preferences and accumulate optimal amount of information and other inputs'. Approach provides 'unified framework for managerial behaviour'. In modified form, analysis has become increasingly influential that methods of management alone are insufficient for understanding complexities of choice. Manager makes decisions in a milieu of limited rationality, subject to predispositions and noises that lead him to behave sub - optimum, from point of view of neo - classical management proposes. Economic and Anthropological approaches to choice confound non - economists unsure about 'utility,' 'preferences,' and 'inputs. Economists and experimental psychologists are at the scientific end of this continuum to construct theories about choice that specify how key variables are related.

'Management science and operations research are based on a supposition that sound relationships between dissimilar parties in a decision-making situation do exist and can be found by diligent search and research. Managers follow the alleyway under the marker of 'rationalism'. The precedent says that sound relationships can be established by means of reason. It goes on to say that reason is something that all share and that when men come to understand clearly, they inevitably will decide in the same ways' (Churchman; 1962). In an unpredictable and penetratingly competitive situation, it is vital to be effectual and operative to accomplish performance fineness. Decision is central in this regard. It helps brand paramount use of resources to attain desired purposes in all functional expanses and echelons of management.

Managers must link with methodological, traditional, behavioural and ecological interdependencies while making decisions. They are called upon to identify, first-rate and use tools and techniques to make efficient and effective decisions. In an evolutionary perspective, focus needs to be extended to embrace motivational underpinnings of behaviour. This means to inquire into agents' preferences and explain how they relate to managerial genetic endowment and how they change over time. In headway, arena has grappled with fundamental questions about anthropological equanimity and influenced thinking in discipline of decision. At its fundamental, inquiry of decision-making attempts to understand and explain ability to process multiple alternatives and choose optimal course of action. Ultimate goal is to construct accurate theoretical and practical models of how to decide and choose. This has occupied theorists with efforts to shape models that describe and prescribe imperative comportment (Donders; 2016).

Due to varying 'inferential' data, manager faces complexities while making decisions. Submission of complexity science to business is a problematic proposition. This is because concepts are multifaceted and indicating significance to manager is tough. There is requirement of focus on application of complexity knowledge to business decision

making, validate significant impact that complexity science have on managerial practice and establish practical applications. As information search is primarily a cognitive activity, understanding extent to which variations in cognitive abilities affect search behaviours and predilections is imperative. Distinctive goal, of all decision orders, is to make complicated basic elements simple without yielding adequate representation of solitary datum of experience (Einstein; 1934). Any reasonable decision process should be able to regulate and assimilate new information. Business decision scholarship incorporates a framework; unwavering, convincing and unflustered. There is an exciting way to make decisions, which may be made under severity / constrictions interfere with options (and predilections) or influenced by emotive state at 'time'. Even if managers have time and information, they are more likely to rely on personal experience than probabilities. Even when managers know all indicators, they often do a deprived job of understanding prospects of significances. Mandated concern is of combining information about probability with information about interests (Taghavifard; 2009).

'I see neuro - behavioural management not just an opportunity to contemplate about neural mechanisms underlying managerial decision making, but an opportunity to help discipline psychological and neuroscientific philosophy with tools of mathematics'

..... Cohen

Delaying a business decision provides certain benefits. Business decision climate will be larger, providing more information, time for thoughtful and extended inquiry. New alternatives might be recognised or created. Delaying a business decision involves certain risks. As business macroclimate cultivates, manager might become overwhelmed with too much information, manager would either make a poor decision or face decision paralysis. Few alternatives might become unavailable because of events occurring during 'delay' and in a competitive scenario. Business competitors (in all likelihood) may gain strategic advantage. Issue is not deviation between 'real' and 'optimal' behaviour. Non - linear convolutions, where interactions and minor changes produce disproportionately major predilections, are of determining optimal decision behaviour. In complexity, agents constrain one another over 'time'. This means difficulties in forecast or predicts decision behaviour. Complications arise when understandings produce insights to investigate positioning of decision behaviour leading to judgement point (Satpathy et.al; 2016). Multifaceted business decision making uniquely represents 'cognitive revolution' limited to conjecture of what occurs inside 'black box' of managers' (Hannah; 2013). Psychologists focus on 'black box' models of business decision where levels of brain and eye(s) function are studied in parallel. Integration is mandatory for understanding flexible goal-directed behaviour as function of dynamic interaction of neural networks. This represents conceptualisation of applying (neuro) scientific methods to analyse and understand managerial behaviour.

(Managerial) reasoning, while making decisions, has been object of research since Socrates and Plato (Dreyfus and Dreyfus; 1989 and Cohen; 1993). Foundation of 'business decision' is traced to Smith's publication of 'The Wealth of Nations' in 1776. Smith described ad hoc prologues that explain how situation influenced behaviour, critical

for appreciating and aggregation of business decisions behaviour (Glimcher; 2006). One School of thought is that regularities in behaviour could (*ceteris paribus*) provide psychological basis to manage (managerial) fluctuations. This investigated structure of business decisions from primitive assumptions on preferences with strong 'normative flavour'. Attention focused on idealised business decisions; how managers choose. 'Weak Axiom of Revealed Preference' (Samuelson) proved assumptions, revealing how stable (weak) preferences have powerful deduction. Axiom posits that some business decisions can be used to design calculations about comparative desirability of 'pairs of objects' that have never been directly compared. What followed was sequence of theorems, which extended scope to business decisions with uncertain outcomes whose probabilities are known. Interestingly, these depict a manager who obeys 'as if' he has continuous utility function that relates subjective value of any gain to its objective value and 'as if' his actions were aimed at maximising total obtained utility (Glimcher; 2006). These form basis to presume an inquiry unique to business decision. Question is under what conditions such functions exist.

How managers develop judgement and decision skills? Do managers really have a choice? If so, how? How do 'concepts' exist and influence? Moreover, where did they come from? In addition, how are solutions integrated into philosophy, since all arise from 'managerial activity'? Choice is not necessarily desirable. It has costs; ('time', 'erroneous' decisions and 'regret'). It is desired to expand choice when heterogeneous wants and needs can be fulfilled by 'expanded choice' set. It is undesirable when 'expanded choice' set includes alluring alternatives. They are safe in short - term but offer low long-term returns. These might increase 'regret' (Lowenstein; 2016). This emanates from narrow set of properties imposed on business decisions ('rationality' axiom). Studies have identified cognitive and other bounds on managerial rationality, producing systematic errors and biases. The interaction of decisions with structure of simulated business entities produces aggregate dynamics that systematically diverge from optimal behaviour. One explanation has been the difficulty of extending the experimental methods to study decisions to aggregate, dynamic settings (Serman; 1989). It determines to what extent business decisions can be summarised (represented) by maximisation of 'latent' function (utility or value function).

Managerial judgement is flexible, ingenious, practical and fallible. Imagination has created extraordinary realm where outcomes of myriad business decisions tend to be unhinged, embryonic and 'reflexive' with potential for unimagined surprise and inadvertent significances. Aubrey Fisher (1974) opines that there are four 'stages' or 'phases' in business decision making; Orientation (Members meet for first time and get to know each other), Conflict (Once members become familiar, opinions differ), Emergence (Group begins to clear vague opinions through exchange of ideas) and Reinforcement (Members fashion a decision and provide relevant justification). Pijanowski describes eight stages of business decision making; Establishing Community (Create 'norms' that stimulate how problems are 'communicated'), Perception (Recognise that 'problem' exists), Interpretation (Identification of competing explanations' and 'drivers'), Judgement

(‘Sift’ possible ‘actions’ / ‘responses’ and determine ‘justifiable’ ones), Motivation (Examine ‘competing commitments’ that distract course of action), Action (Follow action that support ‘justified business decision’), Reflection ‘In Action’ and Reflection ‘On Action’. Kristina Guo (2008) describes six stages of business decision making; define problem, establish or enumerate all criteria (‘constraints’), consider all alternatives and identify best alternative, develop and implement plan of action, evaluate and monitor solution and examine feedback when mandated. Pam Brown (2007) describes seven stages of business decision making; outline goal and outcome, gather ‘inferential’ data, develop alternatives (‘brain storming’), list pros and cons of each alternative, make decision, immediately take action to implement it, and learn from and reflect on business decision (feedback).

Conversation

Given that managers sometime exercise poor judgement in decisions, neurodecision focuses approach in identifying neuronal correlations specific to choices (Sebastian; 2014) and is a cutting-edge area focusing on how managerial brain and eye(s) interacts to make business decisions (McCabe; 2008). Can neuroscience contribute to business decision management (Schioppa; 2008)? Has neuro - behavioural management influenced management with its characteristic positioning? If so, what are its apposite introductory principles? How information about neural apparatuses improves predictive and expressive power of prototypes. What could have triggered this ‘swing’? How should imminent considerations go about building connections to management? Neuroscience is beginning to transform the way in which managers make ‘choices’ (Berns; 2013).

It seems fair to approximate that between neuroscience and social science(s), there has been antiquity of shared disparagement to engage constructively theories, conceptual research, lack of comprehension of assumptions, methods, goals and findings. Emergence of potentials from neuroscience has coincided with progression of interest in issues that, in future, systematic collaboration might be possible. Managerial behaviour is not product of a single process, but moderately reflects interaction of dissimilar specialised sub-systems to determine behaviour. At times, they ‘compete’. Relevant query is whether any perceptive model, that provides psychological version of choice behaviour, lead to better theories than those based on ‘revealed preferences’ (Camillo Padoa - Schioppa; 2008). In addition, why do processes sometimes go skewed, causing imprudent, vacillating and disordered (business) decisions that lead to perilous and putatively dangerous behaviours? The central question concerns what qualifies as managerial science, reliability of managerial scientific theories and ultimate purpose of managerial science in business decision dynamics? Result is that brain and eye(s) sometimes argues with itself, as these distinct systems come to dissimilar conclusions about what one should do. Managerial behaviour is not under constant and detailed control of careful and accurate hedonic calculations. It is product of an unhinged and complex of reflex actions, impulses,

instincts and habits. The bottom question is; how to model business decision making process (Satpathy; 2015)?

New imaging technologies suggest fundamental change in how we think, observe and generate decisions. Brain frames appropriate responses based on complexly interlinked imaging technologies with bandwidth of decision. Managers (often) embody conflicting tenets and design 'rational' decisions. Explorations have protracted from behaviourist to cognitive approach that focuses on pre - response processes. In brain and eye movement's neural simulations, decision task is signified by node of neural activity. This is linked to stimulating shares of chromatic prospects for rational processing. Brain and eye movements help in gaining, possessing and tracing managerial decision formation replicating computational decision formation. Using contributions from Kowlerian model, Fang model, Hochman model and Orquin model, this paper reviews experiential studies that employ brain and eye movement monitoring towards computational approaches. This is an attempt to clarify how neural circuits realize 'mental simulation' in managerial decisions. By characterising effect of these influences, this study expects to gain insight into how brain and eye computes models for decision making.

Conformist managerial science adopts that managers behave reasonably and overlook many facets of real - managerial decision compartment. Choice research is influenced by homo -behaviour metaphor with emphasis on normative models and deviations. In contrast, principal metaphor conceptualises humans as 'information processors'. Cross - fertilisation between ranges of models explains and describe 'choice making in ingenious ways. This encourages cross - pollination between cognitive economics and choice research by highlighting benefits of synergistic modelling of multi-attribute choice making. Expansion of neuromanagement parallels eye movements as an integral part of interaction with visual world. Tasks require that managers bring eye quickly and accurately to important and useful locations viz. Tracing, Tracking and gazing. Eye movements accomplish this goal with no overt effort or awareness. Where do managers look - and why - when performing a complex task? How can the world appear clear and stable despite continual movements of eyes? Eye movements are an integral part of managerial interactions with visual world. This paper is devoted to understanding how eye movements are planned, how they are carried out and how managers maintain percept of a flawless, unwavering and rational world despite continual changes that eye movements produce. Scholarship highlights growing interest in exploring potential links between human biology and management in explaining human behaviour (Satpathy, et. al.; 2017).

Transition towards solving complex natured real - world problems require bringing insights from multiple disciplines. Equated to sensory and motor functions, procedure of business decision making is less manageable to unwavering clinical treatments and imposes guarded theoretic scrutiny. Manager deals with experiential complex and challenging realities with pressures to transmogrify with decisions. Demands arise from commitments and managing increasing volumes of information and actual / possible

effects of activity. 'The process is sensing of business as a whole and total condition pertinent ('feeling', 'judgement', 'sense', 'proportion', 'balance', 'appropriateness') to it. It transcends capacity of merely intellectual methods and techniques of discriminating agents. The pertinent terms are a matter of art rather than science.' (Barnard; 1938).

Several prescriptions emerge concerning 'drivers' and 'down – stream' effects of attention on choice. This suggests that attention processes play an active role in constructing decisions. So far, decision theories have largely ignored constructive role of attention by assuming that it is entirely determined by heuristics, or that it consists of stochastic information sampling. Empirical reviews reveal that these assumptions are implausible, and that assumptions that are more accurate could have been made based on prior attention and eye movement research. Future decision making research would benefit from greater integration with attention research.

Comment

Cognitive research suggests that preference orderings in business decisions possibly surface depending on which brain and eye(s) circuits are activated. This contradicts postulate that one complete preference ordering provides sufficient information to predict. How do managers choose what action to take? How does the brain and eye(s) compute? What characteristics of alternatives make business decision difficult? What variables computed by brain and eye(s) relate to emotional outcomes (Satpathy; 2015)? How does brain and eye(s) implement decision-making? This seeks explanations of emotion and decision making by considering these questions. These have been examined in this paper.

Crucial question is that how brain and eye(s) endogenously decide how to apportion its resources. What are the best uses of neuroscience in managerial decision research? How can these be cultured and improved upon? Does amplified magnitude on neural correlates of managerial behaviour enlarge or limit types of inquiries presently being investigated? What does future hold for understanding of managerial mind? What are the insinuations for managerial decision sciences? Big questions that merit attention are; what triggers business decision? How to make sense of complex 'inferential' data? How do neurons process information, monitor behaviour and code or encrypt emotional weight? Do some neurons become active in response to negative experiences? Do some neurons fire when managers experience something favourable? How do parts of brain and eye(s) coordinate activity when making business decision? Is it cumulative build - up of firing neurons that tip to final business decision? How do we alter business decision when new information makes rules obsolete (Satpathy; 2015)? Analyses of neuromanageirialbehaviour raise difficulties. These are some of the issues that have been examined in this paper.

Managers face conditions of fast-paced, transformative and surprising change. Traditional decision inquiry relies on point and probabilistic predictions. Under conditions of ambiguity, predictions are often wrong and demonstrate expensiveness / precariousness. How to quantify ambiguity? Opportunely, new methods and processes exist to help identify and evaluate strategies in face of challenges. Despite advances, question of how manager make business decisions continues to pose challenges. In such

cases, managers not only identify alternatives as possible but choose one that (1) has highest probability of success or effectiveness and (2) best fits with goals (Satpathy; 2015). Managerial decision making attempts at sufficiently reducing ambiguity to allow rational business decision. This stresses information gathering where ambiguity is reduced rather than eliminated. Complete information - base about all alternatives is seldom possible. Limited business decisions are made with absolute certainty. Every business decision involves certain amount of risk. Manager has an algorithm to bring about fixed result (Satpathy; 2015).

The problem statement encases; what is the character of managerial decision dynamics and how do they come around? How do managerial practices change over time? What agents influence (re) configuration of managerial practices? How do managerial practices transmit to managerial behaviour and abilities? How and why do practices relay implementation probability? How and why do managers endorse decision making approaches Key questions that this paper attempts to evaluate are;

- Do the above issues raise and address compelling new questions in decision research?
- Have the above been neglected in other inter - related scholarship?
- Are the above likely to remain neglected? and,
- Will neural evidence add to understanding and how?

Conclusion

Business decision making is central to managers. A complex decision process takes many steps. Despite impressive accomplishments, neuro - behavioural management is at best a couple of decade old and is yet to represent critical role in neuro - behavioural management. Scholars are still debating whether neuroscientific 'inferential' data will comprehensively provide for managerial decision.

Scholarship of neuroscience, with managerial science, has countersigned advances in neuro - behavioural management. Neuro - behavioural management combines philosophy and methods to study decision-making with focus on representations to describe decision behaviour. Each revision consistently confronts differing evidence. This is result of potent mix of volatility, 'deep' uncertainty, complexity and ambiguity fuelled by advances in neuroscience. This paper attempts to identify neural processes involved in managerial decision making. This is where customary prototypes calculate managerial decision behaviour and understand 'incongruities' where standard representations do not succeed. Paper attempts to include aspects of neuro - behavioural management to a level in neuro - business decision making. It aims to transport diversity of disciplinary backgrounds to probe into causes and effects of on - going debate. Proposition builds strongly on inter - disciplinary perspectives on how business decisions are made. Attempt contributes to offer inter - disciplinary perceptions of brain and eye(s) activity at time of managerial decision making. It describes brain and eye(s) - based models to include exploring anatomy of neuro - discourses to functions of 'neuro - biologism'

Answers nature of explanation in neuro - behavioural management can be pursued either ‘descriptively’ (how does neuro - behavioural management proceed?) or ‘normatively’ (how should neuro - behavioural management proceed)? Neuro - behavioural management has developed raw frameworks for maximising neuro business decision. Despite influence of theories and logic, managers continue to do what is real - rational and reward maximising. Scholarship attracts fierce interest of dissimilar fields: neuroscience and neuromanagement decision. Neuro researchers think of business decision-making as product of physical neural circuits: sensory information enters brain and eye(s), journeys through brain and eye(s) where business decision is ‘made,’ and eventually exits brain and eye(s) to evoke responses.

References

- Allen, R.J. (1983). *Human Stress: Its nature and Control*. Minneapolis, MN: Burgess Publishing Company.
- Ashmos, D. P., and Duchon, D. (2000). Stress - arresting Devoutness at work: A conceptualization and measure. *Journal of Management Inquiry*, 9, 134–145.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of self-control*. New York: Freeman.
- Bellah, R. (1985). Individualism and Commitment in American Life. *Berkeley Journal of Sociology*, 30, pp.117-141.
- Abu Hassan Asaari Abdullah, Dr. (2003). *Single Mothers: Vulnerable to Psychological Effects*. Kuala Lumpur: MessengerMalaysia issue 31 Aug 2003
- Betz, N.E., and Hackett, G. (1983). The relationship of mathematics self-efficacy expectations to the selection of science-based college majors. *Journal of Vocational Psychology*, 23(3), 329-345.
- Betz, N.E., Borgen, F.H., and Harmon, L.W. (1996). *Skill Confidence Inventory (SCI)*. Palo Alto, CA: Consulting Psychologists Press.
- Block, P.: 1993, *Stewardship: Choosing Service over Self-Interest*. San Francisco:
- Brammer, S., Millington, A., and Rayton, B.(2007). The contribution of Corporate Social Responsibility to Institutional Commitment. *International Journal of Human Resource Management*, 18(10):1701-1719.
- Burack, E.: 1999, *Stress - arresting Devoutness in the workplace*. *Journal of Institutional Change*
- Capra, F: 1993, *A systems approach to the emerging paradigm*. In M. Ray andc A.
- Carson, R.C., Butcher, J.N., and Coleman, J.C. (1988). *Abnormal Psychology and Modern Life*. New York: Harper Collins Publishers, Inc., 138-179.
- Cause Found. University of Michigan Business School.
- Chou, C. C., Chan, F., Chan, Y. C., and Phillips, B. (2013). Introduction to positive psychology in rehabilitation. *Rehabilitation Research, Policy, and Institutional awareness*, 27, 126-130
- Coase, R. (1937). The nature of the firm. *Economica*, new series: 386-405.
- Cohen, S. (1980). Alter effects of stress on human performance and social behaviour: A review of research and theory. *Psychological Bulletin*, 87, 578-604.
- Conger, J and Kanungo, R.,(1988). *The empowerment process: integrating theory and*
- Coyle-Shapiro, J. A-M., (2002). A psychological contract perspective on institutional citizenship behaviour.*Journal of Institutional Behaviour*, 23: 927-946.
- Davidson, R.J., and Begley, S. (2012). *The emotional life of your brain*. London: Hodder and Stoughton.
- DeFoore, B., and Renesch, I.,(1995).*Rediscovering the soul of business*. San Francisco:

- Dooley, K.(1997). A complex adaptive systems model of institution change. *Nonlinear*
- Dweck, C.S. (1999). *Self-theories: Their role in motivation, personality, and development*. Philadelphia: The Psychology Press.
- Dynamics, *Psychology and the Life Sciences*, Vol. 3, 230-249.
- Fox, E. (2013). *Rainy brain, sunny brain*. London: Arrow Books.
- fulfillment in institutional life”, *Journal of Managerial Psychology*, Vol. 9. No. 6, pp. 9-
- Gao, S. and Zhang, J.(2006). Stakeholder Engagement, Social Auditing and Corporate Ecological - connect. *Business Process Management Journal*, 12(6): 722-740.
- Gleick, J.(1987). *Chaos: Making a new science*. New York: Viking.
- Goleman, D. (1995). *Emotional intelligence*. New York. Bantam Books.
- Guest, D. and Conway, N. (1997). Employee motivation and the psychological contract. *Issues in People Management*, No. 21, Institute of Personnel and Development, London.
- Hampton, S.J. (2004). Adaptation for nothing in particular. *Journal for the theory of Social Behaviour*, 34(1), pp 35-53. <https://doi.org/10.1111/j.1468-5914.2004.00233.x>
- Herbert, T. B., and Cohen, S. (1993). Depression and immunity: A meta-analytic review. *Psychological Bulletin*, 113(3), 472–486. <https://doi.org/10.1037/0033-2909.113.3.472>
- Higgins, E.T. (1996). The self-digest. *Journal of Personality and Social Psychology*, 71, 1062-1083.
- Holmes, D.S. (1984). Meditation and somatic arousal reduction: A review of the experimental evidences. *American Psychologist*, 39, 1-10.
- House, R. J., and B. Shamir.,(1993). Toward the Integration of Transformational, Charismatic, and Visionary Theories. In *Leadership Theory and Research: Perspectives and Directions*, edited by M. Chemers and R. Ayman, p. 81-107. New York: Academic Press.
- Jena, L.K and Pradhan, R.K. (2014). Deliverables towards HR Ecological - connect: a conceptual review. *European Journal of Business and Management*, 6(23): 95-102.
- Khan, K. E., Khan, S. E., and Chaudhry, A. G. (2015). Impact of servant leadership on workplace stress - arresting Devoutness: Moderating role of involvement culture. *Pakistan Journal of Science*, 67, 109–113.
- Kobau, R., Sniezek, J., Zack, M., Lucas, R., and Burns, A. (2010). Well-Being Assessment: An Evaluation of Well-Being Scales for Public Health and Population Estimates of Well-Being among US Adults. *Applied Psychology: Health and Well-Being*. 2. 272 - 297. [10.1111/j.1758-0854.2010.01035.x](https://doi.org/10.1111/j.1758-0854.2010.01035.x).
- Kuvaas, B. and Dysvik, A. (2009). Perceived investment in employee development, intrinsic motivation and work performance. *Human Resource Management Journal*, 19(3): 217 -236.
- Lazarus, R.S. (1966). *Psychological stress and coping process*. New York: McGraw Hill.

- Lazarus, R.S., and Folkman, S. (1984). *Stress appraisal and Coping*. New York: Springer Publishing Company.
- Lee, S.W. Schwarz and N. (2010). Dirty hands and dirty mouths: embodiment of the moral-purity metaphor is specific to the motor modality involved in moral transgression. *Psychol Sci.* 21(10): pp. 1423-1425. doi: 10.1177/0956797610382788.
- Lewin, R.(1992). *Complexity: Life at the edge of chaos.*, Macmillan Pub. Co. ; Maxwell
- Loscocco, K. A., and Roschelle, A. R. (1991). Influences on the quality of work and nonwork life: Two decades in review. *Journal of Vocational Emotional behaviour*, 39(2), 182–225. [https://doi.org/10.1016/0001-8791\(91\)90009-B](https://doi.org/10.1016/0001-8791(91)90009-B)
- Luthans, F., Youssef-Morgan, C.M., and Avolio, B.J. (2015). *Psychological capital and beyond*. New York: Oxford University.
- Macmillan Canada ; Maxwell Macmillan International, (x, 208), New York Toronto, New
- Maher, B.A. (1966). *Principles of Psychopathology*. New York: McGraw Hill.
- *Management*, 12(4), 280–291.
- Masten, A.S. (2001). Ordinary magic: Resilience (Devoutness) processes in development. *American Psychologist*. 56(3):227–238. [PubMed: 11315249]
- Neck, C.P. and Milliman, J.F., (1994). “Thought self-leadership: finding spiritual New Leaders Press.
- practice. *The Academy of Management Review*, 13 (3), 471-482.
- Rinzler (Eds.), *The new paradigm in business* (pp. 230-237). New York: Tarcher Books.
 - Robbin and MeliaHariadi (2010), *Human Resource Management, Performance and Organisational Ecological - connect: A new paradigm, Social Responsibility, Professional Ethics, and Management* Proceedings of the 11th International Conference, Ankara, Turkey, 24–27 November 2010
- Sahoo, F.M. (2002). *Dynamics of human helplessness*. New Delhi: Concept.
- Sahoo, F.M., and Batra, G. (1997). Self-efficacy and attributional styles in mastery-oriented and learned-helpless students. *Indian Institutional awarenessal Review*, 32(2), 92-103.
- Sahoo, F.M., Sarangi, A., and Sahoo, K. (1017). Emotional styles in potential managers. *Indian Journal of Positive Psychology*, 8(3), 382-385.
- Salovey, P. and Mayer, J. D. (1990) Emotional Intelligence, *Imagination, Cognition and Personality*, 9(3), pp. 185–211. doi: [10.2190/DUGG-P24E-52WK-6CDG](https://doi.org/10.2190/DUGG-P24E-52WK-6CDG).
- Seligman, M. E. P., and Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5–14. <https://doi.org/10.1037/0003-066X.55.1.5>
- Seligman, M.E.P. (1998). *Learned optimism*: New York: Pocket Books.
- Seligman, M.E.P. (2002). *Authentic contentment*. New York: Free Press.
- Selye, H. (1976). *Stress in health and disease*. Woburn, MA., Butterworth.
- Stajkovic, A. D., and Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin*, 124 (2):240-261.

- Staw, B. M., and Ross, J. (1985). Stability in the midst of change: A dispositional approach to engagement attitudes. *Journal of Applied Psychology*, 70(3), 469–480. <https://doi.org/10.1037/0021-9010.70.3.469>
- Verbeek, P.P. (2002) ‘Pragmatism and Pragmata - bioethics and the technological mediation of experience’. In: J. Keulartz et al., *Pragmatist Ethics for a Technological Culture*. Dordrecht: Kluwer.
- Vestling, M., Ramel, E. and Iwarsson, S. (2005). Quality of life after stroke: well-being, life satisfaction, and subjective aspects of work. *Scand J Occup Ther*,12(2): pp. 89-95. doi: 10.1080/11038120510031770. PMID: 16392764.
- Walsh, J. P.,Weber, K., Margolis, J. D.,(2003). *Social Issues and Management: Our Lost*
- Wrzesniewski, A., McCauley, C.R., Rozin, P. and Schwartz, B. (1997). Engagements, career, and callings. *Journal of Research in Personality*, 31, pp. 21-33.
- York.
- Zajonc, Arthur G. (2000). Molding the self and the common cognitive sources of science and religion. In V. Kazanjian and P. Laurence (Eds.), *Education as Transformation: Religious Pluralism, Stress - arresting Devoutness, and a New Vision for Higher Education n America*. New York: Peter Lang Publishing, Inc., 58-68.
- Zappala, G (2010). *Beyond Corporate Responsibility: The Spiritual `Turn' and the rise of conscious business*.CSI Background Paper, no. 6, February. Centre for Social Impact.
- Zimbardo, P.G. (1979). *Psychology and Life* (10th Ed.). Glenview, IL: Scoot, Foresman.
- Zimmerman, B.J. (1995). Self-efficacy and institutional awarenessal development. In A. Bandura (Ed), *Self-efficacy in changing societies* pp. 202-231. New York: Cambridge University Press.