

**A Meta-theoretical Analysis of Creativity theories by
Mihalyi Csikszentmihalyi and Lev Vygotsky**

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DECLARATION

This thesis titled, 'A Meta-theoretical Analysis of Creativity theories by Mihaly Csikszentmihalyi and Lev Vygotsky', is a presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions. The work was done under the guidance of Prof. Minati Panda, ZHCES, School of Social Sciences, Jawaharlal Nehru University, New Delhi.

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CERTIFICATE

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ABSTRACT

Creativity in the discipline of psychology is generally identified as a temporal, ahistorical, abstracted, cognitive-affective phenomenon which lies behind or causes inventions and discoveries. The recent advances in the creativity studies in social psychology, cultural-historical psychology and cultural psychology point to the conceptual gap of social context in the theoretical frameworks of creativity. These developments were based on the debates centred around the origins, development and transformations of self in the continuum between intra-psychic and socio-cultural factors. This study explores theories of creativity with special focus to theories of Mihaly Csikszentmihalyi and Lev Vygotsky.

The two theories are selected due to various reasons. Firstly, both of the theories are vantage points in the project of bringing back the social context to the theoretical frameworks of creativity. Secondly, two theories appreciate the socio-cultural elements in a unique way, which also help to problematise the influence of sociocultural context in the development origin and transformation of self and creativity. Thirdly, Both the theories represent different intellectual traditions of psychology, which help to situate the debate of intrapsychic and socio-cultural nature of self in the inter-paradigm level. Content analysis is done on the creativity theories of Csikszentmihalyi and Vygotsky and later is meta-theoretically analysed through a meta-theory developed in the study.

The study is supported by the genealogy of Creativity research and comparative analysis of the theories, models and significant studies of Creativity. It explores the genealogy of Creativity Research by detailing the significant events, ideas and breakthroughs in the history of the discipline. The significant developments are divided into various themes in three historical periods such as a) From 1850 to WW I, b) Interwar period, c) WW II and Postwar period. The broad themes identified in the first period, i.e., from 1850 to WW I is; Eccentric Genius and Early Experimental Approaches, Intelligence Quotient and myth-busting of Eccentric genius and Unconscious roots of creativity. The themes in the Interwar period is Gestalt breakthroughs – Insights, Productive thinking and Functional Fixedness. The themes identified in the WW II and Postwar period are: Sputnik Era, Divergent thinking, Self-actualisation and Creativity, The post-Freudian explorations, Intuition and Reason in French intellectual circles, Emergence of Psychometric models of creativity, Bisociation, Problems of testing: Test-like conditions, Issues of predictive

validity and Intelligence-creativity relationships, Challenging the past models: perception or thinking; problem solving or problem finding, Problem finding or Problem solving, Darwinian model of Blind variation and Selective retention, Multiple intelligence, Morality and the Dark side of creativity and An audience for creativity research: Talk shows, Journals and Handbooks.

The comparative analysis of various theories and models of creativity informs the focused study on the creativity theories of Mihaly Csikszentmihalyi and Lev Vygotsky. The various models that are dealt for the meta-theoretical analysis are Economic Models, Personality Models, Cognitive Models, Psychometric Models, Biological Models, Affect Models, Psychodynamic models, Systems models, Darwinian models and Socio-cultural models. The classification is based on the nature and central tenet of the theories. A meta-theory developed for this study analyses the theories and models of creativity. It examines the models and theories of creativity on three dimensions a) Conception of Self, b) Interactions with other Cognitive processes c) General theoretical assumptions. The conception of self is classified into three – Person-centric approaches, Interaction approach or Interactionism and Social-constructivism. Person-centric approaches, which are popular in Psychology, view the individual as a product of biological development, who is self-propelling in terms of development, personality, thinking styles, intelligence, motivation and other cognitive processes. Social-constructivism approaches the individual as a social and cultural construction where the thinking skills, personality structure, lifestyles are seen as constructed by socio-cultural forces. Interaction models or synthesis models see the interaction between individual and culture in determining the nature of the individual.

This analysis explores the nature of interaction with other aspects of cognition. The nature of interaction can be Interactive relation or a Dialectic relation. The dialectic relation points to the mutual constitution, mutual development, and functioning together of cognitive processes. The interactive relation points to the level of correlational support of cognitive processes. For instance, the researches focussing on the relationship of IQ, memory, thinking and motivation to creativity in the correlational or causational method is an example of interactive relation. It assumes a compartmental separation of functions. In General theoretical assumptions, the theories of creativity are analysed on whether the theories dealt with Conscious or Unconscious processes, creativity as a Collective or Individual phenomenon, Magnitudes of Creativity, Six P's of creativity and Method. The results of the comparative analysis in the main argues that the System model of Csikszentmihalyi

follows an interactionist conception, whereas the cultural-historical model of Lev Vygotsky follows social-constructivism.

The study takes a closer look at the systems model or Flow model of Mihaly Csikszentmihalyi by detailing aspects of the definition, method, dimensions of creativity such as the domain, field and individual, sources of creativity, creative process, the emergence of problems, the role of self and consciousness, motivation and emotion in creativity. The paradigm position is explored by tracing the origin and development of Positive Psychology. According to Csikszentmihalyi, creativity is located as a synergy of three parts - the domain, field and individual. The individual comes only as any other factor in the system rather than the only factor. A creative individual is best represented as 'complex personality' which shows all shades of personality spectrum rather than developing some aspect of it. According to Csikszentmihalyi, autotelic personality has specific personality traits to achieve Flow states, which are characterised by low self-centeredness curiosity and persistence. Consciousness is conceptualised in the Systems model as a "complex system that has evolved in humans for selecting information from this profusion, processing it, and storing it" (Csikszentmihalyi & Nakamura, 2002). The flow states and creativity are better explained by Emergent motivation, i.e., the preceding moment determines what will happen in the next moment, and the proximal goals determines the action, in a creative activity.

The study analyses the Creativity theory of Lev Vygotsky with particular focus on the various myths of creativity examined by Vygotsky, development of Creative imagination, the General law of cultural development, Symbolic play of children, the developmental transformation of creativity and development of Higher mental functions. The work traces the paradigm of Marxist psychology and historical position of Cultural-historical school of psychology to delineate meta-theoretical assumptions in the paradigm level. According to Vygotsky 'Creativity is a self-propelling ZPD for adults, which is transformed from childhood play, continues to help individual organise, plan, explore the environment by exploring latent possibilities inherent in it, thereby transforming both the environment and person'. Development of Individual is dialectically connected to the creative becoming of a personality. Creativity is a process that brings self-control and flexibility in an individual. He postulated that creativity has a mediated structure. Creativity cannot be isolated from development of higher mental functions, role of education in both formal and cultural learning,

development of meaning, personality development, mediation of tools, signs and artefacts, emotional development and consciousness.

The comparative analysis points out that the Conception of self in Vygotsky's theory of creativity is social-constructivism, whereas that of Systems model of Csikszentmihalyi is interactionism. Both the theories agree that development of creativity is predominantly learned, dynamically changing across age groups, and is in dialectical relation with culture. Both theories agree that the nature of the relationship of creativity to other mental processes is a dialectical relationship rather than interactive relationships popular in general theories of creativity. The Systems model studied every aspect of creativity such as person, product, process, press, potential and persuasion, whereas Vygotsky's creativity theory focused on Process, Product, Press and Potential. The later model can be applied to the creativity of all magnitude, whereas Systems model applies only to Big-C creativity. The cultural-historical model of creativity focused on the creative process while ignoring the characteristics of creativity, whereas Systems model addressed both. Both models attest that creativity is a collective phenomenon. Vygotsky understood creativity as a conscious process, whereas Systems model speculates on the unconscious process in the incubation stage of creativity. The later model assumes creativity as a rare phenomenon available for a few, whereas Vygotsky saw creativity as universal in nature.

This study proposes that the conception of self and its development is a prerequisite for the conception of creativity. It is impossible to take account of creativity by isolating it and not considering the self of the person. The self which is constructed by the socio-political and cultural forces intermixed with the biology of the human being is a network of shared meanings. Inclusion of the origin, development and dynamics of self and culture into the theoretical frameworks of creativity is essential to the purpose of creating psychological frameworks that are inclusive and sensitive to surroundings. This understanding is also the concrete finding from the analysis of creativity theories and comparative study of specific theories of Mihaly Csikszentmihalyi and Lev Vygotsky.

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LIST OF ABBREVIATIONS

APA	American Psychological Association
BESS	Barron's Ego-Strength Scale
BVSR	Blind Variation and Selective Retention
CAT	Consensual Assessment Technique
CAV	Character Strengths and Virtues
DGR	The German Democratic Republic
DSM	Diagnostic Statistical Manual
Four-C	little-c, Mini-c, Pro-c and Big-C
RAT	Remote Association Test
SOI model	Structure of Intellect model
TED	Technology Entertainment and Design
TTCT	Torren's Test of Creative Thinking
U.S.	The United States
USSR	The Union of Soviet Socialist Republics
W.W I	World War I
W.W. II	World War II
ZPD	Zone of Proximal development

*To those who, by the dint of glass and vapour, discover stars and sail in
the wind's eye*

-Lord Byron

Introduction

“All that is the work of human hand, the whole world of culture, is distinguished from the natural world because it is a product of human imagination and creativity based on imagination”- L.S. Vygotsky (2004)

From the great leaps of civilizational progress to activities of everyday significance, the vital capacity of our psychological system to adapt to changing scenarios, emerging problems and constraints become significant. It is difficult to miss the creative sparks in the cognitive system that empowers the person to act in novel and original patterns. The famous works of art, architecture, scientific discoveries and inventions and technological marvels have the stamp of creative thinking. It is also the backbone of the market economy, which is based on evolving technologies and novel methods to address the demand and supply of products. Creativity is a desirable attribute which helps the individual adapt to changing conditions in the socio-political atmosphere.

We can see that the metaphor of creativity is built within the grand-narratives in the social, cultural, and political sphere. The psychological conception of creativity has influenced the metaphor of creativity. In the current context, the metaphor of Creativity refers to the force within the individual that can change the personal destiny and destiny of fellow persons. Creativity is the panacea for all problems in social, economic and political spheres. The dominant psychological conception sees creativity as a trait with associated skills such as problem-solving, divergent thinking, intrinsic motivation, attitudes, skills and values. Many psychological models of creativity read as if creativity is a trait located in the brain of exceptional individuals and in their idiosyncratic characteristics. This leads to a fundamental debate in psychology regarding the conception of self and creativity in terms of its origins in biological factors or socio-cultural factors.

The Cultural psychological theories of creativity inform that the blueprint of creativity is not located in the brain of the individual; rather it is distributed in the socio-cultural network in which the individual is situated. It is located in the visible and invisible narratives of innovation, change, development, technology, nation-building and exceptionality. We find it in the narratives of success, economic development, hope,

possibility and happiness. This narrative is so fundamental that one can find it in the broad ideals or grand narratives of nation-building. Let us consider the famous ‘tryst with the destiny’ speech made by the first Prime Minister of India, Jawaharlal Nehru, addressing the Indian public and the Indian Constitutional Assembly on the eve of Indian Independence.

“Long years ago, we made a tryst with destiny, and now the time comes when we shall redeem our pledge, not wholly or in full measure, but very substantially. At the stroke of the midnight hour, when the world sleeps, India will awake to life and freedom. A moment comes, which comes but rarely in history, when we step out from the old to the new, when an age ends, and when the soul of a nation, long suppressed, finds utterance” (Nehru, 2007)

The metaphors such as ‘tryst with destiny’ or to ‘step out from old to new’ signify the changing times and the urgency to adapt according to it. It also signifies creative action and thoughts. In the narratives of nation-building, one can find representations of problematisation of sudden dynamic change and the corresponding strategy which in the main conveys fighting the restraints and advancing towards greater life and freedom. Creativity is located in the action space of the grand narratives like nation-building. The metaphor of creativity comes in handy in invoking the problems and owning or ascribing the responsibility to others.

“We rejoice in that freedom, even though clouds surround us, and many of our people are sorrow-stricken and difficult problems encompass us. But freedom brings responsibilities and burdens and we have to face them in the spirit of a free and disciplined people” (Nehru, 2007)

The spirit of freedom, hope, overcoming difficult problems or burdens underlies our ideas of change and transformation. The spirit of creative ideation and action also shares similar values. One may find these metaphors of creativity in contemporary ideas and principles of growth, progress and vision for present and future. Let us consider the speech made after 70 years of independence by honourable Prime Minister of India in a ceremonial address from Red Fort.

“If each one of us, irrespective of where he belongs to, strives with a new resolve, a new energy, a new strength, we can change the face of the

country with our combined strength in the 75th year of our independence in 2022. It will be the New India – a secure, prosperous and strong nation. A New India where there is equal opportunity for all; where modern science and technology play an important role in bringing glory for the nation in the global arena”(Modi, 2017)

Change and progress are the leading slogans of most governments across the world. This speech also addresses the same concerns. The ideas such as “new strength” and “new energy” for “new India” symbolises an intent for active interaction with the unpredictable future. The speech conveys the importance of constructive work in times of change. It calls for novel approaches and novel energies to build the destiny of a nation. The old is not enough for the new vision. Contempt for the old and traditional and curiosity for the new and modern is a feature of our creative consciousness (Hanson, 2015). Science and technology are now not just aids for man but the essential things that determine the nation and its glory. The idea of change and progress is intertwined with ideas of creative production.

“We have to leave this ‘Chalta Hai’ attitude. We have to think of ‘Badal Sakta Hai’ - this attitude will help us as a nation.” (Modi, 2017)

The narratives that push for creative ideation and action have in the main concerns of an uncertain future. The individual is concerned with the future, which is also a possibility at the same time. The hope and concern push the individual or self to move towards the new ideals, dreams and ambitions. Creativity is represented as a tool in the narratives by which the person fights the odds and overcome the despair to a brighter side of life. These narratives formulate or model thinking and beliefs.

“When Arjuna was posing a lot of queries to Lord Krishna in the battlefield of Kurukshetra, then Krishna told Arjuna that you achieve goals as per your thinking and beliefs. We have a strong determination, we are committed for a brighter India. We, who have grown up with a state of hopelessness, have to reject the feeling of despair and must now march ahead with confidence.”(Modi, 2017)

The narratives of creativity also imply it as the power source to move towards big and seemingly impossible targets. The idea of development and growth is very related to

creative and exceptional performance in the respective fields. The blueprints of national identity enshrined in these speeches rests on the possibilities of growth in social, economic and political spheres. The tough task of growth is represented in many ways. PM's speech employs the metaphors of 'sleeping elephant' and 'running elephant' to represent the past conditions and present conditions of growth, respectively. Creativity is that quality which is supposed to make the transition from the 'sleeping elephant' to 'running elephant'.

“While engaging with India, the investors used to bemoan the lack of infrastructure, the blackouts due to power shortage and the bottlenecks. The same set of experts who had earlier dubbed India as a 'sleeping elephant' are now saying that 'sleeping elephant' has woken up and started running. Economists and international institutions are saying that India will provide momentum to the world economy for the next three decades and will spur the growth of the world.” (Modi, 2018)

The 'running elephant' here represents that radical change from the past towards a glorious future. The narratives of creativity are also employed to call for action towards dreams and aspirations. It is also used to shift the focus from the past towards the future of opportunities and hope. The corollary of this function of creativity is that it is used to envelop the failures of the past with the sugar-coating of new aspirations.

Innovations and discoveries are promoted in organisations and communities owing to its significance to growth and development. The policies in leadership and talent development in organisations and government exclusively focus on creative behaviour. Creativity is the antidote to address the challenges faced by the knowledge economy where the technologies and innovations determine the fate of nations. Quoted below is an extract from President's address at 'Innovations and leadership forum' where the Honorable ex-President A.P.J Abdul Kalam points out the importance of creativity in the nation-building.

“In a knowledge society, we have to make innovations continuously. Innovations come through creativity. Creativity comes from beautiful

minds... Creativity has got multi dimensions like inventions, discoveries and innovations... Creativity is a process through which, we can continuously improve ideas and find unique solutions by making gradual alterations and refinements to our works.” (Kalam, 2006)

Innovations are the basis for a knowledge society and economy. Creativity is that human resource which will provide the required edge for society in the challenging circumstances. Innovation is regarded as the practical and applied side of creative activities which helps in giving strength to the prosperity and security of the nation.

Creative thinking is encouraged in the educational curriculum to develop wholistic learners and equip children to face challenges of newer order. This change in policy is very critical in the personality development of children. However, the ideal-student model in school is not always compatible with the atmosphere that nurtures a creative student (Hanson, 2015). The ideal student is spontaneous, regular, systematic and participative in all activities of the class. A creative student may not always display these peculiar features. The studies indicate that creative individuals are characterised by the complexity of personality factors. Though the metaphor of creative student is promoted in the classroom, it is in conflict with the ideal-student model of the school. The draft of National Educational Policy 2019 sees creativity as a higher-order skill.

“The entire school education curriculum will be reoriented to develop holistic learners and develop in learners higher order skills of critical thinking, creativity, logical deduction, collaboration/teamwork, social responsibility, multilingualism, quantitative reasoning, and digital literacy.”(*National Education Policy 2019 (Draft)*, 2019)

The socio-cultural environment plays an important role in the origin, cultivation, development and propagation of creativity. There are conscious efforts by the different social agencies to bring innovation, development, progress and success in the life of individuals. In this context, it is important to assess the significance of socio-cultural factors in the models, theories and studies of creativity in the discipline of psychology. The recent spurt in creativity research post-1950s has contributed several insights and breakthroughs in this direction.

0.1 The Creativity Research

The Creativity Research has received considerable attention in the last sixty years owing to special research programmes, Government funding, resource allocation, dedicated professional and reputed Journals. The importance of creativity to nation-building, educational policy, market economics and human resource makes it an important topic of debate in the discipline of psychology. These explorations helped to uncover different dimensions of creativity. The recent spurt of research enhanced the knowledge, research opportunities, and dialogue in the area. The research produced various models, theories, testing devices, experiments and methods which are unique in content and orientation. The plurality or diversity of approaches makes the field productive and open to further investigations into the nature of the process.

One of the fundamental biases in creativity research is the individual-focus in its epistemological and methodological approaches. In this person-centric approaches, the unit of analysis is exclusively the individual. Contemporary psychological studies on creativity are foregrounded on the meta-theoretical assumptions of person-centrism. Glăveanu refers to this approach as I-paradigm or the creative-person paradigm (Glăveanu, 2010; Glăveanu, 2015). These approaches assume the separation of self from its own components and culture and ask questions on how they are related. The creativity models, theories and studies deliberate on the intra-psychological variables such as divergent thinking, associative thinking, remote association, bisociation, problem-solving, insight generation and organic changes. The appreciation of socio-cultural factors is missing or very minimal.

The approach is evident in the early models of creativity from the 1950s. The studies on divergent thinking and structure of intellect model of J.P. Guilford is based on the asocial conception of personality. The cognitive model and associated studies kickstarted the research on divergent thinking. The approach from the beginning was to explore creative personality and its components. The later studies explored various characteristics of the creative person and the processes orienting to those. The creative individual is tolerant to ambiguity, intrinsically motivated, prefers complexity and have a legislative style of thinking. The person has above average intelligence, fluency and flexibility of ideas, moves across associative elements of thinking fast and is articulate.

The studies focussing on the cognitive processes are popular in creativity research. The Geneplore model introduces processes such as the generative processes and explorative processes and the mind structures associated with it. It displays minimal engagement with the socio-cultural factors in the constitution and development of creative ideation. The nearest attempt one can identify is the searching of conceptual structures in the environment in the explorative phase. The cognition-centred model of divergent thinking dimension of creativity advanced by Guilford (1966, 1967) is generally measured by the qualities of fluency, flexibility and originality. Though the third component is socio-culturally determined, the model regards it as a property of the individual.

The Gestalt and the later cognitive psychology approach to creativity employed the concepts of problem-solving, insight generation, functional fixedness and laws of association. The studies in the problem-solving have roots in the early gestalt tradition, which explored laws of perception to solve the puzzle of human behaviour. Studying creative functions as open-ended problem solving and differentiating it from logarithmic functioning of thought puts the boundaries of the enquiry in the intrapsychic level. The studies which focus on the associative process and its nature, properties, dynamics and pace ignore the content of processes and its origins. The model of Mednick (1962) points to types of association based on similarity and serendipity but refrain from identifying the origin of these thought processes. These models are based on a creative personality who is assumed unique, stable, static and generates creative thoughts with one's own capacity. The dynamics of identity formation is the next level question if the enquiry needs to move to the core of the creative process. However, person-centric models generally regard identity as something which is a priori.

The Wallas' Four stage model of creativity is regarded as the classic model of creativity. It is still contemporary though it originated in the 1930s. The cognitive stage model postulated that creativity consists of four stages – preparation, incubation, illumination and verification. The mystery surrounding the non-conscious process of incubation is surprising as the dynamics of what happens beneath the conscious processes is unknown. It left many questions unanswered as what is the nature of incubation, the origin of creative processes and the impact of socio-cultural factors.

There are models which recognise the creativity as an investment which a person consciously decides by looking into opportunities it provides. The demand and supply dynamics of the market determine the value of things. These psycho-economic models appreciate the economic aspect of creativity though it is only one aspect of a large system. The investment model of creativity sees it as a process of buying low and selling high in terms of ideas. It identifies particular styles of thinking, motivation, personality, intelligence and knowledge as distinctive attributes of creative thinking. This approach is termed as confluence approach. However, the personality and the cognitive functions represented here are asocial and isolated. The question of how such a complex formation is constituted remains to be answered. The point missing in these attempts is the question of the origin of attributes and characteristics.

The psychodynamic approaches point that creative impulses are sourced from defence mechanisms, childhood conflicts and primary process thinking. It locates the source of creativity in the structures of the unconscious mind within the person. On closer examination, the defence mechanism adopted by the mind is due to the restrictions imposed by social factors. For instance, Freud's concept of sublimation implies diverting the primal and instinctual energies to socially accepted activities. The defence mechanisms of the mind are culturally tuned or adapted aspects of the mind processes, but the model assumes person-centrism. The location of the unconscious processes in psychoanalysis is within the person; thereby it restricts the dynamic system composed of the individual and environment.

0.2 Contextualising Individual and Creativity

The attempts to bring the social context back into the analytical frame primarily targeted the positivistic and atomic conceptualisations of cognitive processes. The research attempts to bring back the social context deliberated on the collaborative nature, group creativity and distributed cognition. The transactions of the individual with others and the environment are given added focus in these approaches.

The contextualization of individual got significant impetus from the framing of the Social psychology of creativity in the 1980s under the leadership of Teresa Amabile (1998; 2005; 2012). The Componential Model of Creativity tried to incorporate the social factors into the framework of creativity (Amabile, 1983, 2012; Conti, Coon, & Amabile, 1996). The technique developed to assess creativity involved asking expert opinions

rather than employing abstract analytic techniques used in Psychometric models. It showed that the domain of the creative work is equally important as the characteristics of a creative person.

The macro variable studies of D.K. Simonton (1998, 1999, 2000, 2018) has given significant contributions towards developing the social psychology of creativity, which brought back social context in the equation. The historiometric studies analysed data spanning generations to uncover the influences of the zeitgeist to creative production. He discovered that in European history, political and imperial stability helped creative production. The model formulated nomothetic principles towards the development of creativity by including the social context into the equation. The historiometric models predominantly focused on the creative achievement of eminent personalities leaving behind the everyday and common forms of creativity. Such an approach begs the question, such as is the creative processing of eminent individuals different from the ordinary expressions of creativity? Alternatively, does the model's laws of nomothetic characteristics missed the uniqueness of a creative act?

Though the initial attempts of introducing the social context into the framework of creativity challenged assumptions of positivism and person-centrism, a broader Systems or Ecological framework was missing. The creativity phenomenon is a complex function of many variables, and the social context is so vast that it was a serious challenge to bring it into the framework. A comprehensive attempt to bring the complex features of social context to the framework of creativity was foregrounded by Mihalyi Csikszentmihalyi in Systems theory (Csikszentmihalyi, 1984, 2009, 2014a; Fulton & Paton, 2016). The study focused on properties of the symbolic systems of knowledge, the characteristics of experts of the field in addition to individuals' contributions. The considerations in the model ranged from the genetic makeup of individuals to the particular idiosyncrasies of the creative individual. It enshrined the distributive nature of creativity against the person-centric assumptions dominant in the discipline. The model demonstrated social-constructionism of creative lives.

The model went against the standard norm of relying on personality by focusing on the moment to moment phenomenology of person-social interactions. Accordingly, the model produced significant contributions in the theory of motivation and affect, which were radically different from the prevailing models of psychology. The Systems model or

Flow model became popular and is extensively used in Organisations (Aubé, Rousseau, & Brunelle, 2018; Ilies Et Al., 2017), Occupational therapy (Emerson, 1998; Jonsson & Persson, 2006; Rebeiro & Polgar, 1999), schooling (Beard & Hoy, 2010; O'Neill, 1999; Smith, 2005) and in the science of exceptional performances. The chapter three and five of this study details Systems model and its postulates, conception, characteristics, comparative analysis and historic location.

The advances in cultural psychology of creativity also helped in the project of bringing back the social context into analytic frames. The difference between person-centric models and models emerging from cultural psychology is to the magnitude of the very nature of the individual. The basic premise in these approaches is that of the interdependence of individual and social context. Among the different traditions of cultural psychology, the cultural-historical school of Lev Vygotsky challenged the person-centric models with socio-cultural approaches emphasising social-constructivism over genetic-constructivism.

According to Vygotsky, the individual and culture are not separate units but a system which contributes to one another. The development of cognitive processes in the individual is not a sole function of biological maturation. The learning precedes development rather than otherwise. The culture mediates in the everyday behaviour of individuals, and the intra-psychological systems are developed from the blueprint in the inter-psychological plane of cultural-history. The phylogenetic and the ontological codes, which are natural developmental trajectory, are mediated with information from the cultural sphere. Vygotsky rejected the idea that creativity is only seen in famous historical works. It is evident in everyday activities. He demonstrated that the creative person and creation are the product of a particular zeitgeist. This work elaborates and analyses Vygotsky's theory of creativity. It further details basic tenets of cultural-historical school of psychology and Marxist psychology to bring forth the historical position of the cultural-historical school.

This study focuses on two cultural theories of creativity; theories of Csikszentmihalyi and Vygotsky. The study explores the conception of creativity of various creativity theories while focussing on the development and scope of two specific theories by analysing them through a meta-theoretical framework developed through analysis of creativity theories. The two theories are selected due to various reasons.

Firstly, both of the theories are vantage points in the project of bringing back the social context to the theoretical frameworks of creativity. Secondly, two theories appreciate the socio-cultural elements in a unique way, which also help to problematise the influence of sociocultural context in the development origin and transformation of self and creativity. Thirdly, Both the theories represent different intellectual traditions of psychology, which help to situate the debate of intrapsychic and socio-cultural nature of self in the inter-paradigm level. The evolution of Psychology as a discipline has contributed to shifts in focus, approach and understanding of psychological problems. Such trends in psychology will be analysed by studying the paradigms of Csikszentmihalyi and Vygotsky, i.e., Cultural-Historical Psychology and Positive Psychology.

0.3 Methodology

The relevant primary and secondary literature are reviewed in order to examine theories on creativity and specifically theories of Csikszentmihalyi and Vygotsky. The genealogy of creativity and significant theoretical understandings are discussed. Content analysis is done on the creativity theories of Csikszentmihalyi and Vygotsky and later is meta-theoretically analysed through a meta-theory developed in the study.

In the first Chapter, the breakthroughs, significant ideas and events in the Creativity Research in the discipline of psychology are discussed. The genealogy of Creativity Research in the discipline of Psychology is detailed with special emphasis on conceptual breakthroughs. The themes elaborated in the genealogy of Creativity Research includes Early experimental approaches, Reformulation of Lone Genius conception, Gestalt contributions, Emergence of Psychometric models, Unconscious mind and Dark side of Creativity. The events that animated the history of Creativity Research are divided into historical periods associated with the Great War and World War II. The secondary sources consulted in this chapter are *Encyclopaedia of Creativity*, *The International Handbook of Creativity*, *The Cambridge Handbook of Creativity*, *The Palgrave Handbook of Creativity and Culture Research*. The primary sources are the articles, Books, documentaries and TED-Talks of respective thinkers. The relevant articles are published in the Journals such as *Journal of Personality and Social Psychology*, *Journal of Creative Behavior*, *Creativity Research Journal*, *Psychological Review and Scientific American*. The books consulted as primary source include, *The Dark Side of Creativity* (Cropley, Cropley, Kaufman, & Runco, 2010), *Genetic Studies of Genius* (Terman, 1947),

The Creative Cognition Approach (Martindale, 1995), *Genius: The natural history of creativity* (Eysenck, 1995), *The early mental traits of three hundred geniuses*(Cox, 1926). The Online Talks and Documentaries consulted as Primary Source includes *Flow: The Secret to Happiness* (Csikszentmihalyi, 2004), *Do Schools Kill Creativity*(Robinson, 2007) and *The Creative Spirit* documentary.

In the second Chapter, the significant theories of creativity within the discipline are detailed and analysed. This detailing is followed by a comparative analysis of various models and theories of creativity within the discipline of Psychology. We will look upon the diversity of theoretical perspectives and research traditions in creativity research. The issues associated with the conceptualisation of creativity in theories such as the conception of self, the magnitude of creativity - four-C's, Six-P's, methods, collective or individual phenomenon, unconscious or conscious processes and interactions with other cognitive processes will be discussed. The analysis is structured based on the Meta-theory (Table 0.1) developed in the study. The secondary sources consulted for this chapter are *The Cambridge Handbook of Creativity*, *Encyclopaedia of Creativity*, *The International Handbook of Creativity* and *The Palgrave Handbook of Creativity and Culture Research*. The primary sources are the relevant articles published by the theorists in journals such as *Creativity Research Journal*, *The Journal of Creative Behavior*, *Psychological Review*, *Review of General Psychology*, *Scientific American*, *Psychological Review* and *Journal of Personality and Social Psychology*.

Major dimensions	Categories of classification	Issues dealt
Conception of Self	Person-centric, Interaction approach, Socio-cultural approach	Consciousness, Self, individual culture dialectics
Interactions with other cognitive processes	Dialectical relation or Interactive relation.	Cognitive processes such as memory, intelligence, motivation
General theoretical assumptions	Whether the theory has dealt with a) Magnitudes of Creativity, b) conscious or unconscious processes, c) Six P's of creativity d) collective or individual phenomenon, e) Method	General tenets of the theory proposed.

Table 0.1. : Meta-theoretical Framework developed for analysing general theories of Creativity

The third, fourth, fifth and the last chapter are sourced by relevant primary and secondary literature along with a metatheoretical analysis. Informed from a general review of various theoretical perspectives of creativity in the discipline of Psychology, an attempt is made to generate a meta-theory that will help to evaluate the theories of Creativity by Csikszentmihalyi and Vygotsky. Meta-theory (Table 0.2) is conceptualized into five categories; a) conception of Self, b) conception of development c) Interaction with other cognitive processes d) General meta-theoretical assumptions e) Paradigm and historical position. The study evaluates the general theories of creativity by a shorter version of the Meta-theory (Table 0.1) for classification purposes and to dialectically position the Creativity theories of Csikszentmihalyi and Vygotsky.

‘Conception of Self’ can be divided into three, i.e., Person-centric approaches, Interactionism or Synthesis approach and Social Constructivism. Person-centric approaches view individual as the source of himself or self-propelling in terms of development, personality, thinking styles, intelligence, motivation and other cognitive processes. The Social Constructivism adopts the position that the self and the cognitive processes as constructed by social and cultural factors. Interaction models or synthesis models focus on the mutual interaction between individual and culture in determining the nature of the individual. The issues of Consciousness, Self, individual-culture dialectics will be dealt with in this section.

The second category, i.e., ‘Conception of development’, deals with the evaluation of how the respective theorist considers the development of creativity as a cognitive process. This includes whether creativity is characterised as a) Dialectical relation with culture or idiosyncratic physiological development, b) Genetically programmed, learned or both, c) Dynamically changing across age groups or Static across age groups. The issues dealt are the development of creativity, creativity across age groups (e.g., creativity in childhood, adolescence and adulthood), creativity in childhood and activities such as symbolic play, the genetic basis of creativity and skill development. The third category, i.e., ‘Dialectics with other cognitive processes’ deals with the theorised relationship on how creativity is related to (correlational, causational or dialectic) other mental functions like memory, intelligence, inner speech, motivation, perception, fantasy and divergent thinking This includes whether the interaction with other cognitive processes is seen as Dialectical relation or Interactive relation. The issues dealt are cognitive processes such as memory, attention, intelligence, motivation and inner speech.

The fourth category, i.e., ‘Other Metatheoretical assumptions’ examines the general characteristics of the theory of creativity as a Magnitudes of Creativity, characteristics or processes, conscious or unconscious processes, Six P’s of creativity, collective or individual phenomenon and Method. The fifth category, i.e., ‘Paradigm and Historical position, ’ deals with the influence of paradigm in the development of both

Major dimensions	Categories of classification	Issues dealt
1)Conception of Self	Person-centrism, Interactionism, social- constructivism	Consciousness, Self, individual culture dialectics
2) Interactions with other cognitive processes	Dialectical relation or Interactive relation.	Cognitive processes such as emotions, intelligence and motivation.
3) Conception of development	a) Dialectical relation with environment or Biological maturation or Interactive relation with environment b) Genetically programmed, learned or both c) Dynamically changing across age groups or Static across age groups or metamorphosis of cognitive function.	Development of creativity, creativity across age groups (e.g., creativity in childhood, adolescence and adulthood), creativity in childhood and activities such as symbolic play, genetic basis of creativity and skill development.
4) General theoretical assumptions	Whether the theory has dealt with a) Magnitudes of Creativity b) Conscious or Unconscious processes c) Six P’s of creativity d) Collective or Individual phenomenon e) Characteristics or processes f) Universal or Rare phenomenon	General tenets of the theory proposed.
5) Paradigm and historical position	Basic tenets of the paradigm of which theory is based.	Positive Psychology and Cultural Historical Psychology

Table 0.2: The Meta-theoretical framework developed to analyse creativity theories of Mihaly Csikszentmihalyi and Lev Vygotsky

theories and the the historical position of Psychology as a discipline and its mainstream discourse. Philosophical and historical positions in Cultural historical Psychology and Marxist Psychology will be elaborated to situate Vygotsky's conception of Creativity. Similarly, the development of Positive Psychology will be traced to situate Csikszentmihalyi's conception of Creativity.

The third chapter will focus on Csikszentmihalyi 's Flow theory and of the paradigm of Positive Psychology. Csikszentmihalyi 's conceptualisations Creativity and its interaction with other processes in the cognitive system, such as memory, motivation, intelligence, convergent and divergent thinking will be explored along with his conception of Self, Consciousness and Individual. The primary and secondary sources include; *Creative insight: The social dimension of a solitary moment* (Csikszentmihalyi & Sawyer, 1995), *Society, culture, and person: A systems view of creativity* (Csikszentmihalyi, 1988), *Creativity: Flow and the Psychology of Discovery and Invention* (Csikszentmihalyi, 2009a), *Creativity* (Csikszentmihalyi, 1984b), *The Systems Model of Creativity* (Csikszentmihalyi, 2014b), *Oxford Handbook of Positive Psychology* (Snyder & Lopez, 2009), *Encyclopaedia of positive psychology* (Lopez, 2009).

In chapter four, Vygotsky's theory of creativity is detailed. The dialectics of Creativity with higher mental processes such as cognition, memory, inner speech, motivation, and intelligence along with his conception of self, consciousness and individual is dealt in this chapter. Vygotsky's position in the production of the Marxist school of Psychology will be studied with focus on Lenin's reflection theory, Pavlov's theory of conditioned reflex, Rubinstein's synthesis of Lenin and Pavlov, the contribution of Berlin school and Hannover school, Leontyev's production and western cognitive psychology. The primary and secondary sources include; *The collected works of Vygotsky Vol 1: Problems of General Psychology, Including the Volume Thinking and Speech* (Rieber, 1998a), *The collected works of Vygotsky Vol 2: 'The Fundamentals of Defectology (Abnormal Psychology and Learning Disabilities)'*(Rieber, 1998b), *The collected works of Vygotsky Vol 3: 'Problems of the Theory and History of Psychology'* (Rieber & Wollock, 1997a), *The collected works of Vygotsky Vol 4: 'The History of the Development of Higher Mental Functions'* (Rieber & Carton, 1993), *Mind in society: Development of Higher Psychological Processes.* (Vygotsky & Cole, 1978), *Imagination and Creativity in Childhood* (Vygotsky, 2004), *On the Problem of the Psychology of Actors Creative Work* (Rieber & Wollock, 1997b), *Concrete Human Psychology*

(Unpublished manuscript by Vygotsky), *The Psychology of Art* (Vygotskiĭ & Cole, 1978), *An Introduction to Vygotsky* (Daniels, 1996) and *The Cambridge Companion to Vygotsky* (Daniels, Cole, & Wertsch, 2007).

0.4 Research objectives

- 1) To study the Creativity theories of Csikszentmihalyi and Vygotsky in the context of the conceptual history of creativity in the discipline of Psychology?
- 2) To study how the cultural influences on creativity are dealt with in the Creativity theories of Csikszentmihalyi and Vygotsky?

0.5 Research questions

1. What is creativity? How the concept of creativity developed historically in the discipline of psychology?
2. How the cultural influences on creativity are dealt with in Creativity theories of Csikszentmihalyi and Vygotsky?
3. What is Flow? How is Flow related to creativity? What are the other cognitive components to which Flow is related?
4. How are Self and Consciousness conceptualised in Csikszentmihalyi's theory of creativity?
5. How is intrinsic motivation relevant in creativity? How does Csikszentmihalyi deal with the problem of intrinsic motivation in his theory?
6. How the Cultural-Historical Psychology paradigm of Vygotsky influenced his conception of Creativity? Did Marxist Psychology developed in erstwhile USSR influence Vygotskian thought and Cultural-historical psychology, and how does it inform the creativity theory of Vygotsky?
7. What is the conception of Self in Creativity theories of Csikszentmihalyi and Vygotsky?
8. How is the development of creativity as a social-cognitive process conceived by Vygotsky and Csikszentmihalyi?

Chapter 1

Breakthroughs, Significant events and Ideas in the History of Creativity Research

1.1 Introduction

The Creativity Research is now a matured field with sufficient resources, scientific studies, diverse theoretical frameworks, exclusive journals, dedicated professionals, and even specialisation courses in Universities. The field which shines brilliantly in the 21st century is indebted to the early attempts to decode the mechanics of creative behaviour. These attempts got diverse expressions, an earlier one being the myth-busting associated with the conception of genius. The discipline of psychology gave significant contributions in foregrounding the conception of genius on scientific and empirical grounds. Assessment of Intelligence reified as IQ tool was employed to assess the nature and extent of abilities in human species even before the creation of psychological tools of creativity. The conception of genius was refined with the advent of scientific psychology. The assumptions of asocial-eccentric nature of genius were debated, tested and rejected in the first half of the 20th century (e.g., Cox, 1926; Hollingworth, 1942; Terman, 1947). Ideas of scientific experimentation overpowered the theories of divine origins of creative spirit and creators being at the mercy of creative muse¹. Such ideas coming from mysticism and spirituality were indifferent and did not conform to science. The Renaissance project of giving the genius a human face endured in psychology.

This section covers the significant events in the study of creativity within the discipline from the times of early disciplinary formation. The events are divided into three periods a) From 1850 to first WW b) Inter-War period c) WW II and Post War period. This study chooses these periods for two reasons. Firstly, the rapid expansion of creativity research and American psychology is related to war efforts. J.P Guilford recognised the importance of creativity during the training of aircraft pilots in WW II. He observed marked reduction of failure rates in emergency conditions by choosing personals with creative thinking or divergent thinking. Guilford guided the post-war expansion of creativity research in the United States, with the organisational support of APA.

¹ See Sternberg, R. J. (Ed.). (1999) Chapter one for mystical approaches to creativity.

Secondly, both the Wars had a significant and far-reaching impact on the nature of the discipline. The intelligence testing became popular during the Great War, and psychology found its presence in business and organisations offering its services of testing aptitude and increasing productivity. The WW II contributed to the growth of the discipline in terms of supply of government money, military support, support of NGO's and philanthropic organisations. The war efforts of psychologists such as mental and aptitude tests, personal training and selection, vocational training, post-war treatment and psychotherapy captured the imagination of policymakers as well as the public.

1.2 From 1850 to the first WW

The first period is from 1850 to the first WW. The span has gone to pre-disciplinary formations as creativity research can neither ignore the contributions of Francis Galton, a pioneer in studying genius nor fail to address the methods of Italian psychiatrist Cesare Lombroso. Both of them contributed even before 1979, the year when psychology officially became an academic discipline. The former employed statistical analysis, formulated first mental tests and explored eugenics following Charles Darwin. Lombroso's concept of criminal atavism - physical anomalies can distinguish criminals and others - is outdated and is labelled racist. However, his contention that creativity and mental illness may have same roots is a recurrent theme in creativity research.

1.2.1 Eccentric Genius and Early Experimental Approaches

The nature of contemporary Creativity research is sculpted out from intellectual debates on disciplinary formulations and the nature of scientific enquiry (Kaufman & Sternberg, 2012). The intellectual history of the field points out the debates and eventual sidelining of competing ideas such as imagination, talent, genius, and originality. These constructs were debated in various historical periods in an attempt to comprehend the nature and characteristics of exceptional acts and persons. The medieval conception of Genius is tinged by ideas of mysticism and divine interventions. The source of creativity was placed outside the strengths of the individual, guided by unseen forces like Muses or Demons. For instance, Plato recognises the power of muse in dictating poetry to a poet. The creative person was regarded as asocial, eccentric, and possessed by divine spirits. The early experimental works in psychology cleared many mystical presuppositions underlying eminence and genius.

The scientific experimentation and research are very recent in its scientific legitimacy, mass employment and institutionalisation. The advent of scientific research foregrounded many principles such as empiricism and experimentation towards the nature of the scientific enquiry. The intellectual transformations in the nature of research influenced the enquiry of creativity. For instance, the social-cognitive approaches to creativity are different from a behaviourist approach towards problem-solving.

The first mental tests to measure abilities was constructed by Francis Galton, a Victorian-era polymath and founder of Differential psychology. His book *Hereditary genius* (1859) attempts to understand human genius and creativity. He argued that intellectual abilities are inherited like physical features. By using the questionnaire method, Galton collected data of the birth order and race of the dignitaries in Royal Society and concluded that the interest in science is inherited or innate. He points out that the Greek scholar Porson has spectacular memory which was hereditary in the family. According to his study, one in every nine of 286 judges of famous judges in England history are related by blood, and the ability to judge is inherited. He used Historiometry method in studies on nature and nurture and explored language for studying the encoded personality traits.

A common theme which runs in creativity research is the relationship between neurosis and psychopathology to creativity. One of the earliest attempt to study the relationship in the context of criminology was initiated by Italian Psychiatrist Cesare Lombroso. His book, *The Man of Genius* published in 1881, argued that Genius is closely related to insanity or madness; both have common roots. He collected psychiatric art, conducted character-analysis, assessed measurements of facial angles and bone structure, to demonstrate this link. His work could not acclaim scientific legitimacy; it was critiqued for misrepresentation in the American Journal of Psychiatry.

Both Francis Galton and Cesare Lombroso insisted on biological determinism. They gave greater importance to genetics than cultural factors in determining the character of an individual. Lombroso's work on criminal atavism and biological determinism justified fascism during Mussolini's reign. Francis Galton believed in the inheritance of abilities. In later years, the position on biological determinism was debated in psychology and creativity research

1.2.2 Intelligence Quotient and myth-busting of eccentric genius

French educational policy was changed during the start of the 20th century by a law that made the education of children mandatory. Binet was asked to identify children with learning disability among other normal children. Alfred Binet, in collaboration with Theodore Simone, constructed the first test of mental ability on the recommendations of the French government in 1905-1908. The psychometric and differential psychology approach advanced by Binet to identify the mental age of children intrigued both popular and disciplinary imagination. His tradition of psychometry and differential psychology coexisted with the prominent school of psychoanalysis.

IQ tests became a catalyst in eliminating many negative stereotypes regarding exceptional individuals. The model of eccentric genius is challenged in the 1930s mainly by psychological testing and psychometry. The popularity of IQ testing also ensured that the divine and mystical origin of genius is challenged. The significant contributions in this direction were made by Louis Terman and Catherine Cox in the study of Genius in the 1920s. The IQ tests found its way to the United States after original works of Alfred Binet and Theodore Simon. The Binet-Simon test was modified in the United States by Louis Terman. He served as a tester for the United States Military. Army Alpha and Army Beta tests were administered to millions of military personals in WW I. The US defence budget supported research and development in psychology. Both Catherine Cox and Terman argued against negative stereotypes associated with geniuses or creative personalities. Terman resorted to racial genetics by comparing IQ scores of different races, whereas Cox studied the cultural nature of sex differences, apart from her interest in the study of genius. Her doctoral research was under the supervision of Terman, which later became the source of her book, *Genetic Study of Genius*.

The Longitudinal Study of gifted children by Louis Terman tried to clear many stereotypes associated with them. The first volume was published in 1925, titled *Genetic Study of Genius*. The study which published in five volumes concluded that gifted children have normal personalities and they are generally successful in careers, academics and relationships. They are not social misfits and less adaptive types. He argued that intelligence is inherited and believed in eugenics. Catherine Cox's study of intelligence titled *Genetic Studies of Genius: The Early Mental Traits of Three Hundred Geniuses* is published in the year 1926. The Stanford-Binet Intelligence test was used to label IQ

scores of geniuses in their childhood through biographical sources. She reported a negative correlation between increasing age and IQ. She also reported that sex-differences are more cultural than biological, and woman can be a professional as well as a family person.

The work in the area of gifted children targeted at exploring the reality of myths associated with genius. Leta Stetter Hollingworth's work on gifted children titled *Children above 180 IQ* was in the lines of earlier studies by Catherine Cox and Lewis Terman. It is a two-decade longitudinal study of twelve children of high IQ, identified by Stanford Binet Test. The work provided necessary information towards managing the high IQ children in schools and home. The study rejected the idea that exceptional children are eccentric and asocial. She not only worked with gifted children but also wrote books and taught courses on giftedness in colleges.

These studies, including Hollingworth's work, used IQ as a valid measure of smartness or giftedness. There were debates about the nature of intelligence during this period. Spearman's theory of general intelligence and specific intelligence published in 1904 became a topic of the debate throughout the 20th century. The structure of intelligence was debated during this time. Though there were debates on the nature of intelligence, IQ tests were administered across the population. In the United States, many public intellectuals like Walter Lippmann came forward to question the test psychology in the middle third of the 20th century (Pickren & Rutherford, 2010, p. 149).

1.2.3 Unconscious roots of creativity

Freud's significant contributions towards the understanding of creativity fall into the first two decades of the 20th century. His works related to creativity are *Leonardo da Vinci and a Memory of His Childhood* (1910), *Creative Writers and Day Dreaming* (1907), *A Dream is the Fulfilment of a Wish* (1900), *The Moses of Michelangelo* (1914) and *The Psychopathology of Everyday Life* (1901).

1.2.3.1 Creativity: Metamorphosis of child's play

In the essay, *Creative Writers and Day Dreaming*, Freud refers to creativity in adults as a modification and substitution of childhood play. The play of children, which involves engagement with toys and role play, is essentially founded on the pleasure of rearrangements of objects. The creativity in an artist is functionally the psychological

antecedents of childhood play. The pleasure obtained in Childhood play is challenged socially by the serious world view of adults. A creative artist also invests emotions and energy to one's imaginative world, which is similar to the phantasy and unreality of the child. The free association in creative thinking is the flow of instinctual energy, which is similar to dreams and phenomenon such as a slip of the tongue, in that it fulfils a wish or desire that is unconscious to the person.

1.2.3.2 Creativity: A façade

Creativity occurs with the conflict between the irrational unconscious and conscious reality. The primary motivators of an individual are highly aggressive and sexual in nature. These primitive impulses are not allowed in a civilised society which is ordered according to social values. The direct expression of unconscious wishes and fantasies are prohibited in the civilizational pressure. A creative act finds expression to these in-depth unconscious materials in a socially legitimate situation with the support of an audience. The creative act is a façade. The defence mechanisms of sublimation re-channelise the original sexual impulses to activities that are legitimate and psychically related.

1.3 Inter-War period

Psychoanalysis emerged as an active school in the United States and Europe in the first half of the 20th century. Its influence in other regions such as Latin America or Asia came much later. It should be noted that during this period, schools of Behaviourism and Gestalt coexisted as different centres. Gestalt school researched much on insight generation in problem-solving. The intellectual zeitgeist within the discipline of the period was oriented towards understanding learning by rigour experimental and empirical study. Area of learning was also an area where there was conflicting production of scientific studies.

John. B. Watson was apprehensive of the metaphysical nature of consciousness and saw the futility in the scientific study of the same. Behaviourist tradition of Watson, Pavlov, Thorndike rejected introspection as a study of consciousness. The discovery of conditioned reflexes by Ivan Pavlov opened scope for exploration of behaviour in their own terms to behaviourists. The school emerged strongly during the Inter-War period and dominated academic circles whereas psychoanalysis existed in its strongholds and was favoured in the public imagination. This period witnessed Freud's contributions to creativity. Gestalt psychologists produced significant contributions in the area of

perception and sensory organisation. Study on insight generation by Kohler is significant to the history of creativity.

1.3.1 Gestalt breakthroughs – Insights, Productive thinking and Functional fixedness

The German word ‘Gestalt’ translates into qualities of whole, pattern or configuration. The Gestalt school of psychology were radically different in the conceptions of mental processes compared to the orientation of experimental psychology towards sensory experimentation. The Gestaltists saw the problem of creative thinking and problem-solving as functions of perception and insights. Several breakthroughs in the area of problem-solving and creativity such as the studies on insight generation, productive thinking and functional fixedness came from Gestalt school of thought.

Insights provided by Wolfgang Kohler established the significance of perception in the question of problem-solving. He established that internal mental reconfiguration is important to find a solution to a problem. Kohler, a scholar in Gestalt tradition, argued that problem-solving in animal behaviour is not as a result of trial-and-error as postulated by Thorndike, but a case of insight generation. He chose chimpanzees for his experiment owing to the similarity of brain structure and certain observable traits with humans. He took a critical stance on behaviourism that it avoids covert behaviour such as heartbeat and blood pressure for overt actions.

Identification of functional fixedness by Karl Duncker showed complexities in productive thinking. It is a mental block and cognitive bias of not trying alternative ways by sticking to traditional patterns, experienced by a person on solving problems. His experiments, such as candle problem and radiation problem, showed that lack of flexibility in thinking brings down problem-solving. His works, such as the *On Problem Solving* (1935/1945) were in line with Gestalt tradition.

Max Wertheimer differentiated between Reproductive thinking and Productive thinking. His ideas are published in the book *Productive Thinking* published posthumously in 1945. His early interests were in Laws of sensory organisation, perception and Gestalt theory. Max Wertheimer, one of the founders of Gestalt Psychology, came to the United States in 1933 due to Nazi politics in Germany. In the early years in Germany, he taught in the University of Frankfurt and Berlin Psychological

Institute and the later years in New School of Social Research in New York City. The works on productive thinking came in the latter part of his life after his emigration to the United States. Reproductive thinking is repetition, habits and conditioning, whereas productive thinking brings insights, new ideas, real understanding and clarity. The laws of logic and the laws of thoughts are different and need to be differentiated. He rejected the classroom practices of rote learning as it is habitual and imitative and placed importance to creative and productive thinking.

Karl Duncker studied productive thinking by providing problems to college students and asking them to derive a solution by thinking aloud. According to him, the method of thinking out loud is not introspection as in the latter, the subject itself is hearing oneself. If the goal cannot be met by action, thinking is employed to reach the goal. In this context, Productive thinking is successful thinking in reaching the goal. In his famous work, *On Problem Solving* (1945) he argued that fixation prevents insights. The successful Problem solving depends on overcoming the fixation. Karl Duncker is a gestalt psychologist trained under Kofka, Kohler and Wertheimer in Berlin. He found a position in Cambridge after being extradited by Nazis in Germany. Catherine Patrick also used the method of thinking out loud to examine the creative process.

1.4 WW II and Post War period (1939 – 2015)

1.4.1 Sputnik Era

The second half of the 20th century is the era of creativity research in psychology. This disciplinary trend is not a separate stream unconnected from the nature and orientation of mainstream psychology informed by APA. The 1950s is a crucial time for creativity research. The directions of psychological research were influenced by the significant developments in the U.S. during this period. In the post-war period, the discipline developed in a centre-periphery model where the U.S. acted as the centre. Earlier in the latter half of the 19th century, German Psychology was the centre, and it was imported to the U.S. in terms of types of equipment, ideas and intellectual inquiry. Another factor for the boosting up of psychological research is the launch of Sputnik by Russia in the cold-war era. The US restructured its educational programmes on a massive level to readjust itself in the era of technological competition.

The Postwar period witnessed an expansion of Psychology both as a discipline and profession. This period witnessed psychology's golden age in the United States. Psychology's institutionalisation became stronger with defence funds, the cooperation of the military, Philanthropic organisations and non-governmental organisations. Europe's post-war psychological research and practice were highly influenced by disciplinary formations in the U.S. The infrastructure and models of science were rebuilt in Europe by American aid according to the Marshall Plan. Europe was also the site of the export of American psychology. Many American psychologists helped create post-war European psychology. There was resistance in academic and intellectual terms in some areas of Europe. The rise of cognitive psychology in the United States brought back attention to mediational processes such as attention, memory and perception back into focus. APA after the war followed a divisional structure.

The APA has decided to follow a divisional structure after WW II. In 1946, Division 10 of APA – Psychology and Arts got established. The division focussed on creativity apart from cognition, motivation and personality. It also sought to find the relationship between Pathology and Arts. Paul Farnsworth was the first president of the Division during 1945-49. The division now is known as *Society for the Psychology of Aesthetics, Creativity and the Arts*.

Russia launched Sputnik in 1957, which created a national-level concern in the United States. Many experts called for redesign, reformulation and quality improvement of education in the USA. The National Defence Education Act passed in 1957 introduced programmes and infrastructure that will help the students of USA compete with Russian expertise. Apart from creating NASA and increased funding in the National Science Foundation, schools were advised to provide second language instruction, construction of specialised laboratories and exclusive focus on mathematics and physics. For research and graduate training programmes, large funds were allotted to Psychology. The focus of psychology during this period was on individual differences, social behaviour, child development and animal psychology, among others.

1.4.2 J.P. Guilford's Intervention and Divergent thinking

J.P Guilford in his presidential address to APA in 1950 calls for particular focus in the area of creativity study and research. Guilford and colleagues collaborated with war efforts; they were able to bring down pilot failure rates by one-third of initial rates at the

start of the war. Guilford realised the importance of creativity in action during the war efforts. His presidential address was published in 1950, as an article titled *Creativity*, which calls for increased focus on developing creative personalities. It also talks about inadequacy of I.Q. and the need for nuanced factor analysis models. Guilford's personal contribution and contribution under the power of APA president lead to the gradual growth of creativity research.

J.P Guilford's productive career spanned six decades with the publication of more than 300 articles and 25 books. His career trajectory is a piece of evidence for the intellectual zeitgeist of the middle third 20th century. Guilford's interests in early career years in the '30s and '40s were on psychophysics, eye movements and scaling methods – an early experimental tradition. Later his focus shifted to statistical methods and psychometric methods. His works on statistical and psychometric methods such as *Psychometric Methods* (1936) were standard textbooks for university students.

Guilford proposed the concept of divergent thinking in the 1950s, which is regarded as a thought process which can generate creative ideas and solutions. The various characteristics of divergent thinking are – fluency, flexibility, elaboration and originality. These characteristics are now used as the evaluation criteria in psychometric models of creativity like TTCT. Guilford saw the potential of Thurstone's factor analysis model and used it to produce questionnaires, personality inventories, and even a model of intellect. His interests in the latter part of his career were creativity, personality and intelligence. Factor analysis models were used in WW II by psychologists.

1.4.3 Humanistic psychology: Self-actualisation and Creativity

Humanistic psychology took roots in the US soil during the 1940s and 1950s; though its strong influence was during the 1970s and 1980s. In 1943, Maslow proposed the Hierarchy of Needs in a paper titled "*A Theory of Human Motivation*". In the 1940s, Carl Roger advances the ideas of unconditional positive regard and client-centred therapy. In the 1950s, the famous Detroit meeting of Clark Moustakas, Maslow, Carl Rogers and others discussed the tenets of the Humanistic school of thought. Humanistic psychologists were dissatisfied with both Behaviourism and Psychoanalysis. They criticised the imposition of the stimulus-response studies from comparative psychology on individuals who are whole and unique. Psychoanalysis focussed on irrational, deterministic and

unconscious tendencies to understand an individual who has a personal agency. Maslow's ideas on creativity came into the scholarly domain in the late 1960s and 1970s.

In the book, *Creativity in Self-actualizing People* (1959), Abraham Maslow refers to his conception of creativity and self-actualisation. Maslow held the position that ordinary creativity and psychological health are related. He revised and refined his understanding of the creative process with time. Later in 1968, in an essay, he confirms that creativity is a facet of self-actualisation. Creative people are rarely conformist to any order, government or institution as they are like happy and secure children who are cheerful, open to new experience and say the king is naked when it is needed (Krueger, 2013). Later he teeters and proposes two kinds of creativity – the raw or primary creativity and the structured secondary creativity. Real creativeness integrates both. Thus, a creative person is self-accepting, integrative, unifying and constructive.

1.4.4 Creativity as regression in the service of Ego: The post-Freudian explorations.

There are significant advances in creativity studies made by Psychodynamic tradition and Carl Jung's Analytical Psychology. Such reflections are seen in studies of Ernst Kris (1953), Lawrence Kubie (1958) and Frank Barron (1953). Ernst Kris re-evaluated Freud's idea of regression's connection with creativity. Studies by Frank Barron suggested that creative personalities have high ego-strength. According to Lawrence Kubie, the preconscious state is vital to the creative functioning of the individual. From his interactions with celebrity clients and his studies, he argued that there is no psychic law relating neurosis and creativity. Lawrence Kubie's ideas on neurosis and creativity were published in the book *Neurotic Distortion of the Creative Process* (1958). He rejected the popular conception on the empirical, data-driven ground that in order to be creative, the person may be neurotic, emotionally sick and dominated by unconscious energies.

A healthy person learns from experience and is flexible with intrapsychic and environmental demands, whereas an unhealthy person displays behaviour of unalterable and static patterns to environmental changes. According to Kubie, the preconscious and conscious mental process in alliance produce a psychologically healthy being. The verbal, communicative nature of the conscious mind and the flexible symbolic imagery of the preconscious mind are behind creativity. The unconscious system does not communicate

but hides information from oneself, and the domination of this system in a person causes emotional sickness. An artist is a better artist if one can tame the unconscious to favour the preconscious.

Ernst Kris took a positive view of regression when he theorised that creativity is a regression in the service of ego in his book *Psychoanalytic Explorations in Art* (1952). Rather than the ego getting overwhelmed by the primary process, it controls the later, which results in inspiration and creativity. His ideas on creativity are different from Freud and Jung. Freud identified regression as a means employed by the mind to tackle neurosis along with fixation. Through regression, the person goes back to the earlier stages of psychosexual development where there is no restraints on the satisfaction of pleasure. On the other hand, Jung viewed regression as a positive mechanism where the individual longs for innocence, childhood, protection and love.

Frank Barron and colleagues' studies confirm that creative personalities are prone to neurosis, but they also have the trait ego-strength to channel the neurosis into creative work. His study gets published in the *Scientific American Journal* in 1958 titled, *The Psychology of Imagination*. In this study, eminent individuals in the field of art, literature and science were interviewed and administered psychological tests such as Asch experiment, Inkblot test, Welsh figure preference test and Drawing completion test (Barron, 1958). The results indicated that Independent subjects were open to innovation and creativity. They described themselves as the original. The same subjects also displayed a general preference to asymmetry, apparent imbalance and complexity.

1.4.5 Intuition and Reason in French intellectual circles

Jacques Hadamard and Henri Bergson both coming from French intellectual tradition had different areas of expertise. Hadamard was a mathematician who had contributed in number theory and geometry whereas, Bergson a Nobel laureate in literature was controversial owing to his take on secularism and scientific attitude in France. Jacques Hadamard, in his book *Psychology of Invention in the Mathematical Field* published in 1945, provides an introspective account of mathematical thinking and creativity. He described the experiences of mathematicians and physicians such as Herman Von Helmholtz and Henri Poincare in problem-solving. The classic model of Wallas is verified in his work too.

Henri Bergson's book, the *Creative Mind*, got published in the year 1946. According to Bergson, the absolute knowledge and truth could be gained through intuition rather than rational logic as asserted by Kantian tradition. The secret behind novelty is undetermined creation and less of mechanical thinking. He argued that intuition of mind should not be ignored for intelligence. His ideas were controversial in France as he questioned the secular scientific attitude of society. He avoided concepts in his writings and used imageries as the former fails to touch reality. It is essential to note Bergson's ideas in French society in this period as IQ tests were developed and reassessed in France in the early part of the 20th century.

1.4.6 The emergence of Psychometric models of creativity

Creativity research got good follow-through in the 1960s after special boosting and awareness of its importance in the preceding decade. There was a plurality of approaches apart from mainstream approaches ranging from Cognitive psychology to Darwin's evolutionary perspective. After the war, the mainstream approach was Neo-behaviourist, but other topics like psychotherapy, cognition, social psychology and non-learning theoretical approaches to animal behaviour were well funded (Pickren & Rutherford, 2010, p. 221). Several psychometric tools assessing creativity based on different conceptual and methodological framework emerged during this period, such as the Torrance Test and Remote Association Test.

United States' Government money from establishments such as National Science Foundations was used to conduct conferences and seminars on creativity. The debates within the discipline include debates on the predictive validity of creativity, the relationship between intelligence and creativity, quantitative assessment and domain specificity. The position of the controversy of clinical vs statistical prediction in the 1960s was in favour of statistical tools and tests that can be mass administered. The evolution of mass administered tests of creativity is supported by an American identity of a consumer of commodities, including mental health and skills².

There were new operational definitions and advances in theoretical approaches to creativity. In the start of the decade, Donald Campbell proposed a Darwinian model of creativity. This theme is seen in the 1970s and the later decades. In 1962, Mednick

² See Pickren & Rutherford (2010, p. 150) for analysis of consumerism and psychologization of American society in inter-war period.

proposed an associative theory, an operational definition and a corresponding test of creativity (RAT). Torrance came up with Minnesota Tests of Creative Thinking (1966) consisting of both verbal and non-verbal inventories. Jerome Bruner along the lines of cognitive psychology proposed a non-positivistic, non-quantitative theory of creativity.

Jerome Bruner, in his article *Conditions of Creativity* published in 1962, defined novelty as an achievement of surprise in the eyes of the beholder. This definition is metaphorical in nature rather than scientific (Bruner, 1962). He identified three kinds of effectiveness in surprise – predictive effectiveness, formal effectiveness and Metaphorical effectiveness. Predictive effectiveness is a slow acceleration of knowledge and motivation leads to a discovery or solution to the problem which may not come as a surprise. The sudden illumination or eureka moment observed commonly in music, mathematics and logic is formal effectiveness. Metaphoric effectiveness is connections which happen across domains which are usually separated and functions beyond precise placement.

Bruner identifies six essential conditions of creativity. There is a detachment from conventional and obvious, whereas there is a commitment to engage in a construct which replaces the former. Creative act has both passion and decorum. The creator may allow the object of creation to dominate on oneself. Both postponement or deferral and immediacy can be seen in artists or scientists while perusing the creative path. The creative act also composes of the internal drama of different identities and conflict and coalition of these conflicts happen within oneself. The last condition is the dilemma of abilities – abilities seem essential to do work, but from the more profound point of view, they may appear trivial. He saw creativity close to human spirit at the age of technology doing non-creative functions. The theme of the dilemma of abilities can be seen again in the Flow model. Csikszentmihalyi elaborates on opposing traits in a creative individual like masculine-feminine and introvert-extrovert.

Mednick has defined creativity in associative terms and operationalised it in Remote Association Test (RAT). Psychological Bulletin titled *The Associative Basis of Creative Process* publishes his theory of remote associates and RAT in 1962. The speed and probability of a creative solution depend on the state of the organism, which brings associative elements into ideational contiguity. The creative process is forming associative elements in a new combination, which are useful or meet specific requirements. The more remote elements in the association process will lead to a highly

creative process. The associative theory postulates three ways to arrive at a solution – serendipity, similarity, mediation. The individual differences in creativity are due to requisite elements available to the creator, the organisation of associative hierarchy, the number of associations, personality or cognitive styles to approach problems and selection of creative combinations (Mednick, 1962).

This later study of the model by Mathias Benedek and Aljoscha C Neubauer (2013) points out that associative hierarchies do not differ between high and low creative people, but associative fluency does. Creative people have greater associative fluency rather than flatter associative hierarchy. The basic model proposed an association of elements and conditions for it. The dynamics behind the mind formations are not discussed in the model but assumes it as the basic nature of the mind. The emphasis is here on the function rather than structure.

Ellis Paul Torrance publishes the first version of Torrance Test of Creative Thinking (TTCT) in 1966, then named as Minnesota Tests of Creative Thinking. This test was remarkably different from Guilford's factor model and that of Wallah and Cogan (1965) Creativity Battery. Torrance's test had verbal and non-verbal aspects, and verbal aspect was covered using both verbal and non-verbal stimuli. Later TTCT emerged as the famous test for creativity. Many studies, including longitudinal studies on creativity, were carried out across the population using this test.

1.4.7 Bisociation

Bisociation is the basic process that underlies a creative act which is an association of two incompatible frames of thought. Arthur Koestler proposed the concept in his book *The Act of Creation* (1964). The mind is organised in matrixes, so are the skills and knowledge. The matrixes have fixed patterns that, at times, may lead to confusion. One employs the bisociation of mind to bring a new matrix to solve the problems. Arthur Koestler's *The Act of Creation* is divided into two books. The book I and Book II are *The Art of Discovery* and *The Discoveries of Art and Habit and Originality*, respectively. He tried to provide a global theory of creativity that accounts for creativity in science art, music and even jokes.

1.4.8 Problems of testing: Test-like conditions, Issues of predictive validity and Intelligence-creativity relationships

The popularity of psychometric models raised many debates on the methods of testing. One of the debates was on whether administration of creativity tests in test-like conditions could provide the exact measure. According to Michael Wallach and Nathan Kogan (1965), many studies failed because they include many functions to operationalise creativity, administer test-like conditions rather than game-like conditions and give less importance to ideational fluency. The readiness and uniqueness of a person's ideas assessed in game-like conditions reported consistency across tasks. The findings were reported in the book *Modes of Thinking in Young Children: A study of Creativity-Intelligence distinction* published in 1965. Their studies also demonstrated that creativity could be assessed distinctly from intelligence.

The issue of predictive validity was discussed in the first three conferences on creativity conducted at the University of Utah. The book, *Scientific Creativity: Its Recognition and Development* published in 1963 is edited by Frank Baron and Calvin W. Taylor, discusses selected results of conferences on scientific creativity which was held under the sponsorship of National Science Foundation. Particular studies on scientific creativity were provocative such as the finding that a large number of publications are not predictive of the creativity of a scientist. The book also dealt with intelligence, personality and motivation factors in creativity. The predictive validity of the test is essential. The debate is also reflected in the classic book *Talented Student* published in 1969. The authors of the book, Michelle Wallach and Cliff Wing Jr argued that just discriminant validity and reliability is not enough in a creativity test. Divergent thinking tests are better predictors of creativity in the natural environment than intelligence test scores. They also recognised different domains of creative performance (M. A. Runco, 2001). The book stimulated further research.

Creativity and intelligence are often contrasted and studied. A significant development in this area is the publication of *Creativity and Intelligence: An Exploration with Gifted Children* in 1962 by Jacob W. Getzels and Philip W. Jackson. The study identified 28 among 450 children, between 6th grade and high school, who scored in the top 20% in intelligence tests but not among the top 20% in creativity tests. This group was compared with 26 children who scored top 20% in creativity and not in Intelligence.

The result indicated that the creative group of children showed a playful attitude towards tests, displayed humour, performed well in fantasy test-story making and generally showed less respect to conventionality (Faris, 1962).

1.4.9 Challenging the past models: perception or thinking; Problem-solving or Problem-finding

Rudolf Arnheim's ideas of visual perception, thinking and artistic perception in *Visual Thinking* (1969) challenged the fundamental understanding of Psychology on sensation-perception-cognition. Separating perception and thinking in psychology textbooks is similar to the separation of intuitive functions and abstractive functions in medieval times. The treatment of sensory experience as a lower-order entity to reasoning needs revision (Arnheim, 1969). According to Arnheim, the language may help thinking, but it is not the arena where thinking happens. His cube experiment demonstrates that for seeing, one has to think and for thinking one has to look. Productive thinking can solve any problem. Thinking is perceptual in nature and approaches, presenting thinking and perception as two separate entities are misleading. Similarly, the dichotomy between perception and reasoning is also false. His ideas were critical of the basic tenets of psychology regarding sensation-perception-cognition.

1.4.10 Problem-finding or Problem-solving

The Problem-solving model was a popular perspective and a method to understand the creativity employed by many researchers. Jacob W. Getzels and Mihalyi Csikszentmihalyi (1976) in the study titled *A Longitudinal Study of Problem Finding in Art* identifies that in a creative artwork performed by an artist, he or she continuously reformulate, redirect and employs new approaches rather than fixate on a stable, predetermined vision. The creative person not only solve problems but finds new problems on the way. In this prospective study, the artists who employ problem-finding approaches were found to be more creative.

The problem-solving framework of creativity was supplemented by other approaches such as Insight approach, Synectics and Brainstorming. These different approaches and techniques are reflected in the works of many scholars like Morris Stein. There Academic Press publishes Morris Stein's *Stimulating Creativity: Vol I Individual procedures* in 1974. Stein postulates a three-stage model for creativity: Hypothesis

formulation, Hypothesis testing and Communication of results. He reviewed procedures for improving creativity such as roleplaying, hypnosis, therapy and language regression.

1.4.11 Darwinian model of Blind variation and Selective retention

Donald Campbell's article "*Blind variation and selective retentions in creative thought as in other knowledge processes*" published in 1960 in *Psychological Review* is seminal to creativity research. Campbell proposed a Darwinian model for creativity; a three-stage model of mechanisms for the introduction of a variation, selection of variation and preservation and reproduction of variation. Several researchers had elaborated and tried to extend his work (Dasgupta, 2011; Eysenck, 1995; Martindale, 1995; Dean Keith Simonton, 1998). D. K Simonton later elaborates on this model (Dean Keith Simonton, 1998, 1999a, 1999b) which attracted debates in *Creativity Research Journal*. The roots of the contemporary debates can be traced back to Donald Campbell's work on creativity. The spectre of Darwinian theory on mental nature and more specifically, creativity has not left the intellectual sphere.

Howard Gruber traced the continuity and development of Darwin's ideas by analysing his unpublished notebooks and his scientific works. His method called as the case study of evolving systems provides historical and network-oriented analysis of the individual. The study of scientific creativity of Charles Darwin is published in the book *Darwin on Man: A Psychological Study of Scientific Creativity*, in 1974. He demonstrated slow and integrative nature of creative thought and problem-solving.

The BVSR model inspired scholars like Dean Keith Simonton, who studied how the cultural and social factors influence the creative production of a community. His article titled '*Sociocultural context of individual creativity: A transhistorical time-series analysis*' examined political and social climate back to 127 generations in European history. The Creative development was influenced by political instability, instability of imperial empire, political fragmentation and availability of role models (Dean K. Simonton, 1975). The *Journal of Personality and Social Psychology* published Dean Keith Simonton's histometric study of individual creativity in 1975.

1.4.12 Multiple intelligence

Howard Gardner's *Frames of Mind* published in 1983 talks about multiple intelligence against the widely held notion of a single intelligence. He distinguishes and

delineates various domains. Humans have different and relatively independent ways of information processing, whereas IQ tests measure typically linguistic, spatial and logical-mathematical abilities. Apart from these three modules of intelligences there are interpersonal, intra-personal, musical and body-kinesthetic intelligences. These distinctive modules contain distinctive memory and perceptual arrangement and genetic-neural mechanisms. The cognitive-contextual theory advanced by Gardner recognises the importance of culture and values which shape or form these intelligences and determine which one among them values more. Samuel Messick (1992) points out a neo-nativist stand in Gardner's conception of abilities.

Much of Gardner's evidence for multiple domains of intellectual abilities came from applied evidence rather than experimental evidence. This remained as a criticism for his theory. He derived his theory of multiple domains in intelligence from studies in cognition, brain damage, exceptional performances and cultural cognition studies. According to him, other theories of intelligence are ethnocentric and culture-specific, which is not universal in nature. He was able to locate an area in the brain that concerns with existential intelligence, an intelligence which deals with questions such as the meaning of life. Gardner partnered with Csikszentmihalyi and William Damon for 'The Good Project' which explores the nature of work, play and collaboration.

1.4.13 Morality and the Dark side of creativity

In the 1990s, one of the debates within the discipline was on the moral nature of creativity. The issue of the dark side of creativity emerged into considerable attention of research scholars. Extensive discussion of this aspect is seen in the first decade of the 21st century. The dark side of creativity was debated extensively in the academic-research circles during the early decade of this century (e.g., Akinola & Mendes, 2008; A. J. Copley, 2010; D. H. Copley, Copley, Kaufman, & Runco, 2010; Gino & Ariely, 2012; Mark A. Runco, 2010; Sternberg, 2010).

A special issue of *Creativity Research Journal* published in 1993 focusses on the relationship of morality and creativity. Specifically, this edition dealt with moral issues in relation to creative talent and efforts. Many academic experts contributed to this special edition. Howard E. Gruber (1993) argues in this special issue that a moral imperative of what ought to be done and what can be done if combined provides stable action on the moral grounds of fairness and justice. Mark A. Runco (1993) points out that the

distinction between creativity and morality based on conventionality is misleading. Problem-finding skills and evaluative skills are close to creative morality. Howard Gardner (1993) explores early life and principles such as satyagraha of Mahatma Gandhi in an attempt to investigate creativity in the moral domain. According to him, Gandhi epitomises creativity in the moral domain. Robert B. McLaren (1993) emphasises the dark side of creativity by exploring the literary image of the Frankenstein monster along with other historical sources.

Cambridge University Press published the *Dark Side of Creativity* in (2010), edited by David H. Cropley, James C. Kaufman, Mark A. Runco and Arthur J. Cropley. The book pointed to ill effects of creativity like Germ warfare, use of the atomic bomb in 1945, development of mass weapons and promotion of unhealthy food through creative advertisements among many. Many scholars shared their thought on malevolent creativity, negative creativity, negative aspects of Person, Product and even Process. The creative process may lead to high levels of uncertainty, which may not be healthy for certain personality types. Scholars such as Vincent, Goncalo, and Audia point out that past creativity may block the future creative process by functional fixedness. The book explores various aspects of creativity and its relationship with crime, confinement, neurosis, deviance and terrorism.

1.4.14 An audience for creativity research: Talk shows, Journals and Handbooks

The popularity of scholarly video-talks on creativity aired in TED and social media reveals the popular appeal about the topic. TED talks of Mihalyi Csikszentmihalyi, Ken Robinson and Elizabeth Gilbert have attracted a million views. Studies in neurophysiology and brain attempted to grasp the creative process by technologies for brain imaging. Another concern in this period was on the decline of creativity in the population (e.g., Amabile & Conti, 1999; Kim, 2011; Roskos-Ewoldsen, Black, & Mccown, 2008; Weinstein, Clark, DiBartolomeo, & Davis, 2014). Majority of research published in reputed and dedicated journals studied creativity in association with shades of psychopathology, personality characteristics, brain imaging techniques, problem solving and bilingualism.

Mihalyi Csikszentmihalyi's (2004) TED talks on *Flow: The Secret to Happiness* became popular. It has more than five million views on the internet. Elizabeth Gilbert's (2009) TED talk in 2008, *Your Elusive Genius* explores the divine inspiration of creativity

many artists report while involved in a creative task. The video has more than three and a half million views to date. Sir Ken Robinson (2007) in the popular TED talk of titled ‘Do Schools Kill Creativity?’ pointed out that creativity is as important as literacy in education. Without being prepared to be wrong, most kids will not come up with something original. Education system stigmatises mistakes and educates children out of their creative capacity. Peoples idea of the hierarchy of academic subjects is predicated on industrial revolution age. Intelligence is interactive and diverse, but the school system does not respect this fact. His speech became popular and collected more than 17 million views in May 2019. The documentary on creativity, namely *The Creative Spirit*, was televised in the United States in the year 1992. Many researchers, such as Howard Gardner and Theresa Amabile, shared their insights on the development of creative thinking in children. The documentary cited research to communicate with the public that surveillance, evaluation, reward and competition are killers of creativity. Creative activities bring joy into learning for children. The documentary advocated giving control of media to the kids instead of media controlling their childhood.

Establishment of Journals is an important factor in institutionalising any research field. The creativity research field has dedicated journals oriented towards different aspects of creativity. *Psychology of Aesthetics, Creativity, and the Arts* became an official journal of APA in 2005. *Journal of Creativity in Mental Health* and *Thinking Skills and Creativity* started publishing in 2005 and 2006 by Taylor and Francis and Elsevier, respectively. The division 10 of APA makes ‘*Psychology of Aesthetics, Creativity, and the Arts*’ its official publication in 2005. It focusses on Art and general creativity. Thalia Goldstein and Oshin Vartanian are the editors of the journal. It promotes original empirical works and generally discourages qualitative works, case studies and literature reviews. Elsevier starts publishing ‘*Thinking Skills and Creativity*’ in 2006. The journal focusses on critical issues in creativity studies like creativity training, thinking skills training and innovations in creativity studies. Pamela Burnard and Teresa Cremin are the co-editors of this journal in 2019. *Journal of Psychotherapy in Independent Practice* changed to *Journal of Creativity in Mental Health* in 2005 and is published by Taylor and Francis. It is a journal of the American Counselling Association. The Journal examines practical applications of creativity to create mental health and deep self-awareness. It also focusses on therapeutic approaches in counselling practices. Currently, Thelma Duffey is the chief editor of the journal.

Many handbooks, encyclopaedias and collected works were published in the late 20th and early 21st century. Academic Press publishes *Encyclopaedia of Creativity* in 1999, edited by Mark A. Runco and Steven R. Pritzker. It covers domain-specific areas of art, music, cinema, architecture, acting, writing and sports. The first edition covers the research on cognitive styles of creativity and various processes underlying creative thought — the articles focussed on individual, social, cultural and historical aspects of creativity. The encyclopaedia published relevant longitudinal studies, phenomenological studies, neuro-psychological expertise and qualitative studies rather than relying only on quantitative studies. This study derives its secondary source from the encyclopaedia. The significant handbooks on creativity published during this time includes, *The Cambridge Handbook of Creativity* (Kaufman & Sternberg, 2012), *The International Handbook of Creativity* (Kaufman & Sternberg, 2006), *The Palgrave handbook of creativity and culture research* (Glăveanu, 2017) and *The Oxford Handbook of Creativity, Innovation, and Entrepreneurship* (Shalley, 2016).

1.5 Conclusion

The genealogy of creativity reflects the diverse conceptualisations, multiple paradigms, various methodologies and heterogeneous frameworks. Almost all schools of psychology have contributed significantly to creativity. An exception is the behaviourist school and new psychology. The former focussed on various aspects of learning and stimulus-response relationship to study the psychological systems, whereas the latter used brass equipment and precise measurement of sensory and perceptual data. Further, the historic location of these schools is in the pre-World War II era.

The significant advances in the research field were seen in the Post War period. This period witnessed a resurgence in creativity studies and research. The support from the government, philanthropic organisations, non-governmental organisations helped the development of creativity research field in the United States. The very field of creativity emerged out of experiences of psychologists in war efforts. The disciplinary fields like the APA have also given direction to the creativity research.

The employment of the positivist paradigm in Psychology has led to censoring of some of the significant ideas or breakthroughs. For instance, the insights of psychoanalytic tradition like the primary process thinking, ego-strength, and defence mechanisms are not considered in the popular models of creativity or the testing devices.

The emergence of systems models provides hope in analysing creativity without eliminating or censoring factors foreign to the paradigm.

An important contribution of creativity research is the psychologization of genius. The genius was given a human face, and the field reacted strongly against the idea of creativity as an enigma. The Psychologization was also about the democratisation of creativity and myth-busting of old assumptions. It generated scientific understanding on various aspects of creativity such as the process, origins and methods of cultivation. For instance, research has pointed to encourage a playful attitude in children to develop creative thinking. The genealogy points out that the age-old assumptions of biological determinism, eugenics, race or colour psychology were replaced by a democratic idea of genius and exceptionality.

Creativity research field did not eulogise creativity for all its benefits, but it also pointed out its dark side. Though creativity is regarded as a desirable attitude, the recent debates in the discipline point to the dark side such as negative moods, poor impulse control, dishonesty narcissism and non-conformity (Chamorro-Premuzic, 2015). Creativity and its relationship with morality and values is a significant area of debate in creativity research.

Though the creativity research followed the status quo on various issues like method, and philosophy of science, it revisited the traditional models at appropriate times. In Psychoanalytic school, the conception of regression and defence mechanism's relation with creativity was revised and redefined from the orthodox models. Problem-finding models challenged the early models of problem-solving. Rudolf Arnheim's ideas of visual perception challenged the existing models of perception and sensation.

Specific themes keep on recurring in the conceptual history of creativity research, such as the relation of psychopathological states to creativity. The early conceptions of pathological view are seen in the works of Lombroso. The theme is seen again in the works of Jamison, where mild and moderate psychopathological states, including bipolar disorder, are seen very related to creativity. This approach is in contrast to the efforts of normalising the creative genius evident in the first half of the 20th century by the works of Louis Terman, Catherine Cox and Leta Stetter Hollingworth.

The breakthroughs, significant events and ideas discussed in this session helped the advances in the field. The influence of the significant events is reflected in the formulation of theories or models of creativity. They reflect the conceptual shifts, epistemological variance, and advances in the history of creativity research. The next chapter is dedicated to the detailing, evaluation and comparative analysis of creativity theories and models.

Chapter 2

The Theories and Processes of Creativity: A Comparative Analysis

2.1 Introduction

Theories of creativity in Psychology are marked by its plurality and spread. A valid theory is a distilled product after perspective building, research, expert review and practical utility. The divergence of views expressed in the theories is a reflection of the state of the discipline and its historical location. Majority of the theories discussed in this chapter are valid, scientifically debated and peer-reviewed studies. Our central concerns are the nature of the theory, factors addressed by the theory, a central pivotal point to which the theory focuses and a comparative understanding to dialectically position the particular with the general. The spread of theories is extensive with central concerns ranging from genetics to daily life choices. For instance, the recent studies caution about the adverse effects of creativity such as mood disorders, psychopathology and inconvenient attitudes towards social life (Akinola & Mendes, 2008; Arthur J. Cropley, 2010; Gino & Ariely, 2012). The spread and plurality are positive developments which has to be treated cautiously. The study will analyse processes, theories and models underlying creativity. It attempts at briefing, classification and evaluation of theories through a comparative analysis based on a Meta-theory developed in this study.

One of the reasons for theoretical diversity is the focus of theories on a central concern or a major dimension of creativity. For instance, Sternberg's model is concerned with the economic exchange of buying low and selling high in ideas at the market or domain. Kay Redfield Jamison's central concern is the relationship between mild or moderate psychopathic states with creativity. Both the Confluence model and Jamison's study do not reject other factors intervening in creativity, such as intelligence or styles of thinking. What is observable is certain variables are accepted as correlates and certain not rejected but do not remain in the central concern or major dimension in the approach. Some theorists address the correlates directly. For instance, the central concern for Frank Baron was the role of conflict in creativity. Further, he accepts the relationship of I.Q to creativity and the magic figure of 120 – the minimum I.Q. score above which the increase in intelligence do not result in a corresponding increase in creativity.

Majority of theories in the comparative review are post-1950s in origin. This is because of the surge in creativity studies after this period, started after Guilford's intervention and followed up by APA. Since our focus is in comparative review and the big picture, we have taken the base models and core proponents. The work examines the theories of creativity on three dimensions a) Conception of Self, b) Interactions with other Cognitive processes c) General theoretical assumptions. The conception of self is classified into three – Person-centric approaches, Interaction approach or Interactionism and Social-constructivism. Person-centric approaches, which are popular in Psychology, view individual as the source of himself or self-propelling in terms of development, personality, thinking styles, intelligence, motivation and other cognitive processes. Social-constructivism approaches the individual as a social and cultural construction where the thinking skills, personality structure, lifestyles are seen as constructed by socio-cultural forces. Interaction models or synthesis models see the interaction between individual and culture in determining the nature of the self.

This analysis explores the nature of the interaction of creativity with other aspects of cognition. The nature of interaction can be Interactive relation or a Dialectic relation. The dialectic relation points to the mutual constitution, mutual development, and functioning together of cognitive processes. The interactive relation points to the level of correlational support of cognitive processes. For instance, the researches focussing on the relationship of IQ, memory, thinking and motivation to creativity in a correlational or causal method is an example of interactive relation. It assumes a compartmental separation of functions. In General theoretical assumptions, the theories of creativity are analysed on whether the theories dealt with conscious or unconscious processes, creativity as a collective or individual phenomenon, Magnitudes of Creativity, Six P's of creativity and method.

The theories are classified into Economic Models, Personality Models, Cognitive Models, Psychometric Models, Biological Models, Affect Models, Psychodynamic models, Systems models, Darwinian models and Socio-cultural models. The classification is based on the nature and central tenet of the theories. The economic model reflects the role of market-individual dynamics in creativity. The theories deal with the influence of macro-economic factors in the creative production of the individual or the organisation. These models understand creativity through market perspectives like “buying low and

selling high” in the realm of ideas. The efforts taken by an individual to nurture creativity is seen as an investment decision.

Cognitive models focus exclusively on the cognitive processes underlying creativity. They use the constructs of associative thinking, divergent thinking, metaphorical thinking, remote association and conceptual combination. Psychometric models or testing models are generally used for testing purposes. They are concerned with the assessment and prediction of creativity. These models use the concepts of discriminate validity, reliability, fluency, flexibility and originality. Biological models focus on the physiological processes, brain activities and genetic factors. They deal with the characteristics and processes of creativity through the gateway of biological processes.

Major dimensions	Categories of classification	Issues dealt
Conception of Self	Person-centric, Interaction approach, Socio-cultural approach	Consciousness, Self, individual culture dialectics
Interactions with other cognitive processes	Dialectical relation or Interactive relation.	Cognitive processes such as memory, intelligence, motivation
General theoretical assumptions	Whether the theory has dealt with a) Magnitudes of Creativity, b) conscious or unconscious processes, c) Six P’s of creativity d) collective or individual phenomenon, e) Method	General tenets of the theory proposed.

Table 2.1: The Meta-theoretical frame employed to analyse general theories of creativity

Affect models deal with psychopathological states, neurosis, conflict and emotions primarily in the negative spectrum. The psychodynamic models focus on the unconscious processes of mind in the exploration of creativity. The processes such as displacement, sublimation, childhood conflicts, wish-fulfilment are discussed here. The Systems model brings into the equation the socio-cultural forces without diluting the intra-psychic processes of creativity. It deals with concepts like social-construction, domain, field and evolving system. Darwinian models evaluate creativity with the

psychological equivalent of the theory of biological evolution, the principle of “Blind Variation and Selective Retention (BVSR)”. Socio-cultural models focus on the socio-cultural construction of creativity. These models come from the cultural-psychology paradigm. It emphasises the socio-cultural constitution of the self and cognitive processes.

Every classification system has limitations and advantages. Our analysis tries to bring the big picture and scale of creativity theories. The review focussed on major concepts, significant concerns and meta-theoretical assumptions. A comparative analysis is suited for such a purpose rather than approaches like a case study or factor analysis. The general spread of creativity theories and its meta-theoretical analysis provides a platform to locate creativity theories of Vygotsky and Csikszentmihalyi. Purpose of the classification is twofold. First, it helps to provide the dialectic spread of creativity theories on account of a broad meta-theoretical assumption. Such a classification helps in identifying the patterns on the basic question of the nature of the self, inherent in creativity theories. It provides insights and evidence into the divergence of views caused due to the change in major dimension. When the nature of the individual is processed differently, then the theories emerging out of the assumption carried a particular flavour or characteristic. Second, it helps to position the theories of Vygotsky and Csikszentmihalyi in a broad narrative. It helps to differentiate both theories.

2.2 Magnitude Models

Magnitude models are used for the sole purpose of categorising creativity (Kozbelt, Beghetto, & Runco, 2010). These models categorise creativity based on the magnitude and scope while refrain from measuring or quantifying it. Creativity researchers use such models to clear out, delineate or specify which aspect or magnitude of creativity they are referring to. Such models do not speak on the content or processes in creativity. They help in research language and classification as can be seen in the classification of creativity (e.g., Kozbelt et al., 2010). The magnitude models popular in the discipline is the four-C model and four-P model.

In order to differentiate between creativities of high magnitude and that of everyday behaviour, Creativity researchers use Big-C and little-c models of creativity. Eminent creativity or Big-C belonged to people of eminence, who possess the highest expressions of creativity, whereas everyday creativity or little-c belonged to all

people (Kharkhurin, 2014). The former includes creativity of the highest order such as the discovery of electricity, Newtonian physics, artworks of Michelangelo or the music Mozart. On the other hand, little-c represents the creativity of small magnitude experienced in everyday life. This model assumes that creativity is not restricted to special people.

James C. Kaufman and Ronald A. Beghetto (2009) introduced mini-c and pro-c into already established dimensions of Big-C and little-c. Mini-c represents personally meaningful experiences inherent in the learning process which signifies a personal developmental aspect. Mini-c is constructed to avoid non-eminent forms of creativity into the little-c category (Kaufman & Beghetto, 2009). This dimension helps to identify creativity of children. Pro-c refers to creative expressions of professional creators who have not yet arrived at eminence. A chef who revolutionised cooking comes under Big-C whereas a local chef who is professional, better than a home cook, makes cooking for a living comes under Pro-c. It is the effortful and developmental progression from little-c though not yet reached Big-C. This perspective is expertise acquisition approach to creativity.

The four P's in creativity research was identified by Mel Rhodes by collecting and analysing definitions of creativity and imagination. Mel Rhodes (1961) published the article titled '*An analysis of Creativity*' which argued that there are into four categories of definitions - creative process, creative product, creative person and creative environment. The creative environment is represented as press or place. Creative person definitions focussed on personality, traits, characteristics and idiosyncrasies. Product definition focussed on works focussing on a finished product like the work of art, patents, scientific discoveries, and ideas. Process definition focussed on cognitive processes that underlie creativity. Press definitions focussed on zeitgeist, culture, environment and evolution. Kaufman and Beghetto (2009) introduced two more P's in the classification based on magnitude – persuasion and potential. Approaches focussing on persuasion emphasised the ability of the creator to convince others about the creative product. The recognition of experts is a necessary component of creativity. The Potential research focuses on the creative potential of individuals, i.e., the unfulfilled or unexpressed creative talent. The area of this research includes everyday creativity, the creativity of children and support systems that help the promotion of creative talents.

2.3 Economic models

Economic models view the individual as an economic player in the market. These models try to elucidate the interaction between market and individual, a model that fits well in the creative production of organisations. These models use cost-benefit models or human capital approach to study creativity. The Investment theory of creativity and Rubenson and Runco's Psycho-economic model are the popular economic models of creativity (Kozbelt et al., 2010).

According to Psycho-economic model developed by Rubenson and Runco (1992), the creative activity follows a cost-benefit model. People will incur the cost of investing in creativity if they expect some benefits. The cost of investing in creative potential is not equal for all individuals; for instance, children have less opportunity cost than adults in investing in creativity. The model focussed on the human-market interaction towards the formation of demand for creative activities. The potential is a product of initial endowments and active investments in creative activities (Rubenson & Runco, 1992). In addition to intrinsic factors like problem-solving skills, problem-discovery skills, family background and genetics, the active investments taken by the individual are essential to developing creative behaviour. Psycho-economic model of the market is reflected in this model. The magnitude of creativity discussed in the model range from little-c to big-C. The scope of the model is limited to Process and Person. The model attempted to provide scientific framework to quality and value of creativity (Shiu, 2014).

According to the Investment theory of creativity developed by Sternberg and Lubart (1991), creative people metaphorically buy low and sell high in the realm of ideas (Sternberg, 2012a; Sternberg & Lubart, 1991, 1992; Zhang & Sternberg, 2011). This model is similar to the investment model in the market where a successful investor sells the assets higher which he or she bought for a lesser price. A creative person takes an unpopular idea or an idea that is out of favour and pursue them towards growth. The theory views Creativity as a novel response but paradoxically a habit, a way of life, a pattern of behaviour which became almost involuntary. It is not an inborn trait. Creativity can be promoted by opportunities to engage in it, encouragement from others and by encouraging rewards for creative thinking and behaviour. Creative people see a problem differently, take risks, defy the crowd against their own beliefs and do not give in to obstacles or challenges so easily.

According to this model, creativity requires a confluence of six resources; intellectual abilities, styles of thinking, knowledge, personality, motivation and environment (Sternberg, 2012b). Three intellectual skills are required for creativity. Synthetic ability sees problems in new ways against conventional thinking. Analytic ability chooses which idea to pursue and which not to. Practical contextual ability is required to convince others about the value of one's ideas and to sell it in the market. Legislative style of thinking is vital to creativity, i.e., preference to thinking and thinking in new ways. Creative thinking is different from the legislative style of thinking; a person may think differently but not think well or think creatively. Knowledge should be used as a help rather than a hindrance. Without the necessary knowledge, a person cannot contribute creatively, but he or she should not be limited by it. Knowledge of a field should not lead to closed or entrenched perspective. The motivation behind creativity is necessarily intrinsic and task-focussed motivation. Potential external rewards are not the real concern for the creative person as the creator enjoys what is being done.

2.4 Affect models

Affect models focus on conflicts, extreme emotional states, mild to moderate psychosis and psychopathology in creativity. Since emotional states are important in creativity, it is important to assess the scope and significance of such metaphors in studying creativity. Many studies reported common characteristics between Schizophrenia and Creativity. Certain studies suggest that both are two aspects of the same process (Hasenfus & Magaro, 1976). A.J. Cropley and J.S. Sikand (1973) reports that creative individuals differ with Schizophrenics in aspects of flexibility, complexity and differentiation. Margaret Dykes and Andrew McGhie (1976) reports that creative personalities and persons with psychotic thinking or Schizophrenics sample wider range of environmental stimuli than normal people. The role of Conflict is seen as important in creating change. Frank Barron and Donald Mackinnon in a study conducted in the early 1950s, found certain traits in female mathematicians such as rebelliousness, independence, irresponsibility and fluctuating mood. Characteristics such as willingness to take sensible risk, tolerance of ambiguity, and self-efficacy among others, help in creativity. Frank Barron commented that creative personalities are both sick and healthier compared to an average person.

The works of Kay Redfield Jamison (1989, 1995, 2001, 2011) explored artistic creativity and its relationship with mild to moderate psychopathic states. According to her *Mood disorders and forms of Psychosis are linked to Creativity*. Jamison (1989) in a study of British writers and artists studied seasonal patterns of mood changes and productivity and the role of intense moods in writers creative work. The study titled “*Mood Disorders and Patterns of Creativity in British Writers and Artists*” found that hypomania and creative production exhibits similar mood, cognition and behavioural changes. Out of a short sample of eminent British artists and writers (N less than 50), 38% of them reported psychiatric treatment; mood disorder was a common complaint. Artist’s mood fluctuated and oscillated from manic states to depressive states and from melancholia to euphoria.

“Profound changes in mood, thinking, personality, and behaviour can occur during all phases of manic-depressive illness. Even during normal states many individuals with the illness, or who have a cyclothymic temperament, will experience striking fluctuations in the intensity of their perceptions and feelings. All these changes have potentially important effects on personality and thought, but perhaps most relevant to the discussion of artistic creativity are those changes that occur during the milder manic, or hypomanic, states.” (Jamison, 1994, p. 120)

The alcohol and drug addiction found in artists were symptomatic of mood disorders. The optimal level of creative functioning is seen not at extreme mood changes from manic to depressive but at moderate levels of affect and cognition. Many writers such as Charles Dickens, Ralph W Emerson, Robert Burns and Henry James had close family relatives identified with bipolar disorders.

2.5 Cognitive models

The Cognitive models focus on ideational thought processes underlying creativity. The various processes of creativity such as divergent thinking, remote association and associative thinking, are adopting the principles of cognitive models. These processes are detailed in the later section of this chapter. A significant model among this category is Wallas’s stage model (Wallas, 1976). Graham Wallas’s four-stage model of Creativity is regarded as a classic in creativity studies. He developed the model on introspective evidence of Poincare, the French Mathematician and from very rudimentary ideas derived

from the studies on memory by Hermann Von Helmholtz. This model consisted of four stages – Preparation, Incubation, Illumination and Verification. Preparation is the initial sensing and exploration of the problem. At this phase, the creator gains information about the problem at hand. In the next stage, Incubation, the conscious perusing of the problem has stopped, and the creator is engaged in activities that are not concerned with the problem. During this time, the problem is run in the subconscious layers of the mind. In the next stage, Illumination sudden insights or ideas come as a flash often when the person expects it the least. This stage portrays the earlier understanding of creativity as an enigma where the ideas come like the flash of a flashbulb. The next stage is verification. It involves refining, revising and correcting the incomplete product achieved in illumination. Wallas' model is employed in organisations for problem-solving and decision making; it is also used in Psychotherapy. Guilford proposed that Wallas' model is applicable even to everyday problem solving (Joy Paul Guilford, 1970).

Wallas' model of creativity has directly influenced many later models, including the Flow model of Csikszentmihalyi. During the regeneration of creativity research post-1950s, J.P. Guilford called for elaborations and further study of the model on the grounds of lack of testable hypothesis and absence of mental operations. The Componential model of Amabile has incorporated a basic version of the Classic model (Lubart, 2001). Osborn, A. F. (1953) relies on Wallas' model in discussing creativity development, luck in creative endeavours and age factor in the development of creativity.

2.5.1 Guilford's Divergent Production

Guilford's APA memorial lecture of 1949 addressed the neglected field of creativity research. It is regarded as a milestone in creative research. The address mentioned that only two per cent of books and articles in Psychological Abstracts focussed on creativity in the first quarter of the 20th century (J. P. Guilford, 1967). The research gap in the study of creativity was too concerning, owing to the importance of this particular cognitive process. According to Guilford, creativity is a natural resource which has to be nurtured. The mechanism underlying creative thought is divergent thinking. Convergent thinking helps in normal functioning of the individual but divergent thinking is behind creative production. Guilford's own contributions focussed on delineating different forms of intelligence structures. His model, called as the Structure of Intellect Model (SOI) explored the cognitive aspects of mental tasks in three components;

Operation, Content and Product. The model envisioned Intelligence as not a single factor, like g-factor proposed by Spearman but as a multifactor component which consists of both convergent thinking and divergent thinking.

Five operations, four contents and six products lead to 120 varieties of mental acts. Operation or general intellectual processes are Cognition, Memory, Divergent Production, Convergent Production and Evaluation. Operations are applied to Contents, which consists of Figural, Symbolic, semantic and behavioural. When Operation is applied to the Content, the result is the Product which consists of unit, class, relation, system, transformation, implication. Creativity is powered by divergent production while the intelligence measured with IQ tests is sourced by convergent production. Divergent thinking has four characteristics- fluency, flexibility, originality and elaboration. Fluency is the number of different responses; flexibility is the variety of responses; originality is a measure of how original the work is, and elaboration is developing and adding details to work.

2.5.2 Genevieve Model

The Genevieve model is a general framework of creative cognition approach (Ward, Smith, & Finke, 1999). This heuristic model proposes that creative activity involves the generation of candidate ideas and extensive exploration of those ideas. The processes are termed as generative processes and explorative processes. The initial generation of ideas is untested proposals or not fully-grown ideas. They may not help in solving a problem or creating something of a new order. With the help of exploratory processes, the initial ideas are extensively explored. The generative process includes mental association, synthesis and transformation of existing structures, interdomain transfer of information and reduction of existing structures into more primitive constituents. The exploratory process involves searching for new metaphors, finding new functions of existing structures and exploring a problem for solution. Finke identifies mental structures called preinventive structures which are initial precursors of the final creative act or product. They include diagrams, patterns, mental models, verbal combinations.

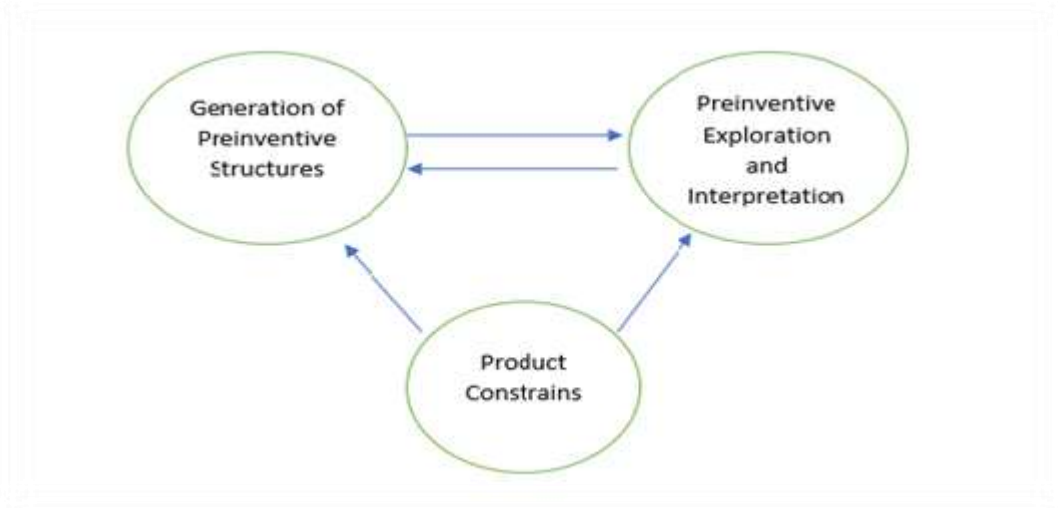


Figure 2.1: Geneplore Model. Adapted from *Creative cognition*. In *Handbook of creativity* (p. 193), by T. B. Ward, S. M. Smith, & R. A. Finke, 1999, New York, Cambridge University Press. © 1999 by Cambridge University Press.

2.6 Psychometric models

Psychometric models are generally used in assessment and testing. They highlight the underlying theory behind the assessment of creativity. There are many psychometric models such as Wallah and Kogan Battery (1965), Torrance Test of Creative Thinking, Guilford's Alternative Uses task, Barron-Welsh art scale and Ego-Strength Scale (BESS).

2.6.1 Ego-Strength Scale and Barron-Welsh art scale

Barron's Ego-Strength Scale (BESS) has a dual function that it can differentiate normal and psychopathic people at the same time it can identify psychopathy and creativity. Ego-strength is the personality characteristic that helps the person to deal with adversity, stressors, and internal psychopathological states. A study on creative writers using Minnesota Multiphasic Personality Inventory found that creative writers scored high on psychopathological symptoms such as depression, hysteria, paranoia and schizophrenia. The high ego-strength scores in the creative writers allowed them to navigate without problems in life. Barron-Welsh art scale Frank X. Barron and George S. Welsh is used as a non-verbal measure of creativity. This works on the basis of the Freudian theory of primary and secondary process thinking. A high score in BESS indicates artistic or creative nature with predominant primary process thinking and supportive secondary process thinking. Further studies cite that BESS can determine the creativity of a person without the availability of gender, age or intelligence.

2.6.2 Wallach and Kogan's Battery

Wallach and Kogan's Battery (1965) is based on an associationist approach in creativity. More associations and more uniqueness of associations determine creativity. Creativity involves ability elicit a number of responses rather correct responses. It consists of three verbal tests – instances, alternative uses and similarity and two figural tests – pattern meaning and line meaning. In instances test, the child is asked to generate several responses to a verbal question e.g., ‘name the round things that you can think?’ or name the things that are sharp? In alternative uses test the child or subject is asked to generate possible uses of objects, for instance ‘tell me the different ways one could use a chair?’

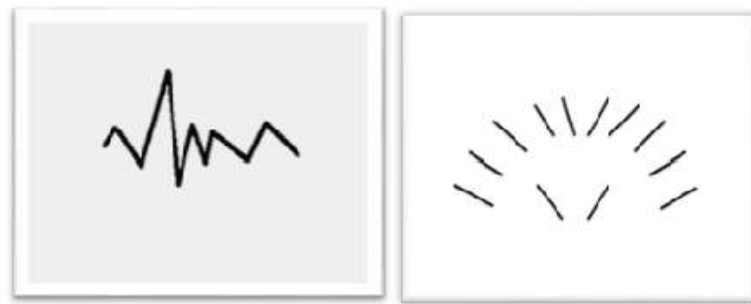


Figure 2.2: A sample of Pattern meaning test (towards left) and Line meaning test (towards right)

The similarity test asks the subject to generate possible similarities between two objects e.g., ‘tell me the ways in which water and salt are related?’ The pattern meaning test shows an incomplete figure and asks to make guesses on the figure if it is completed. In line meaning test, a random geometric pattern is shown to subject and asks what they think of it in its entirety. The scoring is done on the basis of fluency, flexibility, elaboration and originality.

2.6.3 Torrance’s Psychometric view of creativity

Torrance defined creativity as “the process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty, searching for solutions, making guesses, or formulating hypothesis about deficiencies; testing and retesting the hypotheses and possibly modifying and retesting them; and finally communicating the results”(Torrance, 1965, p. 163).

According to Torrance, the activities chosen for testing creativity in an individual should be marked with specific characteristics. It should be a) natural and every day processes, b) suitable for all ages and educational levels, c) easy for young and disabled but challenging enough for the ablest, d) unbiased to race, gender and experiential backgrounds, e) evoking fun (Wallach, 1968). The TTCT consists of two components- verbal and figural. The verbal component consists of five types of activities: Ask and Guess, Product improvement, unusual uses, unusual questions and just suppose; the figural component consists of picture construction, incomplete figures and repeated figures (Hebert, Cramond, Neumeister, Millar, & Silvan, 2002). For instance, in the Ask-and-guess test, the person is asked to respond to a picture of a clown like a figure and then asked to imagine all kinds of questions about this figure (Wallach, 1968). Later the causes that may lead to the situation of the figure and also the consequences that could be imagined are asked and tested in this subsection of the TTCT test.

2.7 Biological Models

The Biological models focus on genetic factors, brain functioning and physiological experiments in studying creativity. The popular biological models are Feist's Functional model and Brain and biological studies of Colin Martindale. Gregory J. Feist studied creativity in relation to personality, both according to him focuses on individual uniqueness. According to Feist, Creativity comes in many forms and hues. Personality established in cognitive, affective and motivational aspects determines creativity by lowering threshold. Genetic difference influences the brain and temperament, which in turn affects personality variability, which in turn determine creative behaviour. Personality variability expresses in social, cognitive, motivational-affective and clinical traits.

“...genetic differences influence both brain structures and temperamental differences, leading to personality variability (social, cognitive, and motivational-affective, and now clinical traits), which in turn effects creative thought and behavior. The idea was and still is that a particular constellation of personality traits function to lower the thresholds of creative behavior, making it more rather than lesslikely.”(G. J. Feist, 2010, p. 114)

According to Feist, the polygenetic influence of genes is a complex path from the genetic expression to behavioural manifestation. There is no gene corresponding to any particular characteristic trait like conscientiousness, but the production of hormones and neurotransmitters influence the expression of traits in complex ways.

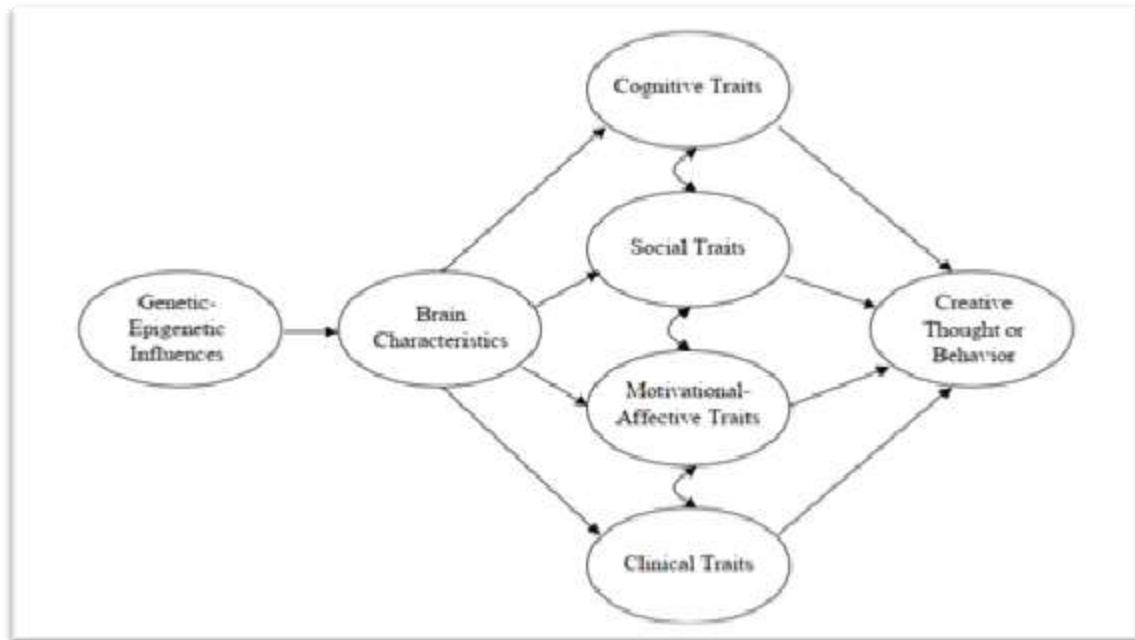


Figure 2.3: Functional Model. Reprinted from *The Influence of Personality on Artistic and Scientific creativity in Handbook of Creativity*. By G. Feist, 1999, New York, Cambridge University Press. 1999. © Cambridge University Press

The frontal lobes and right hemisphere are active in creative thought and problem-solving. The complex and dense connections in the brain rather than greater activity in the brain facilitate creativity. The right hemisphere processes novel, heuristic and diffuse information and creative people have a preference for right brain functions. The personality mediates the relationship between creative thought and brain. Feist (1999) identified specific personality factors influencing creativity as ambition, dominant, driven, self-confident and self-accepting. Certain factors representing negative qualities such as

hostility, unconventionality and impulsivity were found to be influencing creativity. Five Factor Model or Big Five personality inventory was used to assess the personality of individuals. The personality factors such as cognitive, affective, clinical and social factors mediate the relationship between brain and creative behaviour.

According to Colin Martindale, the nature of thought has a physiological basis. This principle holds true to the type of thought that produce creative insight. Creative

insight is not a logical deduction exercise. Neither scientists nor artists derive creative insights through a logical thought exercise. However, creative personalities experience the creative insight in a similar way, irrespective of domain. Mozart music composition where effortlessly symphonies are created from his mind space or the creative process behind the discovery of Benzene by Kekule is not a logical process (Martindale, 1999). The creative act involves the discovery of an analogy of images or ideas that were previously unconnected. A mental state is required where attention is defocused, thought is associative and simultaneous activation of many mental representations (Martindale, 1999). The states are activated by low levels of cortical activation, low levels of frontal lobe activation and right hemisphere specialised activation.

Colin Martindale and Dwight Mines (1975) reports that Creativity is supported by the EEG alpha wave presence in the brain. The waves are evident during the creative inspiration phase than creative elaboration. (Martindale & Hasenpus, 1978). In another study, creativity measured by Alternative uses Test and Remote Association was found to be correlated with primary process content explored by fantasy story writing (Martindale & Dailey, 1996). Creativity is derived from 'primordial thinking' which is free-associative and undirected thought rather than 'secondary process thought'. The latter is conceptual thought and may not produce new ideas. The primary process cognition involved in creativity helps in the activation of the right hemisphere of the brain (Martindale, Hines, Mitchell, & Covello, 1984). His conception is very similar to Freud's primary process thinking and secondary process thinking. The laws governing aesthetic pleasure is similar to the laws governing perception and cognition. He reported creativity is related to resistance to cognitive dissonance and creative people comparatively are not motivated for resonance (Martindale, Abrams, & Hines, 1974).

2.8 Darwinian Models

Several studies also point to chance-based models of creativity based on Darwinian theory. Donald Campbell (1960) proposed "blind-variation and selective-retention model". Creativity process is seen as a process starting from blind variation. The variations introduced into the system undergo a selection process, and the selected ones are preserved and reproduced. Dean Keith Simonton has worked on Campbell's model and variation-selection principle in three ways (Simonton, 1998). He has developed mathematical models for testing on the variation-selection principle. Simonton

demonstrated that research results from studies on personality, socio-cultural context and developmental experiences are consistent with the Darwinian model. Finally, the predictions of Campbell's model are tested by Simonton. Simonton argues that the common definition of creativity attests the Darwinian model of Campbell. The individual produces ideas that are subjected to cognitive and socio-cultural selection and then selects ideas that are adaptive by means of utility, beauty or truth (Simonton, 1999a). We will elaborate on Simonton's approach later in this chapter.

2.9 Psychodynamic models

The psychoanalytic and psychodynamic explorations in the 20th century have explored the dynamics of unconscious processes and its relations to personality. However, the popular models and theories in psychology have opted to explain the creative and cognitive processes with observable and testable samples of behaviour, leaving this dimension out of preview. The strong influence of the school in psychoanalytic therapy and psychiatry could not be replicated in the creativity research field, though the contributions are of high value. The significant themes in psychodynamic models of creativity are childhood conflicts, defence mechanisms – regression and sublimation, primary process thinking, mental contents of fantasy and daydreams.

Apart from detailing the hidden structure of creativity (façade) and its connections to childhood play, Sigmund Freud also points to the influence of free association, defence mechanisms and primary process thinking in creativity. A free association of ideas which liberate the person's mind allows the uncensored flow of instinctual energy against the conscious restrictions of ego. Such expression which is the soul of any creative work is similar in terms of the process involved with that of dreams, fantasies and even the slip of the tongue. The process involved in fantasy and daydream is the same as that of creativity. These are the internal artworks. The fantasy and dreams and the artwork represent the basic biological instinctual desires or wishes which are concealed because of its primitive, aggressive and sexual content. The artworks, according to Freud, is wish-fulfilment which is redirected, modified, and disguised.

Freud justifies the Dionysian conception of the artist, represented by irrationality, chaos and strong affinity towards emotional events. The primary process thinking dominates in an artist which liberates the instinctual energy without much restrictions

owing to social circumstances. The unconscious, which works according to the pleasure principle, guides the creative individual. However, the secondary process act with rationality, order, and social legitimacy to the unguarded impulses. The secondary process organises the instinctual ideas, and images sourced from the primary process.

According to Freud, the spontaneous ideas generated unexpectedly is a wish in the unconscious of the person. These ideas were addressed as Einfall which have the potential to open the gates of consciousness through the gates of defence mechanisms and ego structures. The early childhood experiences are not available for conscious recollection for the individual. However, this infantile amnesia is not inactive but influences a person's motivation and desires. In a creative process, the conflicts and unreachable memories of childhood find expression in modified forms. The defence mechanism plays a significant role in redirecting and moulding the original libido originating in the unconscious of the mind. Freud has given significance to the defence mechanism of sublimation in creative production. The primitive impulses are rechanneled into socially legitimate activities. The activities in art, music, inventions, and science do not escape the sublimation of primitive energy.

Carl Jung disagreed with Freud that the fantasy material in an individual is not just a result of personal characteristics or forgotten repressed materials. These mythological type images come from a collective psychic substratum called a collective unconscious. The awareness of personal unconscious leads to a gradual awareness of the collective unconscious. It is the origin point of archetypical images. Archetypes are instinctual images, psychic aspects, inherited with a brain structure that are systems for the readiness of action. The archetypes of anima and animus are present in creative works like art, fiction, films and social theories. Creative impulses with emotional intensity and extraordinary feelings are related to archetypical images.

Jung associated the archetypes of persona, shadow and self in creative activities. The persona is an archetype that an individual adopts for social functioning in the world, such as a profession. The shadow is the undesirable part of the personality located in the unconscious mind, which holds unacceptable feelings and negative self-image. The villain in a film is the depiction of the shadow. The self is the true nature of the individual, which provides a platform for conscious and unconscious processes of the mind to integrate and work as a whole. This process is called individuation. It brings

authenticity and reconciliation with negative aspects of personality. He referred to Individuation as a path to wholeness, a process of getting rid of false aspects of a persona by the suggestive power of primordial images. The artistic works which move the individual to greater freedom and wholeness are based on the principle of individuation. This process leads to the familiarisation of collective values against restricted individualism in society. This process leads to the identification of a broader universal self rather than being trapped in ego-centeredness.

The neo-analytic thinkers of Psychodynamics shifted the focus from the framework of orthodox psychoanalysis, which signified the role of defence mechanisms like sublimation, instinctual drives and individuation. The novel conceptions of creativity were based on control of the irrational Id by the Ego, thereby prevailing over the constraints imposed by sexual and aggressive drives. The concept of 'regression in the service of ego' advanced by Ernst Kris points to an inspiration phase where the conscious barriers are withdrawn such that various ideas and images of primary process surface. This phase is counterbalanced with the elaboration phase characterised by reality check and social orientation. According to Morton Bloomberg, the ego plays a constructive role in converting the bizarre and irrational thinking to problem-solving and creativity (Bloomberg, 1967, 1971). Lawrence Kubie suggests that the pre-conscious process provides a health adaptation and mediates between unconscious primary process thinking and conscious thoughts in the ego (Kubie, 1958). The debate on the role of primary process thinking and the role of conscious and unconscious parts of the mind is still alive in neo-analytic discussions. The popular models of creativity rely on empirical and positivistic data, which prevents from adopting the psychoanalytic framework. It is to be noted that the dynamics of the incubation phase of creativity is still a mystery.

2.10 Systems Models

System models of creativity represent complex systems of multiple factors. It tries to identify the factors outside the individual, which influences creative behaviour. These theories take into account social-cultural aspects along with personality variables in representing creativity. The pioneering attempt in this arena is that of evolving systems approach by Howard Gruber, who studied the slow and transformative developmental change in the creative process of Charles Darwin. The uniqueness of a creative person demands exploration of multidirectional change and the unique evolving system of

thought processes which is not captured in the unilinear, predictive, cumulative and irreversible idea of psychological change (Gruber & Wallace, 1999). For instance, Gruber insisted on studying ‘ensemble of metaphors’ of thought in its developmental pathway, which provides a system of goals of the creative person (Gruber, 1988).

Further developments in systems approach are seen in the works of D.K. Simonton, Componential model of Amabile. Componential model is the initial attempt to introduce the social aspects into the frameworks of creativity theory. It may not be comprehensive and prominent as the general systems approach, but it is the starting point of mainstream discussion on the inclusion of social factors and domain-relevant aspects to the studies of creativity.

2.10.1 Simonton’s Historiometric method

The historiometric method of D.K. Simonton advances Systems approach. He investigated the nomothetic features of eminent individuals who ‘made history’ in any domain of human achievement. It explores historical data such as the life history of eminent persons, biographies, historical documents and prevailing zeitgeist of the times. The developmental aspect of the individual is covered by the observation of birth order, childhood trauma, intellectual precocity, education, mentors and family training. Studies adopting the method have found many cultural and social factors influencing creativity such as aesthetic milieu, multiple discovery and invention, population growth, minority groups and social structure, the impact of war, and economic growth (Simonton, 1999b).

2.10.2 Amabile’s componential Model

Teresa Amabile research work on creativity is the pioneering attempt to formulate the Social Psychology of creativity. She observed that Haydn’s work in music was not intended for financial rewards or status but motivated to provide the mental satisfaction of the needy. Creativity is influenced by many forces such as intrinsic motivation, as in Haydn’s case, environment and cognitive and personality constructs. The componential model has three intra-individual components and one external component. Intraindividual components consist of a) Domain relevant skills; b) Creativity-relevant skills; and c) Intrinsic task motivation (Amabile, 1983; Amabile & Pillemer, 2012). Domain relevant skills are technical knowledge skills specialised talents in the relevant domains of endeavour. Creativity-relevant skills are personal factors such as tolerance of ambiguity,

risk-taking behaviour and openness to experience; flexible cognitive style; persistent work style; and skill using creative-thinking heuristics. Intrinsic motivation rather than extrinsic motivation leads to higher levels of creative performance.

Amabile and colleagues in the 1980s developed and validated Consensual Assessment Technique or CAT. CAT functions under the principle that a creative product is best evaluated by the experts in the field or the independent raters familiar with product domain. The creative idea or product is put to evaluation by the experts in the field to assess the creative nature of it. Creative poems are best judged by expert poets and creative inventions by inventors.

2.10.3 Systems Model of Mihalyi Csikszentmihalyi

Csikszentmihalyi (1988) proposed three interacting components to explain creativity. 1) The Domain of knowledge that exists in a discipline at a particular time. 2) The Individual who acquires domain knowledge and produces variations on the existing knowledge. 3) The field created by individuals working in the discipline to determine what are worth preserving for the next generation. Csikszentmihalyi's model accepts the importance of socio-cultural factors in creativity. We will elaborate on this model and its various facets in chapter three.

2.11 Socio-cultural models

The Socio-cultural models focus on the cultural forces that shape the self and cognitive processes of individuals. These models assume that socio-cultural forces construct the self and cognitive processes. They even regard the intrapsychic processes as the construction of socio-cultural factors. The socio-cultural models are sourced from the school of Cultural psychology.

2.11.1 Five A model

According to Vlad Petre Glaveanu, Creativity is a socio-cultural-psychological process, i.e., creativity is social, cultural and psychological at the same time. Glaveanu's position is a reaction against characterising creativity as either individual or socio-cultural. Creativity research predominantly focussed on genes, brains and personality structure; concerned mainly with individual-level variables. Culture remained as a variable and was ignored during the heydays of behaviourism and the cognitive revolution. Culture, as a variable in the analysis of creativity, misses the essence and

extent of its influence. Though many researchers have included the environment as a variable, it does not go deep to the level of conditions of possibility. The cultural psychology of creativity takes relationships as units instead of isolated individuals (Glăveanu, 2015, p. 166).

Glăveanu’s perspectival model reflects the We-paradigm of creativity, which accounted for social context. The other two paradigms, such as I-paradigm and He-paradigm, are individual-based models. The I-paradigm of creativity deals with the creative person, whereas He-paradigm deals with genius. He-paradigm is based on individuality, genius and outstanding ability (Mason, 2002) and has roots in pre-psychological thought (Glăveanu, 2010). The I-paradigm is a shift from genius level analysis to individual-level analysis. It is concerned with problem-solving, divergent thinking and psychometric methods in an individual. In other words, I-paradigm accounted for a creative personality and saw creativity as the quality of a lone individual. We-paradigm attempts to bring back social context to the study and conceptualisation of creativity.

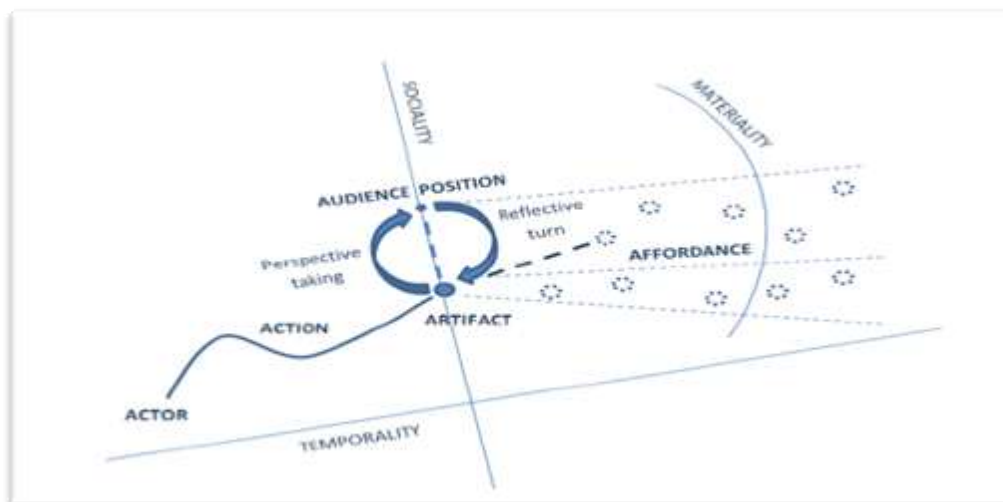


Figure 2.4: The five A's framework. Reprinted from 'Creativity as a Sociocultural Act' *Journal of Creative Behavior*, 49(3), 167. Copyright ©2015 by Creative Education Foundation.

The five A's framework is dynamic and interrelated system consisting of Actor, Audience, Action, Artefact and Affordances. Creative action is depicted as a continuous line that relates to the actor and the emerging artefact. Creative action is dependent on interactions with both audiences – collaborators, critics and colleagues and the material environment. The model identifies three lines of distribution- temporality, sociality and

materiality. Temporality is accounting for the time dimension, signifying the influence of the past and the direction towards the future. Sociality is a social axis which deals in the articulation of perspectives of both creator and audience. Materiality axis is the capacity to engage symbolically and physically with the materiality of the world in the double perspective of self and the other. This view holds a distributive aspect of creativity against centric models that reduce creativity to intra-psychological variables; it engages self and other, symbolic and material, present past and future (Glăveanu, 2015, p. 167).

2.11.2 Vygotsky's Cultural-historical model

Lev Vygotsky conceptualised Creativity as a higher psychological function that helps humans to deal with the future, apart from dealing with the past and present. He postulated that creativity has social origins like all other higher psychological functions. The child learns to be creative through a process called internalisation, where development of the child takes place initially from a social plane to an individual plane. He postulated that creativity has a mediated structure. Therefore the creative activities found in different cultures may vary depending on the cultural tools the society generates and the same with the individual capacity. This theoretical explanation of creativity helps in explaining the cultural variation of the process. Both cultural and historical processes influence the creativity of a person. Creativity is not an isolated island in the developmental process. It cannot be studied by isolation. The development of creativity mainly involves the dialectics with memory, motivation, abstract thinking, inner speech and perception. Vygotsky's model of creativity is detailed and analysed in chapter four and five, respectively.

2.12 Creative Processes

Any attempt to study and problematize creativity cannot escape the question of the fundamental process behind it. Many works have employed the creative-person approach. The study of creative personalities based on idiosyncrasies and special traits gives only a surface picture of the problem. The personal characteristics of a person is a result of a process of psychological maturation and evolution of mental functions. The study focused on a person will inevitably lead to the psychological processes animating the individual. The process-based approaches and person-based approaches cannot exist as two separate enquiries. One complements the other.

The product-based approaches focus on innovations, transformative ideas, creative performances that have novelty and usefulness. These approaches focus on the finished product rather than focussing on the characteristics of the creative person or creative process. The psychometric approaches use product-based approaches when it tests creative thinking on the basis of number and quality of associative processes or the flexibility of divergent thoughts. The creativity tests analyse the sample of the thinking process and assess the creativity or predict the creative potential of the individual. The product cannot be seen as separate from the individuals or the creative process involved. The nature of a creative product is reflected in the historical forces that operate in a person. For instance, an idea of an electric motor car is not possible without the invention of the very wheel. The creative product is a result of accumulated information digested by the individual to produce something of novelty and value. It is not always ‘out of the box’ as often portrayed, but very much employing the information within the box.

The only question that remains when connecting the person-based approaches and process-based approaches is the extent or scope of the processes one addresses at a time. The temporality of creative process considered is very crucial in the analysis of creativity. The time span of consideration in the current approaches varies from the momentary to the developmental span of the individual and development span of culture. A majority of current approaches towards creative processes focus on the momentary process. The individual’s mental processes are assessed based on the mind formations in the immediate context with the help of mental tests. This approach is similar to taking a sample of water from the flowing river. The studies on associative processes, divergent thinking, problems solving, metaphors and analogies focussed on the momentary samples of creative thought. Most of the studies exploring the processes revolved around the divergent thinking aspect of creative thinking.

Studies point out various processes involved in creative thinking and problem-solving. These include special problem-solving skills, attitudes, divergent thinking, mixing of incompatible matrices, metaphors and analogies and unique types of associative thinking. The popular and accepted process model in creativity research is that of divergent thinking. Research works on divergent thinking, and its relation to creativity started in the 1950s in the United States. This concept is used traditionally in a different context in the early 20th and late 19th centuries as used by Binnet and Simon (1905) (Runco & Acar, 2012). The experience in the war front helped the psychologist J.P.

Guilford to identify the importance of divergent thinking. The IQ tests which was used extensively in the world war predicted the intellectual capability of soldiers, but Guilford found it as not comprehensive in encountering emergencies which demands 'out of the box' responses. Divergent thinking is often contrasted against convergent thinking. According to Guilford, the later helps in arriving at the correct answers, which function in more or less like logical deduction or induction. The SOI model of Guilford was inclusive of both the processes.

Every divergent thought is not a creative thought. The standards and measures used to assess the quality of divergent thinking are fluency, flexibility and originality. Later another component of elaboration was added to it. Fluency is the number of ideas generated by the individual. Flexibility represents the range of different categories used in thinking or solving a problem. Originality represents the uniqueness and novelty of the ideas. Many researchers studied the divergent thinking process to conceptualise, measure and predict creativity (e.g., Guilford, 1966; Khandwalla, 1993; Runco & Acar, 2012). According to Runco, Divergent thinking measures will point to potential-creativity and problem-solving. The divergent thinking tests, as well as the creativity tests, use the four standards to measure creativity. The debated over validity, reliability, and prediction of divergent thinking tests establish that divergent thinking is regarded as a predictor for creative potential but not a guarantee to creativity.

There were attempts to explore the mechanism of divergent thinking. The construct of Bisociation by Arthur Koestler (Koestler, 1964) attempts the same purpose. It distinguishes routine skills of thinking from creative thinking; the former is single-minded and later double-minded. It combines two incompatible matrices; the process is the basis for discoveries in science and art.

“Historically speaking, the frames of reference of magnetism and electricity, of physics and chemistry, of corpuscles and waves, developed separately and independently, both in the individual and the collective mind, until the frontiers broke down. And this breakdown was not caused by establishing gradual, tentative connections between individual members of the separate matrices, but by the amalgamation of two realms as wholes, and the integration of the laws of both realms into a unified code of greater universality.” (Koestler, 1964, p. 442)

Koestler tries to give a universal picture of creativity. By matrix, Koestler meant any pattern of ordered behaviour such as habits, skills, abilities that have a code of fixed rules (Koestler, 1964, p. 11). Every combination of two incompatible matrices may not produce creativity. Further, the question of the creation of matrices remains unsolved.

Several studies of creativity have approached the problem under the lens of problem-solving (e.g., Mumford, Supinski, Baughman, Costanza, & Threlfall, 1997; Reiter-Palmon, Mumford, O'Connor Boes, & Runco, 1997; Runco & Nemiro, 1994). The cognitive psychological approaches towards problem-solving are very recent. The Gestalt School of psychology initiated earlier studies in problem-solving. The fundamental focus here is the nature of perception. A successful problem-solving is guided by insights which are a sudden rearrangement of perception and ideas that lead to the solution of the problem. The Gestalt position is often contrasted with the behaviourist position of trial-and-error theory.

Problem-solving is a general cognitive task. It does not specify more on the nature of processes involved in creative thinking. Research studies point to associative processes and divergent thinking playing a supportive role in problem-solving. Getzels & Csikszentmihalyi (1976) introduced the idea of problem-finding. They found that an artist working on an artwork uses proximal goals rather than fixed goals. The creative works in the art are not done with a pre-planned picture, but the artist improvises in the course of the work. Rather than solving a problem, the artist seeks new complexities which improvise the artwork and make it appealing. Various aspects of problem-solving have been explored by researchers such as problem finding, problem definition, problem expression and problem construction (Runco & Nemiro, 1994). These are various shades of mental processes the individual employ in dealing with a problem.

Are these processes the core engine behind creativity or problem-solving? If these are the core processes, then it should be universal, i.e., it applies to all conditions and domains of knowledge. However, creativity research experts like Csikszentmihalyi, Gardner and Runco suggest about domain specificity in activities and knowledge forms. The problems in mathematics are different from the problems in art in the context of the time required to master it and the nature and type of cognitive processing required. In other words, the nature of the domain determines the creative production in substantial

ways. The intra-psychoic conceptualisations of mental processes stand as a barrier to the holistic understanding of the concept.

Problem-solving is classified into two - logarithmic and creative. The first one is following a series of logical steps to reach the solution. The second one involves divergent responses rather than fixed responses according to the circumstances. These are the general type of tasks that an individual is familiar with. Specific tasks demand fixed responses while certain other tasks demand the best responses. According to this classification, switching on television is logarithmic problem-solving, whereas writing fiction is creative problem-solving. However, even in creative tasks, there are rules or open-ended logic. A soccer player in the football field can play uniquely and smartly; still, it has to within the rules of the game.

Certain studies debate on the cognitive and conative aspects of creative problem-solving (Davidson & Sternberg, 2003, p. 135). The former is concerned with thoughts, thinking, planning, and execution, whereas the later is action-oriented aspects of behaviour like motivation, desire, inspiration, volition and purposeful action. Such a distinction is visible in leading creativity theories. This distinction is similar to the age-old problem of the connection between affect and intelligence. For instance, Amabile's componential Model recognises Intrinsic motivation as a motivational component and domain-relevant knowledge as a cognitive component. The Investment Theory of Creativity differentiates intellectual aspects such as analytic skill and synthetic skill from the motivational aspects of creativity. We can observe a separation of cognitive, affective and conative aspects of persons' mental functions both in the conceptual frameworks of creativity studies and in the discipline. The fundamental question here is how can thinking exist as its own? Is thinking a separate entity from the motives and interests of the individual? Does such conceptualisation solve our problem regarding the comprehensive characterisation of mental structure? Ideas exist along with the remnants of the individual affective component as a dynamic system. The question of, can particular styles of thinking power the creativity of an individual lays over a complex problem of what constituted such thinking styles.

Many researchers have explored the effect of metaphors and analogies in creative thinking (e.g., Gold, Faust, & Ben-Artzi, 2012; Marin, Reimann, & Castaño, 2014). A metaphor helps in seeing the problem, domain, situation and broad context in a new light

or perspective. Metaphor helps in the generation of insights that help in problem-solving processes. It helps in formulating or re-formulating the problem and advancing the solutions. At the event of declaring or familiarising the work or creation with the audience or experts, metaphors help to ground the new information in the base of common knowledge. The generation of metaphor in terms of its core process has rarely been studied and is a mystery (Lubart & Getz, 1997, p. 288)

Another approach is the study of associative processes in creative thinking. Sarnoff A. Mednick (1962) study of Associative processes in creative thinking sees creativity as the formation of associations of elements, in new combinations that are useful or may meet specified criteria. This association may happen in three ways; Serendipity, Similarity and Mediation. The similarity of associative elements or similarity of stimulus eliciting them may lead to the required contiguous association of elements. When the environmental stimuli elicit, often accidentally, contiguous associative elements then it is termed as serendipity. When a common element mediates the association, especially in subjects of symbolic use like mathematics and chemistry it is termed as mediation.

Creative people show flatter associative hierarchy, i.e., the individual response to a stimulus or situation is diverse and not common. This is against the steep associative hierarchy, i.e., the individual will respond in very usual and common ways. A later study conducted by Mathias Benedek and Aljoscha C Neubauer (2013) showed associative fluency and uncommon responses rather than special associative hierarchies lead to creative expression. The study suggests that rather than the special organisation of associative memory, the effective access of memory contents determines creative thinking.

2.13 Comparative Analysis of theories of creativity

The selected theories are analysed using the following categories: Conception of Self, Interactions with other cognitive processes, and General theoretical assumptions such as Magnitudes of Creativity, conscious or unconscious processes, Six P's of creativity, collective or individual phenomenon, and Quantitative or Qualitative method.

2.13.1 Conception of Self

The theories that are based on the Person-centric view of self are Cognitive models, Psychometric models, Biological models and Affect models. In the Economic models, the Investment theory of creativity adopts a person-centric approach, whereas Rubenson and Runco's Psycho-economic model employs an interaction-approach. The later model proposes that creativity decisions are the result of market demands. The model uses the supply and demand framework in the analysis of creative activity(Rubenson & Runco, 1992).

The Cognitive models focus on the mental processes, and it assumes a person-centric perspective of self. There is an appreciation of environmental aspects in the Geneptore model as the individual looks for patterns, structures, figures which will support the explorative processes of creativity. However, it does not debate on the development of self through such processes. The SOI model of Guilford focuses on various operations, contents and products in the mental structure. The model does not appreciate the socio-cultural factors in the formation of the self, neither does the model considers interactionism. Mednick Associative theory focuses only on associative processes in creativity.

The psychometric models deal with the assessment and prediction of creative behaviour. The biological model of Feist pointed out the importance of epigenetic factors in the development of brain functionality, which in turn affects creative behaviour. The genetic model of Feist is employed only on the biological processes leaving the socio-cultural factors aside. Colin Martindale studied brain activates such as the relationship of cortical activation, alpha waves, arousal states and speed of information processing to creative processes. This biological model refers to primordial thinking as the source of associative and creative thought. The model skips the debates of social-construction of the self. It assumes a person-centric model of self.

The Darwinian models adopt the principle of evolutionary theory, i.e., BVSR into the explanatory framework of creativity. Donald Campbell introduced BVSR as an evolutionary epistemology which underlies the evolution of cognitive systems as well as instinctive knowledge. BVSR theory, which adopted a position of Universal Darwinism, is an early attempt within the APA informed psychology towards an interactive

conception of self by advancing the principle of social construction of knowledge. The historiometric model of Simonton appreciates the role of historical and social factors in the respective creative production of the times. According to him, political stability and imperial stability influenced the creative production in Medieval Europe. However, in Simonton's conception of BVSR model, he negates the issue of socio-cultural determinism but recognises the importance of socio-cultural forces. These forces help in the selection and preservation of variations.

“Ideational variations first proliferate, and then a subset of them are selected for preservation by the sociocultural system. The very history of Darwinism illustrates this process. The basic ideas first promulgated by Darwin and Wallace were extended to large numbers of intellectual variations, some primary and others secondary. Those that seemed to "fit the facts"-or at least avoided extinction by Popperian falsification were the ones to pass down to subsequent generation” (Simonton, 1999a, p. 310)

The broad socio-cultural factors of civilisations such as ideological diversity of various philosophic traditions, multi-ethnicity and openness to foreign influences promote creative activities. However, the individual will is a significant factor in creativity.

“Yet it is very clear that sociocultural evolution does indeed have agents-the creators themselves. Creative individuals have goals, aims, aspirations, plans; they are struggling to overcome obstacles in the path of self-expression or world discovery”(Simonton, 1999a, p. 319)

Simonton's Historiometric approach and BVSR studies hold an interaction approach to self or interactionism. The componential model of Amabile employs interactionism in the conceptualisation of self. Not only the cognitive abilities and personality characteristics but also the social factors influence the creativity of a person. This model brought the social-psychological perspective of creativity when the field largely neglected the importance of social factors in moulding personality.

“Social-environmental influences can significantly influence creativity but, clearly, they are but one determining force.”(Amabile & Pillemer, 2012, p. 7)

The Systems Model of Csikszentmihalyi adopts interactionism. The model gives importance to socio-cultural validation of the creative product, the role of experts and general intellectual and material zeitgeist in explaining creative behaviour. The systems model is detailed in the next chapter.

The socio-cultural models of Vygotsky and Glavenau resort to a socio-cultural framework of identity before foregrounding the conceptualisation of creativity. Glaveanu elaborates the socio-cultural construction aspect of creativity in his Five-A model. His model reflected social collaboration and interaction in contrast to the person-centred approaches dominant in Psychology.

“The creative process cannot be represented by the almost instantaneous, mental, and individual moment of “getting the creative idea,” but necessarily engages self—other, symbolic—material, and past—present—future relations that turn it into a social, embodied, and temporal act’ (Glaveanu, 2015, p. 167).

According to Glaveanu, creative identity is a neglected topic of creativity research. The nature of creative identity influences the creative work and relations with others. The creative identities are formed through interaction with sociocultural forces.

Creative identities are considered representational projects emerging in the interaction between self (the creator), multiple others (different audiences), and notions of creativity informed by societal discourses. (Glăveanu & Tanggaard, 2014, p. 12)

Category	Theories/Models/studies	Conception of Self	Interactions with other cognitive processes
Economic Models	Investment theory of creativity	Person-centric	Interactive relation
	Rubenson and Runco's Psycho-economic model	Interactionism	Interactive relation
Cognitive Models	Mednick Associative theory	Person-centric	Interactive relation
	Geneple Model	Person-centric	Interactive relation
	Structure of Intellect Model (SOI)	Person-centric	Interactive relation
	Wallas Stage Model	Person-centric	Interactive relation
Psychometric Models	Wallach and Kogan's Battery	Person-centric	Interactive relation
	Torrance's Psychometric view	Person-centric	Interactive relation
Biological Models	Feist's Functional Model	Person-centric	Interactive relation
	Martindale's study of biological processes	Person-centric	Interactive relation
Affect Models	K.R. Jamison's Studies	Person-centric	Interactive relation
Psychodynamic Models	Freud's studies on creativity	Person-centric	Interactive relation
	Jung's studies on Creativity	Interactionism	Interactive relation
Systems models	Systems Model or Flow model	Interactionism	Dialectical relation
	Simonton's Historiometric approach	Interactionism	Interactive relation
	Componential Model	Interactionism	Interactive relation
Darwinian models	Campbell (1960)	Interactionism	Interactive relation
	Simonton's works	Interactionism	Interactive relation
Socio-cultural models	Glaveanu's Five A model	Social-constructivism	Dialectical relation
	Vygotsky's Cultural-historical model	Social-constructivism	Dialectical relation

Table 2.2 : Creativity theories, the Conception of Self and Interaction with other cognitive processes

Theories/Models/studies	Magnitude of Creativity	Six P's of Creativity	Conscious or Unconscious mind	Collective or Individual phenomenon	Method
Investment theory of creativity	Little-c, Big-C	Person, Process	Conscious process	Individual phenomenon	Quantitative
Rubenson and Runco's Psycho-economic model	Little-c, Big-C	Person, Process	Conscious process	Individual phenomenon	Quantitative
Mednick Associative theory	Little-c, Big-C	Person, Process	Conscious process	Individual phenomenon	Quantitative
Geneptore Model	Little-c, Big-C	Person, Process	Conscious process	Individual phenomenon	Quantitative
Structure of Intellect Model (SOI)	Little-c, Big-C	Person, Process	Conscious process	Individual phenomenon	Quantitative
Wallas Stage Model	Little-c, Big-C	Process	Both conscious and unconscious process	Individual phenomenon	Qualitative
Wallach and Kogan's Battery	Little-c, Big-C	product	Conscious process	Individual phenomenon	Quantitative
Torrance's Psychometric view	Little-c, Big-C	product	Conscious process	Individual phenomenon	Quantitative
Freud's studies on creativity	Big-C	Product, process, press, person, potential	Unconscious process	Individual phenomenon	Qualitative
Jung's studies on creativity	Big-C	Product, process, press, person, potential	Unconscious process	Collective phenomenon	Qualitative

Table 2.3 : Creativity theories and general Meta-theoretical assumptions – Part I

Theories/Models/studies	Magnitude of Creativity	Six P's of Creativity	Conscious or Unconscious mind	Collective or Individual phenomenon	Method
Feist's Functional Model	Little-c, Big-C	Person, Process	Conscious process	Individual phenomenon	Quantitative
Martindale's study of biological processes	Little-c, Big-C	Person, Process	Both conscious and unconscious process	Individual phenomenon	Quantitative
K.R. Jamison's Studies	Pro-c, Big-C	Person, Process	Conscious process	Individual phenomenon	Quantitative
Systems Model or Flow model	Big-C	All P's	Conscious process	Collective phenomenon	Qualitative
Simonton's Historiometric approach	Big-C	All P's	Conscious process	Collective phenomenon	Quantitative
Componential Model	Mini-c, Little-c, Big-C	Person, Process	Conscious process	Collective phenomenon	Quantitative
Campbell (1960)	Big-C	Person, Process, product, Press	Conscious process	Collective phenomenon	Descriptive
Glaveanu's Five A model	Little-c, Big-C	Person, Process, product, Press	Conscious process	Collective phenomenon	Qualitative
Vygotsky's Cultural-historical model	Mini-c, Little-c, Pro-c, Big-C	Process, product, Press	Conscious process	Collective phenomenon	Qualitative

Table 2.4: Creativity theories and general Meta-theoretical assumptions – Part II

Lev Vygotsky also gave primacy to the formation of self or identity than any particular cognitive processes. According to him, the self is constructed by socio-cultural factors. He gave importance to two cognitive processes in shaping the cultural world – creativity and imagination. These processes are sourced by the information gained from the outside world. The creativity of an individual is sourced from the social sphere from crystallised imagination. His conception of creativity and self are detailed in chapter five.

2.13.2 Interaction with other cognitive processes

The various models developed unique conceptualisations regarding the relationship of creativity with other cognitive processes. The mental processes associated with creativity includes processes of attention, memory, perception, motivation, intelligence, inner speech and thinking styles. The Investment model of creativity delineates the specific nature of the cognitive processes required for creativity. According to this model, a confluence of intelligence, thinking styles, motivation and personality are required in the intra-psychic level. The studies conducted to establish the links between the cognitive processes rely on quantitative techniques such as factor analysis, correlation, regression and descriptive methods. The model holds an interactive approach between creativity and other cognitive processes.

The psycho-economic model approves the standard relations of cognitive processes in mainstream psychology. The conception of self in the model is interactionism. The models hold the psychoeconomic view towards the environment-person interaction whereas retaining the mainstream psychological conception of interactive relations with other cognitive factors.

“We refer to it as a psychoeconomic theory because it uses the economic paradigm to address many of the issues raised in the psychological literature. The psychological component of our approach is also apparent in our recognition of personality traits, psychic costs, and intrinsic motivations for creativity.”(Rubenson & Runco, 1992, p. 132)

The cognitive models adopt the position of interactive relation of cognitive processes with creativity. The SOI model relays on factor analysis techniques that identified various intelligence abilities in the combination of three dimensions – operations, content and products. The model depicts the interactive approach. It clearly distinguishes the mental functions as separate units in the SIO model. For instance,

divergent production, memory retention and cognition are seen as individual units in the model. The Geneplore model focus on aspects like insight generation and problem-solving in the creative cognition perspective.

“Creative cognition also acknowledges that a range of factors other than cognitive processes contribute to the likelihood of any individual generating a tangible product that would be judged to be “creative”. These would include factors such as intrinsic motivation, situational contingencies, the timeliness of an idea, the value that different cultures place on innovation and so on.” (Ward, Smith, & Finke, 1999, p. 191)

Geneplore model accepts the interactions of various extra-cognitive processes such as motivation and cultural influences. The model assumes that these processes will be reflected in the cognitive processing of the individual. A motivated person may intensify the search for a solution which will be reflected in the generative and explorative processes. The associative theory of Mednick also follows the interactive relation with other cognitive processes though the main focal point is on mental associations. The biological models, affect models, and the Darwinian models also follow the interactive approach towards other cognitive factors.

The Systems Model of Csikszentmihalyi, Vygotsky’s Cultural-historical model and Glaveanu’s Five A model, employs a dialectical relationship between creativity and other cognitive factors. The first two models are analysed in detail in Chapter Five of this study. According to Glaveanu, comparing the scores of personality, motivation with that of creativity is putting initial steps to abstract the person from the social context. These testing approaches ignore the individuality and life situations of the person. The Five, A model, is premised on the dialectical relationship of person and socio-cultural factors. It follows an interactive approach.

“Making a list of traits or cognitive factors, for as comprehensive as it may be, tells us nothing about how people come to acquire those traits, how they might employ them in relation with other people, what happens when the social environment is favorable or adverse to a certain set of personal characteristics, and so forth.”(Glăveanu, 2013, p. 72)

Simonton’s Historiometric approach builds on a nomothetic understanding of creative personality by studying characteristic features of personality traits, environmental

influences, and developmental experience. The quantitative methods such as factor analysis, time-series analysis, regression and structural equations are used to extrapolate the variables in the study.

“For instance, the investigator might assess intelligence, motivations, or traumatic childhood experiences along some kind of dimension, the outcome being a series of numbers along some scale that represents the magnitude of the characteristic or the intensity of the experience. When these quantitative measures are obtained, the historiometrician can then advance to the next step, subjecting these variables to statistical analyses that allow the investigator to confirm or reject the substantive hypotheses.”
(Simonton, 1999b)

The historiometric approach promotes an interactive relationship of cognitive processes with creativity. Simonton addresses the social and environmental factors in the shaping of creative production in a particular community. However, this focus is on macro-level aspects such as the influences of political stability and imperial stability. This dialectic conceptualisation is not evident in the relationship of creativity with other cognitive processes. The dialectic conceptualisation regards cognitive processes as mutually constituted rather than conceiving an exclusive phenomenon. This conceptualisation is not evident in the BVS model initially proposed by Campbell and later supported by Simonton.

2.13.3 General Meta-theoretical assumptions

The creativity theories differ in addressing the magnitude of the process covered which range from little-c, mini-c, Pro-c, and Big-C. Certain theories target the creativity of eminent individuals and their contributions, whereas others focus on everyday aspects of creativity. For instance, Systems theory of Csikszentmihalyi focuses on eminent individuals in the field of science, arts, music and politics refer to Big-C dimension of creativity. Similarly, the Affect model of K.R. Jamison predominantly relies on the creative activities of professional artists and writers, which is the Pro-c level of creativity. The study employs the Four-C model to identify the magnitude dimension of creativity.

Most of the creativity models covered in the comparative analysis focus on the magnitude range between little-c and Big-C creativity, such as the Economic models, Cognitive models, Psychometric models, and Biological models. K.R. Jamison’s Studies

focussed on the magnitudes of Pro-C as well as Big-C. She studied the life and works of eminent individuals like Virginia Woolf, Byron and Van Gogh to understand artistic and literary creativity. Further, she studied episodes of bipolar disorder and mild psychopathic states in the lives of creative individuals.

The Systems Model and Simonton's Historiometric approach to creativity focussed on big-C of creativity. Systems Model of Csikszentmihalyi is concerned with Big-C or cultural creativity, which is distinct in its bigger magnitude and social and cultural influence.

“Big C, or cultural creativity, refers to ideas or products that are original, are valued by society or some influential segment thereof, and are brought to completion. This form of creativity changes the way we see, understand, and interact with the reality that surrounds us. It is the energy that propels cultural evolution.”(Csikszentmihalyi, 2014, p. 239)

A distinct approach is seen in Vygotsky's Cultural-historical model of creativity. Vygotsky deliberated on the process of creativity in its elementary nature. In other words, the model advanced by Vygotsky encompasses the developmental stages and creativity of all magnitudes. His approach is also a criticism of the magnitude model of creativity. According to Vygotsky, creativity is universal in nature, but the highest expressions of it are found only in unique individuals.

Amabile's Componential model does not differentiate the hierarchical magnitudes of creativity. The high levels of creativity is a result of the match between a persons' skills and the characteristics of the domain. The particular personality traits coming under that personality-trait constellation helps creative performances but is not consistent across domains and times.

“It is assumed that there is a continuum from the low levels of creativity observed in everyday life to historically significant advances in science, literature, and the arts. In contrast to popular views of creativity as a discrete entity, this assumption implies that it is possible for anyone with normal cognitive abilities to produce work that is creative to some degree in some domain of endeavour.” (Amabile, 1983, p. 66)

Though the Componential model does not appreciate the hierarchical distinction, it can be interpreted that the model applies for all levels of creative performances ranging from mini-c to Big-C. The BVSR model of Donald Campbell is the general model of evolutionary epistemology and advancement of knowledge. The model is valid for creativities of all magnitude. The initial confirmation of the model came from the observations of his own thought processes.

“Thus, a hypothesis derived from Campbell’s theory was tested and confirmed on Campbell himself! This would seem to imply that Campbell’s own creative process operated according to the same blind-variation and selective-retention principle that he advocated for all creative personalities.”(Simonton, 1998, p. 155)

Glăveanu’s Cultural psychological framework refrains from using the hierarchical system of four C’s. The hierarchical classification system results in trivialising everyday creativity. The perspective of the continuum of creative magnitudes may complicate the problem even further rather than simplifying it. Dividing creativity in the dichotomy of creative magnitudes and studying them separately, leads to disconnections of different modalities.

“From a cultural psychology perspective, thinking in terms of polarities such as P-creativity (creative for the person) and H-creativity (creative for society), creativity in the small and mature creativity, respectively, “little c” and “big C” is generally misleading.” (Glăveanu, 2010, p. 14)

Our earlier conceptualisations of creativity were inherent with mystical and supernatural explanations. The development of psychoanalysis brought the debate of unconscious structures of mind influencing the rational decision making of the individual. The creativity conceptualised in Psychodynamic and Psychoanalytic approaches traced its origin back to unconscious layers of the mind. The appreciation of such unconscious processes such as primary process thinking, defence mechanisms such as sublimation, displacement and regression archetypes and collective unconscious gradually receded from the mainstream discipline after the WW II.

The majority of creativity theories and models discussed in this comparative analysis predominantly focus on the conscious process of creativity. These models are the Economic models, Cognitive models, Biological models, Affect models, Darwinian

models and Socio-cultural models. The contemporary theory, which remains an exception is Wallas stage model. The model views incubation as a psychological process involved in creativity. In this process, the creator is consciously unaware of the problem to which the solution is required as the thinking happens at a subconscious level. Another model which adopts the Wallas model is the Systems Model of Csikszentmihalyi. However, the System Model gives significance to socio-cultural aspects of creativity rather than relying on the unconscious part of the mind. Further, the main framework of the model is only concerned with the conscious process of creativity. The Biological model of Colin Martindale points to primordial thinking, which is rudimentary, undirected thought behind the production of original ideas. Though the primordial thinking is different from Freud's primary process thinking, his studies accept the role of primary process thinking in creativity.

The studies in creativity are generally oriented towards four P's – person, product, process, press. These dimensions also signify the direction of the studies. In the comparative analysis, the four P's and its further additions such as potential and persuasion are employed to locate the theories. The majority of the creativity studies and models discussed in the comparative analysis focus on person and process dimensions. The focal point of the majority of studies is the creative individual and the creative process. Creative person approaches focus on the nomothetic personality traits such as tolerance to ambiguity, intelligence, defence mechanisms, mental flexibility, personality traits and self-concept. The Creative process approach explores processes like intrinsic motivation, associative thinking, communication, perceptual processes and learning.

The models which are oriented towards the Person and Process dimensions are Economic models, Cognitive models, Biological models and Affect models. The Psychometric models are developed to analyse the creative performances in artificial test-like conditions. These models focus only on the Product dimension of creativity. The System Models bring the congruence of components on many levels. The systems model of Csikszentmihalyi and Historiometric approach of Simonton covers all aspects of creativity such as person, product, process, press, potential and persuasion. The componential model deals with Person, Process and Press. It relies on Individual-level skills, the Domain level skills and Motivation to conceptualise creativity.

The social-construction models address most of the areas of creativity research. Glaveanu's Five A model deals with all P's of creativity research, whereas Vygotsky deals with all the Process, product, press and potential. Vygotsky's studies on creativity are centred around the genesis of mental functions and its developmental transformations.

The method opted by the studies is very significant in the conceptualisation of creativity. In the analysis, the method is divided into two – qualitative and quantitative - however, the studies discussed in the comparative analysis employ diverse methodologies. For instance, Csikszentmihalyi's System model or Flow model invented the Experience Sampling Method, whereas the componential model developed the Consensual Assessment Technique.

A majority of studies use quantitative method for analysing creativity. The Economic models, Cognitive models, Psychometric models, Biological models and Affect models employ quantitative methods. Social-Construction models use qualitative methods. The Flow model employs Experience Sampling Method, which is a qualitative approach, whereas the componential model and historiometric methods used quantitative methods.

Comparatively locating the conceptions of creativity in the various models and theories helps in bringing a holistic picture of the field. In the present study, the comparative analysis helped in exploring and clarifying the conceptualisation of self in creativity theories. The meta-theoretical assumptions of the self were categorised in terms of its position on the continuum between intrapsychic and sociocultural conceptualisations. The implicit and explicit assumptions of self influenced the conceptualisation of creativity.

The theories approaching creativity as an individual phenomenon focus on the creative individual, creative process, and creative product. These theories are least concerned with the broader socio-cultural factors contributing to creativity. Very often, these factors are represented as another variable termed as environment or social influences rather than allocating them a substantial position in the explanatory framework. The theories approaching creativity as a collective phenomenon considers the role of socio-cultural factors in the origin, transformation, influence and propagation of creativity. It highlights the collective nature of creativity.

A majority of the prominent theories have dealt with creativity as an individual phenomenon. The Economic models, Cognitive models, Psychometric models, Biological models, and Affect models have considered creativity as concerning with individual only. In the psycho-economic model, the market forces are identified in shaping the creativity of the individual. This economic model is only focussed on the market forces thus considers the social-cultural influence as yet another variable. This model brings some aspects of socio-cultural conceptualisation of creativity and collective nature of creativity, but the larger dynamics of these forces such as structure, function, transformation and genesis in relation to creativity is not elaborated or ignored.

The models which approach creativity as a collective phenomenon are System models and sociocultural models. Glăveanu's Five A model's very core is based on the socio-cultural formation or the distributive nature of creativity. According to him, the appreciation of social aspects in creativity follows a reductionistic course in the popular theories of creativity.

"The social is always external, the self separated from others, even if in close interaction with them. In other words, the social can shape the dynamic of creativity but is not a constitutive element of it. This position, endorsed by positivism, builds on the Cartesian legacy of separating mind from matter, person from environment, self from society." (Glăveanu, 2017, p. 107)

Vygotsky's Cultural-historical model delved deep into the collective nature of creativity. The model builds its conception on the fundamental thesis that creativity is a collective phenomenon. The individual creativity is considered as sourced from the collective nature of creativity.

"When we consider the phenomenon of collective creativity, which combines all these drops of individual creativity that frequently are insignificant in themselves, we readily understand what an enormous percentage of what has been created by humanity is a product of the anonymous collective creative work of unknown inventors." (Vygotsky, 2004, p. 11)

The historiometric model of Simonton points to the phenomenon of multiple discovery and invention. The inventors who are not known to each other or their works

arrive at a particular finding, product, idea or invention. According to historiometry, this phenomenon is related to the prevailing aesthetic or disciplinary milieu. Not only such cultural factors but also the social factors such as minority groups, social structure and population growth influence creative production at a macro level. The economic growth helps creative activities, investment and general propensity influence creative production. Systematic violence, such as war or homicide affects the content and magnitude of creativity in societies. These factors shape the future of the next generations.

“-many sociocultural variables operate as developmental factors that determine the emergence of exceptional creativity. In Other words, these factors define the milieu in which a talented youth grows so as to shape both the nature and the level of creative accomplishments of the future adult.” (Simonton, 1999b, p. 125)

Systems Model or Flow model brings into its scope the collective nature of creativity. The creator works with a symbolic system which is developed with the development of human species. The socio-cultural validation of products is necessary for the recognition of creativity, i.e., the field or panel of experts must recognise the new product or process to be recognised as creative. The Systems Model of Mihalyi Csikszentmihalyi will be discussed in detail in chapter three.

The comparative analysis points to the diverse conceptualisations of creativity in terms of its origin, development, interactions with other cognitive processes and general meta-theoretical assumptions. The analysis helps to dialectically position the creativity theories of Lev Vygotsky and Mihalyi Csikszentmihalyi, which will be elaborated in the next chapters. Both theories are vantage points in the attempt to bring the social context into the psychological frameworks of creativity.

2.14 Conclusion

The comparative analysis points to the diverse conceptualisations of creativity in terms of its origin, development, interactions with other cognitive processes and general meta-theoretical assumptions. The findings of the comparative analysis are given in table 2.2 and table 2.3 respectively. The analysis helps to dialectically position the creativity theories of Lev Vygotsky and Mihalyi Csikszentmihalyi, which will be elaborated in the next chapters. Both theories are vantage points in the attempt to bring the social context into the psychological frameworks of creativity.

Chapter 3

Systems Model of Creativity

3.1 Introduction

Out of the many conceptualisations of creativity, the Systems theories or Systems models are significant owing to its exploration, analysis, and modelling of complex systems and its factors underlying creativity. The frameworks developed in the systems models are broad, which takes into account the developmental, cultural and historical aspects into account. These models see creativity at the interface of subsystems of society and culture without denying the agency of a creative person. The evolving systems model developed by Gruber points out the slow process of generation and transformation of creative ideation in Charles Darwin and its complex connections to the developmental process in different contexts and time scales (Gruber, 1988; Gruber & Barrett, 1974; Gruber & Wallace, 1998). The studies developed under Simonton's historiometric approach analyses the macro-level socio-historical factors that influence the creative production of a period (Simonton, 1999a, 1999b). The Systems model or Flow model developed by Csikszentmihalyi is a systems theory which tries to locate creativity in the interaction space of socio-cultural factors and the individual. This model is employed in Organisational settings (Aubé, Brunelle, & Rousseau, 2014; Aubé, Rousseau, & Brunelle, 2018; Ilies et al., 2017), Sports psychology (Jackson, Ford, Kimiecik, & Marsh, 1998; Stein, Kimiecik, Daniels, & Jackson, 1995), Occupational therapy (Emerson, 1998; Jonsson & Persson, 2006; Rebeiro & Polgar, 1999) and Schooling (Beard & Hoy, 2010; O'Neill, 1999; Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2014; Smith, 2005).

3.2 Definition of Creativity

Csikszentmihalyi distinguishes the creativity conceptualised in systems model from two different phenomena which can be legitimately called *Creative - Brilliant* and *Personally Creative*. The first category consists of unusually bright persons. They are exciting and stimulating in conversations. People with brilliant thought, a conversationalist with varied interest and with a quick mind. These people are *Brilliant* but will not fit in the definition if they have not contributed "something of permanent significance". The second category of people is *Personally Creative*. They are insightful in judgement, with fresh perceptions. They experience the world in novel and original ways and make important discoveries that are only known to themselves. This category

does not come under the definition of creativity. Csikszentmihalyi regards a person as creative who changes the culture in some important respect, the likes of Albert Einstein, Thomas Edison or Pablo Picasso. Csikszentmihalyi recognises such larger developed form of creativity as the creativity of the Big-C magnitude. This also means that persons who may be exceptionally creative, who has greatest impact on history, maybe very dull in a conversation (not Brilliant).

“For example, Leonardo da Vinci, certainly one of the most creative persons in the third sense of the term, was apparently reclusive, and almost compulsive in his behavior. If you had met him at a cocktail party, you would have thought that he was a tiresome bore and would have left him standing in a corner as soon as possible. Neither Isaac Newton nor Thomas Edison would have been considered assets at a party either, and outside of their scientific concerns they appeared colorless and driven.”(Csikszentmihalyi, 2009, p. 26)

In other words, it is possible to produce creative contributions without being *Brilliant* in public eyes. Similarly, it is possible to be *Brilliant* and not to contribute to the culture in any possible way. Another two terms which are used simultaneously with creativity is Talent and Genius. According to Csikszentmihalyi, Talent means something innate.

“Talent differs from creativity in that it focuses on an innate ability to do something very well. We might say that Michael Jordan is a talented athlete, or that Mozart was a talented pianist, without implying that either was creative for that reason.”(Csikszentmihalyi, 2009, p. 27)

Some of the eminent persons interviewed displayed Talent right from the early days. However, the majority of the creative individuals identified in the study, who has contributed to the culture were without any exceptional talent. Talent is not a necessary condition for creativity to flourish. The next term used synonymously with creative individuals is *Genius*. This designation goes to persons who are both brilliant and Creative at the same time. Some people interviewed in the study rejected the designation of *genius*, though the media and public have identified them so. Further, Csikszentmihalyi says that a person can be creative without being a genius and still contribute to the culture on a large scale.

Then the question comes what is identified as Creativity by Csikszentmihalyi? He has delineated his conception of creativity from *talent, genius, brilliance* and *personally creative*. Csikszentmihalyi identifies Big-C creativity for his study and for further deliberations. Big-C creativity is Creativity of larger magnitudes (Kozbelt, Beghetto, & Runco, 2010, p. 22). Such creative production should change some aspect of culture. The experts in the field should attest the creative idea/product/process. Further this should be understandable to others who are interested in the area. Finally, such a product should be included as a part of the cultural domain. This definition is not a case of cultural creativity (Csikszentmihalyi, 2009, p. 27) and not a specific case of individual creativity. Which leads Csikszentmihalyi to the question “where is creativity”?

“So the first question I ask of creativity is not what is it but where is it?” (Csikszentmihalyi, 2009, p. 27)

3.2.1 Where rather than what is Creativity

“Creativity is any act, idea, or product that changes an existing domain, or that transforms an existing domain into a new one” (Csikszentmihalyi, 2009, p. 28). Creativity can be only understood by the interrelationship of the system made of three main parts- the domain, field and individual. Creativity is located as a synergy of three parts. The first domain is a set of symbolic rules and procedures. Mathematics is a larger domain, whereas algebra is a finer domain. Domains are nested in cultures, i.e., the symbolic knowledge known to society. The second part is the Field. The field is a collection of experts of the relevant domain. They are the gatekeepers of the domain who decide whether to include or exclude new ideas or products into the culture. In Academics field consists of subject experts, editors of major journals, curriculum committee, organizing committees of various national seminars, significant publications, Governmental agencies that allocate budgetary provisions and non-governmental agencies that support institutions by fund and direction. The field decides what is to be recognised, circulated and valuable.

The individual comes only as a final cog in the system rather than the only system. The final part is the person who imbibes the meanings of any particular domain such as music, arts, engineering, or science. An act becomes creative only when the person finds a new pattern that in some way, contribute to domain/culture as recognised by the field of experts. Further, there are two aspects to it. The changes made in a particular domain by a

particular individual will bring freshness or novelty in that domain, and the next generation will see such changes as statuesque and learn and build from it. Another chance is that creativity can bring about another domain, a new one into cultural space. The Example, Csikszentmihalyi provides examples of Galileo who pioneered experimental physics and Sigmund Freud who introduced Psychoanalysis. Csikszentmihalyi identifies certain fundamental assumptions to his definition of creativity.

- 1) *“The personality trait of creativity is **not** that determines a person is creative or not”*. Contrary to the approach of extrapolating the traits of a creative individual and identifying the personality characteristics as the ultimate marker of creative performance, creativity is considered more holistically in the systems model. A creative individual may not necessarily be different from other individuals in society. This is because the other two parts of creativity also have a role to play. What counts as creativity is the identified novel pattern which is accepted for inclusion in the domain by the field. This explains perfectly why Gregor Mendel’s work on genetics was not regarded creative during his lifetime but later acknowledged. Mendel’s experiment in genetics on the pea plant was later incorporated into Boveri-Sutton chromosome theory of inheritance, which became the basis of classical genetics. During his time, Mendel was relatively unknown. The personal trait of creativity is neither a sufficient nor a necessary condition for creativity.
- 2) *Being at the right time and right place is very important component of creativity*. Csikszentmihalyi gives an example of the Florentine Renaissance, a period between 1400 and 1425, in Europe. The sculptures, art and architecture reached golden heights during such a brief period. The presence of eminent persons like Brunelleschi, Donatello, and Masaccio may count as an explanation but not the explanation. The reinvention of Roman architecture, an abundance of Florence in terms of trade and culture, the bankers who were getting money from foreign kings and the intent of city political leaders to build a beautiful city played an important role in rebuilding the city and its renaissance. All factors converge to make creative expression large enough to the renaissance.

- 3) *A person cannot be creative in a Domain which she or he is not exposed* (Csikszentmihalyi, 2009, p. 29). Any person who has to be creative has to invest a sufficient amount of time into the domain. Mastering the rules of the domain is a necessary condition for creativity. Csikszentmihalyi gives the example of children with mathematical gifts. No matter how much gift a child has, he/she has to learn the domain and the rules before venturing into creative behaviour in the respective field. Learning the rules is not a sufficient condition of creativity. The field, here the mathematics wizards and renowned experts, has to accept it for the final recognition to happen. The famous Indian mathematical wizard, Srinivasa Ramanujan's creative contributions to mathematics, was well supported by the experts in the field such as G.H Hardy who was the Professor in the University of Cambridge. During the British rule in colonial India, it was challenging for a voice to be heard unless recognition of experts and their benevolence help against high odds.
- 4) *Creativity can be manifested only in existing domains and fields* (Csikszentmihalyi, 2009, p. 29). A loosely organised domain has loose rules and lack experts and expert opinion. The properties like wisdom, compassion and nurturance come under such loosely organised domains. Experts are necessary to legitimise the claims put forth by the creators in the respective domains. There are very few rules and priorities. In other words, it is easy to evaluate a new song, film or a scientific formula, but it is challenging to examine an act of anthropomorphism, compassion, and an insight into human nature.
- 5) *Attribution of creative can fluctuate mysteriously.* Csikszentmihalyi gives examples of Raphael, the painter, Gregor Mendel, the geneticist and Johann Sebastian Bach, the musician. Raphael's reputation as a painter has fluctuated over time. Mendel's work was not appreciated during his time, though later it became the foundation of Genetics. Bach's music was regarded as old fashioned for many generations. Attributed creativity of Raphael changed with changing aesthetic sensitivity of the age and with varied art critical theories and art histories. Thus a corollary of this observation is "*Creativity can be constructed, destructed and reconstructed several times over the course of history*"

3.3 Method

The basis for Csikszentmihalyi's seminal work is based on the video-taped interviews of eminent personalities between 1990 and 1995 in the University of Chicago. The sample of eminent individuals was collected by purposeful sampling or in his words, Snowball sampling. The eminent ninety-one persons interviewed were from varied cultural backgrounds. This accounted for a diverse sample which contained fourteen Nobel Laureates- four in Chemistry, four in Physics, two in Literature, two in Medicine/Physiology, one in Peace and one in Economics. The criteria used were threefold.

“The person had to have made a difference to a major domain of culture—one of the sciences, the arts, business, government, or human well-being in general; he or she had to be still actively involved in that domain (or a different one); and he or she had to be at least sixty years old (in a very few cases, when circumstances warranted, we interviewed respondents who were a bit younger).”
(Csikszentmihalyi, 2009, p. 12)

The sampling technique used in the study is Snowball sampling, and the women-man ratio in the study is a skewed one. The research team lead by Csikszentmihalyi contacted the eminent persons they listed in for the Interview asking for permission. The accepted people were interviewed, and they provided some leads which lead to another person of eminence and so on. Csikszentmihalyi observes that out of the invitation sent, people in natural sciences agreed more to participate than the artists, writers and musicians. The acceptance rate of letters was fifty per cent in the former while the rate was 33 per cent in the case of the latter group. The Research team tried to bring an equal number of Women and Men of eminence into the sample, quite unsuccessfully. The final ratio of Men and women turned out to be 7:3. The reason given by the Research team was under-representation of creative women in creative domains.

The interview was done at the office or homes of the eminent persons. The interviews were supplemented with the work these creative personalities have left in their respective circles. Many wrote books, articles and a few wrote auto-biographies that were available. The interview lasted for a few hours, and it was later translated into a readable form. The interviewees in Arts and Humanities include Historians like Natalie Davis, John Hope Franklin, Writers like Nadine Gordimer, Naguib Mahfouz, Poets like Domin

and Faludy, Media persons like Anderson and Konner, Philosophers like Adler and Booth, Composers and Performers like Ravi Shankar and Blackwood, Visual Artists like Baskin and Kurokawa. The interviewees in Sciences included many Nobel Prize winners too. This list has Biologists/Physicians like Lederberg and Yalow, Chemists like Eigen, Karle and Pauling, Economists like Stigler and Boulding, Physicists/Astronomers like Bardeen, Bethe and Chandrasekhar and Psychologists/Social Scientists like Campbell and Coleman. Inventors like MacCready and Offner political activists like Boulding and Henderson, Businessmen and philanthropists like Galvin and Reed also were interviewed

The questionnaire used in the study has four Parts; A) Career and Life Priorities, B) Relationships, C) Working Habits/Insights, D) Attentional Structures and Dynamics. The full questionnaire is provided in the Appendix. The questions included in Career and Life Priorities had questions like A) *Of the things you have done in life, of what are you most proud?*(Csikszentmihalyi, 2009, p. 393) B) *Of all the obstacles you have encountered in your life, which was the hardest to overcome?* (Csikszentmihalyi, 2009, p. 393) C) *Have there been points when what you were doing became less intensely involving—seemed less interesting or important to you? Can you describe a time that stands out?*(Csikszentmihalyi, 2009, p. 394).

The questions asked in Relationships section (Part B) includes A) *“If there has been a significant person (or persons) in your life who has influenced or stimulated your thinking and attitudes about your work... a. When did you know them? b. How did you become interested in them (e.g., did you actively pursue them)? c. How did they influence your work and/or attitudes (e.g., motivation, personal or professional values)? d. In what ways was he/she a good and/or bad teacher? e. What kinds of things did you talk to this person about (e.g., personal, general career-related, specific problems)? f. What did you learn from them? How to choose what problems to pursue? Field politics and marketing yourself?”* (Csikszentmihalyi, 2009, p. 394,395). B *“Is it important for you to teach and work with young people? a. Why? b. What are you interested in trying to convey to them? Why? c. How do you do this?”*(Csikszentmihalyi, 2009, p. 395)

The questions asked in Part C, Working Habits/Insights includes question items like A) *“Where do the ideas for your work generally come from? a. From: reading? others? your own previous work? life experiences? b. What determines (how do you decide) what project or problem you turn to when one is completed? c. Have there been*

times when it's been difficult to decide what to do next? What do you do?" (Csikszentmihalyi, 2009, p. 396) B) *How do you go about developing an idea/project? a. Do you write rough drafts? Outlines? How often do you rewrite? b. Do you publish your work right away or wait a while?* (Csikszentmihalyi, 2009, p. 396)

The questions asked in Part D, Attentional Structures and Dynamics asks questions like A) *"At present, what task or challenge do you see as the most important for you? a. Is that what takes up most of your time and energy? If not, what does?"* (Csikszentmihalyi, 2009, p. 397) B) *"What do you do about this? (probe for field/domain/reflection)"* (Csikszentmihalyi, 2009, p. 397)

The whole study was aimed to disprove some widespread assumptions on Creativity rather than to prove some. There is no special attempt to introduce generalisations or behavioural laws that govern the creativity of the individual. The focus is more on disproof rather than proof as the Research Team found it easy navigating the way through scientific research. The scientific task of finding proof for a generalization is difficult compared to finding the falsification of that generalization.

"The advantage of disproof over proof in science is that whereas a single case can disprove a generalization, even all the cases in the world are not enough for a conclusive positive proof. If I could find just one white raven, that would be enough to disprove the statement: "All ravens are black." But I can point at millions of black ravens without confirming the statement that all ravens are black." (Csikszentmihalyi, 2009, p. 15)

Statistical Tests were avoided because of the lack of comparison group, sample type and focus of the Research. Csikszentmihalyi acknowledges the lack of a proper comparison group to the Creative cream he has sampled. The sample type is a snowball sample which is a non-probability sampling technique. It is challenging to run parametric statistical tools in such samples. Csikszentmihalyi's intent in the Research work is to disprove some widely held assumptions which make such statistical advances less necessary and less burdensome.

3.4 Source/s of Creativity

Much effort of his lifelong work on Creativity is focused on debunking the individualistic explanation of creativity in popular as well as academic landscape. His

work has responded well to the notion of the lone eccentric genius of the 19th century by contributing empirical and qualitative work to the discipline as well as to the general public.

“Perhaps being creative is more like being involved in an automobile accident. There are some traits that make one more likely to be in an accident—being young and male, for instance—but usually we cannot explain car accidents on the basis of the driver’s characteristics alone. There are too many other variables involved: the condition of the road, the other driver, the type of traffic, the weather, and so on. Accidents, like creativity, are properties of systems rather than of individuals.” (Csikszentmihalyi, 2009, p. 45)

He stressed the importance of the interaction of individual and socio-culture as the fundamental basis of creativity.

“If by creativity we mean an idea or action that is new and valuable, then we cannot simply accept a person’s own account as the criterion for its existence. There is no way to know whether a thought is new except with reference to some standards, and there is no way to tell whether it is valuable until it passes social evaluation. Therefore, creativity does not happen inside people’s heads, but in the interaction between a person’s thoughts and a sociocultural context. It is a systemic rather than an individual phenomenon.” (Csikszentmihalyi, 2009, p. 47)

Csikszentmihalyi’s approach to an explanatory framework includes synergy of many sources rather than the single person per se. The complex process of creativity has its sources in domain, field, and person. The synergy of the three is the process by which creativity as an act is performed, socio-culturally validated and accepted into the cultural stream.

“The real story of creativity is more difficult and strange than many overly optimistic accounts have claimed. For one thing, as I will try to show, an idea or product that deserves the label “creative” arises from the synergy of many sources and not only from the mind of a single person.”(Csikszentmihalyi, 2009, p. 1)

3.4.1 Domain

The existence of domain is the best statement on creativity. The domain is extrasomatic, which is not biological or genetic. Chromosomes transmit genetic information through the media of biological reproduction. The domain is the realm of knowledge. The data of the domain constitutes culture. The domain can be as vast as chemistry or as specific as molecular bonding. The examples of Domain include music, arts, science, business, and architecture. They expand the limitations of the individuality of a person by providing large working space and new worlds where one can find meaning. The domain is also the power to a person who has learned the rules of the game. Most of our lives are spent in learning the rules of the game or domain which determines the success or failure of the individual in society. In other words, most people identify domain as a means of living or a paying job.

People select their respective domain based on many factors. Broadly this choice can be broken into two basic categories based on outcome - match and mismatch. If the domain is a perfect match to the individual, then the job itself is rewarding to the individual and chances of creative production are very high. The job in itself becomes the reward. People in such jobs have high job-satisfaction and are very less likely to leave the job. They obtain happiness just for the sake of doing the job. The second outcome is a mismatch between the domain and individual competence. This could occur in many variations, but primarily socio-cultural pressures and tensions, or lack of discretion can cause such outcome. Such conditions will not help the person in work-related situations. The satisfaction and pleasure will be derived from sources other than the job itself.

The eminent persons chosen in the interview have common reasons to pursue the domain though the symbols of domains are incredibly different. The people included in the study pursued different and varied domains such as molecular chemistry, nuclear physics, poetry and microbiology. The reasons listed, as Csikszentmihalyi says, include making something that will endure after one's death, to bring order to existence and to contribute to humankind to advance further. Csikszentmihalyi describes how Gyorgy Faludy decides to be a poet.

“When asked why he decided to become a poet at the age of seven, Gyorgy Faludy answered, “Because I was afraid to die.” He explained that creating patterns with words, patterns that because of their truth and beauty

had a chance to survive longer than the body of the poet, was an act of defiance and hope that gave meaning and direction to his life for the next seventy-three years.”(Csikszentmihalyi, 2009, p. 38)

Physicist John Bardeen who worked on superconductivity, wanted to make a world of no friction. Similar was the response of Physicist Heinz Maier-Leibnitz who wished for unlimited power by harnessing nuclear energy. According to Csikszentmihalyi, a particular domain can harness or hinder creativity in three ways- Structural clarity, cultural centrality and accessibility. Structural clarity refers to aspects like, is there detailed data and organised data. Are there any efforts to dig more data of the domain? Cultural centrality is aspects like, is the particular domain respected by the people working in it? Alternatively, is the domain is respected by the public as central and respectful? Accessibility involves aspects like, does the data gathered is disseminated into the people involved in the domain. If a particular domain adequately addresses all three ways, then creative exploration is much more possible within the domain. The chances of innovations are more, whether it is a company, a discipline or politics.

Domains though varied in nature and appearance show distinctions in the way creative productions exhibited in developmental life span. Creative production of Mathematical genius peaks in the twenties, physicists in thirties and philosophers in later life. Csikszentmihalyi explains that as the symbolic system of mathematics is very tight and very structured, it is relatively easy to learn for a new person. This strict internal logic makes a person to learn the rules fast, and that makes him/her champion the domain in a few years. The domains like philosophy or social-sciences are comparatively vague in structure, and it takes decades to contribute to the area in a creative manner. For instance, take Psychology as a domain.

“But because with the exception of a few highly structured subdomains, psychology is so diffuse a system of thought that it takes years of intense writing for any person to say something that others recognize as new and important. The young student in Leibnitz’s class was eventually awarded the Nobel Prize in physics, something that could never happen to a psychologist.”(Csikszentmihalyi, 2009, p. 40)

It takes decades of experience and effort to contribute something new to the area. This is not possible without great writing and associations in the field which may or may

not recognise the person. In some other domains too the young people have an edge, and in some other, the elder one has more chances. The creative verses in lyrics are exhibited more by the young poets, while veterans write classics/epics. Similarly, the exceptional ability in mathematics or music is shown early by the eminent persons while the abilities in painting or philosophy are displayed in the later years. These variations in the developmental life span maybe because the domains are structured differently.

Csikszentmihalyi also mentions that it may be because of the current historical climate that the domains that are measurable or quantifiable take precedence over the ones that are not.

“But it is certainly true that nowadays a quantifiable domain with sharp boundaries and well-defined rules is taken more seriously. In a typical university it is much easier to get funding for such a department.”(Csikszentmihalyi, 2009, p. 40)

For instance, researchers in psychology take mental ability or intelligence very seriously while other aspects of personality like altruism, sensitivity, helpfulness are rarely researched. Csikszentmihalyi identifies the dangerous trend of giving scientific status and respect to those domains that are quantifiable very quickly. It is difficult for experts to agree on who is the world authority on personality development because of its broadly defined boundaries and comparative vagueness.

3.4.2 Field

The field is the gatekeeper of a domain which determines which innovation to approve and not to. There is no scarcity for innovations in culture, but very few are chosen for many reasons. One of the reasons is that cultures are generally conservative. Very few paintings out of lakhs are kept in art museums. Very few scientific theorems get accepted as the path-breaking ones in disciplines. Further, the span of attention is very limited to individuals. It will be difficult to focus on the millions of paintings that are produced around the world for people who are interested in that domain.

“Because of the scarcity of attention, we must be selective: We remember and recognize only a few of the works of art produced, we read only a few of the new books written, we buy only a few of the new appliances busily being invented. Usually it is the various fields that act as

filters to help us select among the flood of new information those memes worth paying attention to.” (Csikszentmihalyi, 2009, p. 41)

Fields are also sensors that act as filters to choose creative productions among many works of importance. The volume of information produced is too much to bear for the human sensory system. The field is a part of a culture that specialises in a particular domain. In other words, culture exists because of the choices the people have.

“In fact it could be said that a culture exists when the majority of people agree that painting X deserves more attention than painting Y, or idea X deserves more thought than idea Y.” (Csikszentmihalyi, 2009, p. 41)

The field can be as broad as a society or as narrow as two or four people. For instance, a new recipe for Coke is valued by an entire population of the country, but the relativity theory by Albert Einstein found very few subject experts. The field can affect the rate of creativity in three ways by being either reactive/proactive, narrow/broad filter, connectedness to the social system. Proactive field implies the field that demands creativity from its members. The science fairs, exhibitions, science competitions, Science scholarships, celebrating Science days/weeks are examples of promoting science proactively. A proactive field is the best recipe for constructive work in any discipline. The idea of a proactive field can help companies, educational institutions and entrepreneurship. A reactive field does not stimulate novelty.

The second way is to bring a narrow or broad filter in processing the production of the domain. A conservative field allows only a few works to enter the domain. In choosing the best, the majority of works are left behind the screen. Allowing a broad filter to work will cause more novelty to enter the domain. The best strategy to adopt is not to be in the extremes as it can be detrimental to the field. The domain may be either starving for novelty, or the allowed novelty still tries to find a place in the domain if such a strategy is adopted. The third and final way is to be connected to the social system and derive support for the activities in the domain. An example Csikszentmihalyi provides is the case of nuclear research during World War II. The nuclear research in developed nations got funds, support, stature and close monitoring during the World War. Both the political system and the public were interested in such a deciding force.

“During a few years in the 1950s, the number of students in theoretical physics at the University of Rome went from seven to two hundred; the proportions were not so far off elsewhere around the world”(Csikszentmihalyi, 2009, p. 44)

The possibility of power and deterrence of nuclear power made the whole society bank on new hope and technology. The laboratories, experimental reactors, new physicists and fund came into nuclear research very fast.

Field and domain can affect each other in two ways- domain determines field or field determines domain. In the first case, the domain determines more or less what the field can, or cannot do. This is often seen in sciences where the knowledge base restricts what to or what not to claim. A theory to be accepted into the domain with just the field experts is not much possible unless it corresponds well with the knowledge base generated by the domain. This is usually not the case with arts where the field may determine the domain. The expert of the artistic establishment may use the less strict rules and vague boundaries of the discipline to allow a piece of art to a domain or chose not to do so.

Fields which are not competent with the domain may take charge of it, which could also affect the creative production of the times. The examples cited by Csikszentmihalyi are, interference of the church in Galileo's astronomical findings, Communist Party giving directions to genetics, art and music, and not teaching evolutionary history in classrooms in the act of political support of fundamentalists in the United States. Csikszentmihalyi lists some more instances in his work.

“The Japanese government is heavily invested in stimulating new ideas and applications in micro-circuitry, while the Dutch government, understandably enough, encourages pioneering work in the building of dams and hydraulic devices. The Romanian government was actively involved in the destruction of the art forms of its ethnic minorities in order to maintain the purity of Dacian culture; the Nazis tried to destroy what they considered “degenerate” Jewish art.”(Csikszentmihalyi, 2009, p. 44)

Another chance is that the field is unable to represent the domain well. An example Csikszentmihalyi identifies is the discipline of philosophy. An eminent person in

the study reported that for a person to study philosophy, it is better to immerse in good books than consulting the experts in the field. The eminent person in philosophy is of the opinion that philosophy departments, i.e., the fields are no competent. The field consists of experts, here the university professors, school teachers, curriculum makers and academic committees of a higher order. The opinions of field members matter for the domain. Understanding how the fields operate is detrimental in order to understand creativity.

3.4.3 Individual

The individual is the one who generates novelty. However, the investigations focused only on the individual are not sufficient to bring the creative process into the picture, though the history of creativity research shows such a trend. Csikszentmihalyi argues there may not be a single characteristic that is responsible for novelty in creative individuals. The explanation of novelty by the eminent persons revolved around luck and being at the right place at the right time. We have to look into the data by considering the reasonable chances of humility and interviewer effect.

The scientists interviewed in the study got Nobel prizes for introducing quantum theory. In the late 1920s and 1930s, they were among the first batch of students to be exposed to quantum theory. Many of them in the later years applied the theory into their respective domains like Chemistry, astrophysics and electrodynamics. Later some of them got Nobel Prize like Subrahmanyan Chandrasekhar, John Bardeen and Manfred Eigen for their work. Another example cited by Csikszentmihalyi is the problem of the representation of women in science during World War II. The women scientists in the 1940s claimed that they got admission, scholarship, individual attention and acceptance because the male students went for War II.

Csikszentmihalyi accepts luck as a critical component of creative discoveries but with a word of caution. For Csikszentmihalyi, it is vital to point out the tenuousness of creativity and not to fall in the trap of not giving the individual any credit for novelty. The latter trend can be cited in certain Social psychological and Sociological works where creativity is regarded as an attribute. This view sees creativity as a projection of social consensus and is an illusory quality. Csikszentmihalyi warns of oversimplification in any such attempt. Novelty is not possible without individual contributions.

Luck as a reason for novelty is easy to overstate as according to Csikszentmihalyi. In the former example of eminent persons who got Nobel Prizes for bringing in quantum theory into disciplines like Chemistry, Biology, Astrophysics cannot be just an accident. It requires a certain quality to see whether quantum physics fit into one's own disciplines and the need to pursue it further in career. Time and space are essential factors of creative expressions, but the person is also an important contributor to novelty in any case.

3.4.4 Personality

Csikszentmihalyi does not believe in particular trait/traits that make a person come up with something novel or creative. The person in order to be creative must internalise the system, i.e., the domain and field. One aspect Csikszentmihalyi notes is that creative individuals are adaptive to any situations and work towards their goals. Any particular personality trait for creative behaviour, according to Csikszentmihalyi, does not seem to exist. For instance, Creative artist like Raphael is extrovert, whereas Michelangelo is an introvert. According to Csikszentmihalyi, there is no evidence or proof for such static personality trait that occurs throughout the creative personalities or eminent individuals. Some suggestions along such lines would be sensory advantage/genetic predisposition.

Certain people are sensitive to light, sound or colour at a very early age. Certain individuals are born with a perfect pitch. Some individuals who have their nervous system very sensitive to light or colour may have an extra edge in painting. In future, they may develop a taste in the respective area and chances of innovation are more. A sensory advantage is not a necessary condition for novelty. Csikszentmihalyi gives an example of El Greco, who had a deceased optic nerve. Beethoven was deaf in the latter part of his life but still composed great works. The sensory advantage may result in an early interest in a particular area.

The personality of the individual must adapt to the particular field and domain to produce novelty and creativity. Csikszentmihalyi does not emphasise too much on creative personality, or the attempt to locate creativity in individual temperament. Both Michelangelo and Picasso changed the domain of painting, but there are no common characteristics in them that lead to creativity in arts.

“The reason I hesitate to write about the deep personality of creative individuals is that I am not sure that there is much to write about, since creativity is the property of a complex system, and none of its components alone can explain it.”(Csikszentmihalyi, 2009, p. 56)

The only way Csikszentmihalyi distinguishes a creative individual from others is by Complexity. A complex personality shows all shades of personality spectrum rather than developing some aspect of it. It may seem contradictory as a creative individual may be both aggressive and cooperative. A complex personality is similar to Carl Jung’s Mature personality. The shadow of an individual is a repressed aspect that seeks expression. For instance, a submissive person desires to be dominant. A mature person disowns the shadow, a tendency that keeps a person struggling from expressing his true identity. In Csikszentmihalyi’s own words Complexity means

“I mean that they show tendencies of thought and action that in most people are segregated. They contain contradictory extremes—instead of being an “individual,” each of them is a “multitude.” Like the color white that includes all the hues in the spectrum, they tend to bring together the entire range of human possibilities within themselves.”(Csikszentmihalyi, 2009, p. 57)

Complexity is not neutral state or average. It is the ability to move from one side of the personality spectrum to another, from competitive to cooperative. Creative persons chose a golden mean or a central position as their default position, and they move to extremes. They are aware of both extremes and experience those states with intensity without inner conflicts. Complexity is represented by a set of ten pairs of antithetical traits. a) Energetic and Quiet b) Smart and Naïve c) Playfulness and Disciplined d) Reality and Fantasy e) Extroversion and Introversion f) Humble and Proud g) Masculine and Feminine h) Rebellious and Independent g) Passionate and Objective h) Suffering and Enjoyment.

- 1) **Energetic and quiet.** Creative persons seem to have an enormous reservoir of energy. They can focus on tasks for hours without losing enthusiasm and freshness. This does not make a creative person hyperactive; the energy is under their own control rather than an external schedule. The energy is internally generated due to the focus of minds rather than any genetic advantage. According

to Csikszentmihalyi, creative persons have high eros/generalised libidinal energy, sometimes manifested through sexuality. They show paradoxical traits in sexuality too as both periods of celibacy attitude and overindulgence occur in their life. Many individuals interviewed in the study reported bad health during their childhood. Later in their adult life, they outwork many in their domain. Further, creative individuals supplement activity with periods of idleness. This serves as an important aspect of their creativity. Such periods allow the individual to recharge batteries. These include a lot of sleep and rest periods. Creative individuals oscillate between the two extremes.

- 2) **Smart and Naïve.** Csikszentmihalyi quotes Howard Gardner, who has studied geniuses in the 20th century, that for them immaturity both physical and mental can go hand in hand with big insights. Psychologists refer to a g factor or general intelligence which is detrimental for persons who make important creative contributions. However, Csikszentmihalyi points out that individuals who are tested as highly intelligent do not emerge as creative contributors, which is the real problem. Lewis Terman, Psychologist at Stanford, refers that children who are intelligent do well in life, but after a point, it is not a predictor of superior performance in adulthood. Later studies have shown that a cutoff score of 120 above which intelligence is not helping creative performance necessary. The people with high I.Q can become complacent in life and lack curiosity as they consider themselves self-sufficient. Both ways of thinking – convergent and divergent, are used by creative people. This is in contrast to the general trend in cooperations and enterprises where divergent thinking is promoted by techniques such as brainstorming and creative environments. Csikszentmihalyi postulates both convergent and divergent thinking is necessary for creativity. Galileo and Charles Darwin had very few ideas, but they changed the cultural landscape. However, the assumption thus arrived by divergent thinking has to be tested, analysed and defended. Divergent thinking helps to distinguish a good idea from a bad one, but convergent thinking helps in the later process.
- 3) **Playfulness and Discipline.** Both playfulness and its antithesis, i.e., endurance and perseverance, are seen in creative individuals. A light attitude, similar to lightness in joking, or playful attitude helps in creative thinking. David Reisman, an eminent personality in the interview, talks about detached attachment and being irresponsible and responsible at the same time. Some of the inventors like Jacob

Rainbow have used a mental technique such as imagining that he is in a virtual jail to complete works that require endurance rather than intuition. Nina Holton, an architect, sees sculpturing as not an easy job as others see on the periphery. According to her, it is a combination of hard work and fantastic wild ideas. Physicist inventor Frank Offner refers to how his work on ear membrane has to do with solutions coming to his mind at the bed in the midnight.

- 4) **Fantasy and reality.** Great works of art and science came from a leap of imagination that normal people would call unreal. The relativity of Einstein was unimaginable and unreal unless and until it was established. Creative individuals display a sense of imagination while rooted in reality. Albert Einstein regards art and science as an escape from reality, and probably he was mentioning the World War affected the social condition of his times. Original responses were elicited by administering projective techniques like Thematic Apperception Test or Rorschach to artists. The responses were not bizarre as one would occasionally find with normal people. The original responses have the novelty rooted in reality. Csikszentmihalyi adds that professionals like bankers, politicians and businesspeople may have their fantasy side if they are creative, though the popular opinion may vary.

“But when a person begins to work creatively, all bets are off—the artist may be as much a realist as the physicist, and the physicist as imaginative as the artist.” (Csikszentmihalyi, 2014a, p. 56)

The current reality will become obsolete, and the new order is always on the verge. This is an evolutionary process, and the emerging reality is something inherent in the present.

- 5) **Extroversion and introversion.** Csikszentmihalyi critiques the popular idea of lone genius or solitary genius as a stereotype. It is a necessity to be alone for working continuously in a given domain to master it. A composer may work on his musical instruments for years to bring something novel in the field. Being alone is a part of the job, but solitude alone cannot bring any success in creative tasks. Many of the eminent individuals interviewed in the study reported an exchange of ideas and information and knowing the mind of other people in the field helped them to produce something new. Physicist Freeman Dyson says science is a very gregarious business. When he writes, he consults the library,

which means keeping the doors shut. However, while doing science, it is essential to talk to others in the field and know what important developments are happening in the field. This means to keep the doors open. Both approaches of keeping the doors open and keeping it closed help creative production.

- 6) **Humble and Proud.** Why should a creative personality become humble or selfless? Csikszentmihalyi lists three reasons for humbleness. The creative person knows the long line of work done in their respective area by others as important as themselves. They have relied on the scholarly work already done in the discipline. As mentioned earlier, they are aware of the luck factor which made their inventions or discoveries, or they are aware of how they are at the right time and right place. The third reason is that creative individuals are focused on the present challenge or a future task, which makes the achievements seem silly. Elisabeth Noelle-Neumann's answer is "she always looks ahead" when asked about what makes her proud. For the same question, Freeman Dyson answered that raising six kids is the proud aspect of his life. However, creative individuals have a sense of pride in their accomplishments in comparison to others. People interviewed in the study displayed, a good dose of both humility and self-assurance. Creative people can be ambitious and selfless at the same time. The eminent persons interviewed have said that their goals have become more altruistic in the later years and shifted from self-centric goals they earlier pursued. Specific fields are organized in certain ways that a certain amount of aggressiveness is required to make changes in them. This is especially true when competition in the field is fierce. Both aggression and humbleness help the creative urge.
- 7) **Feminine and Masculine.** Creative individuals are a case of Psychological Androgyny. Both feminine and masculine operate in them in unusual ways compared to the general population. Csikszentmihalyi cites tests to show that creative women are generally more dominant and mentally tough than their peers while creative men are less aggressive and more sensitive than male peers. Psychological Androgyny is itself a resource. They have double resources compared to normal population. They are aggressive and compassionate, sensitive and rigid and dominant and submissive at the same time. Creative individuals have strengths of the other gender too. This feature is evident in men who cared for their family and environment. Further creative individuals exhibited stable identifiers of their own gender while exhibiting other cross-gender traits.

- 8) **Rebellious and Independent.** Csikszentmihalyi challenges the popular notion of creative individuals as non-traditionalists. For learning a particular domain, it is very important to be learning the rules of the game. The creative person learns the rules and then changes it, which invites the label of rebelliousness. Novelty is based on changing the traditional domain. Artist Eva Zeisel says that to be different is a negative impulse as no creative thought emerges from just being different. Willingness to take risks is a very important factor in creativity once the domain is mastered properly.
- 9) **Passionate and objective.** The creative process has a Yin-Yang altercation as according to Csikszentmihalyi. Many eminent personalities in the study mentioned about attachment and detachment at the same time. This is similar to being passionate and objective at one's own work. Passion provides interest in the task while being objective brings credibility to one's work and determines the direction of it.
- 10) **Suffering and Enjoyment.** Creative persons have a higher sensitivity to their domain. They are pained by the low quality which they see in various aspects of the world. A creative writer feels upset while reading bad prose, similar the case with a creative engineer who sees a bad machine. They have a low threshold for pain. Eminence is a vulnerable position because of the exposure and frequent criticisms that it generates. The pain may occur if years of work go unnoticed and unrewarded, leading to isolation. The society may not regard the divergent thinking as special but as deviance from normal unless and until the person is recognised. There is enjoyment in working in the area of expertise, where there is no worry and artist can be carefree. Enjoyment can happen because of the “flow” state the individual finds himself while performing a creative endeavour.

3.5 Creative Process

According to Csikszentmihalyi, there is no “single” creative process by which all creative individuals perform creative acts. Csikszentmihalyi’s study claims there can be many such implicit theories for each creative person, which may differ from one another. Robert Galvin, an eminent person, interviewed in the study, claimed anticipation and commitment, which consists of creativity. Peter Drucker claimed of his workaholic nature, being a loner, quality time spending, stress and deadlines for his creative

accomplishments. There are many creative enhancement programmes run at organisations, schools and companies which claim a method of teaching creativity. Csikszentmihalyi claims of many theories of creativity and support implicit theories of creativity and the same time seek to identify specific common threads that are across domains and idiosyncrasies.

“Given how different domains are from one another, however, and given the variety of tasks and the different strengths and weaknesses of individuals, we should not expect a great deal of similarity in how people arrive at a novel idea or product. Yet some common threads do seem to run across boundaries of domains and individual idiosyncrasies, and these might well constitute the core characteristics of what it takes to approach a problem in a way likely to lead to an outcome the field will perceive as creative.”(Csikszentmihalyi, 2009, p. 77)

The creative process for Csikszentmihalyi is how the three aspects of creativity-domain, field and person, act in synergy and contribute in a path-breaking way to society. Further, individuals identify problems in their respective domain as part of advancing with symbolic learning in the area. Csikszentmihalyi addresses a few critical questions like how a problem emerges. What are the components of a problem? What happens in the individual mind when such a problem is processed in creative ways? According to Csikszentmihalyi creative process apart from the synergy of the three parts includes the aspect of the emergence of a problem and temporal mind processes involved in creativity, which is best represented in Wallas stage model.

3.5.1 Emergence of Problems

Insights occur to a mind which is prepared/cultivated. Without preparation, it is very difficult to invoke insights, though a rare chance still exists. There are two types of problem: Presented problem and Discovered problem. The problems that are already formulated by experts or given by the employers are Presented problems. They are more familiar to the people. The Discovered problems are problems that are formulated and solved by the same person and others may not be aware of the existence of such problems. Darwin formulated such a problem of evolution and collected evidence in Latin American shores and islands for many years. He formulated a case of evolution and gave evidence to support it. There are three primary sources of problems: personal

experiences, requirements of the domain and social pressures(Csikszentmihalyi, 2009, p. 83) They act synergistically and are intertwined.

3.5.2 Personal Experiences

Life experiences determine the path of the individual whose creative activity is shaped by it or constructed as a reaction to it. Csikszentmihalyi provides an example of Lee Nading, a painter, who canvases the nature-technology conflict as his artwork. The sensitivity of Nading in nature-technology conflict dates back to an event, the suicide of his brother. Fierce competition in a prestigious scientific research laboratory made life difficult for Nading's brother, which led to suicide. Nading became very sensitive to the lack of human concern in sciences and targeted such themes as his artistic expression.

Eva Zeisel decided to be an artist in order to prove her in a family of Nobel laureates which regarded her as a dumb one. Poets like Antony Hecht and Hilde Domin write down their daily experiences in notebooks which help in later works. According to Ann Roe, for many creative scientists, ordinary interests of childhood was not available to them that they became interested in other aspects such as the properties of matter. Linus Pauling's interest in Chemistry dates back to his childhood when his father allowed him to do work in the drugstore behind their house. The curiosity, which is a hallmark of creative work is not just an intellectual pursuit. The perseverance of creative artists is because of the interest in a particular area, which is based on feelings and early experiences. The resolution of such experiences or feelings leads to creative expressions in artforms or a new way of understanding. The intelligent person may become self-satisfied once he/she is well established in society. The creative individuals struggle and advance more than the normal ones and will not stop their pursuit of money and status.

3.5.3 Influence of Domain

“One cannot be creative without learning what others know, but then one cannot be creative without becoming dissatisfied with that knowledge and rejecting it (or some of it) for a better way.”(Csikszentmihalyi, 2009, p. 90)

Another source of the problem is the domain itself. Similar to life produces experiences and feelings which are resolved in creative work, the creative person responds to the symbolic system in the domain for creative solutions to the problems. The

person who sees the internal logic of the domain has two options- to work with the logic or to respond to it. Csikszentmihalyi provides many examples to prove his point. A young painter in the 1960s either paint in expressionist style or rebel against it with another style. There was a trend in natural sciences to apply quantum theory in sciences, which served as a problem. Shifting of frameworks or ideas from one domain to another can bring creative breakthroughs. Manfred Eigen's idea of replicating evolution in laboratories involved concepts and procedures in various sciences.

3.5.4 Social Pressures

Social Pressures can act in two ways in the formulation of a problem- direct and indirect. The direct way consists of dynamics in the field. The latter is a source of problems, which consists of information provided by teachers, seminars, co-workers and the internet. Social contexts determine the problems compared to personal experience and domain knowledge. Any person is introduced into a domain by a teacher. The eminent personalities are deeply influenced by their favourite teachers. The scientists were well supported by research institutes such as Rockefeller Institute, Bell Labs, and Argonne National Laboratories. The problems that won Nobel prices emerged from the field.

The indirect way of social pressures that lead to problem formulation is mostly historical processes. In the study sample, indirect social pressures are economic depression, World War II and the Cold War. George Stigler claims the economic depression lead him to choose economics in graduate school. The nuclear physics became very attractive to students during World War II. World War I affected sciences as Psychology became focussed into mental testing and recruitment oriented as an adjustment to war. Creativity studies owe its emergence in Psychology to Guilford, who was commissioned by US Air Force to assist war pilots. World War II helped women scientists to find government-sponsored research programmes and admission in graduate schools. Cold War kept the scientific drive on a competitive edge. Csikszentmihalyi sums up the effects of historical events in arts as

“It is no coincidence that at the inability of Western civilization to avoid the bloodshed of World War I. It is no coincidence that Einstein's theory of relativity, Freud's theory of the unconscious, Eliot's free-form poetry, Stravinsky's twelve-tone music, Martha Graham's abstract choreography, Picasso's deformed figures, James Joyce's stream of consciousness prose

were all created—and were accepted by the public—in the same period in which empires collapsed and belief systems rejected old certainties.”(Csikszentmihalyi, 2009, p. 94)

3.6 Self, Consciousness, Personality and Motivation in Csikszentmihalyi’s Creativity Model

Flow model focuses on interactionism, i.e., conceptualising individual as a dynamic system composed of person, environment and its interactions. It differs from the conception of the individual as personality traits and types; rather, it sought to integrate the cultural or environmental aspect with the individual. Instead of abstracting the person from the context flow model focus on the phenomenology of person-environment interactions. The individuals were interviewed taking the context, skill and challenge into consideration.

Flow is regarded as an *autotelic* activity, i.e., activity rewarding in itself (*auto* means self and *telos* means goal). The result is less cared for, and the individual loves to engage in the activity just for the sake of it. Autotelic activity is intrinsically motivated. However, Flow is better explained by Emergent motivation. Rather than attributing the motivation to the internal structure of need or drive in Flow the preceding moment determine what will happen in the next moment while engaging in flow activity. The proximal goals arise out from the interaction.

Consciousness is conceptualised in Flow theory as a “complex system that has evolved in humans for selecting information from this profusion, processing it, and storing it” (Csikszentmihalyi & Nakamura, 2002). Attention is the process whereby the information into consciousness is selected. After the process of attention, the information reaches awareness, which includes mental processes of thinking, feeling and willing, i.e., cognition, feeling and motivation. The subjective experience is the content of consciousness and memory stores and retrieves information.

The Self emerges when the consciousness comes to existence and become aware of itself. It includes information about the body, subjective states, memories and personal future (Csikszentmihalyi & Nakamura, 2002). The Self conceptualised in flow theory consists of two aspects; the sum of one’s conscious processes and the information about oneself that comes into awareness when one becomes the object of one’s own awareness. Consciousness provides an alternative to the restrictions imposed by genes and culture by bringing reality into awareness. Consciousness acts as a clutch between programmed

instructions and adaptive behaviours (Csikszentmihalyi & Nakamura, 2002). A teleology of self gets emerged through consciousness, i.e., a set of goals are chosen by the individual out of the free will. This act of consciousness helps in getting adaptive fit with the environment under conditions of rapid change. In order to achieve flow continuously, a person should keep shifting challenges and skill balance by putting progressively complex challenges. Thus teleology of self is a principle of growth which says that the optimum level of challenge stretches existing skill resulting in more complex capacities for action.

Capacity for flow is universal, and it is concerned about the momentary experience. Flow theory and research had focused on phenomenology rather than personality. An autotelic personality is a person who “generally does things for their own sake, rather than in order to achieve some later external goal” (Csikszentmihalyi & Nakamura, 2002). Certain meta-skills are needed for the individual to stay in Flow state. They are curiosity, interest in life, persistence, low self-centeredness.

Csikszentmihalyi identifies nine characteristics of flow; a) Challenges and skill balance – A fine balance between challenges and skills are vital to induce flow state. A task too difficult or too simple can hamper the chances of flow b) Action and awareness merging – The person gets involved in the task such that any emotions of the negative spectrum such as fear, anxiety or distraction is not generated in the creators' mind. c) Clear goals – well-specified goals and immediate feedback are essential. d) Unambiguous feedback – clear and immediate feedback helps to be focussed on task e) Concentration on the task – high level of involvement in the task brings high concentration on the tasks at hand. It involves narrowing of awareness and rejection of unwanted aspects from perception, f) sense of control – the person feels a sense of control in work coupled with relaxation and feeling of security. g) loss of self-consciousness – the creator devotes attentional resources to the task at hand such that the mind ignores other information in the surroundings. f) distorted sense of time – when the person is actively engaged in a task, the time flows fast compared to the activities that are routine and monotonous. g) autotelic experience – when people are in the flow then the creative urge comes from inside, and activity becomes its own reward.

Different emotional states are experienced if the individual is capable of reaching flow or even not capable of reaching it. Apathy is experienced when the skill level is low, and the challenge is also low. Relaxation is experienced when the skill level is high, and

the challenge is low. Boredom is experienced when the skill level is average, and the challenge level is low. Worry is experienced when the challenge is average and skill is low, whereas control experiences when skill is high, and the challenge is average. When the challenge is high, and skills low the individual experience anxiety. Arousal is experienced when skills are average, and the challenge is high. Finally, flow is experienced when both skill and challenge are high.

Csikszentmihalyi's conception of creativity and his theory of flow state was not a direct result of Positive psychology. Csikszentmihalyi formulated his theory in the 1980s and Positive Psychology as an Organized paradigm can be traced back to 1998 APA Presidential lecture. Csikszentmihalyi's research on flow was considered as coming under Humanistic psychology of Maslow and Rogers. He started the research when the established theory and definition of Creativity in APA informed Psychology was dominated by Cognitive psychology. The psychometric conceptualisation of Torrance and Guilford's Structure of Intellect model was popular in the discipline. Csikszentmihalyi was able to formulate a culturalistic theory which saw the individual in context rather than the person-centric models of Investment theory of creativity, Torrance model, Guilford's SOI model or Wallace Stage model.

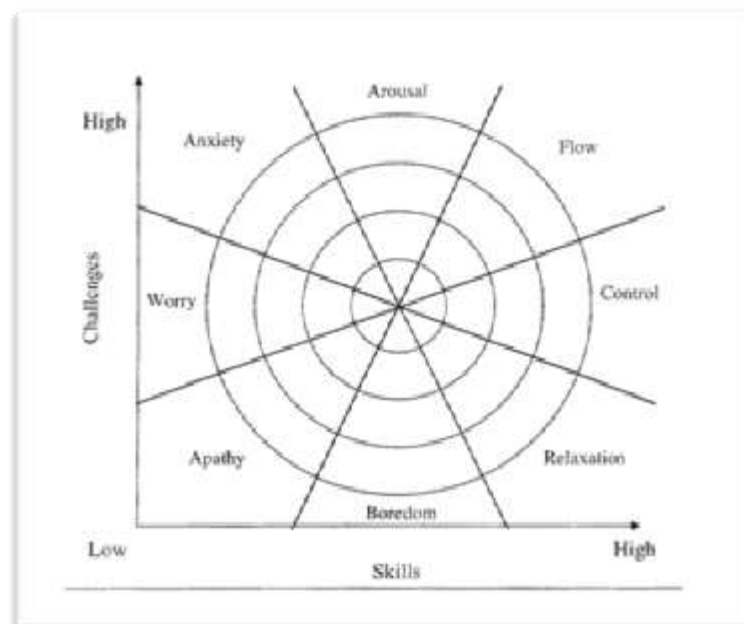


Figure 3.1: Flow model showing skills, challenges and respective mind states. Adapted from *Finding Flow: The Psychology of Engagement with Everyday Life (1st edition)*, by M. Csikszentmihalyi(1998), New York, NY: Basic Books. Copyright 1997 Csikszentmihalyi.

3.7 Positive Psychology: The Origin and Development

The social and economic progress has created wealth, better living standards, increased comfort levels, and social tools for networking and collaboration. However, we cannot claim a corresponding increase in happiness, joy, contentment at the personal level and cohesiveness, support, and humanism at the social level with respect to the corresponding progress. How well were the social and behavioural sciences able to comprehend, conceptualise and problematize a situation which nags the very fundamentals of human existence? What makes life worth living for? What leads to wellbeing in individual and society?

Positive Psychology as a movement is a studied reaction towards these fundamental questions which the mainstream Psychology failed to address even after massive enhancements in the post-War phase. The clinical approach of Psychology followed a doctor-patient model, where the clinician or therapist cures or heals the disease or disorder of the person. The exclusive attention was on mental pathology, the post-war research in psychology discovered disorders of various range. However, the normal person or the fulfilled individual was out of the disease framework, which became more sophisticated day by day. Positive Psychology defined by Martin. E. P. Seligman and Mihalyi Csikszentmihalyi are as follows:

“The field of positive psychology at the subjective level is about valued subjective experiences: well-being, contentment, and satisfaction (in the past); hope and optimism (for the future); and flow and happiness (in the present). At the individual level, it is about positive individual traits: the capacity for love and vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality, future mindedness, spirituality, high talent, and wisdom. At the group level, it is about the civic virtues and the institutions that move individuals toward better citizenship: responsibility, nurturance, altruism, civility, moderation, tolerance, and work ethic” (Seligman & Csikszentmihalyi, 2000, p. 5)

3.7.2 Brief History of Positive Psychology

The advent of Positivity Psychology can be traced back to the APA Presidential Address of Martin. E. P. Seligman in 1988. According to him, Psychology neglected its pre-WW II missions of identifying and nurturing talent and helping people to live a

fulfilling and productive life. The other mission of curing mental illness was given considerable focus, thereby ignoring the missions above. Two institutional events were significant in giving shape to the orientation of clinical psychology – The founding of Veterans Administration in 1946 and the National Institute of Mental Health in 1947. The Veterans Administration helped in creating Jobs for Psychologists for the treatment of mental illness, and the National Institute of Mental Health provided grants and support to the research in Pathology.

The support and funding have even shaped how psychologists viewed themselves and others (Seligman & Csikszentmihalyi, 2000). The dominant discourse in Psychology centred around the studies of learning, reinforcements, drives and childhood conflicts. The models of mental illness saw the individual as a passive focus, and the corresponding research was oriented towards the effects of environmental stressors on psychological disorders. The psychologists worked on fixing the damage of habits, drives, brains and conflicts rooted in childhood.

“They came to see themselves as part of a mere subfield of the health professions, and psychology became a victimology. Psychologists saw human beings as passive foci: Stimuli came on and elicited responses (what an extraordinarily passive word!).” (Seligman & Csikszentmihalyi, 2000, p. 6)

The earlier works in the orientation of Positive Psychology are the Lewis Terman’s Study of Giftedness, Carl Jung’s studies on individuation and meaning of life and work, John Watson’s work on effective parenting. Positive psychology is recent in its advent as an organised school. The School gives credit to the early works on positive subjective states such as the works of Abraham Maslow and William James but maintains distinctive ideological positions from Humanistic and Experimental approaches.

“The perspective of positive psychology is intended as a corrective both to the value-free stance of experimental approaches, on the one hand, and to the exclusively pathology-oriented views that have permeated much of clinical psychology on the other” (Csikszentmihalyi & Csikszentmihalyi, 2006)

The Seligman's presidential address was followed by a series of events that built the framework and institutional structure of Positive Psychology such as follow-up meetings, the formation of steering committees, dedicated journals, research centres, and organisation of research literature. A series of meetings was held at Akumal in Mexico which detailed the conceptualisation and orientation of the new field. A committee, namely the Positive Psychology Steering Committee, was formed to overlook the activities and programmes. The committee consisted of Mihalyi Csikszentmihalyi, Chris Peterson, Ed Diener, Kathleen Hall Jamieson and George Vaillant. Under the leadership of Dr Martin E.P. Seligman, Positive Psychology Centre was established in the University of Pennsylvania. The centre aims to build a science that supports workplaces with high productivity, psychotherapy oriented towards strengths, civic engagement in communities and better families and schools that helps the children flourish.

The institutionalisation of Positive Psychology was fast-tracked by the foundation of *The Journal of Positive Psychology* in 2006. The peer-reviewed journal is dedicated to scientifically informed perspectives on the aspects of human conditions that lead to contentment, happiness and fulfilment. Various special issues by reputed journals also helped to communicate the priorities and orientation of the new field. The special issue of *American Psychologist* at the turn of the millennium was dedicated to the advances in Positive Psychology. It was followed by special issues of positive psychology in reputed journals such as *Journal of Humanistic Psychology* (2001), *Psychological Enquiry* (2003), *Journal of Social and Clinical Psychology* (2000) and *Social Psychology Quarterly* (2003) (see review by Linley, Joseph, Harrington, & Wood (2006) for the detailed list of special issues).

A significant contribution of Positive Psychology is the development of CAV, i.e., *Character Strengths and Virtues: A Handbook and Classification*. It is the classification of Strengths and Virtues that helps human thriving which runs against the disorder-oriented classification system of *Diagnostic Statistical Manual (DSM)*. CAV identifies six overarching virtues such as Courage, Wisdom, Justice, Humanity, Temperance and Transcendence. The Six virtues have respective twenty-four Character Strengths (See the detailed list of Character Strength in Seligman, Steen, Park, & Peterson (2005)). For instance, the virtue of Courage has Character Strengths of Bravery, Authenticity, Persistence and Zest.

The initiatives were financially supported by many organisations such as the Mayerson Foundation, The Gallop Organisation, The Atlantic Philanthropies and the Templeton Foundation (Linley et al., 2006, p. 4). In the Year 2014, the Positive Psychology Network provided financial support to fifty research group and One hundred and Fifty research scholars across the world(Seligman et al., 2005). The research centres were established in the University of Illinois, University of Michigan and Claremont University apart from the one in the University of Pennsylvania.

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Csikszentmihalyi is regarded as one of the initiators of positive psychology as an organised movement. He was influenced by the early works of Carl Jung but was disappointed to see that these works were not recognised as scientific during his college days. Csikszentmihalyi lived amongst the chaos and troubled times of World War II where hope was the most prized entity. Given below is his own description of the chaos of the War and his realisation of the significance of inner strength during the time of crisis.

“As a child, I witnessed the dissolution of the smug world in which I had been comfortably ensconced. I noticed with surprise how many of the

adults I had known as successful and self-confident became helpless and dispirited once the war removed their social supports. Without jobs, money, or status, they were reduced to empty shells. Yet there were a few who kept their integrity and purpose despite the surrounding chaos. Their serenity was a beacon that kept others from losing hope. And these were not the men and women one would have expected to emerge unscathed: They were not necessarily the most respected, better educated, or more skilled individuals. This experience set me thinking: What sources of strength were these people drawing on?”(Seligman & Csikszentmihalyi, 2000, p. 6)

The Positive Psychology movement focuses on individual strength rather than illness and pathology. It is a reminder to the field that psychology is not about curing pathological states. The investigations of the subject must include the positive spectrum of subjective states and behaviours like growth, insights, happiness and contentment. The strengths of the individuals will help them to deal with the changing circumstances. Positive Psychology aims towards developing the strengths of the person rather than curing the disease or weakness in the behavioural repertoire. The work, education, and growth associated with it are very crucial for individual development and resilience.

Positive Psychology models are developed in the orientation of prevention rather than cure. The intervention of psychologists is crucial before the surfacing of the problem against curing it after the occurrence. The prevention of mental pathology is more efficient than the treatment of it.

“How can psychologists prevent problems like depression or substance abuse or schizophrenia in young people who are genetically vulnerable or who live in worlds that nurture these problems? How can psychologists prevent murderous schoolyard violence in children who have access to weapons, poor parental supervision, and a mean streak?” (Seligman & Csikszentmihalyi, 2000, p. 7)

The prevention of psychopathology can be enhanced by building buffers based on the strengths of the individual such as the capacity to flow states, insights, skills, hope and honesty. Positive psychology is the science of strengths which will nurture the virtues in individuals.

3.8 Conclusion

Csikszentmihalyi was focusing on Big C creativity, i.e., the creative experience of professional individuals already established in the field like Nobel laureates or established musicians. However, he insists that flow experience is to everyone in any age group, profession and gender. So he considers the potential of creativity as universal and implicitly says that there are unique expressions of creativity. Csikszentmihalyi focused more on characteristics of creativity by bringing Flow as a central tenet in his theory. However, he also focused on the process, such as the development of skills and challenges, the social-cultural validation and emotional processes directly linked with the optimal subjective states.

According to Csikszentmihalyi, Creativity is both individualistic and collectivistic in nature. The product of a creative act has to be valued by society, an act which Csikszentmihalyi terms as socio-cultural validation. The person is also important as the question arises why certain individuals produce more creative variation than others. The affective, motivational and cognitive factors may be the reason. He quotes Gardner that some children are born with sensitivity to particular stimuli such as light, sound or touch and may become more advanced in dealing with it in adulthood. Robert Sternberg's attempt to investigate information-processing strategies of creative children is person-centric. Not only the person the domain and the field together determine a creative act.

Chapter 4

Vygotsky's Cultural-historic theory of Creativity

4.1 Introduction

The Cultural-historic Psychology is a scientific exploration into the socio-cultural fundamentals of the origins, formation, metamorphosis and transformative development of the human mind. The broad framework of the School is sourced from the works of Lev Semyonovich Vygotsky (1896 – 1934) originally written in the early twentieth century. This approach is aimed at providing a nondeterministic account of the formation of mind. Vygotsky pointed out the crisis in Psychology, which is reflected on the surface as the failure of methodologies of introspection and reflexology. According to Vygotsky, the two camps in psychology neglected the synthesis, appreciation or elaboration of social, cultural, historical and phylogenetic factors in psychological research. This is true for the Objective psychology which adopts the principle of natural sciences such as the works of Pavlov on reflexes or for the Subjective psychology which is phenomenological and idealistic.

He rejected many cartesian dichotomies in psychology. For instance, he studied the developmental interdependence of language and thought. Language modifies the genetic relation of the individual with reality and brings a mediated relationship. The language shapes the thinking process and mind functions as much as it is used in speaking. The development of conceptual thinking is a remarkable turning point in the development of the individual as a socio-cultural entity. Vygotsky saw the mediated nature of cultural or sign-mediated behaviours as distinct in terms of origin, dynamics and function from the natural ones. The former finds its origin in socio-genesis and follows the general law of cultural development. The process of creativity operates on the level of higher mental functions.

One of the fundamental assumptions of Vygotsky is the General law of cultural development. Any Higher mental processes such as creativity first originate in the social place and then on the psychological plane. Many laws come under the General law of cultural development such as the law of sociogenesis, interiorizations and law of mediation. The transformation from natural to cultural forms of behaviour is not possible

without the mediation of signs and tools. This law is called the Law of Mediation. The transfer of external meanings into the internal space or the process of social nature becoming internalised as internal nature is termed as Interiorization. It is the active process of constructing a meaningful experience within the person from the outside resources. The Law of Social genesis states that the mediational means used in social forms of behaviour gets transmitted to the individual form of behaviour. This chapter attempts to detail the conception of creativity of Vygotsky. This study details and examines the theory of Creativity by Lev Vygotsky with particular focus on the various myths of creativity examined by Vygotsky, development of Creative imagination, the General law of cultural development, Symbolic play of children, the developmental transformation of creativity and development of Higher mental functions. The work traces the paradigm of Marxist psychology and historical position of Cultural-historical school of psychology to delineate meta-theoretical assumptions in the paradigm level.

4.2 Vygotsky's Conception of Creativity

Creativity is a self-propelling ZPD for adults, which is transformed from childhood play, continues to help individual organise, plan, explore the environment by exploring latent possibilities inherent in it, thereby transforming both the environment and person. Creativity is a process that brings self-control and flexibility in an individual. It is a live developmental process, which we can differentiate, with the emergence of new mind functions at developmental transitional points. It cannot be isolated from development of higher mental functions, role of education both formal and cultural learning, development of meaning, personality development, mediation of tools, signs and artefacts, emotional development and consciousness. Vygotsky saw creativity very central to the development of individual and culture. His notion of creativity is against the rare attribute conception of creativity seen widely in the discipline. Creativity is available to every individual who is healthy functioning, an aspect which is so central to personal development and cultural development.

Development of Individual is dialectically connected to the creative becoming of a personality. A new latent possibility in cultural space or individual space invites creative reworking. These new possibilities are creatively explored as part of the developmental process and then it is crystallised into personality internally and creative product externally. This process involves mastering of tools, signs, artefacts and finally, the

meaning of the respective culture of the person from other outside sources. This dynamic will develop a personality that will give more self-control and regulation over behaviour. The crystallised creativity which individual co-constructs is just a fossil and also a result of a dynamic process involving many factors.



Figure 4.1: Creative activity and Personality in Lev Vygotsky's Creativity model

Scientific or artistic creativity in adults is a developmental sequence in historical, ontogenetic and psychological time scales. The creative function starts when the child learns to use signs and symbols in play. Here imitation play change to pretend play and object substitution, and this later gets internalised as fantasy or imagination. The change in psychological function gets another character when inner speech develops in children. Now imagination is consciously becoming a higher-order mental function. A decisive shift occurs again in adolescence when thinking in concepts accompanies fantasy, and this leads to scientific and artistic creativity.

Play brings into child self-control and symbolising ability. Child by the process of internalisation learns social behaviour, which is not just imitation but a creative reworking of the accumulated impressions, which can be seen in pretend play. The primary imitative play is getting replaced by more complex pretend play or object substitution. The later gets more evolved and gets independent of the object which results in symbolic capacity in the child, i.e., the child can separate the thought and action which makes behaviour more flexible and self-regulated.

He postulated that creativity has a mediated structure. Therefore, the creative activities found in different cultures may vary depending on the cultural tools the society generates and the same with the individual capacity. Both cultural and historical processes influence creativity. There is a radical transformation with creativity during the developmental process. As a child, the creative imagination is first displayed during play.

Here the child learns to distinguish between reality and imagination. During this time the beginnings of symbolic play are observed in children. However, the entire system and way of creativity changes when the child reaches adolescence.

“We know that a child’s experience is vastly poorer than an adult’s. We further know that children’s interests are simpler, more elementary, and thus also poorer; finally, their relationship to the environment does not have the complexity, subtlety, and diversity that characterizes the behaviour of adults... In the process of development, the imagination develops like everything else and is fully mature only in the adult. This is why products of true creative imagination in all areas of creativity belong only to those who have achieved maturity. As maturity is approached, the imagination also matures, and in the transitional period between childhood and adulthood—in adolescence, starting at the time of puberty—we observe a powerful enhancement of the imagination combined with the rudiments of mature fantasy” (Vygotsky, 2004, p. 32)

Now the symbolic play is absent, and the mediation is more complicated with words, symbols, signs and abstract thinking. This transformation is conceptualised by Vygotsky as radical transformations with new systems taking an active role in mediation. Creativity is not an isolated island in the developmental process. It cannot be studied by isolation. The development of creativity essentially involves the dialectics with memory, motivation, abstract thinking, inner speech and perception. This development is also very gradual and is directly dependent on such psychological processes. Studying creativity should address all such possible interactions of these systems and the dialectics involved within them.

The nature of creative imagination changes during adolescence. The imagination is dominated by emotions and inner-speech in early adolescence. The immediate impression of an object and action is separated by speech. It can help thinking about objects, not in immediate presence. Thus, the immediate visual and concrete impressions are changed in involving verbal and symbolic/abstract thoughts of imagination. The creative imagination is based on memory which is very transformed so that even the person cannot figure out its original sources.

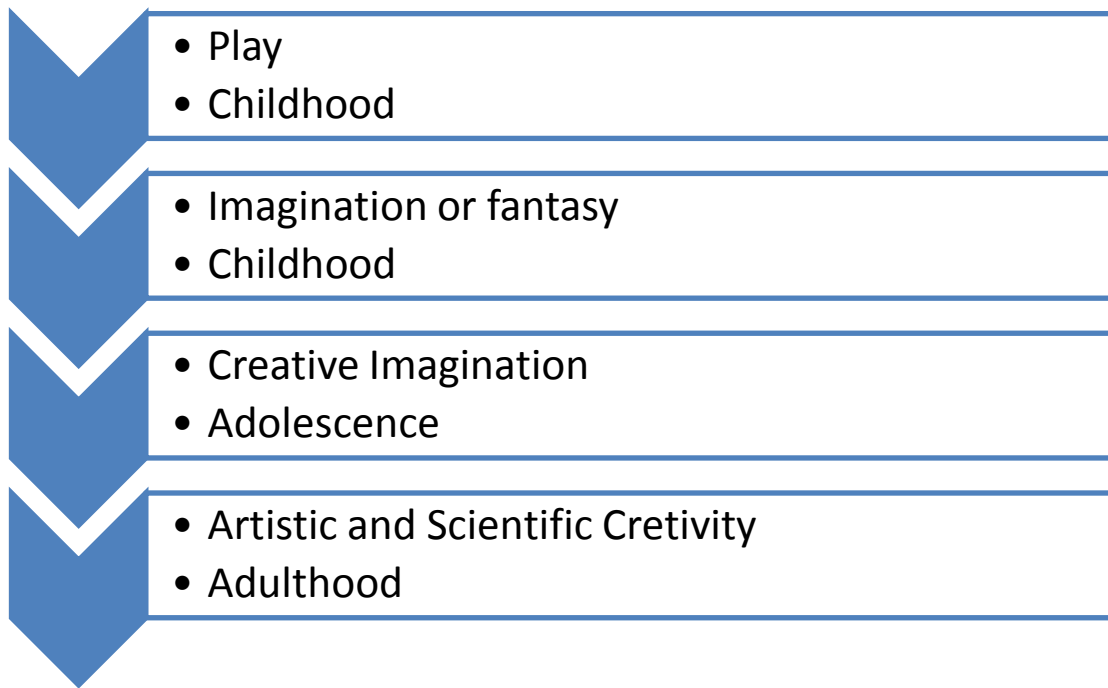


Figure 4.2: Creativity across the developmental life span in Lev Vygotsky's creativity model.

Adolescence is also a period when the individual turns critical about imaginative products and balances subjective and objective fantasy. The imagination Vygotsky refers is not opposed to reality but a process that even constructs reality for the person. During Adolescence imagination/fantasy develops in two ways-subjective and objective. The emotional aspect of a person, desires and inner life are subjective fantasy, whereas the reality of culture or society is objective fantasy.

Vygotsky has seen creativity as a rule rather than the exception (Vygotsky, 2004, p. 11). Although he postulated that everyone has creative talent with them, he clarifies that the highest expressions of creativity remain with a few selected individuals. He insisted that creativity is necessary for everyday life, and it amounts to survival value. In other words, it is essential for existence.

“The overwhelming majority of inventions were produced by unknown individuals, as Ribot rightly says. A scientific understanding of this phenomenon thus compels us to consider creativity as the rule rather than the exception. Of course, the highest expressions of creativity remain accessible only to a select few human geniuses; however, in the everyday

life that surrounds us, creativity is an essential condition for existence”
(Vygotsky, 2004, p. 11)

His conception of creativity was remarkably distinct from everyday use of the term. According to him, creativity is not only an individualistic phenomenon but also a collective phenomenon. The individual minute creative works combine to form collective phenomena of creativity. The whole creation of humanity in terms of cultural products is predominantly collective creativity.

“When we consider the phenomenon of collective creativity, which combines all these drops of individual creativity that frequently are insignificant in themselves, we readily understand what an enormous percentage of what has been created by humanity is a product of the anonymous collective creative work of unknown inventors”(Vygotsky, 2004, p. 11)

Vygotsky mentions two fundamental processes that distinguish the natural world from the cultural world – imagination and creativity. According to him, the creative activity based on our brain to combine elements is called imagination or fantasy in psychology. Imagination is the basis of all creative activities. It is also an essential cultural component in artistic, scientific and technical creation (Vygotsky, 2004). Vygotsky described creativity as the creative act of imagination. The creativity of a person thus depends on the richness and variety of a person’s previous experience (Vygotsky, 2004, p. 13). These materials are the same by which the products of fantasy are constructed. The richer experience leads to richer imagination and greater creativity. Imagination is not the opposite of reality but is conceptualised as a process which supplies materials for reality. The imagination takes psychic materials from reality.

“This creative activity, based on the ability of our brain to combine elements, is called imagination or fantasy in psychology... But in actuality, imagination, as the basis of all creative activity, is an important component of absolutely all aspects of cultural life, enabling artistic, scientific, and technical creation alike. In this sense, absolutely everything around us that was created by the hand of man, the entire world of human culture, as distinct from the world of nature, all this is the product of

human imagination and of creation based on this imagination.”(Vygotksy, 2004, p. 9)

In four basic ways, imagination is associated with reality. Everything imagination creates is by taking the elements from reality. For instance, the ‘learned cat’ and ‘hut on chicken legs’ in Alexander Pushkin’s fairy tale world is imagination and fantasy, but the elements are taken from reality. Here cat, hut, chicken and chicken legs are real, but the combination of elements in a particular way makes fantasy. Secondly, imagination is related to a real phenomenon. A historian’s idea of the French revolution is derived from study, hearing narratives and engaging in discourses rather seeing the event directly. A rich imagination is required to understand the French revolution, and with more experience, understanding becomes richer. Thirdly, emotions are related to imagination. The particular emotions choose specific images in mind. Emotions choose the images, thoughts and impressions. There is a dual expression of feeling, i.e., fear is expressed not only by the changes in respiration rate, heart rate, dry throat and trembling but also by fearful thoughts. As the saying goes, the scared raven takes fright even at a bush. The final and fourth association is the influence of new imagination or fantasy on other imaginations. This is called crystallised imagination. The new age technological devices or instruments are examples. They were only in fantasy before getting materialised but later they become a part of real life.

Vygotksy conceptualised Creativity as a Higher psychological function that helps humans to deal with the future, apart from dealing with the past and present. He postulated that creativity has social origins like all other higher mental processes. These processes are distinct from other processes like reflexes and instinct in origin, development and transformation. The child learns to be creative through a process called internalisation, where development of the child takes place initially from a social plane to an individual plane (Gajdamaschko, 2011). Internalisation is a dialectical process. For instance, a child learns to be creative by observing the adults and doing activities with them in such situations. Later the child internalises the activity and knows to do it by themselves.

“We can identify creative processes in children at the very earliest ages, especially in their play. A child who sits astride a stick and pretends to be riding a horse; a little girl who plays with a doll and imagines she is

its mother; a boy who in his games becomes a pirate, a soldier, or a sailor, all these children at play represent examples of the most authentic, truest creativity... A child's play very often is just an echo of what he saw and heard adults do; nevertheless, these elements of his previous experience are never merely reproduced in play in exactly the way they occurred in reality. A child's play is not simply a reproduction of what he has experienced, but a creative reworking of the impressions he has acquired. He combines them and uses them to construct a new reality, one that conforms to his own needs and desires. Children's desire to draw and make up stories is other examples of exactly this same type of imagination and play"(Vygotsky, 2004, p. 11).

According to the General Law of cultural development, not only creativity but all higher psychological processes first originate in a social plane and then transfers to the individual plane. Similarly, child development occurs in two planes; first as a collective social activity and later as an individual activity. Vygotsky saw creativity as a process that engages with culture to produce what is he termed as the cultural world. Creativity in a child is developed through a process of internalisation, where the child learns how to act in a situation from adults.

He also saw creativity as a dialectic process involved in a relation with other mental processes such as imagination, emotion, intelligence and motivation. He has not conceptualised a compartmentalised view of creativity or cognitive processes in general. Vygotsky also addresses the question of what guides creativity; intelligence or emotion? According to him, both factors are necessary for producing creativity. Both feelings, as well as thoughts, help in creativity (Vygotsky, 2004, p. 19). Vygotsky points to the problem of diversity of emotional experience gained by the creator, which are located in the opposite poles. The creative activity provides happiness for the creator, but there are different accounts of the agonies of creation. He cites the works of Fyodor Dostoyevsky and the poet Mikhail Lermontov to demonstrate the 'agony of the word' to point out the essential motivational element in creativity, i.e., the drive to be embodied.

“This feature is the imagination's drive to be embodied, this is the real basis and motive force of creation. Every product of the imagination,

stemming from reality, attempts to complete a full circle and to be embodied in reality.” (Vygotsky, 2004, p. 41)

The connection between emotion and creativity has implications for literary activities in school. Children will be able to write better prose when they are asked to write on a topic that is close to one’s emotions and intrinsically valuable. The ideal education is invoking, developing and giving direction to the interiority of the child rather than familiarising them with emotions, ideas and feelings alien to them.

4.3 Development of Higher Mental Function

The fundamental thesis of Vygotsky is the cultural determination of specific forms of behaviour and its modification, how the biological instincts are transformed and developed, and how the behaviour is altered in its method and tools. Vygotsky views the development of will, memory, attention, inner speech, creativity and other cultural forms of behaviour as ‘Higher mental function’ due to its distinctive nature in terms of origin, functions, metamorphosis and the cultural laws that it abides by. The traditional psychology has not explored the problem of development of the higher mental function, a central concept in genetic psychology. The facts gained by research over decades are affected by the wrong formulation of basic problem of development, and the traditional viewpoint fails to see these facts as a historical development. Such a state of affairs leads to difficulty in even formulating the problem of higher mental function. The conception of the natural development of higher mental functions in a child, promoted by Psychology, does not distinguish social and biological factors and underappreciate historical and cultural factors in child development. It sees development as a natural biological process from within, termed as Naturalism, while not bothering to process data available in species development and cultural development.

According to Vygotsky, the predominant approach in Psychology is to skip explaining the genesis of mental formations to prefer the analysis of the developed form of behaviour. The same approach also sees complex mental processes in higher mental functions and ‘cultural forms of behaviour’ as separate processes more elemental in nature, as many parts of a whole, losing the true integral nature of these processes to the eyes of the researcher. Both notions made way for an image of development which is not holistic but separated stage-wise, or element-wise. An instance cited by Vygotsky is the development of abstract concepts. Formation of abstract concept occurs in the child at the

age of fourteen. Psychology could not answer why at this age abstract concept has developed, the pathway of development, and what gives rise to it? Naturalistic assumptions are common to both 'subjective empirical Psychology' and objective Psychology consisting of Behaviourism and Russian Reflexology. Psychoanalysis pitched on biological decoding of cultural history, reducing cultural forms of behaviour into explanatory frameworks that reduce them to archaic, primitive, biological drives or tendencies. In Psychoanalysis, cultural formations were seen as tertiary sexual signs modified in mind. There is a reference to displacement as a mechanism of mind where behaviour is modified according to cultural requirement, which lies at the base of psychoanalysis. Even this aspect is tainted with the naturalistic approach, where the motive and cultural requirement are seen as the result of displacement. According to Vygotsky, both the cultural requirement and motive are two separate genetic paths which complement each other in the process of development.

The higher mental function consists of two phenomena, two streams, which are inseparably connected: the process of mastering cultural information by mastering the language, drawing, writing, and arithmetic and the process of development of higher mental functions like attention memory, and concept formation. The later stream is conceptualised not in the same way the terms mean in traditional psychology. They are not precise, determined centres that control atomistic or elemental processes. Further, these two streams are placed in the broader framework of another two historical factors. The problem of development of Homo sapiens is seen in the background of two historical factors of mental development i.e., the evolution of man as in Phylogeny and the historical-cultural development, which is the substrate for cultural-historical development. Both historical and biological factors, the two lines of development, coincide in the ontology.

With the evolution of animal species, their behaviour developed in one dimension. The vast sketch of the evolution of species from microbes to man and its corresponding biological development of behaviour is difficult to sketch due to lack of evidence. The difference between the evolutionary process of development and historical-cultural development is the development of higher mental functions. This is also the circumstance of the genesis of the artificial organs or tools and signs in the new form of adaptation, which includes work, and more broadly mastering of cultural tools. There is no change in the biological type of man, but the nervous system is reordered for a new adaptation. The

question is, what replaces the organic development of the nervous system when man adapts to his work without any change in biological type?

Associative Psychology assumes mental functions were constant throughout history. The psychological laws operating were the same, but the glaring difference in cultural behaviour is attributed to the poverty of experience. Vygotsky notes that biological type is similar to men across historical times. This approach is based on laws of individual psychology, which overlooks the problem of adaptation, and it ignores changes in higher mental function and its relation with the cultural development of behaviour. The unchanging nature of elementary mental function across historical time is substituted, to that extent, by higher mental functions. This circumstance is both the evidence and a reason for the problem of cultural development of behaviour.

Use of tools is not under the principle of biological adaptation so as the higher behaviour and its corresponding mental function. The two lines of mental development pave the way for the mental development of the child or ontology. This process is not the repetition or totally according to the bio-genetic law which postulates 'phylogeny recapitulates ontology' but a departure from the law. In phylogenesis, both the biological type and the adaptation requirements are merged on account of continuity and succession of the species. The human mental development does not conform to such a pattern and the ways of bio-genetic law. In a child, both factors merge to form the social-biological formation of behaviour and character. Organic growth and cultural development are not mutually exclusive. With biological type remaining unchanging, cultural development is characterised by organic changes and organic development.

The difference between cultural development and organic development is that in the former there is a merging of cultural and biological. The traditional Psychology missed this aspect, which is very crucial in the genetic perspective. Both walking and development of speech cannot be treated in the same order. The dialectical merging of two strands and special laws that govern them at each stage, the nature and diversity of merging determines the uniqueness of each age and development of an individual.

Separating and studying both natural and cultural development is a difficult task, but Vygotsky chooses basic two methods; Genetic examination and Comparative study. The former gets its data from the observations of the development of higher mental

functions. The data from premature development as in speech or use of tools are used in the genetic examination, i.e., the instances where the biological structure is primitive while handling cultural signs or tools. The development of the mental system proceeds not as a straight line and as a closed unit but with shifts and displacement of two lines. This data is also used in the genetic examination. Comparative study of different types of cultural development is done by avoiding studying the organic defects in children and studying cases of cultural impoverishment like the case of a primitive child. The abnormal child's difficulty is the difficulty in integrating cultural tools and signs due to lagging or immature organic structural development. The child develops circuitous paths that are unique for functioning in the social world. A blind person develops such paths while shifting to Braille from other modalities of input.

Psychology is faced with methodological problems even in different levels of analysis. The descriptive psychology, which is analytical and close to the phenomenological method reduces the data of consciousness into parts. Traditional psychology is dominated by the associative method after the atomic bifurcation of mental processes. Certain schools of modern psychology of the time, for instance, the Gestalt school emphasised the significance of the whole but not probed the depths of the whole or studied the genetic roots of the whole. This approach of holistic psychology recognises mental processes as a starting point of universal structure of mind and cognition, thereby not explaining the genesis of such mental processes. An extreme version of Behaviourism reaches an erroneous judgement that behaviour is a reflex action and its modification. Descriptive psychology shaped its method on the premise that mental process could not be explained through natural science method. On the other hand, the elemental approach or atomistic approach is based on association of elemental processes.

Vygotsky emphasises three points on analysis of higher mental functions. First, the mental formations are not solid bodies, things, unchanging and solid facts. They are processes. The error of atomism of mental processes comes from the former conception. Second, the causal dynamic connection and relations of phenomena should be studied compared to explanatory and descriptive processes. The genetic study will reveal such connections. Vygotsky employs a conditional-genetic approach which keeps genetic aspect in the first order and the external manifestation of processes or phenotype in

second-order or in a subordinate position. The third basic point is to convert the automatic, mechanical and fossilised character of the mental process into the historical process in order to trace its genesis.

A two-fold structure is found in the cultural development of the child. The first structure is primitive and an original foundation which has a biological base. This unit is a natural psychological whole. The second structure is built on its base and is cultural, higher structure with complex genetic functions. The higher structure is characterised by sign and its method of use. There is a clear differentiation between external phenomena and behaviour. There is a differentiation between stimulus-sign and stimulus-object. This transition from direct operation to use of signs start at childhood, where a neutral stimulus is acquired into behavioural processes.

4.4 Cultural-historical Psychology- Basic tenets and theoretical framework

The School of Cultural-historical psychology had its origins in the movement for an alternative in Psychology started in the 1920s by Lev Vygotsky and Luria. However, the school came into prominence only in the 1970s due to the political situation in USSR and untimely death of Vygotsky when he was thirty-seven. His work was banned by the government and was not available to the outside world until the 1970s. Vygotsky was one among the scholars who were asked to reformulate Psychology after the Russian Revolution. There was no consensus in the attempt to rebuild psychology. However, the Pavlov's model became the standard in Psychology, Physiology and Medicine. Vygotsky was not satisfied with the association model and behaviourist framework of Pavlov. Vygotsky and followers exposed, debated and produced counterpoints on the crisis of the then-contemporary Psychology by critically analysing the Objective and Subjective streams of Psychology and counterbalancing it with the Genetic method. The fundamentals of the critical approach initiated by Vygotsky and peers are valid and significant even in contemporary times.

He derived from the works of Karl Marx on collective exchanges and material production and applied Marx's political theory in the conceptualisation of culture. Vygotsky attempted to capture the co-evolutionary process the individuals encounter in

their environment while learning to engage in shared activities (Stetsenko, 2005). He conceptualised the organism and environment as a unit against the tenets of Associationist psychology.

Associationism treated organism and environment as separate entities but gets connected through the repeated pairing of stimulus-response relationship. Many other Psychologists began opposing Associationism on its pseudo-science label and called for more observable and credible science. Vygotsky also responded to the mainstream movement of treating the organism and environment as separate entities. He called for an attempt to study human consciousness and human activities objectively. The new system should be based on seeing consciousness as co-created by the organism, environment and the activities of the individuals.

The resulting model consisted of conceptualising the individual as an active element who forms the consciousness through interaction and activities with culture. He introduced the concept of mediated action to explain semiotic processes that enable the development of human consciousness through activities. Human speech is a mediated process involving thinking and speech, which assisted in the development of consciousness. Vygotsky's concept of mediation is represented in the basic Mediation triangle, which depicts the relationship with Object, Subject and Mediating tool or artefact. The subject is the individual who engages in an activity. The mediating tool includes prior knowledge and artefacts. The Object is the goal of the activity. This mediated action triangle was used by Vygotsky to explain the moment to moment unfolding of consciousness, and this conception is nondeterministic and socio-cultural compared to the Pavlovian understanding of mind processes and consciousness.

What Vygotsky described as the mediational triangle is that of the first Activity theory. Later two mediational triangles were generated, which are the second generation and third-generation activity theory. A.N Leontiev is credited along with Engeström's work of 1987 that developed activity systems model. In this Leontiev emphasised the collective nature of the human activity. The third-generation activity theory was developed as applications of activity system analysis in developmental research (Yamagata-Lynch, 2010).

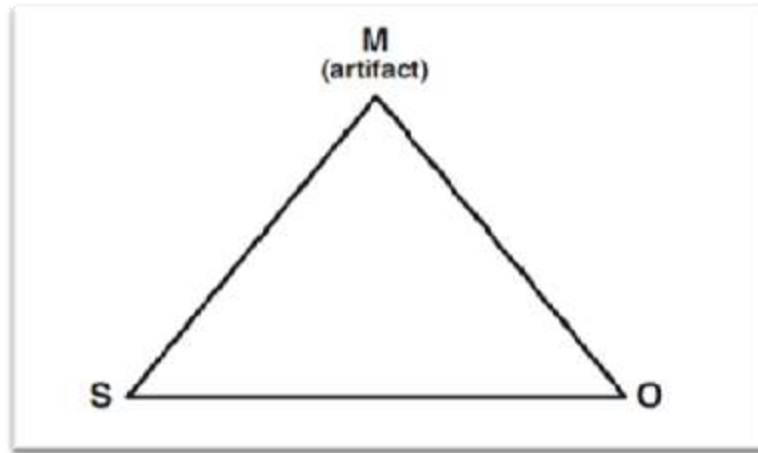


Figure 4.3: The meditational triangle: shows triangular relation between Subject(S), Object (O) and Artefact (M). adapted from 'The collected works of L.S. Vygotsky. The History of the Development of Higher Mental Functions (p.79), by L.S. Vygotsky, (1997) New York, Copyright 1997 by Springer Science+Business Media

In the approach of Cultural-historical Psychology, the mental processes and content are not regarded as static but evaluated as dynamic constructions. One of the reasons for the crisis in Psychology is the consideration of mental process as psychological objects as traits or characteristics. The psychological phenomenon is primarily best investigated at the points of transitions, metamorphosis and change in qualitative and quantitative terms. Vygotsky focussed on the changing relationships between various psychological processes and the dynamics of associated cultural processes. The Genetic method of Vygotsky gave significance to the roots or origins and turning points of psychological processes. The transformations of cognitive functions are not because of biological maturation as assumed in Psychology but because of the functional interweaving of socio-cultural symbolic systems and individual organic processes.

Vygotsky criticized the studies of Psychology on account of its negligence towards the conception of the origin of mental processes. The genetic-constructivism of Piaget conceive the psychological growth of the child such as the development of inner speech, logic and concepts as a part of biological development. The origins of these capacities are primarily dependent on the information in the socio-cultural sphere. All mental functions, including creativity, has origins in the social plane and then it is internalised in the psychological plane to form more complex mental functions. The individual, while using the cultural tools and signs like language and technology, gets transformed in the same direction.

4.5 Marxist Psychology and Cultural-historical Psychology

Creativity theory of Vygotsky and many of his other conceptions about cognitive structure and mind are developed from a Cultural Historical perspective, which emerged with debates and discussions within the Marxist Psychology, Soviet Psychology and with the Western cognitive Psychology majorly advanced by Piaget. The discourse is not only characterised by debates but changes in the epistemological position with debate and synthesis. The perspectives developed in the Cultural Historical School of Psychology are primarily a reaction with disciplinary trends and theoretical positions of other camps of discipline. Here a short account of Marxist Psychology is provided by identifying the debates and interaction around the cultural-historical school of Psychology.

Marxist Psychology is largely derived from the Marxian philosophy. It developed first in the Soviet Union and spread to Eastern and Western European countries. At first Soviet Psychology influenced the development of Marxist Psychology, but after the end of World War I, we find attempts to develop the discipline in the Soviet Union. Not Only Vygotsky, but many other thinkers such as K.N Kornilov, Lenin, Ivan Pavlov, S.L. Rubinstein, A.N Leontyev, and A.R Luria; not only Cultural-Historical School, but Berlin School and Hannover School contributed to the development of Marxist Psychology. Cultural-Historical Psychology dominated in the fourth phase (after the 1960s) of Marxist Psychology though the school started in the 1920s.

The first phase (1920-1930) of Marxist psychology begins after the communist revolution of 1917 and the end of the First World War. Among many attempts made to develop Marxist Psychology, K.N Kornilov's Reactology became leading. The object of Psychological research consisted of reactions, which differed from classical introspective Psychology, which majorly dealt with Consciousness and from Behaviourist Psychology, which focused on Innate and Conditioned Reflexes. He conceptualised Reactology as addressing both the social, cultural aspects and the Consciousness of the individual by focusing on objective methods such as reaction studies and tests. The second phase (1930-1950) witnessed criticisms of Kornilov's work majorly coming from the Lenin's theory about the psycho-physical problem, conceptualised in Philosophical Notebooks which got published in the '30s. Central Committee of Communist Party declared psychological testing as non-Marxist. During the '30s and '40s, Rubinstein wrote general psychology textbooks.

The third phase (1950-1960) witnessed the government actively involved in the development of disciplines, majorly the natural sciences, after the Second World War. The central committee of the Communist Party and the Soviet Academy of Science recognised Ivan Pavlov's theory as a basis for Psychology, Physiology and Psychiatry. Pavlov's Psychology became a state-authorized paradigm. Psychopathology was studied by experimental neurosis, individual differences by the theory of Types and Language including thought by the second signal system. This period witnessed Pavlovization in USSR. Rubinstein, in his work, *Being and Consciousness* attempted to integrate both Pavlov and Lenin's reflection theory. According to Lenin, Reflection is a function of the brain and represents cognition and consciousness of the objectively existing world. Now the conditioned reflex of Pavlov is regarded as a Prototype of Brain's reflective activity.

The fourth phase (after the 1960s) witnessed the prevalence of Cultural-Historical School. Though the school began in the 1920s by Vygotsky, it became prominent only after the 1960s under his disciples Luria and Leontyev due to the ban of his works, and his untimely demise. He employed Marx's theory into the development of human cultures by emphasising on Productive work, which involves tools and is socially organised. The language was conceptualised as a cultural tool that mediated thoughts. A.R Luria followed Vygotsky and was known for his neuropsychological research. He put forth both a test system and theory on brain damage. Brain function as a system and different cerebral processes function on different levels. His works got translated into English.

A.N. Leontyev is known for developing Cultural-historical schools' theory and integrating it with Rubenstein's theory. The later was reputed for the synthesis of Pavlov's theory and Lenin's theory of Reflection. Leontyev conceptualised Psyche as consisting of Reflection (consciousness) and governs behaviour. The elementary or sensory psyche is a representation of sensory qualities which is in all organisms that can be Classically Conditioned. The perceptive psyche consists of reflection of objects, which appears in organisms that have a cerebral cortex. The intellectual psyche consists of two functions, i.e., preparatory and executive, and this appears in organisms which has a developed area of association in the cerebral cortex. Human consciousness consists of primitive human consciousness, class society's consciousness and socialistic consciousness. This stage is found with the development of speech centres and developed society. The appearance of human consciousness replaces the biological evolution by cultural-historical evolution.

After Leontyev's death, many scholars came into Cultural-historical school, namely P.J. Galperin, D.B. Elkonin, V.V. Davydov and N.F. Talysina. Certain psychologists followed a Pavlovian model but were not associated with the cultural-historical school. B.M. Teplov, a pioneer in differential psychology; P.K. Anokhin who developed general psychology based on Pavlov's theory; V. Zeigarnik famous for the study on unfinished tasks on memory (Zeigarnik effect); B.F. Lomov who contributed to Industrial Psychology in the Soviet Union.

Certain East European Countries such as Poland, East Germany (DDR), Czechoslovakia and Hungary were influenced by Soviet psychology and Marxist Psychology. A very few selected Psychological developments will be discussed here. In Poland, Psychology became too Pavlovized. J. Kornorski introduced the distinction between classical and instrumental conditioning and neuropsychological explanations to perception, learning and motivation. First Polish Psychological Laboratory was established in 1901 by K. Twardowski at the University of Lwow. T. Tomaszewski was leading in the development of Marxist Psychology after the period of Pavlovization. East Germany was already famous for the first psychological laboratory of Wundt. The International Psychological Congress was held in Leipzig in the year 1980. Felix von Klix has shown interest in cognitive psychology and information theory.

Psychological Laboratories and applied psychological disciplines were developed in Czechoslovakia even before the Second World War, but the focus was on applied psychological disciplines. After Pavlovization there was a Marxist reorientation of Psychology. The general psychology was developed under the Institute of Psychology under Czechoslovakian Academy of Science lead by Joseph Lindhardt. Marxist Psychology in Hungary was developed under the influence of Budapest School founded by Georg Lukacs. The school focused on the study of society in a socialist economy; a critical work is the study of Agnes Heller who studied the concept of need put forth by Marx.

Marxist Psychology was largely developed in Western Europe under the influence of two Marxist micro-schools- Hannover and Berlin Schools. Hannover school focused on the integration of Marxist philosophy, Psychoanalysis and social scientific theory. They theorised that the agent of socialisation can be the mother, and later any other family member and the child's personality was seen in Psychoanalytic lens as dynamics

of Ego and Superego. Socialisation is influenced by the structure of society. In a capitalist system, socialisation contributes to alienization of work relations and commercialisation of human relations. Alfred Lorenzer was a leading Psychologist and contributed to a critical version of psychoanalysis. One of the significant contributions of this school is the integration of Marx and Freud.

Berlin school was based on the cultural-historical school's psychology and Leontyev's theory. They criticised traditional Psychology as Bourgeois Psychology, which lacks values for evaluating epistemological values of theories. Marxist schools and Hannover school too were criticised, and the main representative of this school was Klaus Holzkamp. Other members in Berlin camp was Ute Holzkamp, Osterkamp and Frigga Haug. They were called as 'critical psychologists'. Another important person is Lucien Seve, who was close to critical psychologists but appreciated Psychoanalysis. He theorized personality as composed of basic elements of 'actions' that builds up into individual life history.

4.6 Conclusion

Vygotsky has pointed out the significance of cultural and historical time in the development of mental functions and creativity of individuals. The creative vision and psychic material for it come from society or the social plane. He believed in the phenomena of collective creativity.

“No invention or scientific discovery can occur before the material and psychological conditions necessary for it to occur have appeared. Creation is a historical, cumulative process where every succeeding manifestation was determined by the preceding one.” (Vygotsky, 2004, p. 30).

Vygotsky was influenced by the dialectical traditions of Marx and Hegel. His work on critical psychology was inspired by the understanding of consciousness in the Marxian theory. According to Vygotsky, creativity and subjective development are an interconnected process involving shared meanings and personal transformations. The conception of creativity cannot be restricted to individual development over a life span, but it has to encompass the development of cultural meanings, changing relationships between phenomena and processes, internalisation of social functions, reconstruction of knowledge, character formation and self-mastery. Vygotsky's conception of creativity is relevant in the context of the emergence of global societies where the inter-cultural transactions are taking place at a faster rate.

Chapter 5

Analysis and Conclusion

5.1 Introduction

This chapter is exclusively dedicated to analysis, which follows the detailed study of the creativity theories of Mihalyi Csikszentmihalyi and Lev Vygotsky. There are many unique aspects of the frameworks employed by the respective theorists. The study demonstrates that each model of creativity is unique in conceptualisation, methodology, and scope and such variance is a result of multiple factors. These factors range from inter-paradigm factors such as conceptualisation of Self, mind, cognitive processes to intra-paradigm factors such as focus, purpose, and magnitude of the process under consideration. For instance, in Cultural-historical Psychology, the approach towards creativity is very similar to that of other cognitive processes. Such similarity is not evident in other scenarios. The implicit assumptions of cognitive processes in the problem-solving model are not the same as that of problem-finding models. The way affect or emotions is handled in the psycho-economic approach is not at all similar in the way affect is handled in affect models though both approaches are well accepted in mainstream psychology. This chapter attempts to explore the characteristics of creativity theories with particular reference to Creativity theories of Csikszentmihalyi and Vygotsky.

An attempt is made to generate a meta-theory, informed from a general review of various theoretical perspectives of creativity in the discipline of Psychology, to evaluate the theories of Creativity by Csikszentmihalyi and Vygotsky. Meta-theory (Table 1) is conceptualized into five categories; a) Conception of Self, b) Conception of Development c) Interaction with other cognitive processes d) General meta-theoretical assumptions e) Paradigm and historical position.

The conception of Self is divided into three, i.e., Person-centrism, Interaction approach or Interactionism, and Social-constructivism. Person-centric approaches, which are popular in Psychology, view the individual as a product of biological development, who is self-propelling in terms of development, personality, thinking styles, intelligence, motivation and other cognitive processes. Social-constructivism views the individual as a

social and cultural construction where the thinking skills, personality structure, lifestyles are seen as constructed by socio-cultural forces. Interaction models or Interactionism see the interaction between individual and culture in determining the development of self. The issues of Consciousness, Self, individual-culture dialectics will be dealt with in this section.

Major dimensions	Categories of classification	Issues dealt
1)Conception of Self	Person-centrism, Interactionism, social-constructivism	Consciousness, Self, individual culture dialectics
2) Interactions with other cognitive processes	Dialectical relation or Interactive relation.	Cognitive processes such as emotions, intelligence and motivation
3) Conception of development	a) Dialectical relation with environment or Biological maturation or Interactive relation with environment, b) Genetically programmed, learned or both c) Dynamically changing across age groups or Static across age groups or metamorphosis of cognitive function.	Development of creativity, creativity across age groups (e.g., creativity in childhood, adolescence and adulthood), creativity in childhood and activities such as symbolic play, genetic basis of creativity and skill development.
4) General theoretical assumptions.	Whether the theory has dealt with a) Magnitudes of Creativity b) Conscious or Unconscious processes c) Six P's of creativity d) Collective or Individual phenomenon e) Characteristics or processes f) Universal or Rare phenomenon	General tenets of the theory proposed.
5) Paradigm and historical position	Basic tenets of the paradigm of which theory is based.	Positive Psychology and Cultural Historical Psychology

Table 5.1: The meta-theoretical framework developed to analyse creativity theories of Mihalyi Csikszentmihalyi and Lev Vygotsky

The second category, i.e., ‘Conception of development’, deals with the evaluation of how the respective theorist considers the development of creativity as a cognitive process. The development of creativity is assessed on three aspects; a) Dialectical relation with the environment or Biological maturation or Interactive relation with the environment, b) Genetically programmed, learned or both, c) Dynamically changing

across age groups or Static across age groups or metamorphosis of cognitive function. The issues dealt are the development of creativity, creativity across age groups (e.g., creativity in childhood, adolescence and adulthood), creativity in childhood and activities such as symbolic play, the genetic basis of creativity and skill development.

The third category, i.e., 'Dialectics with other cognitive processes' deals with the theorised relationship on how creativity is related to (correlational, causational or dialectic) other mental functions like memory, intelligence, inner speech, motivation, perception, fantasy and divergent thinking. This category includes whether the interaction with other cognitive processes is seen as Dialectical relation or Interactive relation. The issues dealt are cognitive processes such as memory, attention, intelligence, motivation and inner speech.

The fourth category, i.e., 'General Metatheoretical assumptions' analyse the theories of creativity on whether the theories dealt with conscious or unconscious processes, creativity as a collective or individual phenomenon, Methodology, Magnitudes of Creativity and Six P's of creativity. The fifth category, i.e., 'Paradigm and Historical position' deals with the influence of paradigm in the development of both theories and the historical position of Psychology as a discipline and its mainstream discourse. Here, the philosophical and historical positions in Cultural-historical Psychology and Marxist Psychology will be elaborated to situate Vygotsky's conception of Creativity. Similarly, the development of Positive Psychology will be traced to situate Csikszentmihalyi's conception of Creativity.

5.2 Conception of Self

The conception of Self is a meta-theoretical assumption about the nature of the individual, which is often implicitly present in the discourses concerning creativity. These assumptions are found in implicit or explicit form in social theories. It is associated with the ideological superstructure of the theories. For instance, discourses in Marxian literature see a person as a cog in the larger social dynamics, a product of class-structure in the society. Assumptions of a self in Foucauldian discourses is focussed on the social power dynamics that operate in language and practices.

The person-centric conception of self is the most popular and mainstream approach seen in the discipline of psychology. This view is balanced more towards giving

significance to basic biological process in the constitution of the self. It assumes a self-propelling model of development powered by the biological forces. Significant evidence of this feature is the reliance or dependence of biological aspects to explain, predict and define behaviour. Environmental influences are not totally negated in this conception. More often than not the environment will be presented as another variable in the study. This relationship is termed as mechanical interactionism in which the person is presented with stable personality characteristics defined by genetics, temperament or individual differences (Reynolds et al., 2010).

Conception of Self	Csikszentmihalyi's Model	Vygotsky's Model
Person-centrism	No	No
Interactionism	Yes	No
Social-Constructivism	No	Yes

Table 5.2: Conception of Self

The person-centrism in psychology dates to the origins of the discipline. The fundamentals of New Psychology embrace such an assumption. It is evident in the Experimental psychology of William Wundt and the Functionalism of William James. Wilhelm Wundt, a pioneer of Experimental psychology, saw Psychology studying the individual from inside whereas physiology studies individual from outside. The Behaviouristic model saw the animal instinct and human instinct as very similar. Watson, who pioneered the model, saw psychology as stimulus-response relations which could be built on solid biology. Watson's Behaviorist model is based on biological and stimulus-response association, which also follows the person-centric conception of self. This conception is seen in the works of behaviourists like Pavlov and neo-behaviourists like Hull, B.F. Skinner and Edward C. Toleman. The psychoanalytic formulations of Sigmund Freud, on the surface, posits a model of self that is person-centric in nature but a close examination may reveal the sociocultural taming, regulation and modification of impulses of biological origin. The legends in Psychology like Freud and Skinner had biological conception inherent in their work.

The systems model and Cultural-historical model of creativity appreciate the socio-cultural factors in the origin and development of creativity. The former model posits the socio-cultural conception very explicitly and is reflected in the very definition of creativity. Systems theory defines creativity as, “An act, idea or product that changes an existing domain, or that transforms an existing domain into a new one” (Csikszentmihalyi, 2014b). He insists on a Systems view of creativity, which consists not only person but also domain and field. The System model is, in fact, a reaction against the person-centric conceptualisation of self, prevalent in the general models of creativity.

“The location of genius is not in any particular individual’s mind, but in a virtual space, or system, where an individual interacts with a cultural domain and with a social field. It is only in the relation of these three separate entities that creativity, or the work of genius, manifests itself.” (Csikszentmihalyi, 2014, p. 100)

The conception of self in the systems model is that of Interactionism. It assumes that the self is constituted by dynamic and reciprocal interaction of social factors. This view is supported in the dominant sociological discourses and elaborated in the works of George Herbert Mead. The system model is situated more specifically towards the conception of Dynamic Interactionism. Here the environment is not considered as another variable; rather, the person and environment are taken as a whole unit (Reynolds et al., 2010, p. 459).

“According to systems theory, ... creativity should be viewed as a part of a complex dynamic system of feedback in which novel ideas and acts may result in creativity only in the context of an interaction with a symbolic system inherited from previous generations, and with a social system qualified to evaluate and accept the novelty. In this model, creativity is not an attribute of individuals, but of social systems making judgments about individuals”(Csikszentmihalyi, 2014, p. 124)

Vygotsky appreciates the role of socio-cultural factors in the constitution and development of Self, Cognition and specifically the creative process. This study recognises his approach as social-constructivism. This approach is to be distinguished with the genetic-constructivism and interactionism of Csikszentmihalyi. Genetic-constructivism is derived from the genetic epistemology of Jean Piaget. It assumes the

development of cognitive and learning modalities as a function of fundamental processes such as accommodation and assimilation. Cognitive development is linear, cumulative, and moreover an expression of biological maturation. The learning happens ‘inside out’, sourced by the developmental changes in the individual. Here the nature of the interaction between the self and the environment is that of static interactionism.

On the other hand, the social-constructivism of Vygotsky sees the development of cognition and self as socio-culturally determined or sourced from ‘outside in’. The significant conceptual shift in Vygotsky’s constructivism regarding social interaction is that the learning precedes development rather the reverse as evident in Piaget’s genetic constructivism.

“Fundamental to any analysis of this issue in Piaget's theory is a recognition of the gap he assumes to exist between the biological and the social. Piaget thinks of the biological as primal, initial, and self-contained within the child. He views the biological as forming the child's substance. In contrast, the social acts through compulsion or constraint as an external force which is foreign to the child himself.” (Lev S. Vygotsky, 1997, p. 82)

The general law of cultural development states that the intra-psychological functions first appear in the inter-psychological plane. Creativity is seen as a Lifelong zone of Proximal development, a space that is cultural and social in nature which nourishes the cognitive functions of the individual in the later adult stages. The position of interactionism encapsulated in the system theory also values the contributions of socio-cultural factors. However, Vygotsky’s social constructivism places the socio-cultural and historical factors in the centre as it demonstrates the origin and construction of cognitive processes by these factors. Interactionism, on the other hand, signifies reciprocal and continuous interaction of the individual with socio-cultural factors. The primary difference between the two views, which sees the socio-cultural factors as the core of self is the concept of development of higher mental functions proposed by Vygotsky. This work will elaborate the nature, function, dynamics and origin of Higher mental functions later. Vygotsky identifies creativity as a Higher order psychological function, which first occurs in the social plane and then gets transferred to the individual plane. The transfer occurs through the process of internalisation. For instance, children learn by a dialectic

process of looking at how adults work in situations, and then they internalise it to rework the impressions creatively.

The role of sociocultural factors in Vygotsky's conception of creativity is reflected in the conceptualisation of the brain process and the phenomenon of collective creativity. According to Vygotsky, the inventions that we use in our daily life, both on small scale and large scale are created by individuals whom we may not know. Our experience of the world and our future is based on such inventions. Thus, individuals' minute works combine to source creativity, which is very collectivist in origins.

“When we consider the phenomenon of collective creativity, which combines all these drops of individual creativity that frequently are insignificant in themselves, we readily understand what an enormous percentage of what has been created by humanity is a product of the anonymous collective creative work of unknown inventors. (L. S. Vygotsky, 2004, p. 11)

Further, Vygotsky points to our brains' ability to combine elements and to reproduce it as one aspect of the universal mechanism underlying creativity. We may not read the idea as biological determinism. He has given importance to the brain processes of the individual to drive another point home, i.e., the adaptation to new conditions in the environment. The creative combinatorial activities help the person to adapt to new situations.

Both theories have a firm socio-cultural conception of an Individual, at the same time the models do not discount or neglect the idiosyncrasies of the person. Csikszentmihalyi was reacting to the overindulgence of personality as a source of creativity in mainstream psychology, but he has not rejected the individuality or person in explaining creativity. Further, he rejects the Social psychological attempt to see creativity as an attribute whereby denying an individual any credit of creativity. Vygotsky also stresses the importance of socio-cultural factors, distributed nature of creativity, and the dialectic relationship of intra-psyche and socio-cultural factors.

5.3 Conception of Development

The conception of the development of creativity across the developmental lifespan in both theories are similar in terms of the influence of socio-cultural factors and change

across age groups. The influence of socio-cultural factors in the conception of development can be traced to the origin and the nature of the progression of cognitive development. Both theories reject the conception of genetic programming as the primary factor responsible for the development of the cognitive system as a unit and creativity in particular.

Vygotsky’s Cultural-historical model derives from the evolutionary metaphor of Charles Darwin. His theory incorporates the developmental information in the sociocultural plane, adding to the phylogenetic evolution of species and the ontological development. The model gives significance to the biology of the individual as well as the species. However, the culture interferes with the natural system in unique ways such that the social interactions become internalised into the mental processes.

Conception of Development	Csikszentmihalyi’s Model	Vygotsky’s Model
Genetically programmed, learned or both	Predominantly learned	Predominantly learned
Dynamically changing across age groups or Static across age groups	Dynamically Changing across age groups	Dynamically Changing across age groups
Dialectical relation with culture or idiosyncratic physiological Development	Dialectical relation with culture	Dialectical relation with culture

Table 5.3: Conception of Development

The System model also sees the importance of distributed nature of creativity and its development. The individual is a cog in the system consisting of the symbolic domain and its gatekeepers. The developmental transition of creativity in the system model is the change in the social systems that support the person. During childhood, the teachers and parents have a significant role in affirming the talent, interest and ability of the child. Here the materials and opportunities required for the child are provided by the parents. During adulthood, the social support is taken up by mentors, boss, sponsors, and friends.

“Mentors play a critical role in helping negotiate both personal and professional issues. They contribute to the development of young people

by building self-confidence, affirming and encouraging their abilities, and helping them develop a stronger and clearer professional identity.”
(Csikszentmihalyi, 2014, p. 139)

Some of them may act as the role models for the person. The problem solving and the problem finding during the times and the support and reward systems gives confidence, support and clarity to the person such that he or she may advance to the next levels of performance. If the social support system is weak, then the burden of the tasks may hamper the creative development of the person. The colleagues and the profession provide opportunities, challenges, exposure to the area where any person may acquire the required skills. The social and cultural system transmits values, ideas, opportunities and they provide the person a space to develop competencies, interests and skills.

Both models assume a dialectical relationship between individual and culture. The models reject the idea of genetic or biological maturation followed by learning processes where the former is primary and the later secondary in the development of individuals. The cultural-historical model of Vygotsky goes to the far end of social-constructivism, whereas the Systems model adopts interactionism and demonstrates the social construction of creative lives. The systems model demonstrates the distributed nature of creativity in terms of sociocultural validation, the role of field and domain.

“There is a dialectic between interpersonal relationships and identity formation. Both are influenced by experiences, opportunities, aspirations, and achievements. Talent development is influenced by the provision of opportunities and positive experiences as well as restrictions from, or negative experiences with, educational and professional social systems.
(Csikszentmihalyi, 2014, p. 157)

Vygotsky, on the other hand, employs the principle of the origin of higher mental processes through the internalisation of socio-cultural systems. The conception of cognitive development in Cultural-historical framework rejects the view of development which proceeds step by step in tandem with biological maturation. The development is an open system which is characterised by unevenness of origin and transformation of different functions, metamorphosis, qualitative transformations, and coexisting of internal and external factors.

“... only if we radically change our representation of child development and take into account that it is a complex dialectical process that is characterized by complex periodicity, disproportion in the development of separate functions, metamorphoses or qualitative transformation of certain forms into others, a complex merging of the process of evolution and involution, a complex crossing of external and internal factors, a complex process of overcoming difficulties and adapting.” (L. S Vygotsky, 1997, p. 99)

Vygotsky rejected the idea of development as a slow maturational process but regarded it as a dialectic process involving changing connections and conflicts which arise in dependence of individual with the social.

5.4 Interaction with other Cognitive processes

The popular models of creativity have conceptualised creativity as an isolated trait which is supported by the cognitive processes of a different order. Isolating creativity as an abstract trait is predominant in the post1950s models and theories such as in the Economic models, cognitive models, Affect models and psychometric models. The mental processes are evaluated separately and are stitched together by methods of statistics. These models encompass the assumption of compartmentalisation of cognitive processes. The problem of methodological fixedness allows only a specific range of conceptualisation. In the parametric statistics influenced models like the above, cognitive processes like, intelligence, motivation and emotion are conceptualised, represented and analysed separately. However, Csikszentmihalyi's flow model and Vygotsky's creativity model is based on a different framework in the aspect of accessing and accommodating mental process which does play in a creative endeavour.

According to Csikszentmihalyi, the motivation in a creative act does not fall into the dichotomies of extrinsic and intrinsic motivation. The individual displays Emergent motivation, i.e., the present moment determines the next moment or the path in the present moment determines the path in the next moment. The motivation is to move creatively to the next moment. A conceptualisation of need or drive in the mental structure is absent in the model. The proximal goals which arise when an individual performs creative task determine the direction of the activity. Such motivational states include attributed like a general curiosity and interest.

“Even more than particular cognitive abilities, a set of motivational attributes - childlike curiosity, intrinsic interest, perseverance bordering on obsession - seem to set individuals who change the culture apart from the rest of humankind.”(Csikszentmihalyi, 2014, p. 196)

The person primarily engages in self-rewarding activity at the peak of creativity. This state is called the Flow state, which in itself becomes the motivational component. Flow is regarded as an autotelic activity, i.e., activity rewarding in itself (auto means self and telos means goal). In the flow state, the individual finds the activity pleasurable, and the engagement is not motivated for external rewards. Autotelic activity is intrinsically motivated. Flow states are motivated by emergent motivation. In optimal states, rather than the internal need or drive the preceding moment determines the next moment. Emergent motivation means that an activity which was not motivating in the past can become interesting after the skills and actions of the individual improvise with time. The person-centric approaches to creativity locate motivation within the internal structure of need or drive. In the Flow model, the force of flow help develops the interest, goal and internal mental structure by the interaction of individual. It is referred to as emergent motivation because the proximal goals emerge out from interactions between the intentions and social structure.

The basis for motivation in Flow theory is a perceived asymmetry in person-environment interaction(Csikszentmihalyi & Nakamura, 2002). The process starts by individual perceiving the subjective challenges in the environment. The model focussed on the stream of information that is selectively attended by the person. It considers the lived experience of a person while interacting with the challenges rather than focusing on objective traits and interests of the person. The contribution of personality traits and attention are valid only at the moment to moment interaction of the person with the social context. The person-centric models refer to internal mental states and drives as the source of motivation.

Optimal states in a person is a result of the motivation based on the teleonomy of self. According to flow theory, three integrative teleonomy motivates a person – genetic teleonomy, cultural teleonomy and teleonomy of the self (Moneta & Csikszentmihalyi, 1996). Genetic teleonomy is concerned with biological and genetically programmed goals such as eating and sex. The cultural teleonomy is concerned with social and economic

wellbeing. The teleonomy of self helps in growth and reorganisation of mental structures and interests in a person. It helps reorder the conscious experience of the individual. The satisfaction of the person coming from a creative task is a part of the teleonomy of self.

The emotional reward to the creativity is flow, an autotelic property which brings the person again into action in the increasing levels of complexity. The flow state is just one aspect of the emotional spectrum one experiences in a cognitive activity oriented towards perceived skills and perceived challenges. A range of emotions are connected to the activity engaged by the individual like a holistic system. In any activity, the individual experiences *relaxation* when the skill level is high, and the challenge is low, whereas *boredom* is experienced when the skill level is average, and the challenge level is low. When the skill level is low, and the challenge is low, the corresponding emotional state is *apathy*. The individual experiences *Control* of situations when the skill is high and the challenge average. The person experience *Anxiety* when skill is low, and the challenge is high, and *Arousal* is experienced when skills are average and challenge high. The systems model has integrated the emotional structure of the individual to the creative tasks as a single unit rather than seeing it as compartmentalised functions.

The concept of the motivation of Vygotsky is almost similar to Csikszentmihalyi except that it developmentally varies. Creativity is a self-propelling ZPD, which will find the activity space it's own depending upon the domain it operates. The motivation is also self-mastery and meaning-making in a vast cultural space. Creative activities in adolescence are a result of dialectics between objective fantasy and subjective fantasy. The emotional and private life of individual and reality of life is under dialectical tension, which results in artworks and emotional resolution. Later in adulthood, when life's work and intention are precise, then the individual will advance in the direction of the intention.

The emotion works in various ways in the general cognitive process and in creativity. Vygotsky refers to 'dual expression of feeling' which is an external physical expression of emotions coupled with the changes in the internal environment. The internal states associated with any particular emotions organises or influence the further perception of the individual. For instance, when the fear is generated in an individual, the emotional states influence neutral stimuli, whereby the individual judge it as fearful.

“When the proverb says that a scared raven takes fright even at a bush, it means that the influence of the emotion we are experiencing colors our perception of external objects.” (L. S. Vygotsky, 2004, p. 18)

Vygotsky explored the role of emotions in creating the principles of associations which influences creativity. The emotions affect the combinatorial activities of the brain such that the person cluster together impressions and images of no external similarity or connection. Emotions influence the imagination of a person. He views the creative imagination as a synthesis of emotion and thinking. This function is demonstrated in the development of fantasy in the adolescence. Fantasy brings satisfaction to the emotional side of an adolescent, and it interiorizes as the subjective activity. The fantasy development during the adolescence gives direction to the emotional life. The person expresses oneself in creative activity, which is structured by the development of fantasy or creative imagination.

The system model argues that an optimal level of Intelligence is sufficient even for creative works of great magnitude. Csikszentmihalyi does not reject the studies which cite the optimal I.Q score of 120, above which the creativity will not affect. The creative people interviewed for the studies by Csikszentmihalyi were all of the average intelligence except certain childhood prodigies. However, Csikszentmihalyi is critical towards the reification of intelligence as I.Q. According to him, Intelligence is “refers to patterns of thought evolved by culture and recognized by society”(Csikszentmihalyi, 2014, p. 29). It is always a part of a social context. Csikszentmihalyi sees Intelligence as a part of the interaction of a person with the social context, against the notion of intelligence originating from the brain. I.Q is not predictive of future achievement compared to the persistence and confidence in one's own abilities.

“...to locate intelligence within the brain is to reify a phenomenon that manifests itself only in interaction. The IQ refers to a peculiar process adapted to its peculiar environment...” (Csikszentmihalyi, 2014, p. 29)

The decline of intelligence with age may not affect creativity in any significant ways. The effects of ageing on other cognitive processes point to the decline of many functions such as memory and intelligence. However, creativity is generally not affected in terms of biological age, but such concerns are valid with social ageing.

“Clear physiological effects include declines in memory functions in old age, impairment of fluid intelligence, and loss of energy. These changes, however, are of relatively little consequence to many forms of creativity. In many ways, social ageing is more consequential.”(Csikszentmihalyi, 2014, p. 243)

Vygotsky saw intelligence as a practice the child develops when he/she is introduced to the topsy-turvy world. Inner speech development and pretend play are developmental milestones in a child’s intellectual ability. The learning of signs like language, gestures will increase processing of meaning in individual. Schooling will increase the cognitive capability of the child with the introduction of scientific concepts. In the late adolescence, the development of thinking in concepts will help develop scientific and artistic creativity in adulthood. Development of individual is mediated by the symbolic systems and social and cultural practices; the Higher-order mental functions work in communion rather than in isolation.

5.5 General meta-theoretical assumptions

The General meta-theoretical assumptions are specific categories obtained through a brief survey of available creativity theories. They explore factors such as Magnitudes of Creativity, Six P’s of creativity, Conscious or Unconscious processes, Collective or Individual phenomenon and Method, Characteristics or Processes and Universal or Rare Phenomenon.

5.5.1 Magnitudes of Creativity

The systems model addresses the creativity of high magnitudes, which contributes in significant ways to cultural evolution. It addresses the Big-C creativity or cultural creativity. The model explores the mechanism of creativity of higher magnitudes, which cannot escape an external evaluation. On the other hand, in everyday creativity or little-c, the only aspect which matters is the subjective experience of the person. Csikszentmihalyi sees the little-c and Big-C as a part of a continuum. However, he classifies them as two separate domains, and the system model gives exclusive focus to Big-C creativity.

The Cultural-historical theory of creativity by Vygotsky focuses on the creativity of all magnitudes. His theory acknowledges the creativity of all magnitudes, which range from everyday experiences to inventions that changed history.

“ ... just as electricity is equally present in a storm with deafening thunder and blinding lightning and in the operation of a pocket flashlight, in the same way, creativity is present, in actuality, not only when great historical works are born but also whenever a person imagines, combines, alters, and creates something new, no matter how small a drop in the bucket this new thing appears compared to the works of geniuses.” (L. S. Vygotsky, 2004, pp. 10–11)

5.5.2 Six P's of creativity

The systems model encompasses every aspect of creative personality from a person, product, process, press, persuasion and potential. The model has described the characteristics of a creative person as Complexity. A creative person is a multitude and enjoys the full spectrum of personality. The creative person is both introvert and extrovert, and sociable and aloof at the same time. The creative process in the system model is the interaction of the individual with the domain and the field. The former is symbolic, whereas the latter represents the gatekeepers of the domain. It considers the press or environment to a great extent. The whole model in the main deals with socio-cultural factors and the distributed nature of creativity. The individual's skills to convince the results to the field is very important. The persuasion dimension is significant in the system model as the product is always evaluated from the socio-cultural standpoint. Systems model acknowledge the importance of effectively conveying the findings to the field experts without which creativity may not find expression. The Systems model is employed in Organisational settings (Aubé, Brunelle, & Rousseau, 2014; Aubé, Rousseau, & Brunelle, 2018; Ilies et al., 2017) and occupational therapy (Emerson, 1998; Jonsson & Persson, 2006; Rebeiro & Polgar, 1999) to help an individual develop their full potential.

The Cultural-historical model of Vygotsky focuses on the process, product, potential and press. On a fundamental level, Vygotsky points to the combinatorial activities of the brain, which combines the elements in the memory to reproduce a new combination. This process is again supported by the dissociation and association of impression gained from perception. The dissociation process involves breaking up of the

complex whole into individual units. This process is also the foundation of abstract thinking and concept formation. The association process involves unification of dissociated elements. This process enables the construction of a picture. The creative process completes a cycle when it gets embodied or crystallised in the external world. Apart from the basic process of association and dissociation, Vygotsky points to the development of Higher mental functions, internalisation of child’s play, the interweaving of fantasy and conceptual thinking, development of tools and signs, and interconnectedness with emotion, and experience.

Vygotsky saw that the finished products of creativity are not the ultimate stop of the creative process, but it works in a cyclical nature to support other creative activities. The imagination that which is crystallised in the products can be explored by the process of dissociations and associations. He observed that the psychological tests which test the product bring only a fossilised form of process which obscures broader dynamics and transformations of mental processes. The crystallised product does not leave the signs of an active process. Vygotsky has not approached creativity with a person-oriented framework. His studies of creativity were not based on an investigative approach towards people of eminence or Big-C creators. However, the creativity theory in Cultural-historic framework is equally applicable for all levels of creativity and all domains of activity. The press or the situational factors are placed in the core of the model. The Vygotskian model of creativity embraces social-constructivism and distributed nature of cognition. Vygotsky traced the live process of creativity, which also addressed the question of creative potential. Creativity becomes the Zone of proximal development of the individual, which helps the person to develop skills and cognitive functions.

Dimensions	Csikszentmihalyi’s Model	Vygotsky’s Model
The Six P’s	All Six P’s	Process, Product, Press and Potential
Magnitude of creativity	Big-C creativity	Creativity of all magnitudes
Collective or Individual phenomenon	Collectivistic	Collectivistic
Conscious or Unconscious processes	Predominantly Conscious	Conscious process
Universal or Rare phenomenon	Rare Phenomenon	Universal phenomenon
Characteristics or processes	Both Characteristics and Process	Process

Table 5.4: General Meta-theoretical assumptions

5.5.3 Collective or Individual phenomenon

The work has explored the Conception of Self in the theories of creativity. The conception of Self emerged in the models were divided into three – Person-centrism, Interactionism and Social-constructivism. The study reflects that the conception of Self invariably influences the conception of creativity. Creativity, as conceived as an individual phenomenon, considers the person as the primary source of creativity. This view does not appreciate the distributed nature of creativity. The Economic models, Cognitive models, Psychometric models and Affect models hold this conception. Creativity as conceptualised as a collective phenomenon factor in components other than personality factors such as socio-culture, or social agents like family or religion into its explanatory account. Csikszentmihalyi and Vygotsky saw Creativity as a collective phenomenon, but the historical context in which both theorists formulated their conceptions differs. Csikszentmihalyi was reacting to the mainstream APA informed Psychological research tradition of Creativity, which dates back from the first half of 20th century.

Further, Csikszentmihalyi has not ignored the individual in his person-domain-field model or systems model. He outlined individual idiosyncrasies as the personality characteristic of ‘complexity’. However, he insisted that creativity is a part of the domain and field were more often than not domain and field to determine whether a product is worthy of being included in culture. The socio-cultural validation and expert opinions are essential aspects in determining whether a product is creative or not. Csikszentmihalyi further breaks the normal binary personality differentiations (e.g., Introvert and Extrovert) and introduce a creative person as one who enjoys a wide spectrum of personality continuum.

Vygotsky sees creativity as a collective phenomenon; he was reacting to different set approaches to Psychology such as the reflex-oriented science of Pavlov, Phenomenological and philosophical traditions and the constructivism of Jean Piaget. Any higher order mental process such as creativity is collective in nature.

“No invention or scientific discovery can occur before the material and psychological conditions necessary for it to occur have appeared. Creation is a historical, cumulative process where every succeeding manifestation was determined by the preceding one.”(Lev Semenovich Vygotsky, 2004)

The contents of the mind are derived from culture through the process of internalisation. Creativity and Imagination are the two processes that rework the material and bring novelty into the present. In other words, the creator can only derive from the past and contribute to the future.

5.5.4 Conscious or Unconscious Processes

The psychoanalytic school has contributed significantly towards the conception of creativity in the first half of the 20th century. The period between the 1900s and 1930s witnessed active exploration of the unconscious mind, its therapeutic derivatives such as free association and introspection were used as mind-medicine to the general population. The introduction of unconscious mind processes challenged the psychological discourse of rational mind of individual and free will and its implications to personality was multi-faceted. The psychodynamic tradition under Sigmund Freud, Carl Jung, and the neo-analytic scholars asserted, in the main that certain aspects of mind is not rational and unconscious and is hidden from any direct enquiry.

Freud regarded personal unconscious, and Jung regarded the collective unconscious mind as a significant source of creative tendencies. Freud's theory of the unconscious mind is regarded as one of the significant findings of the 20th century. This is reflected in his theory of Creativity, which foregrounds creativity as a façade to hide intensely sexual and aggressive impulses by presenting them in a socially legitimised form. Creative impulses are coming from the subconscious and unconscious states of mind. Jung contended that creativity has an individuation value and is connected deeply with social, cultural and spiritual values of both individual and society.

The systems theory and the Cultural-historical theory of creativity ignored the unconscious as a major focus of enquiry. The reasons for avoiding seem to be both historical and intellectual. Csikszentmihalyi in certain specific occasions points to the unconscious nature of the human mind. The origins of curiosity, which is a primary instigator of creative activity in Systems model may have deep unconscious roots. Csikszentmihalyi points to Freud's concept of regression when deliberating on the nature of curiosity of the creator. What makes an individual curious about a particular field? The curiosity in an artist or a scientist is because of repressed childhood experiences of sexual origin. By unveiling the nature of things a creative person makes disguised attempts to the confusing impressions of seeing parental sex and repressed erotic emotions towards them.

The root of incubation lies in the repressed primary interest where the secondary creative process fails to connect with the former; the process goes to the subconscious where the reconnection to the primary repressed interest happens. Any scientific problem or artistic exploration confronts and connects its personal nature in the subconscious and reemerges as disguised curiosity and interest whereby the scientist or artist can pursue the work. The curiosity is also based on the two contradicting tendencies; Explorative tendency and Conservative tendency. When the system stores energy, uses instincts of self-preservation, then it is under conservative tendency, and when the system is active with exploration and using energy, then the system is under Explorative tendency. Creativity is an Explorative tendency. However, these conceptions are not primary to the systems model as it does not treat unconscious factors as a significant dimension in its framework.

Lev Vygotsky was not concerned with unconscious dimensions of the mind. He observed that the factors that lead to defence mechanisms and ego formations are socio-cultural in nature. He differentiated between the unconscious and lack of conscious awareness. He questioned the origins of the unconscious process as to whether it is a differentiated structure of the consciousness or the origins of consciousness. If the unconscious is constructed as a differentiation of the conscious mind, then the influence of socio-cultural aspects cannot be negated.

“If we view the development of consciousness as the gradual transition from the unconscious (in Freud's sense) to full consciousness, this representation of the process is correct. However, Freud's research established that the unconscious -- which is carved out from consciousness - emerges comparatively late. In a certain sense, it is a product of the development and differentiation of consciousness itself.” (Lev S. Vygotsky, 1997, p. 190)

The social construction happens in complex ways, and by the method of dialectics, Vygotsky seeks to explore the individual. Vygotsky was concerned with the lack of appreciation of consciousness in the behaviourist traditions such as the Pavlovian model of conditioning and Reflexology of Bekhterev. Vygotsky pointed out that these approaches which ignore consciousness, tried to study a Human being as a mammal. The responses that are not visible to naked eyes such as Inner speech, internal movements and

somatic responses will be neglected in a Psychology of no consciousness. Both Csikszentmihalyi and Vygotsky avoided the unconscious in the primary explanatory framework.

5.5.5 Characteristics or Processes

Any phenomenon can be studied by what it appears outside, i.e., the descriptive account of the phenomenon and what causes it, i.e., the dynamics and process of its occurrence. The former is describing the nature of the event, whereas the latter focus on causality. Csikszentmihalyi focussed on both process and characteristics of creativity. The processes cited by Csikszentmihalyi compose of Classic 5-stage model, Person-domain-field dynamics, Exploratory tendency, Social-construction of creative lives, Emergent motivation, Autotelic personality, Problem-finding approach, the affective dimension of Flow and Teleonomy of self. The characteristics cited compose of creative personality, nature of person-domain-field model and creativity across the developmental span. Vygotsky focussed on process, such as internalisation process, development of Higher mental functions, the General genetic law of cultural development, imagination-creativity dynamics, mediated-nature of creativity and Law of sociogenesis.

5.5.6 Universal or Rare Phenomenon

Persons with exceptional feats of achievement always amused the general public which begged the question of “is this possible for anyone?” Certain thinkers on individual development and creativity view creativity as a rare trait while others regard it as a universal trait available for everyone. The former acknowledges creativity as an exception and a treasure available to a few selected individuals, whereas the later views creativity as a common trait in a population. Creativity is a rare phenomenon for Csikszentmihalyi, whereas a universal phenomenon for Vygotsky. The antecedent statement needs a word of caution. Csikszentmihalyi distinguishes between novelty and creativity. Anything novel has to be accepted by both field and domain to be creative. There seems to be definitional disagreement between two thinkers. Vygotsky accepts that the highest feats of creativity are possible only for selected individuals, but in everyday context, creativity is a rule rather than an exception.

“A scientific understanding of this phenomenon thus compels us to consider creativity as the rule rather than the exception. Of course, the highest expressions

of creativity remain accessible only to a select few human geniuses; however, in the everyday life that surrounds us, creativity is an essential condition for existence” (Lev Semenovich Vygotsky, 2004, p. 11).

Every person is creative. Being creative is natural to an individual due to the natural ways mind function. On the other hand, Csikszentmihalyi focuses on Big C creativity, which he distinguishes very clearly in his texts. The Cultural-historical model of creativity attempts to formulate a model that can encapsulate the creativity of any magnitudes. This property is the natural consequence of developing a psychological model by positioning it on the origins of identity and cognitive processes.

5.5.7 Paradigm and Historical Position

The intellectual zeitgeist and the paradigm positions influence the studies in Psychology in general and Creativity Research in particular. However, Csikszentmihalyi’s studies in Psychology have influenced the paradigm position rather than the paradigm position influencing him. Mihalyi Csikszentmihalyi is regarded as one of the founding fathers of Positive Psychology. The advent of Positive Psychology is very recent as many historical records suggest that Martin Seligman has introduced Positive Psychology to the American Psychological Association in the APA presidential address of 1998. According to Jeffrey J. Froth (2004), the principles and the basic tenets of Positive Psychology is not recent as it can be traced back to works of Wilhelm James and Humanistic tradition of Maslow. However, Positive Psychology as an organised school is recent, and it is contributing to the studies on subjective wellbeing, human strengths, virtues, social responsibilities and development of citizenship. Csikszentmihalyi’s works on Creativity, Consciousness, Self, Happiness, Flow states, Affect and Motivation have contributed to the paradigm of Positive Psychology.

Lev Vygotsky built the foundations of Cultural-historical Psychology though his followers and critics attributed the name of the school. Vygotsky never used the term cultural-historical psychology in his works. His works pointed to methodological and epistemological problems in psychology in the early 20th century, which is still relevant considering the contemporary state of affairs in Psychology. Vygotsky’s thinking crosses historical time as issues like positivism, compartmentalisation of cognitive functions, entity-oriented approach and methodological-fixedness influences mainstream Psychology. The basic tenets of the school such as the social-constructivism, sign-

mediated development of cognition, transformation of thoughts and intelligence with language development, internalisation of social, studying psychological process in its development or transformation, adaptation and personality development are reflected in his approach to creativity. As the cultural-historical school provides valid criticisms and alternatives to the mainstream psychological approach, the Vygotskian model of creativity is a critic of the contemporary models of creativity. The Vygotskian model prefers social-constructivism, dialectical relation between cognitive processes, creativity as a developmental variable over the conceptions of person-centrism, the compartmental relationship of cognitive processes and analysis of fossilised functions, respectively.

5.6 Summary

This section attempts to summarise the entire study by outlining the significant findings in the respective chapters. The first chapter dealt with the genealogy of creativity. The explorations in the conceptual history of creativity have identified various ideas, events, debates, and breakthroughs that defined or redefined the creativity research field. This study identifies the various themes in the creativity research and places it historically into three periods - a) From 1850 to WW I, b) Interwar period, c) WW II and Postwar period. The broad themes identified in the first period, i.e., from 1850 to WW I are; Eccentric Genius and Early Experimental Approaches, Intelligence Quotient and Myth-busting of Eccentric genius and Unconscious roots of creativity. The theme explored by the study in the Interwar period is Gestalt breakthroughs – Insights, Productive thinking and Functional Fixedness.

The themes identified in the WW II and Postwar period are: Sputnik Era, Divergent thinking, Humanistic psychology: Self-actualization and Creativity, Creativity as regression in the service of Ego: The post-Freudian explorations, Intuition and Reason in French intellectual circles, Emergence of Psychometric models of creativity, Bisociation, Problems of testing: Test-like conditions, Issues of predictive validity and Intelligence-creativity relationships, Challenging the past models: perception or thinking; problem solving or problem finding, Problem finding or Problem solving, Darwinian model of Blind variation and Selective retention, Multiple intelligence, Morality and the Dark side of creativity and An audience for creativity research: Talk shows, Journals and Handbooks.

In the second chapter, selected theories and models of creativity are comparatively analyzed with the help of a meta-theory developed for this study. The models of creativity that are dealt in the meta-theoretical analysis are Economic Models, Personality Models, Cognitive Models, Psychometric Models, Biological Models, Affect Models, Psychodynamic models, Systems models, Darwinian models and Socio-cultural models. The meta-theory examines the models and theories of creativity on three dimensions a) Conception of Self, b) Interactions with other Cognitive processes c) General theoretical assumptions.

The conception of self is classified into three – person-centric approaches, Interaction approach or Interactionism and Social-constructivism. Person-centric approaches, which are popular in Psychology, view the individual as a product of biological development, who is self-propelling in terms of development, personality, thinking styles, intelligence, motivation and other cognitive processes. The conception of Social-constructivism argues that the individual and cognitive processes are social and cultural construction and the thinking skills, personality structure, lifestyles are seen as constructed by socio-cultural forces. Interaction models or synthesis models see the interaction between individual and culture in determining the nature of the self. The models which embody the person-centric assumptions of self are Cognitive Models, Psychometric Models, Biological Models and Affect Models. In the Economic models, the Investment theory of creativity adopts a person-centric approach whereas Rubenson and Runco's Psycho-economic model adopts Interactionism. The orthodox Psychodynamic models of Sigmund Freud and Carl Jung have assumptions of person-centrism and interactionism, respectively. The models that focus on interactionism are Systems models and Darwinian models whereas models assuming social-constructivism are Glaveanu's Five A model and Vygotsky's Cultural-historical model.

The meta-theoretical analysis in chapter two also explores the nature of interaction with other aspects of cognition. The nature of interaction can be Interactive relation or a Dialectic relation. The dialectic relation points to the mutual constitution, mutual development, and functioning together of cognitive processes. The interactive relation points to the level of correlational support of cognitive processes. The models that assume interactive relations are Economic Models, Cognitive Models, Psychometric Models, Biological Models, Affect Models and Psychodynamic Models. In the Systems models, the Flow model of Csikszentmihalyi assumes dialectical relations with other cognitive

processes, whereas Simonton's Historiometric approach and Componential Model assumes interactive relations with other cognitive processes. The Socio-cultural models in the study exclusively assume a dialectical relationship of creativity with other cognitive processes.

The third chapter deals with the Systems model of Mihaly Csikszentmihalyi by focusing on definition, method, dimensions of creativity such as the domain, field and individual, sources of creativity, creative process, the emergence of problems, the role of self and consciousness, motivation and emotion in creativity. The paradigm position is explored by tracing the origin and development of Positive Psychology. Creativity is located as a synergy of three parts - the domain, field and individual. The individual comes only as any other factor in the system rather than the only factor. A creative individual is best represented as 'complex personality' which shows all shades of personality spectrum rather than developing some aspect of it. According to Csikszentmihalyi, Creative persons chose a golden mean or a central position as their default position, and they move to extremes. They are aware of both extremes and experience those states with intensity without inner conflicts. According to Csikszentmihalyi, autotelic personality has specific personality traits to achieve Flow states, which are characterised by low self-centeredness curiosity and persistence. Consciousness is conceptualised in the Systems model as a "complex system that has evolved in humans for selecting information from this profusion, processing it, and storing it" (Csikszentmihalyi & Nakamura, 2002). The flow states and creativity are better explained by Emergent motivation, i.e., the preceding moment determines what will happen in the next moment, and the proximal goals determines the action, in a creative activity.

The fourth chapter elaborates on the Creativity theory of Lev Vygotsky with particular focus on the various myths of creativity, development of Creative imagination, the General law of cultural development, Symbolic play of children, the developmental transformation of creativity and development of Higher mental functions. The work traces the paradigm of Marxist psychology and historical position of Cultural-historical school of psychology to delineate meta-theoretical assumptions in the paradigm level. According to Vygotsky 'Creativity is a self-propelling ZPD for adults, which is transformed from childhood play, continues to help individual organise, plan, explore the environment by exploring latent possibilities inherent in it, thereby transforming both the environment and

person'. Development of Individual is dialectically connected to the creative becoming of a personality. Creativity is a process that brings self-control and flexibility in an individual. He postulated that creativity has a mediated structure. Creativity cannot be isolated from development of higher mental functions, role of education both formal and cultural learning, development of meaning, personality development, mediation of tools, signs and artefacts, emotional development and consciousness. Vygotsky has seen creativity as a rule rather than the exception. He conceptualised Creativity as a Higher psychological function which has social origins like all other higher mental processes, and this function is distinct from other processes like reflexes and instinct in origin, development and transformation. He also addressed creativity as a dialectic process involved in the mutual formation with other mental processes such as imagination, emotion, intelligence and motivation.

The chapter five attempts to analyse the creativity theories of Lev Vygotsky and Csikszentmihalyi, with the help of a meta-theory. The comparative analysis points out that the Conception of self in Vygotsky's theory of creativity is social-constructivism, whereas that of Systems model of Csikszentmihalyi is interactionism. Both the theories agree that development of creativity is predominantly learned, dynamically changing across age groups, and is in dialectical relation with culture. Both theories agree that the nature of the relationship of creativity to other mental processes is a dialectical relationship rather than interactive relationships popular in general theories of creativity. The Systems model studied every aspect of creativity such as person, product, process, press, potential and persuasion, whereas Vygotsky's creativity theory focused on Process, Product, Press and Potential. The later model can be applied to the creativity of all magnitude, whereas Systems model applies only to Big-C creativity. The cultural-historical model of creativity focused on the creative process while ignoring the characteristics of creativity, whereas Systems model addressed both. Both models attest that creativity is a collective phenomenon. Vygotsky understood creativity as a conscious process, whereas Systems model speculates on the unconscious process in the incubation stage of creativity. The later model assumes creativity as a rare phenomenon available for a few, whereas Vygotsky saw creativity as universal in nature.

5.7 Conclusion

Creativity in the discipline of psychology is generally identified as a temporal, ahistorical, abstracted, cognitive-affective phenomenon which lies behind or causes inventions and discoveries. The recent advances in the creativity studies in social psychology, cultural-historical psychology and cultural psychology point to the conceptual gap of social context in the theoretical frameworks of creativity. These developments were based on the debates centred around the origins, development and transformations of self in the continuum between intra-psychic and socio-cultural factors. The Systems models and Socio-cultural models critiqued the person-centric conception of self and brought into the picture the socio-cultural factors such as intellectual zeitgeist, resource availability, cultural values and nature of the field and domain. Vygotsky points to the relation between creative activities and crystallisation of personality. Csikszentmihalyi argues that creative lives are social-constructions. The self and creativity are related to each other, and the conception of self is essential to the conception of creativity.

The primary evidence of the influence of social context comes in the changing conceptions of creativity. The idea of creation was different at different times. For instance, in medieval Europe, Creativity was reserved for God or church. The original is not possible, but only a replica of original is possible. Artists were doing God's work on earth. In Egypt, pyramids were built by the emperors, not for the sake of novelty and economic logic of our times. In India, during the ancient and medieval times, artists were given patronage by kings, and their work of art always reflected royal life and symbols, often very uncritically.

This study proposes that the conception of self and its development is a prerequisite for the conception of creativity. It is impossible to take account of creativity by isolating it and not considering the self of the person. The self which is constructed by the socio-political and cultural forces intermixed with the biology of the human being is a network of shared meanings. The instincts of individuals get mixed with social forces. Alternatively, creative production cannot be isolated from the self or from the social forces that involve in the engagements of self.

However, the developments in psychology in the past century has cleared many debates on the nature of creative genius. The psychologization of genius in the early part

of the 20th century cleared the myth of lone genius associated with creativity or exceptional performances. The studies on intelligence and creativity cleared the divine and mystical understandings of genius. The psychologization also resulted in the democratisation of the idea of creativity, i.e., the studies on training, nurturing and socio-cultural influences on creativity implied that genetics or hereditary factors and divine interventions are not at all essential for creative performances. Creativity is no more a rare quality which a gifted few will attain. Vygotsky saw creativity as a rule rather than an exception and tried to trace the roots of creativity in concrete human life.

The implications of the study are manifold. The disciplinary shift from the idea of lone genius to distributed nature of cognitive processes and creativity provides a leading direction towards an inclusive psychological framework. Socio-cultural forces and its effect of self can either dominate or liberating. Many studies suggest that political stability or imperial stability affects creative production and violence, war and repression will have a negative consequence to creative production. Dominant narratives of self, based on class, caste, religion, gender, culture, language, and region creates a dominant narration which the self, internalises and later objectivises. Creativity or creative production is mostly affected by such assumptions. For instance, the enrolment of women in the formal workforce is very less compared to men. This leads to less productivity, having said that, the concept of productivity has to be seen in a broader critical lens. It is critical thinking and negation of the self or revolutionary movement towards the establishment of an oppressive-ridden structure. Creative production at this level will help individuals to be free and liberated, which will lead to welfare in society. Inclusion of the origin, development and dynamics of self and culture into the theoretical frameworks of creativity is essential to the purpose of creating psychological frameworks that are inclusive and sensitive to surroundings. This understanding is also the concrete finding from the analysis of creativity theories and comparative study of specific theories of Mihalyi Csikszentmihalyi and Lev Vygotsky.

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