**Practical Application of Whiteheadian Process Philosophy and Creativity to the Creative Economy in Korea: A Five Cs Creativity Theory Perspective**

Hong Y. Park

Professor of Economics

College of Business and Management

Saginaw Valley State University

University Center, MI 48710

hyp@svsu.edu

Il-Hyung Cho

Associate Professor of Computer Science

Department of Computer Science

Saginaw Valley State University

University Center, MI 48710

Email: icho@svsu.edu

Sonia Park

Vice President

Product Development and Sourcing

Etienne Aigner

320 Fifth Avenue, New York

Professor Hong Y. Park received the Korea Foundation Field Research Fellowship Grant in 2016 and SVSU sabbatical leave in 2016 for this research and he acknowledges the fellowship grant and the SVSU sabbatical leave. He has benefited from extensive discussions on Whitehead’s creativity with Professors Robert Mesle and Young Whan Oh. Authors are responsible for all remaining errors in the paper.

**Practical Application of Whiteheadian Process Philosophy and Creativity to the Creative Economy in Korea: A Five Cs Creativity Theory Perspective**

**Abstract**

Creativity is an important subject in business, economics, psychology, sociology and philosophy, fields that deal with creating and identifying new ideas. Each of these disciplines uses a discipline-specific language and theoretical framework. The entrepreneur employs these new ideas for innovation and new firm formation. Whitehead (1929/1978) argues that philosophy expresses the larger generalities in metaphysics. For Whitehead, the larger generality is creativity. Whitehead (1929/1978) defines creativity as the actualization of possibilities; he states that creative imagination is an important source of creativity. Space and time are also important factors, as creativity is evolving and evolutionary. Everything in real world is interdependent; thus, creativity is a social act. Scholars in cognitive social psychology point out that much human creativity arises from activities that take place in a social context, in which interactions among stakeholders and shared artifacts are important contributors to the process of creativity (Fischer, 2005; Glaveanu, 2014; Sawyer and DeZutter, 2009). We propose the five Cs creativity model connecting creativity theories in several disciplines; we then apply the model to the creative economy in Korea where the Korean government has initiated a host of measures to foster entrepreneurship.

Key words: creativity, five Cs creativity model, knowledge, entrepreneurship, creative economy

JEL: M13, D21, L21

**1. Introduction**

Creativity is the most commonly used English word in the news media and everyday conversation in Britain, according to Halewood (2014). This may not be unique to Britain, as it has become a universal phenomenon. The reason for the emphasis on creativity stems from the fact that creativity is the raw material of innovation (Lombardo and Roddy, 2010). Entrepreneurs carry out innovation (Drucker 1985), which is a source of competitive advantage of the firm and the nation. Naturally, creativity and entrepreneurship have catapulted to the forefront of economic policy and corporate strategy debates. Policymakers have realized that entrepreneurship helps create jobs and fosters economic growth, primary factors in their political success. Economists and management scholars also pay attention to the origination and innovation of the firm, because the global economy is going through a period of profound change and transformation. Creative firms such as Google, Apple and 3M Companies have become the most valued firms in the world. They are frequently in the news as success stories and major job creators; their strategies contribute to their firms’ successes and foster economic growth. As entrepreneurs originate new products, processes, and services in response to changes in the economic environment, they create a disturbance in the equilibrium (Schumpeterian entrepreneurship, 1934).

Holcombe (2003) argues that entrepreneurship discovers the stock of entrepreneurial opportunities and becomes the engine of economic growth. Creativity is an important source of entrepreneurial opportunity. Deeper understanding of the nature of creativity can generate more stocks of entrepreneurial opportunities. Entrepreneurs actively pursue creativity by themselves or encourage creativity of organizational members.

The Schumpeterian entrepreneur (Schumpeter, 1934, 1947) creates disequilibrium by creating new products, processes, services, markets and industrial organization. Foss and Klein (2010) argue that Schumpeterian entrepreneurship is exercised within the firm when it introduces new products, processes, or strategies; routine operations of the firm need not involve entrepreneurship at all. The outcomes of new capabilities are sources of above-normal profits (surplus) for entrepreneurs. Creativity is the raw material of Schumpeterian innovation. Schumpeter’s (1934) economic development theory states that above-normal profits drive entrepreneurs to innovate, even though the creation of new capabilities is accompanied by uncertainty and risk (Knight, 1921). When a firm consistently performs below competitors the firm will not be able to stay in business for long because it will not attract resources.

Creativity, entrepreneurship and competence building are crucial sources for competitive advantages of the firm (Foss, 1999; Schiuma, 2009). Langström et al. (2012) argue that “to successfully develop entrepreneurship research in the future, we need to relate new research opportunities to earlier knowledge within the field, which calls for a stronger ‘knowledge-based’ focus” (p. 1154). Casson (2014) urges researchers to involve greater use of formal models and give greater attention to cognition and information processing. However, there is a paucity of studies on creativity, knowledge and entrepreneurship (Foss and Mahnke, 2000; Kirzner, 1999). Therefore, to fill the gap, this paper develops a formal creativity and entrepreneurship model. The study also attempts to bridge the gap between abstract theory and descriptive empiricism by applying creativity and entrepreneurship theories to the creative Korean economy.

The paper is organized as follows: Section two discusses concepts of creativity; Section three proposes a five Cs theory of creativity and examines the five Cs theory of creativity in the Korean creativity economy; Section four describes the link between creativity and entrepreneurship (Schumpeterian entrepreneurship); Section five analyzes the Korean creativity economy; Section six presents discussion of these ideas and finally, section seven concludes the paper.

**2. Creativity**

Mesle (2008) argues that novelty is essential for our survival. If the firm does not change, the firm will not survive in competition. Creativity is input for creating novelty in products, processes, services and markets. It is, therefore, important for us to have a deeper understanding of creativity.

Several academic disciplines have studied the nature of creativity. We propose to build an integrative theoretical model by connecting concepts of creativity from philosophy, cognitive psychology and sociology. Philosopher Whitehead (1929, 1978) offers basic foundations for creativity by linking the potential to the actual. Psychologist Gibson (1977) points out that affordances change behaviors of animals, including human beings. Sawyer and DeZutter (2012) stress the importance of groups in creativity. Sociologist Bourdue's (1977) and Giddens’ (1979) structure is akin to Gibson's physical affordances on human behavior. We will discuss these concepts in this section to provide a deeper understanding of theories on creativity from different disciplines. We will then present our integrative model, which includes factors discussed from these diverse disciplines.

**2.1 Whiteheadian creativity**

In understanding Whiteheadian creativity we need to prehend the nature of Whitehead’s proposed solutions on philosophical problems. Hartshorne and Peden (1981) indicate that Whitehead has proposed to help solve three major philosophical problems: (1) many and one, (2) the issue of efficient and final causes, and (3) the problem of permanence and change. The problem of permanence and change involves the first two problems. Whitehead’s proposed solutions on these problems are the core of his creativity.

First, the issue of “many and one” is about two aspects of the universe. One includes a factor of unity, involving the **connexity** of things. The other equally fundamental in the universe, a factor of multiplicity. According to Peden (1981) there are many actualities. The description of unity requires many actualities. For Whitehead, the summation of many into the one, and the derivation of importance of unity in purpose and unifying purpose from many involves the notion of disorder, of conflict, of frustration. These are primary aspects of the universe and creativity. Shaviro’s (2009) illustration of the many and one is easy to follow. He argues that Whitehead radicalizes Kant’s argument about the manifold and explains many and one.

Whitehead (1929/1978) insists on the formal unification of diverse data, and multiple prehensions, in every entity’s concrecence or final satisfaction (1929/1978). During a process of becoming, the prehended data are “unintegrated,” or not yet integrated: but they are at least “compatible for integration” (26: Category of Subjective Unity). (Shaviro, 2009, p. 74).

This integration of many into one is creativity. haviro (2009) points out that for Whitehead, every achievement of unity is something that has never existed before: something different, something radically new and different from any entity in the many which it unifies. Many and one in Whitehead reverses the traditional thinking in philosophy which advocates one and many. This many and one is about a **combination** of many into one**.**  In traditional philosophy, one creator creates many. However, many becomes novel one and add one to many in Whitehead. According to Shaviro (2009) Whitehead seeks after “the most general systematization of civilized thought” (Whitehead, 1929/1978. p. 17) and the primary stage of philosophy is a process of “assemblage” (Whitehead, 1938/1968, p. 2). Shaviro further elucidates the process that philosophical speculation collects the most heterogeneous materials and **puts them** together in the most unexpected configurations which are like the practice of collage in modernist painting. The combination of heterogeneous materials results in a new material. **Combination** as today’s knowledge creation (Kogut and Zander, 1992; Nonaka, 1994) is akin to ‘the many into one’ and the combination in Whitehead.

According to Stengers (2011) creativity introduces novelty into the content of many to unity is a synthesis derived from many occasions. She provides an example of a judge’s decision. The judge asks many relevant questions from many witnesses and decides. The decision of unity (synthesis) bears a new consequence (novelty). This novelty becomes new data. She points out that Whitehead’s process and reality (1929/1978) offers a “new conception of the world,” the master themes of which are complexity, emergence, self-organization, and so on. Stengers (2011) further argues that we should recognize Whitehead’s intuition of the centrality of creativity, as these concepts link to the ontological principle:

[Whitehead’s] principle states that “there is nothing which floats into the world from nowhere” (PR, 244), that is, that whatever happens must be related to reasons. And creativity is not a reason, for “actual entities are only reasons” (PR, 244). (qtd. In Stengers, 2008, p. 92).

Here, Whitehead states that whatever happens must be related to reasons. Reasons are causal efficacy. Physical efficacy is about the past occasions and creativity **connects** them. Mesle (2008) explains the **connectivity** on how each actual entity create itself out of the past actualities. “Each actual entity must reach out and grasp those past actual entities, draw them in, and create itself out of them” (Mesle, 2008, p. 98). For Whitehead (1929/1978) the actual world is a process, the process is the becoming of actual entities. Thus, actual entities are creatures, they are also termed ‘actual occasions.’ (PR. P. 22). Whitehead’s principle of process (PR, p. 23) is relevant here. His principle of process states that “how an actual entity becomes constitute what that actual entity is.” The attributes of novel being (creatures or actual entities) depend on how that actual entity became. For instance, an actual entity selects eternal objects and sets the final cause (aim) in the process of becoming. The selected eternal objects and the final cause determine the attributes of the novel actuality created by this creativity process. The principle of process constitutes the nature of creatures (outcomes of creativity).

Efficient causes (causal efficacy) are actualized entities (many) and they can cause retention of the same characteristics in the novel unity. Each actual entity also selects eternal objects (pure potentials) and actualizes them in the creativity process. According to Whitehead selected eternal objects ingress to the process of creativity. Not all eternal objects are selected in the process. The final cause (vision) is teleology (aim) and would affect the choice on the type of eternal objects (possibilities). The final cause (vision) can provide a guiding judgment for **choices** in change and novelty. Final cause defines the attributes of novelty because it is an ideal that the actual entity is pursuing. Whitehead (1929/1978) states that “definition is the soul of actuality: the attainment of a peculiar definiteness is the final cause which animates a particular process (p. 223).” The attributes of actualized entity (novel unity) are determined by the final cause and the principle of process.

As stated before the Whiteheadian creativity process explains how the many become a novel unity. He uses the term ‘satisfaction’ when the many become one. Many are concrescing and they are relating to each other in the creativity process. Whitehead states that creativity is conditioned by other entities (society) in the process. Other entities in a business firm can be employees in the organization, competitors, suppliers, new technologies and regulations. These entities are stimulants to creativity. It is worth noting Shaviro’s (2009) description on Whitehead’s stimulation:

Whitehead insists that thought is stimulated, rather than paralyzed, when it is pushed to its limits, and when its “tentative formulations” break down under the pressure of changed circumstances, or simply in the face of additional evidence. Such is the point at which new concepts, and new categories, need to be invented (Shaviro, p. 146).

As the business firm faces the pressure from changed circumstances of markets, emergence of new technologies and regulations, people in the firm tend to be creative in meeting the pressure. Stenger’s (2011) arguments that Whitehead’s creativity is about complexity, emergence and self-organization are interesting since self-organization states that entities interact based on local information and interactions form (emerge as) a macro pattern (Kauffman, 1993). Emergence in Stenger is becoming of Whitehead. A new pattern formed is a novelty and it is creative advance.

The Whiteheadian creativity process discussed above can be presented as the following:

 Creativity Process

 Causal Efficacy Self-causation Satisfaction

 ↓ ↓ ↓

 Many (created) → Actual entities → ← Final cause Novel Unity (One)

 ↑

 Eternal objects (potentials) → Select

As stated above, Whitehead’s creativity is actualizing potentials. Clarifying his potentialities is a starting point of our discussions on creativity. Whitehead (1929/1978) proposes two potentialities: real vs pure potential. A real potential is the actualized entity (being) and the starting point of creativity. All beings are potentials for becoming. When a firm begins with a product currently in the market and aims for a new product the firm makes decisions to accomplish the aim. The result of those decisions is the firm’s new product. Efficient causes (causal efficacy) are actualized entities and they can cause to retain the same entity. For Whitehead (1929/1978) the self-cause retains the attributes of actualized entity which is referred to as **conformation**. Actual entities (physical causes) **interact** and they are also **relational**. Interaction and relationship in Whitehead’s creativity are relevant in today’s corporate creativity. Firms create structures for creatives to interact and build relationships among creatives. Some forces in the entity continue to inherit its past and eternal objects are **chosen** or **selected** to become the ideal set by the entity. The firm continues excellent attributes and practices for its product and chooses new ideas for making the product better. There is a reservoir of eternal objects (potentialities) and the firm makes a choice which eternal object (pure potential) is to be actualized. Great ideas exist, but they may not be available for the choice of decision makers in the firm. Discovery of eternal objects (potentialities) to be realized in today’s business is important in business innovation. Users, suppliers and competitors have become their importance sources of innovation in recent years. The firm also seeks them within the organization and the firm is providing conducive structures for the discovery of new ideas. We try to unpack creativity of the firm and discover an order or theory that makes the firm or an organization creative.

In the firm or organization actual entities are interacting and they are relational. Interactions and relationships are determinants of creativity in Whitehead. Past actualities are physical causalities. Contemporary entities are concrescing (growing together). The principle of novelty in Whitehead states that the disjunctive many become the conjunctive unity and the process of many becoming unity is the essence of his creative process. The subject becomes superject. He states ‘creativity’ as actualization of the potential.

Second, the issue of efficient and final cause is about the nature of efficient and final causalities and the relationship between them. Whitehead (1929, 1978) argues that actualities of the past are reasons (efficient cause) for events. According to Griffin (1988) a prehended event as the cause and prehending experience as the effect implies that the cause entered into the effect. “This passage of the cause into the effect is the cumulative character of time. The irreversibility of time depends on character” (PR, 237). Griffin (1988) points out that a positive relation can exist between efficient and final causation. According to Shaviro (2009) final cause in Whitehead is always at work, alongside the efficient (mechanistic or physical) cause and supervenes upon the efficient cause. For Whitehead creativity is the basic force of the universe. Creativity is caused by the self-causation, causal efficacy and final cause. Self-causation and final causation are interior causes and efficient cause is an exterior cause (Griffin, 1988). Natural Sciences primarily focus on discovering efficient causes. Scientists’ controlled experiments are to discover efficient causes. Self-cause is the self-preservation of actuality. Witehead’s causality is forward causality which implies that the past causes the present and the present does not cause the past. The future will not cause the present because the future is not actualized yet. The actual entity is the only cause in the process of actualization. The present causes the future and causality is cumulative. The forward causality in process philosophy is applied to causality in econometrics where scholars employ lagged independent and dependent variables in testing their causality.

Final cause is about value and purpose of an actuality. Mesle (2008) points out that self-creativity requires some aim, some goal. Teleology and purposefulness play more significant roles in human and human organization. Teleology in Whitehead is an ideal direction for creative advance. The teleology of civilization is directed to the production of beauty (Whitehead, 1933, p. 265). Whitehead proposes the beauty as an ideal to be pursued (Shaviro, 2009). For Whitehead (1933) beauty is a wider, and more fundamental notion than truth. The reason that Whitehead gives a priority of beauty over truth concerns the relations of appearance to reality and the notion of conformation to reality in the case of truth is narrower than that in the case of beauty. Whitehead (1933) elaborates his arguments:

Beauty is the internal conformation of the various items of experience with each other, for the production of maximum effectiveness. Beauty thus concerns the inter-relations of the various components of Reality, and also the inter-relations of the various components of appearance, and also the relations of Appearance to Reality. Thus, any part of experience can be beautiful. The teleology of the Universe is directed to the production of Beauty (Whitehead, 1933, p. 265).

Beauty is the internal conformation of the various items of experience with each other, to produce maximum effectiveness. Beauty concerns the inter-relations of the components of reality. Beauty for Whitehead is harmony and proportion. Harmony among various components, various fields, people, and harmony in everything is an ideal to be pursued. Current global conflicts stemming from extremes may be mitigated by adopting his ideal of the beauty (harmony and proportion). Extreme income inequality today may cause instabilities in society and retard economic growth. Extreme income inequality can lead to reduction in consumption and result in low investment as well. According to Wallack (1980) Whitehead adds value and purpose to the materialist conception of nature. Materialism accepts physical causation (external causation) only. Whitehead’s addition of value and purpose to the nature can be envisaged from his integration of mental and physical poles. Whitehead (1933) expands the conception of teleology by espousing the value of civilization that is a certain ideal for life on this earth: The ideal concerns both the individual human being and societies of men. He puts forward a general definition of civilization that a civilized society is exhibiting the five qualities of **truth, beauty, adventure, art, peace.** Today, firms are beginning to adopt a broader conception of their goals including stock holders, employees, communities and the natural environment. Whitehead’s notion of adventure is relevant to innovation and new product development in business. Whitehead (1933) indicates that “without adventure civilization is in full decay (p. 279).” Without innovation and adventure of entrepreneurs the firm will decline. Whitehead (1933) points out that adventure of imagination leads to the physical exploration and realization of the adventure of imagination. According to Mesle (2008) the world is a deeply interwoven relational process in Whitehead and can change the way we feel and act. Therefore, we need a coherent vision of our world which requires including different perspectives from many fields such as science, culture, philosophy, religion and people.

Hosinski (1993) indicates that “there are two types of process: transition (from one actual entity to another) and cocrescence (development within one actual entity). Efficient causation concerns transition; final causation concerns concrescence. Both are in the final real facts of our experience (p. 96).” Hosinski (1993) summarizes the relationship between efficient cause and final cause by citing Whitehead’s Modes of Thought (1938).

If we stress the role of environment, this process is causation. If we stress the role of my immediate pattern of active enjoyment, this process is self-creation. If we stress the role of the conceptual anticipation of the future whose existence is a necessity in the nature of the present, this process is teleological aim at some ideal in the future. This aim, however, is not really beyond the present. For the aim at the future is an enjoyment in the present. It thus effectively conditions the immediate self-creation of the new creature (Whitehead, 1938, p. 166).

This quote clarifies the concept of self-creation (cause), efficient cause and final cause and relationship between them (see the creative process above).

Third, the problem of permanence and change involves two aspects in Whitehead. The first aspect is about the dominant Western philosophy, the “subject-predicate forms of thought” (Whitehead, 1929/1978). In traditional Western philosophy, the subject stays the same (permanence) and predicates are changes. For example, pencil is yellow, white and green, short, long etc. The pencil is not changing and characteristics of the pencil are accidental. They happen to be green or white. Whitehead abandoned this subject-predicate form of thought and replaced morphological description with description of dynamic process. Whitehead contrasts permanence and flux. He proposes permanence to analyze flux and eternal objects determine the characteristics of flux. Mesle (2008) offers a case of our body. If we took away all the parts of body, there would simply be nothing left. The body simply is all of those parts together, changing as its parts change. We may also draw the firm as another example. The firm is abstract and the firm is nothing other than all kinds of actual people. If we take away all the people, there is no firm. The firm is all of the people together. These examples also illustrate the change from macro prudential as well as micro prudential. The change can come from the whole as well as the parts. We now introduce Whiteheadian creativity.

Creativity, according to Whitehead (1929, 1978), is creative advance into novelty (i.e., transforming of something into something better) and a key feature of his creativity is the actualization of potential (possibilities). Young (1985) defines creativity as actualizing our potential, involving the integration of our logical side with our intuitive side. It can involve an advance in thought but retain links with the past. Young’s definition of creativity aligns with Whitehead, whose initial work was published in 1929. We employ Whitehead’s creativity concept in our paper. Whitehead’s creative imagination implies that an individual connects dots, combines various ideas and makes choices on relations with other individuals and ideas (eternal objects). According to Shaviro (2009), Whitehead (1929, 1978) and Heidegger (1959) ask two important questions in philosophy. German Philosopher Heidegger (1959) asks the question of being, “Why is there something, rather than nothing?” Heidegger’s question is about the ontology or being of the firm in economics. Why is there a firm rather than a market? This question has been a fundamental question in theories of the firm because it deals with the origin and foundation of the firm. The transaction cost theory of the firm (Coase, 1937; Williamson, 1975, 1985) further clarifies market and hierarchical organization. This question boils down to the make or buy strategies of the firm and clarifies the concept of being of the firm. The clarification of this question took almost fifty years and has helped develop the field of supply chain management (Williamson, 2008).

Whitehead (1929, 1978) asks the question of becoming, “How is it that there is always something new?” For Whitehead creativity is the basic force of the universe. Shaviro (2009) points out that Whitehead breaks the tradition of philosophy from the orientation toward the past to the future. The new is the fundamental concept and the production of novelty is an ultimate metaphysical principle in Whitehead. The emergence and creativity are oriented toward the future. Shaviro’s (2009) interpretation on Whitehead’s futurity offers the nature of Whitehead’s future orientation.

For, just as the past remains active within the present by means of the “vector transmission” of efficient causality, so the future is already latent within the present, thanks to the “multiplicity of pure potentiality” (Whitehead, PR, p. 164) that can be taken up by the living actual occasion. “The past is a nexus of actualities” (Whitehead, PR, p. 214); it is still actual, still a force in the present, because it is reproduced as a “datum,” physically prehended by each new actual occasion. On the other hand, the future is available, without having yet been actually determined: it takes the form of eternal objects, or “pure potential” that may be conceptually prehended (or not) by new actual occasion. Whitehead says, therefore, that “the future is merely real, without being actual (Shaviro, 2009, p. 97).

The vector of transmission of efficient causality remains within the present. We need to discover efficient causes to understand current events. Whitehead’s futurity implies that the future is available now as possibilities. Deeper understanding of the vector transmission of efficient causality can provide foresight on the direction and forces of changing events. Whitehead (1933) also indicates that business organizations quantify the quality of change in the air. Entrepreneurs sense the feeling on the quality of change in the air and quantify it for innovation and formation of new firms. Capturing the vector transmission of causality requires processing of information to discover patterns and actual entities that caused change in the new actual entity. Lately, big data processing has been emerging as a way of capturing and detecting patterns and future directions of events. Data science has emerged as an academic discipline and it draws growing attention from both academicians and practitioners.

Whitehead (1929, 1978) argues that events are constantly becoming. Griffin (2007) explains that Whitehead’s phrase constant becoming refers to the fact that “now” does not stand still, but always divides a different set of events into past and future. Therefore, there are infinitely many “nows” and they divide past and future. Shaviro (2008) points out that “nows” are interstices between present and future (p. 97). New trees and plants grow from the interstice in the rock and so do new actualities. The present plays as an interstice in Whiteheadian creativity. Whitehead’s appetition is an appetite (desire) in the present and an urge towards the creative advance. The firm’s appetite can be **profit, value and purpose**. Firms make decisions (choices) to fulfill the appetite and the potentiality will be actualized. Shaviro (2008) points out that “nows” are interstices between present and future (p. 97). We observe that new trees and plants pierce through the interstice in the rock and the present as an interstice is, therefore, important in Whiteheadian creativity.

Griffin (2007) further clarifies the concept of a settlement of the past and future. According to him the past is fully settled, while the future involves potentialities still to be settled. The vector transmissions of efficient causality on the past offer understanding of the settled past. He points out that the present, the “now” between past and future, is assumed to the time in which potentialities are being settled. Wallick (1980) states that “the time-span, or temporal duration, of an occasion is its present; it covers both its potentiality and its actualization” (p. 104). Wallick (1980) further points out that the epoch is the unit of Whiteheadian time and an epoch cannot be understood as an instant. An epoch can be a minute, hour or month. It varies depending on what the occasions are. Therefore, Whitheadian time is relative compared to Newtonian absolute time. Potentialities are latent in the present. Therefore, the future is available or immanent at the present as potentials (possibilities). Mesle (2008) illustrates how decisions or making choices create the future. “The future does not exist and the future must be created. The creatures of the present must decide between many **possibilities for what may happen, and their collective decisions bring the moment into being”** (Mesle, 2008, p. 7). Shaviro (2009) points out that both the physical causality and making choices from eternal objects are involved in Whitehead’s creativity.

We cannot ignore the physical chain of causality that is at work in a given event; but we do not want to stop there. We also “require to understand,” as Whitehead says (cited in Stengers 2005, 42), the reason behind this chain of causality, the “decision” that makes of it what it is…. Whitehead warns us that such ‘decision’ cannot be construed as a causal adjunct of an actual entity. It constitutes the very meaning of actuality” (1929/1978, 43). (Shaviro 2009, p. 25).

This citation illustrates the importance of the decision in creativity. Whitehead (1933) points out that “progress is founded upon the experience of discordant feelings. The social value of liberty lies in its production of discords (p. 257).” **Because of the created discords** the creatures of the present face crisis, confusion, frustration and chaos (Hartshorne and Peden, 1981) in making **choices** and thus time is not linear. However, **the produced discords** are sources of creativity because discords are diversities. Disjunctive diversity will converge into conjunctive unity and novelty through interactions among entities. The beauty is our final cause and beauty in Whitehead is harmony and proportion. The future outcomes are probabilistically distributed because identifying efficient causes is not exact science and the efficient cause may not be the sole determinant of outcomes. Time is moving and events are dynamic and becoming. The decisions or selections are about actualizing potentials along with efficient causes. Actual entities are physical causes and eternal objects are potentials, alternatives and contingencies for becoming of actualities (Shaviro, 2009). A potential cannot be a cause because it not actual. An organization may not actualize the most valuable potential in making choices among alternatives and not tap the reservoir of possibilities. Therefore, making the right choices and decisions in individuals, organizations and nations is crucially important in creating the better future of an individual, an organization, a nation and the world. This is the nature of Whitehead’s creativity and his quest for beauty which is harmony and proportion. Therefore, Whitehead’s creativity and beauty can be applied to solve problems in all entities including individuals, organizations and the nation. When these entities actualize potentials, they reach self-enjoyment or satisfaction.

Events are conditioned to change and the conditions involve actualities and nature in Whitehead. Mesle (2008) states that Whitehead looked more deeply at the character of life as novelty. Novelty is the root of life and essential for our survival. An additional aspect of permanence is eternal objects. Eternal objects (pure potentials) are permanent and remain as potentialities even if they are actualized. Pure potentials (possibilities) can be actualized again and again without being exhausted as they are actualized. Eternal objects (pure potentials) are crucially important in understanding Whitehead’s creativity. Shaviro (2009) points out that Whitehead’s eternal object is akin to the Kant’s transcendental and the Deleuze’s virtual. Shaviro (2009) clarifies concepts of the transcendental, virtual and potential.

It (an eternal object) remains available for other events, other actualizations. This is another mark of the transcendental. As Deleuze similarly says, referring both to Kantian Ideas and to his own notion of the problematic virtual, “true problems are Ideas, and …these Ideas do not disappear with ‘their’ solutions, since they are indispensable condition without which no solution ever exist” (Deleuze 1994, 168). Eternal objects and problematic Ideas never disappear (Shaviro, 2009, p. 43).

Whitehead defines two meanings of potentiality: **general (pure) potentiality and real potentiality.** Pure or general potentialities are referred to eternal objects and eternal objects are permanent. The permanency of an eternal object may imply that the eternal object remains as a potential even if it is employed in creativity. Whiteheadian philosophical problems are about changes, creativity and innovation in business and economics. Whiteheadian creativity is an open-ended rational and interactional process (Hartshorne and Peden, 1981) and it endures. Weber (2016) makes an important point on Whitehead’s process: “Actual processes are never twice the same because they depend on their environment and because this environment is always changing” (Weber, 2016, p. 359). Continuing improvement in today’s business parlance is also an open-ended process and will endure because of high velocity of environmental change in today’s business. Business innovation and change are conditioned to environments. The firm faces problems as economic environments change. Ideas for solutions to problems are indispensable in solving problems. Ideas are raw material for innovation and formation of new firms (new businesses). Deleuze’s notion of the problematic virtual is akin to the conception of Popper’s (1982) evolutionary epistemology. Popper (1982) argues that all organisms are facing problems and they are constantly, day and night, engage in problem-solving. A solution eliminates errors, but the new solution comes with new problems. This is the reason why entities involve in continuous innovation and creativity.

He states ‘creativity’ as actualization of the potential. Therefore, we need to begin with clarifying two meanings of potential: a) real and pure potential. For Whitehead, real potentiality is conditioned by the data provided the actual world (Whitehead, 1929/1978, p. 65). He clarifies his real potentiality further:

General potentiality is absolute, and real potentiality is relative to some actual entity, taken as a standpoint whereby the actual world is defined. It must be remembered that the phrase “actual world’ is like ‘yesterday’ and ‘tomorrow,’ in that it alters its meaning according to stand point. The actual world must always mean the community of all actual entities, including the primordial entity called ‘God’ and temporal actual entities (Whitehead, 1929/1978, p.65).

Wieman (1946), who is one of the prominent students of Whitehead, points out that possibilities are created by the creative events. The created possibilities are “real potentials” for Whitehead (PR, 1929/1978, p. 65). A real potentiality is the datum for creativeness and every being is a potential for becoming. Scientists create new possibilities for businesses and new technologies are sources of changes and innovation in businesses. Therefore, Whiteheadian creativity involves the actualization of both real and pure potentialities.

Since Whitehead’s creativity places novelty, innovation and change at the center of the universe we can apply it for establishing foundations of the creative economy. The Whiteheadian universe consists of events and processes and for Whitehead (1929/1978) all events are becoming. The essence of his philosophy of organism is creativity, and creativity is the ultimate reality. The nature of the universe is becoming. Shaviro (2009) points out that Whitehead’s philosophy is grounded on events, becomings, and continual change and novelty. Whitehead’s process philosophy fits well into today’s business buzzwords, “continuous improvement or innovation”. We, therefore, employ his concept of creativity in this paper to explain phenomena in innovation and entrepreneurship. Whitehead (1978) redesigned language in his explanation of creativity. He stresses that philosophy expresses the larger generalities in metaphysics, and the larger generality is creativity. He further argues that creative advance and creative imagination, key elements in creativity, can be taught. According to Fetz (1990), “creative advance is the Whiteheadian term for the totality of natural events, for the current of cosmic happenings, insofar as it is not simply reproduction, but a production of new actual entities of a higher level” (p. 202), the transformation of something into something better.

Whitehead (1929, 1978) further argues that free imagination, controlled by the requirements of coherence and logic, plays a very important role in creativity when we seek larger generalities in philosophy. He uses an analogy of the flight of a plane for creative imagination in discovery:

The true method of discovery is like the flight of an aeroplane. It starts from the ground of particular observation; it makes a flight in the thin air of imaginative generalization; and it lands for renewed observation rendered acute by rational interpretation. The reason for the success of this method of imaginative rationalization is that, when the method of difference fails, factors which are constantly present may yet be observed under the influence of imaginative thought. Such a thought supplies the differences which the direct observation lacks. It can even play with inconsistency; and can thus throw light on the consistent, and persistent, elements in experience by comparison with what in imagination is inconsistent with them (Whitehead, 1929/1978, p. 5).

The firms and all organizations are entities in the universe and are a part of the universe which is becoming. Therefore, creativity can be applicable to the discovery of entrepreneurial opportunities. Since theories require imagination (Casson, 1998), the influence of imaginative thought is critical in constructing a theory in the market for entrepreneurs. Potential entrepreneurs start from the ground of particular observation on entrepreneurial opportunities, make a flight of imaginative generalization, and land for renewed observation rendered by rational interpretation. This method can throw light on whether imagination is inconsistent with observation or reality. The entrepreneurial theory based on imagination needs to be consistent and logical and be examined by the applicability of its results beyond the restricted observation, as we can then construct generalization in the market for entrepreneurs. We believe that Whitehead’s choice of words, imaginative rationalization is a crucially important point. He states that “rationalism is an adventure in the clarification of thought, progressive and never final” (Process and Reality, 1929/1978, p. 9). We continue to clarify our thought on creativity in economics and management and make progressive improvement.

In Whitehead’s philosophy of organism “the ultimate is termed creativity” (PR, 7). Whitehead (1929, 1978) clarifies creativity in his Process and Reality (PR): ‘Creativity’ is the universal of universals characterizing ultimate matter of fact. It is that ultimate principle by which the many, which are universe disjunctively, become the one actual occasion, which is the universe conjunctively. It is in the nature of things that the many enter into complex unity. …. ‘Creativity’ is the principle of novelty. Actual occasion is a novel entity diverse from any entity in the many which it unifies. Thus, creativity introduces novelty into the content of many, which are the universe disjunctively. The ‘creative advance’ is the application of this ultimate principle of creativity to each novel situation which it originates (Whitehead, 1929/1978, p. 21).

Here, Whitehead points out that creativity is the nature of the universe and the universe consists of many actual occasions. Although Whitehead is neutral on creativity which may result good or bad outcomes, Fetz (1990) argues that the creativity advance is transforming something into something better. What do we mean something better? Whitehead favors the fidelity of open ended search for what is true, good and beautiful. Mesle (2008) points out that such a search at its best engages us continually in a relational process. Therefore, we can surmise that the ultimate criteria for innovation or judgments for creativity are goodness, truthfulness and beauty. Of course, profits are an important criterion for judgment in economics.

Creativity is always found under conditions, and described as conditional (PR, 31). For Whitehead, creativity is conditioned by social environment (p. 203). Whitehead’s ontological principle states that there is nothing which floats into the world from nowhere. Actual occasions are reasons (see the creativity process above). Actual entities make up Whitehead’s society. He stresses that creativity is caused by self-cause, efficient cause and final cause, and argues that creativity is social. These are ideas from Whitehead’s speculative philosophy and we can apply them in economics and management. If we apply these causes to a business firm’s change and innovation, the firm is a continuing and ongoing entity. Firm’s change, innovation and creativity are accidents of environments. The high velocity of changes in today’s business and economic environments are causes for business firms to be creative. The business environment consists of new technologies, regulations and markets such as suppliers, customers and competitors. We often observe that market crises such as the 2008 subprime mortgage crisis cause firms to change (Park et al. 2012).

First, Whitehead (1929/1978) points out that “an actual entity feels as it does in order to be the actual entity which it is” (PR. P. 222). He then argues that an actual entity satisfies Spinoza’s self-causation (*causa sui*). The self-cause implies that nothing comes from nothing. The firm’s employees come from their own past and have innate drives (appetitive) to be creative (self-cause). This ontological principle in Whitehead elucidates the existence of the firm and explains its own existence.

Second, physical causality indicates that the past actualities are reasons for whatever happens. Employees in the firm also interact with each other, competitors, suppliers, customers, science communities, regulators and nature. Interactions with these entities imply that employees in the firm affect each other. These entities are interrelated (principle of relativity). Firms use raw materials, labor, capital and technology and discharge carbon dioxide into the atmosphere as they produce products. Air and water pollution are examples of the firm’s interactions with nature. Physical interactions among these inputs elicit something new.

Third, people in the firm make changes to increase profits (final cause) or to supply what customers want. According to Shaviro (2009) Whitehead’s ideal for final cause (teleology) is beauty and for him the beautiful is about harmony and proportion (Shaviro, p. 152). It is said that Apple’s founder, Steve Jobs, stressed the importance of beauty in product design and simplicity of technology (Issacson, 2011). He worked with designers and engineers to bring about a beautiful and easy-to-use product. Visions of the firm are akin to the final cause in Whitehead and the firm’s visions established by organizational members or leaders who provide guides for resource allocation decisions (choices) and these decisions help create new products and services. Therefore, the principle of process and final cause are working together in new product development. In other words, novelty is caused by the principle of process and final cause.

**2.2 Creativity in psychology and sociology**

Gibson's (1977) affordances are akin to structures in sociology and we discuss them together. Gibson (1977) argues that the environment constrains what the animal can do within its limits, and how the human animal can alter the affordances of environment. Structure in sociology (Giddens, 1979; Bourdieu, 1977) refers to constraints and enabling; it is like Plato’s receptacle (Malvestiti, 2011). Glăveanu (2012, 2014) argues that creative action is distributed among multiple actors, creations, places and times. We may develop a creativity model incorporating social environment, affordances, structure and distributed creativity. Operationalizing Whitehead’s creative imagination and creative advance may lay foundations for the creative economy. We may bring additional perspectives on creativity from psychology and sociology.

Psychology has provided several valuable perspectives on creativity. First, Gibson’s (1977) affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill. Physical affordances of air and water enable the animal to breathe and swim. Whitehead (1933) also cites psychology’s phraseology, “Every action is the product of conditioned reflexes.” Environments are conditions. Firms likewise construct physical structures to enable their creative employees to be more creative. For example, The Apple Company is constructing a new facility designed to generate more social interactions or engagement among employees, because interactions have been found to be an important factor for creativity. Whitehead (1929, 1978) concurs that creativity is conditioned by physical environment (efficient cause); affordances are equivalent to factors of efficient causes in Whitehead. Water flows in a river and the banks constrain the flow of the river, but it can overflow because of flooding which relieves the constraint and becomes creative or changing. We often state that we can’t cross the same water twice. This implies that the actuality continues to change.

Second, distributed creativity has become prominent for creativity discussions in psychology. Scholars in distributed creativity stress the importance of groups (Sawyer and DeZutter, 2012). They define “distributed creativity to refer to situations where collaborating groups of individuals collectively generate a shared product” (Sawyer and DeZutter, 2012, p. 82). According to Glăveanu (2012 and 2014), creativity is distributed among people, objects and places. He argues that it is important to recognize that the creating person does not create in isolation, and that creative action extends into the world of other people. Therefore, group creativity or creation as co-creation needs **collaboration** among creatives. Glăveanu (2014) indicates that social interaction has become an emergent process in co-creation, as **collaboration** requires both structure and openness for creative outcomes to be generated. Brainstorming and ideation have been the most prevalent such structure in psychology. Park et al. (2012) illustrate how ideation facilitate the new idea generation.

Affordances in psychology, structure in sociology and creativity in Whitehead have some common elements. Structure in sociology has emerged as an important field of research in recent years (Bourdeu, 1977; Giddens, 1979). For Whitehead (1929, 1978), creativity is always social, involving many creatives who interact and relate each other. Individuals choose collaborating groups and relationships. Structure in sociology and management is akin to the concept of physical affordance in psychology. Both structure in sociology and physical affordance in psychology deal with behaviors of human beings facing constraints in terms of individuals and groups. Structure in sociology involves the relationship between the structure and agents. Giddens (1979, 1984) refers to structures as rules and resources. He regards the rule of social interaction as “techniques or generalizable procedures applied in the enactment/reproductions of social practices” (1984, p. 21). He considers three dimensions of social structure in his structuration theory: signification, legitimation, and domination. (For detailed discussions on knowledge creation structures, readers may refer to Park’s et al. (2015a) article on firms’ knowledge creation structures.)

Structures can be both social and physical. Giddens’ structure is social, whereas 3M Company, Pixar and Apple’s new buildings and campuses which are built to be conducive for creativity are physical structures. Physical structure is an affordance for Gibson (1977). Structure involves an antinomy: It enacts and enables human agents on one aspect and constrains actions of the agent on the other aspect (Bourdue, 1977, 1979). Addressing this antinomy requires careful design in structure and designers of the structure include elements of reflexivity in the structure (Park et al. 2015a). For example, The Pixar Company conducts postmortems to find out what went well and what went wrong in a new production of an animation picture (Catmull, 2008). This practice continues to improve the structure and avoid the same mistakes in the future. It can also mitigate the problems in antinomy of the structure. Amabile (1988) found that “freedom was the most prominent environmental promoter of creativity, and constraint was the second most prominent environmental inhibitor of creativity” (p. 148). She argues that structure requires a delicate balance between freedom and constraint. We have discussed what social and psychological conditions are favorable to creativity. The organization needs to provide those conditions when designing the structure for creativity. We construct a creativity model by putting together relevant abstractions on creativity in philosophy, psychology and sociology.

**3. Creativity Model**

As discussed above, creativity in Whitehead originates from creative imagination. For Whitehead (1929/1978), creative imagination is stemming from physical conditions and corporeal experiences are sources of mental experience. His primordial proposition is that creativity is conditioned on negation or destruction of given data. **The negation of the given** is the fundamental proposition of creativity in Whitehead. This point is well practiced by Toyota. Toyota Company is known to ask customers about what the problems in their new products are rather than just how good their products are. This has become a practice in automobile industry. When they know what is not good they can make changes. Wonder is the beginning of thinking “creatively.” This proposition may be akin to critical thinking in today’s creativity discussions. Sociology and psychology offer factors that are requisite for the creative structure. The creative model ought to involve creative imagination of creatives and creative organizational structure. We present factors in creative imagination and creative structure in Figure 1. We propose a five Cs model based on ideas from philosophy, psychology and sociology discussed above: three Cs from the creative imagination of creatives and two Cs from the creative structure in creativity. Creatives or creative individuals draw creativity from creative imagination, and the organization creates an environment for creatives to enact creatively. Creativity is the raw material for innovation (see Figure 1). Entrepreneurs innovate products, processes and services with the raw materials (creativity and knowledge).

Figure 1 is about here.

**3.1 Five Cs creativity model**

Stengers (2008) points out that the task of philosophy, according to Whitehead (1978), is engineering relevant abstractions. A creativity model needs to engineer relevant abstractions for creativity. We engineer relevant abstractions from philosophy, psychology and sociology in constructing our creativity model, which is called the combination or the hybrid (Halewood and Michael, 2008). Halewood and Michael (2008) argue that “in the actual occasion of academic practice, completion or satisfaction is reached when sufficient examples are collected to establish the multiplicity manifested in the poly-ingression of eternal objects and their interplay with actual entities” (p. 51). The multiplicity in novelty emerges in the interplay of such entities and eternal objects (Halewood and Michael, 2008). We will first engineer relevant abstractions and then provide a few practical examples to support the model. For Whitehead (1929/1978), creativity is actualization of possibilities (real and pure potentials). Perhaps, we can say that creativity is all about “C.”

 Creative imagination: Connectivity

 Combination

**Creativity** Choice

 Creative structure: Collaboration

 Coordination

We propose that creativity in organizations can be thought of from two broad perspectives: creative imagination and creative structure. Creative imagination involves creatives, and members of the organization creates a structure or affordance in the organization. Twohill (2012) points out that good ideas sell product, while great ideas change lives. Creativity is about creating great new ideas. The Google Company, for example, sees creativity as a way of solving problems – large and small. As stated in our earlier discussions on Whitehead, Deleuze and Popper ideas are requisite for solving problems. Traits of creatives include having curiosity and wonder in their chosen field (Whitehead, 1929/1978, Twohill, 2012). Twohill (2012) argues that curiosity and creativity are never apart and creatives are genuinely interested in discovering something new for solving the problems humans face. The ability to create is the ability to solve problems creatively. Creativity is the raw material of innovation (Lombardo and Roddy, 2010) and entrepreneurs carry out innovation (Drucker, 1985). In human history, entrepreneurs have solved most of the problems that we have faced. We argue that creativity then is all about “C”: Connectivity, Combination, Choice, Collaboration and Coordination. This Five C’s framework is comparable to ideas in the four P’s framework in Rhodes (1961) and the five A’s framework in Glăveanu (2012). We draw relevant abstracts for creative imagination from Whitehead and for creative structure from Glăveanu (2012) and Giddens (1979).

First, **connectivity** in creativity is connecting dots among what, at first glance, might appear to be unrelated activity or data (Lombardo and Roddy, 2010). Csikszentmihalyi (1996) states that creative people love to make connections with adjacent areas of knowledge. Whitehead’s connexity is one of the important aspects in creativity. For Whitehead, everything in the universe is interconnected and relational (1929/1978, 1938). Events are concrescencing. Information and communications technology (ICT) has made the connection easier and inexpensive. Numerous new businesses are formed by connecting different fields that are seemingly not connected and ICT connects them with ease. We can see creativity in process in philosophy; biology and physics likewise are connected in terms of the emergence of something new. Several examples demonstrate these processes. Whitehead’s (1929, 1978) novelty involves connecting the past, present and the future.

Whitehead’s fusion or connection between subject and object, physical and mental poles are creativity. When we come to have deeper understanding on becoming we may develop our foresights on creativity (Whitehead, 1933). Mesle (2008) points out that Whitehead’s imagination is basing on the facts of our own experience. Mesle (2008) states that we remember our past, anticipate our future, and are experiencing our present. We interact with economic environments in purposeful ways and make choices to solve problems we are facing at the present. The anticipated future outcomes will depend on choices we make when we face problems. We are engaging in the process of creativity during the present. We reason and imagine various connections based on the facts or our experiences. We test our imagination based on the facts of experiences. Integration of reason and experience is Whitehead’s (1929, 1978) creativity. We can surmise that Newton imagined various possible reasons on his experience when the apple fell on him. Whitehead states that “all productive thought has proceeded either by the poetic insight of artist, or by the imaginative elaboration of schemes of thought capable of utilization as logical premises (PR, p. 9).”

There are many experiences arising in each new moment and Whitehead’s (1929, 1978) novelty involves connecting the past, present and future. For Whitehead, the present is duration and not a moment in time. For example, the director of design at Etienne Aigner Company takes her team to art museums, to movies, traveling, and even to a pottery class. She is offering experiences to her creative team for a duration of time and has them connect their experiences of those various activities in designing new products. Lehrer (2012) provides examples for connecting the dots for creativity among scientists and artists. Nike’s advertising agent, Dan Wieden, was known for coming up with his most successful ad campaign tagline, “Just Do It,” from the last words of a convicted murderer, Gary Gilmore, who said “Let’s Do It” as he was waiting for his execution to commence. Hedge fund manager, George Soros (2008) professes that he took a philosophy class from Karl Popper during his senior year in college and learned fallibility of knowledge. He developed hedging on his position in investment since his knowledge (fund position) is fallible. Lately, the Enterprise Immune System in the Darkface Corporation connects the human immune system to cyber security. The Darkface Corporation (2017) developed a cyber security system and referred to it as the Enterprise Immune System that connects the human immune system to cyber security. According to the Darkface Corporation their cyber security system works like the human immune system by learning about what is normal for the body, identifying and neutralizing outliers that do not fit that evolving pattern of normality. The Enterprise Immune System can see threats as they are happening by combination of AI (artificial-intelligence) techniques such as machine learning. These examples connect dots among unrelated fields. The creativity model we are proposing connects philosophy, psychology, sociology, management and economics.

Second, creativity **combines** diverse ideas and knowledge. Creatives working together benefit from diversity in education, gender and specialties, because more combinations can be generated when the creative team members are diverse. Diversity offers potential for numerous combinations of ideas. Creative and innovative companies such as 3M, Apple, Google and Dow Chemical purposefully hire their new employees from many different universities and backgrounds, as diverse experiences offer better insights on reality which is a noumenon. A noumenon can be better understood by observing from diverse perspectives. Diversities become sources of creativity. Nonaka and Takeuch (1995) propose combinations as creativity in their knowledge creation model and combinations of various ideas and explicit knowledge create new ideas and knowledge.

Third, creativity in the organization is enhanced as creatives **choose** their own projects or have leeway to engage in their own projects. Freedom to choose unleashes their hidden talents and empowers creatives to create something new and better. Creative firms also allow employees freedom to allocate their time. This provides intrinsic incentives. Whitehead (1978) understood novelty as inherently involving freedom of choice. Mesle (2008) points out that Whitehead’s freedom means cutting off one possibility and choosing the other. Novelty depends on the choices of individuals and the organizational leaders who make them. Creativity is the process of making these choices (Whitehead, 1929/1978) an important factor in creativity, as the outcomes of creativity depend on the creative process. Choices can be individuals’ freedom to make a choice in work arrangement, team and relationship with members in the organization. Whitehead’s eternal objects discussed above imply alternatives, contingencies, and situations that could have been otherwise (Shaviro, 2009). According to Whitehead, “each actual entity creates itself, in a process of decision, by making a selection among potentialities offered to it by eternal objects” (Shaviro, 2009, p. 42). Potentialities play a transcendental, quasi-causal role in the constitution of the actual world. Therefore, individual choices are important determinants of creativity and choice problems span many regions. One important aspect is making a work arrangement choice. Individuals create a team arrangement and creativity may depend on the nature of the arrangements. Human experiences offer evidences that connections and choices can be erroneous. We need to learn from our errors. Amabile (1988) found freedom (choice) is the most prominent promoter of creativity. Freedom to choose your own project and the type of possibilities to be actualized are crucial in creativity.

Fourth, **collaboration** involves both internal and external aspects of creativity. Today, major creativity is accomplished by teamwork. As creativity is a process (Csikszentmihalyi, 1997), the question is how to assure that team members collaborate. The Apple CEO, Tim Cook (Rose, 2014) points out that team members need to interact; these interactions can take place in a physical or virtual space. Steve Jobs (Isaacson, 2011; Catmull, 2008) was known for his emphasis on interactions, and he designed physical facilities in Apple and Pixar (Rose, 2014; Catmull, 2008) to be conducive for casual encounters among all levels of employees. Brainstorming and ideation have been predominant practices in bringing out ideas from employees. Though brainstorming encourages bringing out ideas, it has failed to contribute significantly to creativity if there is a lack of employees’ critical interactions (Lehrer, 2012). Critical interactions cause to result in discords among team members which generate more intensive interactions. As members of a creative team interact more intensively outcomes may become more creative. Tim Cook (Rose, 2014) argues that discords are requisite in creativity team. The organization needs to structure employees’ interactions. Creatives with diversities in skill sets, education and specialties must interact with each other with respect, trust and honesty. Cook (Rose, 2014) argues that intrinsic incentives that help solve human problems drive The Apple Company’s creativity. However, Twohill (2012) argues that creatives sharing their imagination ultimately requires shared ownership of the company’s brand. The organization needs to design a hybrid incentive structure including intrinsic and extrinsic incentives, as well as individual and group roles and rewards, to realize the potential of individuals and teams. The question in an organization is how to build organizational capabilities to uncover possibilities, unlock capabilities that are uncovered, and unleash the capabilities to enable collaborative and cohesive effort (Lombardo and Roddy, 2010).

External collaborations have become increasingly important as new business practices. The Apple Company is known to have nine million registered developers (Rose, 2014), and The Google Company has Creative Commons (Twohill, 2012). The Dow Chemical Company has Idea Central to mobilize creative ideas internally and scouting departments in all fields of new product development to collaborate with external stakeholders (Park et al., 2015a; Whiteman, 2013). Creative firms foster an incredible momentum of creative energy all over the world by creating structures for external collaboration (Twohill, 2012; Rose, 2014). Collaboration also encourages and engages the firm’s creatives to connect with customers, suppliers and other stakeholders. Collaboration fosters co-creation, and this collaboration is an actualization of Whitehead’s concrescence for creating new products and services in business organizations (Whitehead, 1929/1978). Park et al. (2015a) list factors that are requisite for the organizational structure in eliciting knowledge from individuals; those factors may be relevant to the structure in our creativity model. **Interactions** and sharing ideas among creatives are known to create energy in the organization (Whiehead, 1929/1978; Argote and Miron-Spector, 2011; Park et al. 2015a). Energy in the living organism is a driving force for change and innovation. Information and communications technology reduce collaboration cost and foster global collaboration (Park et al. 2015b).

We must be reminded that for Whitehead, systems, firms and governments are abstractions incapable of creativity and only individuals constituting those organizations are creatives in the final sense. However, individuals create themselves out of their relationships. As we change those relationships, we have more creative relationships out of which to creative ourselves and each other. The construction of structure is crucial because it can cause different relationships among creatives. We do act differently in different systems and structures because those descriptions point to different kinds of actual relationships between actual individuals. Therefore, when individuals creatively chose to create themselves and their relationships with each other in certain kinds of novel ways, new possibilities for creative choice and relationships are actualized.

Fifth, **coordination** in creativity is about coordinating creative activities in an organization. Since creativity is distributed (Sywyer and DeZutter, 2009; Glăveanu, 2014), coordination is requisite. Tim Cook (Rose, 2014) points out that the leader in a creative firm needs to control noise in corporate meetings for creative interactions among creatives. All creative team members need to work for the same goal. He argues that the goal should be intrinsic in nature. The Apple Company pursues elegance and simplicity in their designs of new products, because improving the lives of consumers is the company goal. Twohill (2012) points out that creativity is most powerful when it has a purpose. The focused purpose of the firm drives employees to innovate, and this purpose is the final cause for Whitehead (1929/1978). As stated before there is a positive relationship between the efficient case and final cause. Control management is traditionally used to direct the firm to profit maximization. However, control tends to dull intrinsic drives and creativity of organizational members.

**3. 2 Creatives and creative structures**

The research question in this study is what the relationships between creatives and creative structures are. Structure and agent in sociology is about subject and object in Whitehead. The study of the social is the study of subjects and objects (Halewood, 2008). We get to choose subjects and objects. Creatives are subjects and structures are objects. The structure in sociology is a social structure (Giddens, 1979, 1984) and structure in psychology (Gibson, 1977) is a physical structure (physical affordance). Halewood (2008) states that structures cause different kinds of agents (subjects) and agents cause different kinds of structures. Bourdue (1977) argues that structures are enabling and constraining agents. This is his antinomy of the structure and this antinomy has been addressed by making changes based on reflexivity (Those who want see the detailed discussions on this may refer to Park et al., 2015a). Whitehead (1927) makes a similar point:

The art of free society consists first in the maintenance of symbolic code; and secondly in the fearless revision, to secure that the code serves those purposes which satisfy an enlightened reason. Those societies which cannot combine reverence to their symbols with freedom of revision, must ultimately decay either from anarchy, or from the slow atrophy of a life stifled by useless shadows. (Whitehead, 1927, p. 93).

This statement does not directly address issues involved in structural changes, but it does indicate the valorization of the reverence to structure and freedom of revision. There are two issues regarding the structure: 1) the design of structure that is conducive for creativity; 2) innovation in structure as agents experience that the structure is a source of undue constraints. Weber (2016) makes an important point on Whitehead’s process: “Actual processes are never twice the same because they depend on their environment and because this environment is always changing” (Weber, 2016, p. 359). Designing a proper context-specific structure is necessary in the process of creativity. For Whitehead, the structure needs to be conducive for interactions among creatives and conditional to environmental changes and social relationships. It is possible that creatives may create different relationships each time they involve in creative events under the same structure as Weber (2016) points out.

Shaviro (2009) argues that physics, genetics and biotechnology are changing rapidly and require us to abandon everything we think we know, and make singular judgements that cannot be subsumed under preexisting criteria. Shaviro’s questions on the new categories to comprehend the new biology seems relevant here.

The question we should be asking, therefore, is not: How can we establish valid criteria and standards? But rather: How can we get away from such criteria and standards, which work only to block innovation and change? (Shaviro, 2009, p. 16).

Similarly, we can ask: How can we get away from such structure which works only to block innovation and change in business organizations? We need to constantly ask this question and address the problems in antinomy of structure. We examine a few business creative structures in Korea in section 6.

**4. Creativity and Entrepreneurship**

Ideas shape actions (Mesle, 2008, p. 3) and ideas generated by creative imagination shape actions of entrepreneurs. Therefore, no idea is inadequate and all ideas are respected in the process of creativity. Diversity is valued in firms where people design organizational structures to generate diversity (Park et. al 2015a). Knowledge is relevant to Kirznerian entrepreneurs, and creativity is relevant to Schumpeterian entrepreneurs. We describe them here in detail. Gurteen (1997) points out that creativity and innovation concern the process of creating and applying new knowledge. As stated before, knowledge and creativity are the raw materials of innovation that are carried out by entrepreneurs.

**4.1 Creativity and Schumpeterian entrepreneurship**

Casson (2014) argues that entrepreneurship researchers need to give greater attention to information processing, a very important step for the new entrepreneur. Information on density of the same type of business in the area, newly emerging technology and new regulations provide sources for new entrepreneurship. Cognition of knowledge flow (Schiuma, 2009) offers entrepreneurial opportunities to potential entrepreneurs. Information processing may lead to better understanding the universe. As stated by Whitehead the universe consists of vast epochs. Whitehead (1933) argues that when we examine the structure of the epoch of the universe the structure exhibits successive layers of types of order (p. 199). The percipient (entrepreneur) may grasp the order of some larger environment. The order in this larger environment may offer entrepreneurial opportunities. The dominant identity of character pervading the concrete connexity of the many occasions is of value to creative entrepreneurs. For Whitehead, actualities of the universe are processes of experience and the whole universe is advancing assemblage of these processes.

As we have discussed, creative imagination is a key source of entrepreneurial opportunities. Fillis and Rentscheler (2010) argue that creativity enables entrepreneurs to act on opportunities in ways that can result in competitive advantage for the organization. Schumpeter advocated the same point in his book, *Theory of Economic Development* (1934); the Schumpeterian entrepreneur (Schumpeter 1934, 1942, 2008) generates surplus profits by breaking circular flow. Schumpeter defines this concept of circular flow in his book, *The Theory of Economic Development* (1934):

Under the assumption of constant conditions, consumers’ and producers’ goods of the same kind and quantity would be produced and consumed in every successive period because of the fact that in practice people act in accordance with well-tried experience, and that in theory we regard them as acting in accordance with a knowledge of the best combination of present means under the given conditions. But there is also another connection between how the successive period operates with goods which an earlier period prepared for it, and in every period goods are produced for use in the next (Schumpeter, 1934, pp. 41, 42).

Goods would be bought and sold at the same prices year after year in this circular flow, which is a description of the concept of Walrasian general equilibrium. Every business firm finds that its selling price exactly equals its cost of production; there is no surplus profit and no economic growth in the circular flow. Breaking this circular flow is the function of the entrepreneur.

For Schumpeter (1934), economic development is spontaneous, and discontinuous change in the channels of the flow, the disturbance of equilibrium, forever alters and displaces the equilibrium state previously existing. The entrepreneur carries out new combinations and contributes to economic development. These entrepreneurial actions are then the main mechanism in the process of economic development:

This concept covers the following five cases: (1) The introduction of a new good – that is one which consumers are not yet familiar with – or of a new quality of a good. (2) The introduction of a new method of production, that is, one not yet tested by experience in the branch of manufacture concerned, which need not be founded upon a discovery scientifically new, but can also exist in a new way of handling a commodity commercially. (3) The opening of a new market, which is a market in which the particular branch of manufacture of the country in question has not previously entered, whether or not this market has existed before. (4) The conquest of a new source or supply of raw materials or half-manufactured goods, again irrespective of whether this source already exists or whether it first has to be created. (5) The carrying out of new organization of any industry, like the creation of a monopoly position (for example through trustification) or breaking up a monopoly position (Schumpeter, 1934, p. 66).

Schumpeter’s (1942) later work links these cases with creative destruction. He argues that “the opening up of new markets, foreign or domestic, and organizational development from craft shop to new organization illustrate the process of mutation that incessantly revolutionizes the economic structure from within, incessantly destroys the old one, incessantly creates a new one” (p. 83). He refers to this process as the process of creative destruction.

This fact bears upon our problem in two ways: (1) In the process, every element takes considerable time in revealing its true features and ultimate effects, so we must judge its performance over time; (2) Every piece of business strategy acquires its true significance only against the background of that process and within the situation created by it. It must be in its role in the perennial gale of creative destruction; it cannot be understood irrespective of it or, in fact, on the hypothesis that there is a perennial lull (pp. 83, 84).

Thus, Schumpeter (1934) explains economic development from the creative destruction perspective:

Development in our sense is a distinct phenomenon, entirely foreign to what may be observed in circular flow or in the tendency towards equilibrium. It is a spontaneous and discontinuous state previously existing. Our theory of development is nothing but a treatment of this phenomenon and the process incident to it (p. 64).

For Schumpeter (1947), gradual or routine adaptive response to changes in data is not entrepreneurial, but creative response to changes in data is entrepreneurial. Creative response is something that is outside of existing practice. According to him, a study of creative response in business becomes coterminous with a study of entrepreneurship. Therefore, the Schumpeterian entrepreneur is a creative entrepreneur, compared to a Kirznerian alert entrepreneur. Carrying out new combinations is referred to as *enterprise*. Schumpeterian entrepreneurs are individuals whose function is to carry out the new combination. In contrast, managers merely operate an established business or direct routine daily tasks in circular flow and do not receive profit, though they receive wages. Ryle’s know-how (1946) and creativity are sources of Schumpeterian entrepreneurs. There are different grades of know-how; the higher grade provides better products and services for consumers, and entrepreneurs with a higher grade of know-how obtain profits. Creativity is the raw material for innovation, and Schumpeterian entrepreneurs carry out innovation and gain surplus profits.

Who are the entrepreneurs? According to Shane and Venkataraman (2000), entrepreneurs are the set of individuals who discover, evaluate and exploit opportunities. Schumpeter (1934) characterizes three corresponding pairs of opposites in characterizing the entrepreneur: (1) opposition of two real processes: the circular flow or the tendency towards equilibrium on the one hand, vs. a change in the channels of economic routine or a spontaneous change in economic data arising within the system, on the other; (2) opposition of two theoretical apparatuses: statics and dynamics; and (3) opposition of two types of conduct: mere managers vs. entrepreneurs. Entrepreneurs respond creatively to a spontaneous change in economic and environmental data and work under a dynamic theoretical framework. Schumpeter argues that entrepreneurs are motivated by the psychology of a non-hedonistic character. First, there is the dream and the will to found a private kingdom, usually, though not necessarily, also a dynasty. Second, there is the will to conquer, the impulse to fight, to prove one-self superior to others, to succeed for the sake of, not the fruits of success, but success itself. Third, there is the joy of creating, of getting things done, or simply of exercising one’s energy and ingenuity (p. 93). The Schumpeterian entrepreneur is bold, self-confident, creative and innovative (Kirzner, 2008).

For Schumpeter, entrepreneurs do not bear risk, because new combinations are financed by capitalists, although entrepreneurs may own capital in some cases. Schumpeter carefully distinguished the entrepreneur from the capitalist (Foss and Klein, 2005). New combinations – new products, production methods, markets, sources of supply, or industrial combinations – are financed by banks that bear the financial risk. Schumpeter points out that interest is paid to the capitalist out of surplus values created by the entrepreneur. Today, venture capital firms finance most new combinations. A variety of funding sources have emerged in entrepreneurship: venture capital firms, corporate venture capital, angel funding and crowd funding.

**5. A formal model for entrepreneurship: entrepreneurship as getting puzzle pieces to fit together**

Entrepreneurial opportunities by themselves do not produce any new products or services. Entrepreneurs have the power to make new products and make changes in existing products for profits. Producing a new product or service requires several puzzle pieces (Park et al. 2015). If they do not fit together well or entrepreneurs miss pieces of a puzzle, the entrepreneurs may not succeed.

**Puzzle pieces need to be identified:**

**Demand side**

1. Kirznerian perspective – identifying opportunities from market disruption, discovering opportunities from the hidden business reality, knowledge.

2. Schumpeterian perspective – creativity, new products, processes, markets, organization.

3. New technology perspective – new industry.

**Supply side**

1. Human capital – Education, training and experience.

2. Finance – Bank, venture capital, corporate venture capital, angel funding, crowd funding.

3. Operation – Competitive cost.

4. Market – Market channel.

5. Conducive culture for entrepreneurship

Casson (1982) developed a theory of the market for entrepreneurs; Freman-Peck et al. (1998) apply this market analysis for entrepreneurs in their study on entrepreneurs and business performance. According to Freman-Peck et al. (1998), “the demand for entrepreneurship is derived from their productivity and depends upon the opportunities presented by the economy” (p. 239). Entrepreneurs need to discover the opportunities presented by the economy. They may feel the quality of changes in the air and quantify it and process information to discover and identify entrepreneurial opportunities. Casson (1982, 2014), therefore, argues that information processing is important in today’s entrepreneurship study. Entrepreneurs can find the density of the business in the local they are studying for the potential start-up business. Big data processing has become a new business practice which provides the discovery of entrepreneurial opportunities. Entrepreneurs can afford to find the patterns of changes in consumers’ preferences and emergence of new demand.

Entrepreneurship research differentiates entrepreneurship and intrapreneurship. Entrepreneurs create new business enterprises, whereas intrapreneurs create new products, processes, organizations and markets from existing firms. The demand for entrepreneurs in this paper includes both types. When market disruptions such as the subprime mortgage crisis take place, the demand for entrepreneurs increases. New technology generates the demand for entrepreneurs. For instance, information and communications technologies have increased the demand for entrepreneurs and they are likely to contribute to increasing demand for entrepreneurs in connection with newly emerging technologies such as artificial intelligence (AI) and IoT (Internet of Things). Lately, the demand for cyber security offers ample opportunities for new startup businesses.

The demand curve for entrepreneurs is downward sloping, because there are diminishing returns to entrepreneurs as more entrepreneurs are added to the economy or the firm. Rewards for entrepreneurs are profits. When entrepreneurial opportunities increase, the demand for entrepreneurs will likewise increase, and the demand curve for entrepreneurs will shift to the right (see Figure 2). Determining factors of demand are opportunities for entrepreneurship, the emergence of new technologies and creativity. We can draw a few examples for entrepreneurial opportunities. First, disequilibrium of a market, such as the bursting of the housing bubble and disruption of the financial market, provides opportunities for entrepreneurship. Prices of housing fell drastically in 2008; entrepreneurs bought those houses at cheap prices, then made profits by reselling them as the prices of houses recovered. Second, knowledge and creativity, the raw materials of innovation, will cause the demand curve to shift to the right.

Third, the emergence of new technology can open entrepreneurial opportunities and likewise cause the demand curve to shift to the right. For instance, the emergence of information and communications technology (ICT) offered abundant entrepreneurial opportunities and formed a new industry. 3D printing and carbon fiber technologies are relatively new and they offer entrepreneurial opportunities. In our industrial history, the demand for entrepreneurs has increased as new industries emerged. When we examine the ICT industry we recognize that the ICT created enormous entrepreneurial opportunities throughout its development and IBM, Hewlett-Packard, Microsoft, Apple, Google, Amazon and Facebook are dominant companies in the world. Today, artificial intelligence (AI) is emerging as a new technology that has a potential for ample new opportunities for entrepreneurship by connecting the new technology to the ICT. The ICT can be connected to various fields. Again, creativity is the raw material for innovation and innovation is carried out by entrepreneurs. Changes in products, processes and markets also offer entrepreneurial opportunities.

The supply of entrepreneurs comes from those who have capabilities in the field. The supply of entrepreneurs has a positive relationship with profit, as seen in Figure 2. The number of entrepreneurs will increase as the profit in the field increases. The determining factors of the supply of entrepreneurs are training, education, culture and experience of potential entrepreneurs. Costs of new ventures will affect the supply of entrepreneurs. Shifting factors of the supply curve of entrepreneurs are costs in financing and operations and accessibility of market channels. When costs in financing, operations and marketing fall, the supply curve of entrepreneurs shifts downward, increasing the supply of entrepreneurs. Baumol (1990), however, states that this can generate more entrepreneurial opportunities and shift the demand curve for entrepreneurs to the right, increasing profits for entrepreneurs. Interactions between the demand and supply of entrepreneurs may increase the number of entrepreneurs. The supply of entrepreneurs originates from forming new business ventures or making changes in existing firms (intrapreneurs). Freman-Peck et al. (1998) argue that “other things being equal, the larger a country’s supply of entrepreneurial risk-takers, the better the economy will perform” (p. 240). We apply market analysis to entrepreneurs in this study.

**6. The Five Cs theory and entrepreneurship model in the Korean creative economy**

The creative economy should be designed to actualize potentialities. Potentialities are both actual entities and eternal objects. Creativity is also about generating great ideas because great ideas shape actions and solve problems to make human lives better. Actions result outcomes. The creative process discussed above lays foundations on the creative economy and provides a guidance for operationalizing the creative economy. Our five Cs model is structured to combine relevant abstracts from philosophy, psychology, sociology and economics. We employ the model to examine the valorization of the Korean creative economy.

Korean government embarked new initiatives in the name of the “creative economy.” President Park Geun-hye (2013) defined creative economy as:

A creative economy is defined by the convergence of science and technology with industry, the fusion of culture with industry, and the blossoming of creativity in the very borders that were once permeated by barriers. It is about going beyond the rudimentary expansion of existing markets, and creating new markets and new jobs by building the bedrock of convergence. At the very heart of a creative economy lie science, technology and IT industry, areas that I have earmarked as key priority (Park Geun-hye, 2013).

We examine the practices employed by the Korean government from the perspectives of the creativity and entrepreneurship models.

**6.1 The five Cs creativity model and the Korean creative economy**

**Connectivity**

A **creative economy and innovation center** is an integrated facility located nationwide specializing in the regional specialty to enhance the creative economy initiated by President Park Geun-hye (2013) by: Vision: “**Realization of National Welfare and New Era of Hope through the Creative Economy**”

**Strategy for creative economy**:

* Creation of an ecosystem in which creativity is rewarded fairly and it is easy to start a new company.
* Strengthening of the global advance and playing a leading role in the creative economy by venture business and small & medium-sized businesses.
* Creation of the new growth engine to develop new products and new markets.
* Training of creative global talents.
* Strengthening competency to innovate science & technology and ICT as the foundation of the creative economy.
* Development of the creative economy culture in which people and government work together.

The Korean government established a total of 17 Centers for Creative Economy and Innovation since the first one set up in Daegu City in September, 2014. These centers are **connecting** big chaebols and small and medium size enterprises (SMEs). The basic concept of the government-initiated project is that the central and local governments work in conjunction with conglomerates to foster entrepreneurship in creative and innovative small firms in each city and province. The centers connect start-ups, venture firms, universities and research institutes with chaebols to utilize their business ideas and technologies. Conglomerates help with things from legal affairs and finding investors to marketing and selling their products and services at home and abroad.

**Combination**

Each center combines various specialties. For instance, the Seoul creative and innovation center primarily combines culture with lifestyle. The corporation in charge is CJ which is a conglomerate in entertainment. It has expertise in movies, music and restaurants. It is in Seoul and Seoul is the center of culture and life style. The Chungbuk creativity and innovation center combines bio and environment-friendly energy industry. LG has expertise in energy and battery industry and LG plays a leading role in this center. The Jeonnam Center combines bio-chemical and new materials. These examples show that each center is designed to create synergy by combining closely related fields and mobilizing local resources. Daejeon Center for Creative Economy & Innovation helps support startups by facilitating the process of creative ideas to become new startup businesses. Daejeon region includes forty-one government sponsored research institutes and KAIST (Korea Advanced Institute of Science & Technology). KAIST is a top research university in Korea. Daejeon Center forms a cluster of innovation based on capabilities of these institutes. Seventeen Creativity and Innovation Centers and their themes and chaebols which take leading roles are as following:

### Location and theme

|  |  |  |
| --- | --- | --- |
| **Region**  | **Theme & specialty**  | **Corporation in charge**  |
| Seoul | Culture & lifestyle | CJ |
| Incheon | Logistics industries, aviation | Hanjin  |
| Gyeonggi | IT-based convergence industries | KT  |
| Chungnam | Clean energy, agriculture as the 5th industry | Hanhwa  |
| Daejeon | Global venture business | SK Telecomm  |
| Sejong | ICT-based agriculture | SK Telecomm  |
| Chungbuk | Bio & beauty, environment-friendly energy industry | LG  |
| Jeonbuk | Carbon-related industries, traditional culture | Hyosung  |
| Jeonnam | Bio-chemical, new materials and convergence-oriented agro-fishery | GS  |
| Gwangju | Motor vehicle-related start-up and common people-oriented innovation platform | Hyundai Motors |
| Gyeongbuk | Smart factory innovation, convergence type culture and agriculture | Samsung  |
| Daegu | Fashion, machinery and automobile parts, traditional industries | Samsung  |
| Ulsan | Ship-building & marine plant, medical automation industry | Hyundai Heavy Industries  |
| Gyeongnam | Machinery manufacturing innovation | Doosan  |
| Busan | Global distribution, Film and video-oriented ecology, IoT-based smart city | Lotte  |
| Gangwon | Big data, crowd sourcing, tourism, health care and smart farm | Naver  |

Source: The Ministry of Science, ICT and Future Planning (MSIP)

**Choice**

Korean government officials made choices in selection of the centers and placed emphasis on Internet of Things (IoT), Information and Communications Technologies (ICTs), Artificial Intelligence (AI) and new materials science because they foresee them as newly emerging technologies from which new industries will be formed. These technologies have potential for future economic growth. Choices of individuals, organizations and government are crucial in the creative economy because future outcomes depend on today’s choices.

**Collaboration**

The centers work with start-ups, venture firms, universities and research institutes to utilize their business ideas and technologies, with conglomerates helping with things from legal affairs and finding investors to marketing and selling their products and services at home and abroad. It is desirable for the government to facilitate collaboration between conglomerates and small firms, and nurture promising venture firms and start-ups which is one of the key elements of a creative economy.

**Coordination**

The basic concept of the government-initiated project is that the central and local governments work in conjunction with conglomerates to foster creative and innovative small firms in each city and province. The Park government created a new Ministry of Science, ICT and Future Planning (MSIP) to develop, coordinate and implement creative economy policies. Establishment of the ministry level structure helped create the 17 Creativity and Innovation Centers as listed above. The MSIP and other authorities announced vision and action for the creative economy on June 4, 2013 (MSIP, 2013).

**Vision:** “**Realization of National Welfare and New Era of Hope through the Creative Economy**”.

**Strategy for creative economy:**

* supporting start-ups and SMEs in each specialty area,
* organizing the partnership or ecological relations between the relevant big corporation and regional enterprises,
* arranging funds for them to overcome financial difficulties,
* encouraging managerial and technological innovation and advisory services (called mentoring),
* promoting communications and cooperative works among participants, and
* exploring new markets at home and overseas in a concerted manner.

In implementing these strategies, the Park administration initiated public-private partnerships, but the overly ambitious implementation of this partnership might have caused the downfall of the Park government. The Park government elicited large chaebols’ participation in the formation of the partnership and some non-official government citizens in the government-led businesses were found to be influence-peddling for their private gaining.

**6. 2 The entrepreneurship model and the Korean creative economy**

We have discussed entrepreneurship from the puzzle pieces of demand and supply of entrepreneurship. The Ministry of Science, ICT and Future Planning and 17 Creativity and Innovation Centers have focused on the demand and supply side of entrepreneurship.

Strategies in section 6. 1 are based on the demand and supply sides of entrepreneurship and they are physical aspects of entrepreneurship. Policy makers have also worked on the mental aspect of entrepreneurship (cultural). Policy makers established mental aspects of entrepreneurship called the Korea Science and Creativity Foundation which fosters the culture of creativity and entrepreneurship. People in the foundation are working on “make movement” for instilling the valorization of entrepreneurship. Combining physical and mental aspects in entrepreneurship of the Korean creative economy can be regarded as an application of Whiteheadian integration of physical and mental poles. The causal efficacy and final cause are positively related in the Whiteheadian process.

**6.3 Outcomes of the creative economy**

The Ministry of Science, ICT and Future Planning (MSIP) and policy institutes such as KISTEP (Korea Institute of S & T Evaluation and Planning) and KSDI (Korea Information Society Development Institute) developed models for evaluating outcomes of the creative economy in Korea. The MSIP and 17 creative economy and innovation centers designed creative structures that help create an entrepreneurial ecosystem and coordinate for creatives in each region to become new start-up firms. Each has its specialized field and is in a region where it has a comparative advantage for the specialized field. Pairing of a large firm with the local government and creatives are to create a synergy and external economy among specialty firms in the region. The MSIP continues to invest and lure technology firms to Pangyo Techno Valley. Pangyo Techno Valley was developed to cluster technology firms together and it is akin to Silicon Valley in the U.S. It is now a good-sized city and the most rapidly growing city in Korea.

New policies take time to take roots and bear fruits. Policies of the creative economy were initiated in 2013 and they are beginning to bear results according to the Ministry of Science, ICT and Future Planning (MSIP, 2016). The MSIP reports that 17 creative economy and innovation centers created 1063 start-up firms; The MSIP opened Pangyo Creative Economy Valley Start-up Campus where the MSIP placed a start-up firm’s growth model: start-up – growth – global expansion; The MSIP helped create start-up and new venture firms which will lead the 4th industrial revolution. Detailed empirical results are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **2013** | **2014** | **2015** |
| New venture firm |  29,135 |  29,910 |  31,260 |
| College venture firm club |  1,833 |  2,949 |  4,070 |
| New venture investment |  13,845 |  16,393 |  20,858 |

(billion won: $.1billion)

Sources: The MSIP

The Pangyo creative economy valley was established in March 2016 and it is in Pangyo techno valley. It is anticipated to create 1600 high-tech firms and anticipated to attract 100,000 highly skilled workers. The number of firms in 2015 is 1,121 which represent 13 times of the number of firms in 2011 and the numbers of workers is 72,820 which is a 25.14% increase from 2014. The MSIP has provided government funds to new venture firms and helped expand or create new funding sources by establishing rules and regulations on crowd funding and angel capital. Venture capital and corporate venture capital firms are relatively well-established funding sources.

The MSIP is preparing and taking steps to lead the 4th industrial revolution by investing in IoT, big data, software, graphite fiber (carbon fiber) and artificial-intelligence. New technologies normally open large potential entrepreneurial opportunities and economic growth as stated above. The creative economy actualizes these potentials. However, there are criticisms on the government-led creative economy. It limits freedom and dulls creativity.

**7. Discussion**

We employed Whitehead’s creativity for our development of the five Cs theory of creativity. Whitehead’s valorization of imaginative flight and stubborn fact illustrate the importance of creative imagination and observation of the fact for creativity. Creatives connect and combine various actualities in their imaginative flights and discover the order present in the process of creativity. Creativity is conditioned and relational. Therefore, society and nexus matter in creativity. We discussed a few conditions for creativity in the structure section of our paper. Creativity is about generating great ideas for new business formation and innovation. Good ideas sell products, but great ideas change peoples’ lives for better.

Whitehead’s creativity links potentiality to actuality. Entrepreneurs actualize potentials for new products and innovation. Whitehead presents what constitutes characteristics of creative outcomes. We analyzed the Korean creative economy from the five Cs theory to examine the applicability of the model to the real business and economy. Connectivity in Korean creative economy is connecting its strong ICT to emerging new technologies in the 4th industrial revolution. Newly emerging technologies are IoT, artificial-intelligence technologies, big data processing and machine learning. ICTs can connect these new technologies and create new businesses. Changes in technologies from the 4th industrial revolution offer unprecedented entrepreneurial opportunities. Various combinations such as culture and sports create new businesses. Choices or freedom of creatives are gaining momentum in every aspect of business organizations. Choices have huge effects on creativity and new idea generation. Choices span many regions such as choices of eternal objects and freedom to choose employees’ own projects. Creatives connect, combine and choose for their creative advance.

 Creative structures such as the MSIP and creativity and innovation centers created conducive environments for creativity. The MSIP and the centers collaborate domestic firms and international businesses. They help pair small firms with large firms in Korea and open collaborations with global firms. The MSIP and the centers coordinate many entities in the region and the nation. As discussed earlier these policies are beginning to bear results. New start-up firms are growing and college venture clubs more than doubled between 2013 and 2015. However, they employed tactics that are very forceful and sometimes influence peddling. They also appear not to follow creative processes in their choices of policy alternatives. These tactics backfired and they may have caused to bring down the Park government. Creative structures involve physical and social structures. Psychology deals with physical affordance and sociology deals with social structure. Creative organizations such as Apple, Google and 3M have been paying keen attention to both the physical and social structures of their organizations. The Apple Company is opening a new physical building in Cupertino, California. It is like a college campus and is designed for more casual encounters among employees. The Apple Company also has interesting social structures for internal and external collaboration and coordination.

A new administration is embarking in Korea because of the 2017 presidential election. Policy makers in the new administration will undoubtedly reevaluate the policies of the creative economy. They need to find out what worked and what did not work. However, one thing is clear that the creative economy has been established and one cannot undo what has been done. The past is data and they should start their new creative economy from the past accomplishments. Creativity does not come from nothing and comes from something. That something is the creative economy in Korea. How to operationalize the creative economy better or making creative advance is their task at hand. As we have discussed before, the creative advance is about making something into something better.

**8. Conclusions**

We constructed a five Cs creativity model by drawing relevant abstracts from Whitehead’s creative imagination and creative structure from sociology and psychology. Connectivity, combination and choice provide foundations for creatives to become creative. Collaboration and coordination are enablers and constraints. They need to be designed to be conducive for creativity and continue to be revised as they become burdensome constraints to creatives. It is requisite for the creative economy to constantly address the antinomy of creative structure. The reality in Whiteheadian creativity is the process. Therefore, deeper understanding of the process is essential for fostering the creative economy. Whitehead’s process philosophy can be a foundational ground for the Korean creativity economy and the operationalization of the Whiteheadian creativity can serve the Korean economy to become creative and vibrant.

Creative advance involves both efficient cause and final cause. The final cause is the vision of the creative economy. Efficient cause, final cause (vision) and the process of the creative economy determine the characteristics of the outcomes. It is crucially important to formulate the vision of the creative economy in new administration. Pressing issues are scarcity of jobs, income inequality and actualization of potentials for all citizens. Therefore, policy makers should make the current creative economy into a better creative economy by addressing these issues. The creative advance is the order of the universe. Following the order of the universe is not only wise, but also conforming to nature. Conforming to nature will make the Korean economy creative and vibrant. The success of the new administration will depend on the healthy growth of the Korean economy which will offer jobs and makes people’s lives better.

We also developed a formal entrepreneurship model. The entrepreneurship model examines both the market demand and supply of entrepreneurs. Policy makers need to identify puzzle pieces of entrepreneurship from both the demand and supply sides and design policies for putting the puzzle pieces of entrepreneurship together. Creativity and entrepreneurship models were applied to examine the Korean creative economy and entrepreneurship. We conclude that these models are promising in development and analysis of the creative economy. However, they require refinement and more empirical testing and applications to generalize them.

**References**

Amabile, T. M. (1988). A model of creativity and innovation in organizations*, Research in Organizational Behavior*, 10, 123-167.

Argote, L. and Miron-Spektor, E. (2011). Organizational learning: From experience to knowledge. *Organizational Science*, 22 (5), 1123-1137.

Bourdieu, P. (1977). *Outline of a Theory of Practice* (trans. by R. Nice), Cambridge, UK: Cambridge University Press.

Bourdieu, P. (1990). *The Logic of Practice* (trans. by R. Nice), Stanford: Stanford University Press.

Bughin, J., Chui, M. & Manyika, J. (2013). Ten IT-enabled business trends for the decade ahead, *McKinsey Quarterly*, McKinsey &Company.

Casson, M. (1982). The Entrepreneur: An Economic Theory, Oxford: Martin Robertson.

Casson, M. (1997). Information and Organization, Oxford: Oxford University Press.

Casson, M. (1998). *An Entrepreneurial Theory of the Firm*, Department of Economics, University of Reading, Reading, UK.

Casson, M. (2014). Entrepreneurship: A personal view*. International Journal of the Economics of Business*, 21 (1), 7-12.

Catmull, E. (2008). How Pixar fosters collective creativity. *Harvard Business Review*, September, 2008.

Coase, R. (1937). The nature of the firm, *Economica,* 4(16), 356-405.

Csikszentmihalyi, M. (1997). *Creativity: The Psychology of Discovery and Invention*, New York: Harper Perennial Modern Classics.

Darkface Corporation (2017). https://www.darkface.com/technology/

Deleuze, G. (1994). *Difference and Repetition*, Trans. Paul Patton. New York: Columbia University Press.

Drucker, P. (1985). *Innovation and Entrepreneurship.* New York: Harper & Row Publishers, Inc.

Fetz, R. L. (1990). Creativity: A new transcendental? *Whitehead’s Metaphysics of Creativity,* F. Rapp and R. Wiehl (eds.), Albany: State University of New York Press, 189-208.

Fillis, I. & Rentscher, R. (2010). The role of creativity in entrepreneurship, *Journal of Enterprising Culture,* 18 (1). DOI: 1142/S0218495810000501

Fischer, G. (2005). Creativity and distributed intelligence. <http://www.cs.umd.edu/hcil/CST>

Foss, N. (1999). Networks, capabilities, and competitive advantage, *Scandinavian Journal of Management,* 15 (1), 1-15.

Foss, N.J. & Mahnke, V. (2000). *Competence, Governance, and Entrepreneurship*. Oxford University Press, Oxford, U.K.

Foss, N. J. & Klein, P.G. (2005). Entrepreneurship and the economic theory of the firm: Any gains from Trade? *Handbook of Entrepreneurship Research: Interdisciplinary Perspectives*, Alvarez, S.A., Agarwal, R. & Sorenson, O.( eds.), New York: Springer, Inc. , 55-80.

Foss, K., Foss, N. J. & Klein, P.G. (2007). Original and derived judgment: An entrepreneurial theory of economic organization, *Organization Studies*, 28(12), 1893-1912.

Foss, N. J. & Klein, P. G. (2010). Alertness, action and the antecedents of entrepreneurship, *The Journal of Private Enterprise,* 25 (2), 145-164.

Freman-Peck, J., Boccaletti, E.& Nicholas, T. (1998). Entrepreneurs and business performance in nineteenth century France, *European Review of Economic History,* 2 (3), 235-262.

Gibson, J. J. (1977). The theory of affordances, in *Perceiving, Acting, and Knowing,* Shaw& J. Bransford, (eds.), Hillsdale, N.J.: Lawrence Erlbaum Associates.

Giddens, A. (1979). *Central Problems in Social Theory*, Berkeley: University of California Press.

Giddens, A. (1984). *The Constitution of Society,* Berkeley: University of California Press.

Glăveanu, V. P. (2014). *Distributed Creativity: Thinking Outside the Box of the Creative Individuals*, Heidelberg: Springer.

Glăveanu, V.P. (2012). Rewriting the language of creativity: The five A’s framework*, Review of General Psychology.* Advance online publication. DOI: 10.1037/a0029528.

Griffin, D. R. (2007). *Whitehead’s Radically Different Postmodern Philosophy: An Argument for its Contemporary Relevance*. Albany, NY: State University of New York Press.

Griffin, D. R. (1988). *The Reenchantment of Science: Postmodern Proposal*. Albany, NY: State University of New York Press.

Gurteen, D. (1998). Knowledge, creativity and innovation, *Journal of Knowledge Management*, 2(1), 5-13.

Halewood, M. (2014). *Rethinking the Social through Durkheim, Marx, Weber and Whitehead*, New York: Anthem Press, 134-135.

Halewood, M. & Michael, M. (2008). Being a sociologist and becoming a Whiteheadian: Toward a concrescent methodology, *Theory, Culture & Society*, 25(4), 31-56.

Hathaway, I. (2013). Kauffman Foundation Research Series: *Firm Formation and Economic Growth, Tech Starts: High-technology Business Formation and Job Creation in the United States*, Kansas City, Missouri, 1-32.

Hathaway, I., Schweitzer, M.E. & Shane, S. (2014). The shifting source of new business establishments and new jobs*, Economic Commentary*, No. 2014-15, Federal Reserve Bank of Cleveland.

Heidegger, M. (1959). *An Introduction to Metaphysics*, New Haven: Yale University Press, 7-8.

Hislop, D. (2009). *Knowledge Management*, Oxford University Press, Oxford.

Holcombe, R. G. (2003). The origin of entrepreneurial opportunities, *The Review of Austrian Economics,* 16(1), 25-43.

Hosinski, T. E. (1993). *Stubborn Fact and Creative Advance: An Introduction of the Metaphysics of Alfred North Whitehead.* Lanham: Rowman & Littlefield Publishers, Inc.

Isaacson, W. (2011). *Steve Jobs*, New York: Simon & Schuster.

Kauffman, Stuart A. (1993). The origin of Order: Self-organization and Selection in Evolution. New York and Oxford: Oxford University Press.

Kirzner, I. M. (1997). Entrepreneurial discovery and the competitive market process: An Austrian Approach, *Journal of Economic Literature*, 35(1), 60-85.

Kirzner, I. M. (1999). Creativity and/or alertness: A Reconsideration of Schumpeterian entrepreneur, *Review of Austrian Economics*, 11, 5-17.

Knight, F. H. (1921). *Risk, Uncertainty and Profit,* Boston, MA: Houghton Mifflin Co.

Langström, H., Harirchi, G. & Astrom, F. (2012). Entrepreneurship: Exploring the knowledge base, *Research Policy*, 41(2012), 1154-1181.

Lehrer, J. (2012). *Imagine How Creativity Works.* Boston: Houghton Mifflin Harcourt.

Lombardo, B. J. & Roddy, D. J. (2010). *Cultivating organizational creativity in an age of complexity*, Executive Report, New York: IBM Global Business Services.

Malvestiti, M. (2011). Plato’s receptacle in the *Timaeus*: Towards a theory of matter, *Working Paper,* Department of Moral Philosophy, University of St. Andrews, St. Andrews, U.K.

Mesle, C.R. (2008). *Process-Relational Philosophy*, West Conshohocken, PA: Templeton Press.

The Ministry of Science, ICT and Future Planning (2013).

The Ministry of Science, ICT and Future Planning (2016). Public report and data. www.msip.go.kr

Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company*, Oxford, UK: Oxford University Press.

Park, Geun-hye (1913). The 18th Presidential inauguration speech, February, 25, 2913, Official website of the Republic of Korea.

Park, H. Y., Shinn, G. C., Jung. S. & Park, Y. S. (2013). Changes in economic environment. Learning, and dynamic capabilities in Korean firms, *Change Management: An International Journal*, 12, 19-39.

Park, H. Y., Chang, H. & Park, Y. (2015a). Firms’ knowledge creation structure and new product development, *Cogent Business & Management*, 2: 1023507.

Park, H. Y., Cho, I., Jung, S., & Main, D. (2015b). Information technology and user knowledge-driven innovation in services, *Cogent Business & Management*, 2: 1078869.

Popper, K. (1982). Of clocks and clouds. In H.C. Plotkin (ed), *Learning, Development and Culture*. New York: John Wiley & Sons, Inc. 109-119.

Rose, C. (2014). Charlie Rose interview with Tim Cook (Apple CEO), PBS, September 14, 2014.

Rhodes, M. (1961). An analysis of creativity, *Phi Delta Kappan*, 42, 205-210.

Ryle, G. (1946). Knowing how and knowing that, *Proceedings of the Aristotelian Society,* XLVI, vol. 2, 212-225.

Ryle, G. (1949). *The Concept of Mind,* London, U.K.: Hutchinson & Co. LTD.

Sawyer, R. K. & DeZutter, S. (2009). Distributed creativity: How collective creations emerge from collaboration, *Psychology of Aesthetics, Creativity, and the Arts*, 3(2), 81-92.

Shane, S. (2000). Prior knowledge and discovery of entrepreneurial opportunities, *Organization Science*, 11(4), 448-469.

Shane, S. & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research*, Academy of Management Review*, 25(1), 217-226.

Schiuma, G. (2009). The managerial foundations of knowledge assets dynamics, *Knowledge Management Research & Practice*, 7(4), 290-299.

Schumpeter, J. A. (1934). *The Theory of Economic Development*, New York: Oxford University Press.

Schumpeter, J. A. (1942). *Capitalism, Socialism and Democracy*, New York: Harper & Brothers.

Schumpeter, J. A. (1947). The creative response in economic history, *Journal of Economic History*, 7(2), 149-159.

Schumpeter, J. A. (2008). *Essays on Entrepreneurs, Innovations, Business Cycles, and the Evolution of Capitalism,* R. V. Clemence, (ed.), New Brunswick: Transaction Publishers.

Soros, G. (2008). *The new paradigm for financial markets: The credit crisis of 2008 and what it means*. Philadelphia: Perseus Books Group.

Stengers, I. (2008). A constructivist reading of *Process and Reality, Theory, Culture & Society,* 25(4), 91-110.

Stengers I. (2011). Thinking with Whitehead: A Free and Wild Creation of Concepts. Translated by Michael Chase. Cambridge, MA: Harvard University Press.

Twohill, L. (2012). The curious case of creativity, *Think with Google*: https://www.thinkwith google.com/ articles/the-curious-case-of-creativity.html

Wallack, F. B. (1980). *The Epochal Nature of Process in Whitehead’s Metaphysics,* Albany, NY: State University of New York Press.

Weber, M. (2016). Symbolism, its meaning and effect: The universal algebra of culture, *The Journal of Natural and Social Philosophy*, 12 (1), 350-377.

Weick, K. E. (ed.). (1977). *Enactment Process in Organizations*, Chicago: St. Clair Press.

Weick, K. E. (1979). *The Social Psychology in Organizing*, Reading, MA: Addison-Wesley.

Wieman (1946). *The Source of Human Good*, Southern Illinois University Press, London and Amsterdam: Pfeffer & Simon, Inc.

Whitehead, A. N. (1927). *Symbolism: Its Meaning and Effect*. New York: Capricorn Books.

Whitehead, A. N. (1929/1978). *Process and Reality*, New York: Free Press.

Whitehead, A. N. (1933). Foresight, Chapter VI in the *Adventures of Ideas,* New York: The Free Press, 87-99.

Whitehead, A. N. (1938). *Modes of Thought*. New York: Macmillan

Whiteman, M. (2013). Collaboration to develop new business ideas, Dow Chemical Company, Midland, Michigan.

Williamson, O. E. (1975). *Markets and Hierarchies: Analysis and Antitrust Implications*, New York: Free Press.

Williamson, O. E. (1985). *The Economic Institution of Capitalism*, New York: Free Press.

Williamson, O. E. (2008). Outsourcing: Transactions cost economics and supply chain management, 44 (2), 5-16.

Young, J. G. (1985). What is creativity? *Journal of Creative Behavior*, 19(2), 77-87.

Creative

Imagination

Five Cs

Connecting

Various Disciplines

Creativity

Innovation

Philosophy

Sciences

Psychology

Sociology

Economics

Connectivity

Combination

Choice

------------------

Collaboration

Coordination

Innovation

in Products

Services

Markets

Organizations

and

Development

of New Technology

Creativity

Entrepreneur

Creative

Structure

Figure 1: Creativity and Innovation

Profit

Number of

Entrepreneurs

0

SE

DE

 Figure 2: The market for entrepreneurs