

Abstract Thought: Production of New Knowledge for the Development of Human Civilization

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Citation: Shah, K. P. (2021). Abstract thought: Production of new knowledge for the development of human civilization. *Journal of Fine Arts Campus*, 3(2), 33-48.

Abstract: Abstract thought is the key source of new knowledge production for the development of human civilization. It is the mental state of being able to visualize or imagine beyond the physical world's existence. Abstract thought has formed the basis of creativity, experimentation, and innovation. Analyzing ideas, creating information, solving problems, composing new ideas, and creating things are sources of new knowledge. So, the human abstract thinking process or thought is the result of new knowledge. New knowledge has always played a vital role in human advancement. The theory of empiricism is that all knowledge is based on experience derived from the senses. Transcendental idealism is another theory that is a term applied to the epistemology of German philosopher Immanuel Kant, who seized that the human self produces knowledge out of sense impressions. Transcendental is the ability to go beyond the usual limits; existence or experience beyond the normal or physical level is abstract. Kant attempts to synthesize sense perception and existing forms of the ideal realm above material reality. Abstract thoughts help people make it possible to imagine, visualize, and exercise to produce new knowledge. New knowledge plays a vital role in developing tools and new ideas that build up the quality of human life. This research theorizes that abstract thought is the root source of producing new knowledge for the development of human civilization. The core objective of this study is how abstract thought produces new knowledge. This study has focused on the imagination and visualization of the human thinking process to create new knowledge in art, science, and human civilization. The qualitative research model is adopted to analyze, interpret, and theorize this research paper.

Keywords: Abstract thought, production of new knowledge, visualization, imagination, creation, transcendental idealism

Introduction

We are able to make our civilization more advanced than other living beings because we can think, imagine, and visualize things beyond physical existence. We can imagine and visualize further than basic needs like eating, sleeping, and mimicking, signifying a higher degree of thought. Deprived of this ability to consider the implications of an abstract idea, we would not have developed the tools, complex cultures, and unique social behavior that define humanity today. The thinking process symbolizes the ability to form and visualize abstract thought and test it in worldly form. It also goes together with the development of art, science, culture, and innovation for the progress of human performance through time. Shah (2021) states:

The remarkable discoveries, inventions, arts, science, and philosophies are the aftermath of the transformation of abstract thoughts and imagination. The invention and discoveries have enhanced the lifestyle, philosophies, humanitarian and cultural behavior. Arts have helped humans to feel lively via their ability to provoke excitement and ecstasy. The intensified consciousness to imagine is the benefactor of civilization, and we are a part of it today. (p. 3)

Imagination and visualization of new things or subjects are abstract. Abstract thoughts of the things beyond existence or sight are perceived first and imitated into concrete form later.

Therefore, such abstract imagination also possesses the potential to invite notable revolutions around the world.

It will not be inappropriate to credit abstract thoughts to being the benefactor of advanced humans today. Humans are always very interested in alternatives to difficult tasks for safe and convenient livelihood methods. Various inventions have simplified the lifestyle of humans today. Many technologies, such as automobiles, computing, and Artificial Intelligence (AI), have been introduced to enhance and comfort lifestyles. These are among us because of the fantasies and imaginations that showed a path for developing such technologies. The abstract imagination made it possible to achieve more benefits from less effort.

Abstract thought is known as one of humanity's most attribute-defining features. It imagines or visualizations beyond the existence of this world, which are non-figurative and non-representational shapes and forms in mind. It is related to the conceptualization of the plural state of imagination (Sharma, 2021, p.153). It has been shaped by theory, creativity, and innovation. Thus, abstract thought opens the path to a higher degree of human thought. With the lack of this thinking process to consider the implications of an abstract idea, the human being cannot develop civilization using challenging vision, science, technology, theory, and philosophy to show the power of abstract human thought. Using abstract thought and testing them in physical form, the ability to form assumptions characterizes scientific thinking (Boroditsky & Ramscar, 2002). Abstract thought also goes with the development of language and mathematical ideas, art and culture, and science and technology in the evolution of human performance from side to side in different phases.

Despite the limitations of a relatively small data set and disputes arising from uncertainties in interpretation, charting the evolution of abstract thought and attempting to plot its first appearance in our ancestors is crucial (Landy & Goldstone, 2007). There are understandable complications in carrying this out through humanity's roots. Unlike physical skills such as the development of tool use or hunting technique, abstract thought leaves no direct trace in the physical record of the lives of past people (Caianiello, 1961). Only the attempts at transferring visualized and imagined realms into physical objects yield relevant records in archaeology. It seems helpful to understand how abstract thought can manifest itself in arts, science, and civilizations.

Abstract thinking shaped tool manufacture. The progress we see in the widening and diversity of later material culture has only arisen from abstract thought. This thread can be followed through the evidence of abstract thinking among our more recent ancestors, where it seems to become more prevalent and its manifestations more obvious to the archaeologists in the form of symbolism — especially through ornamentation and art (Tversky, 2014). The outline concludes that the path of abstract thought has been traced throughout humanity and indicates the characteristic of human features of imagination, creation, and innovation in object structure and its beauty.

Researchers and writers have analyzed abstract thought, and abstract arts from various angles, but books and papers have not linked abstract thought with new knowledge and its impact on human civilization—this research attempts to fill this gap. We are able to change our lifestyles. We have developed art, literature, philosophy, culture, science, and technology. What makes us different from other existing beings? What is the main idea behind the development of human civilization? This research paper endeavors to respond to these questions. Abstract thought is the main key to producing new knowledge, creation, innovation, and enlightenment that changed human civilization. This statement has been supported through reasoning and

examples. The research clarifies the concepts of abstract thought, presents the process of creating new knowledge, and throws light on the role of abstract thought in the development of human civilization.

Research Methodology

The research areas of this paper are abstract thought and new knowledge. Abstract thought is the main root of new knowledge for creations, innovations, and the development of human civilization. This statement has been supported through reasoning and examples. The research clarifies the concepts of abstract thought and the root of new knowledge and throws light on the role of abstract thought in producing new knowledge. The paper uses a qualitative research method since abstract thought can be understood and interpreted from multiple perspectives, and the writer and critic's subjectivity affects the interpretation and criticism. Books and articles on abstract thought are secondary sources that are used to create background, literature review, and clarify the research tool. In addition to this, the researcher has interviewed concerned authorities.

Abstract Thought

Abstract thought attempts to give visible shape to the invisible and intangible concepts and ideas. Beauty, kindness, unknown shapes, and ideas are abstract qualities. The abstract does not directly refer to objects and events of the world. Abstract thought can be contrasted with the real object. Realistic images are referential because they represent the objects and events of the external world in an objective manner. However, abstract thought subjectively refers to itself (Ramsar et al., 2009).

In the real world, reference and representation are more dominant, whereas, in creation and innovation, abstract thought is more powerful. Curious and imaginative human consciousness goes beyond the natural world (Casasanto, 2005). Imagination and visualization is the primary source of abstract thought. Imagination is abstract and invisible (Santiago et al., 2011). The intensified awareness to imagine has enhanced human culture. Abstract thoughts beyond visible existence or sight are perceived first and represented in concrete form later (Shah, 2021). Imagination possesses the power to bring change in life and society.

Abstract thought is an element of most intelligence tests. These skills are associated with high levels of intelligence. Skills such as mental object rotation, mathematics, higher-level language usage, and the application of concepts to particulars all require abstract reasoning skills (Lamarque, 2009). Learning disabilities can stop the development of abstract thinking abilities. People with severe intellectual disabilities may never develop abstract reasoning skills and take abstract concepts such as metaphors and analogies literally (Vervaeke & Kennedy, 2004). Moreover, since abstract thinking is associated with creativity, it may often be found in gifted individuals who are innovators. Abstract thoughts guide essential inventions in arts, culture, and technology. Abstract thought visualizes new concepts and things. They are presented in the form of art, a unique composition of the things or innovators' experiments to materialize the conceptual vision.

Abstract Thought: Production of New Knowledge

Abstract thought has the mental ability to visualize or imagine beyond existence. Real things are about nature, whereas abstract concepts go beyond physical reality (Martin & Jacobus, 1991). Imagination and visualization produce new knowledge, forming the basis of creativity, innovation, and experimentation. Analyzing ideas, solving problems, composing new ideas, and creating things involve abstract thought that produces new knowledge. The production of new knowledge is a result of abstract human thought.

There are different sources to achieve knowledge, but mainly two: empirical knowledge and new knowledge. Empirical knowledge is obtained through five senses organs, i.e., eyes, nose, ear, tongue, and skin, by seeing, smelling, hearing, tasting, and touching; and new knowledge production through imagination and visualization beyond existence. The theory of empiricism is that all knowledge is based on experience derived from the senses. Still, rationalism is a theory that reason is in itself a source of knowledge and autonomous of sense perceptions. Transcendental idealism is another theory that is a term applied to the epistemology of German philosopher Immanuel Kant. He states that the human self produces knowledge out of sense impressions. Transcendental is the ability to go beyond the usual limits; existence or experience beyond the normal or physical level is abstract. Kant attempts to synthesize sense perception and existing forms of the ideal realm above material reality which becomes new knowledge.

Deers are animals; it is not new knowledge; it is universal; It is only new information. It is just reliable knowledge. Dried meat is tastier than raw meat of deer is new information of knowledge or synthetic judgment. In this way, abstract thoughts help human beings make it possible to exercise the production of new knowledge. Human beings are mainly involved in new knowledge production in three ways: creativity, innovations, and discovery that change the society and civilization of human beings. Art, science, engineering, design, media, stories, strategies, principles, decisions, and recommendations are sources of knowledge production.

Abstract thought is used in creating things. We use most of the daily life things created by humans' imagination or ideas in abstract forms, such as home appliances, wearing clothes, transportation, communication, and today's modern civilization. Not only daily using things but also communicating language involves abstract thought. Abstract thought needs to analyze situations. It helps solve problems, understand concepts, and develop new theories and philosophies. The ideas derived from imagination appear in a pictorial form having sensational qualities. Shah (2021) further says: "Abstract art is born of pure imagination. Various monuments were built based on geometry and architecture, like the Pyramids of ancient Egypt. This is how geometry, born of pure imagination, led the basis to the magnificent architecture valid to date" (p.3). Geometrical forms are abstract and created by humans. Humans created different geometrical forms and shapes that helped create the well-developed history of civilizations like Mesopotamia, Egypt, and Greek. Harari (2015) explains:

The vast majority of farmers lived in permanent settlements; only a few were nomadic shepherds. Settling down caused most people's turf to shrink dramatically. Ancient hunter-gatherers usually lived in territories covering many dozens and even hundreds of square kilometers. The home was the entire territory, with its hills, streams, woods, and open sky. Peasants, on the other hand, spent most of their days working a small field or orchard, and their domestic lives centered on a cramped structure of wood, stone, or mud, measuring no more than a few dozen meters - the house. The typical peasant you sent developed a very strong attachment to this structure. This was a far-reaching revolution whose impact was psychological as much as architectural. Henceforth, attachment to my house and separation from the neighbors became the psychological hallmark of a much more self-centered creature.

Aside from the use of fire, hunter-gatherers made a few deliberate changes to the lands in which they roamed. On the other hand, farmers lived in artificial human islands that they laboriously carved out of the surrounding wilds. They cut down forests, dug canals, cleared fields, built houses, plowed furrows, and planted fruit trees in tidy rows.

The resulting artificial habitat was meant only for humans and their plants and animals and was often fenced off by walls and hedges. (pp. 110-111)

The materialization of these ideas has uplifted us to the present state. Abstraction leads to innovation and experimentation. Guided by this human ability, various monuments, like the pyramids of ancient Egypt (2500 BC), were built. Huge Gijurate of Mesopotamia (see Figure 4) and Pyramid of Egypt (see Figure 1) are examples of abstract thought using geometrical shapes that produce new ideas and knowledge.



Figure 1. *The Pyramid of Khafre (Chephren) and the Giza Sphinx (2570 BC)*. Egypt.

Abstract thought has a level of mental intelligence to visualize or imagine beyond the real world. It attempts to give visible shape to the invisible and intangible concepts and ideas, leading to experimentation, innovation, and the creation of new knowledge (e.g., Figures 1 and 2).

In Wassily Kandinsky's paintings, we can see the pattern of sweeping and dancing curves that create musical motion. Our eyes glide over the canvas with rhythm and spontaneity. Musical rhythm is an inevitable element of Kandinsky's abstract painting, which becomes visible and colorful in abstract form. It is the innovative aspect of abstract thought toward new knowledge production. Cernuschi (2009) writes that Schopenhauer and Nietzsche had argued that music was the most influential and powerful of all the arts because it can manage to suggest emotions directly, not by imitating the world. Kandinsky tries to emulate music's power of direct suggestion by including abstract forms and depicting an imaginary rather than an observable reality in his painting, searching for unknown dimensions of the external world.

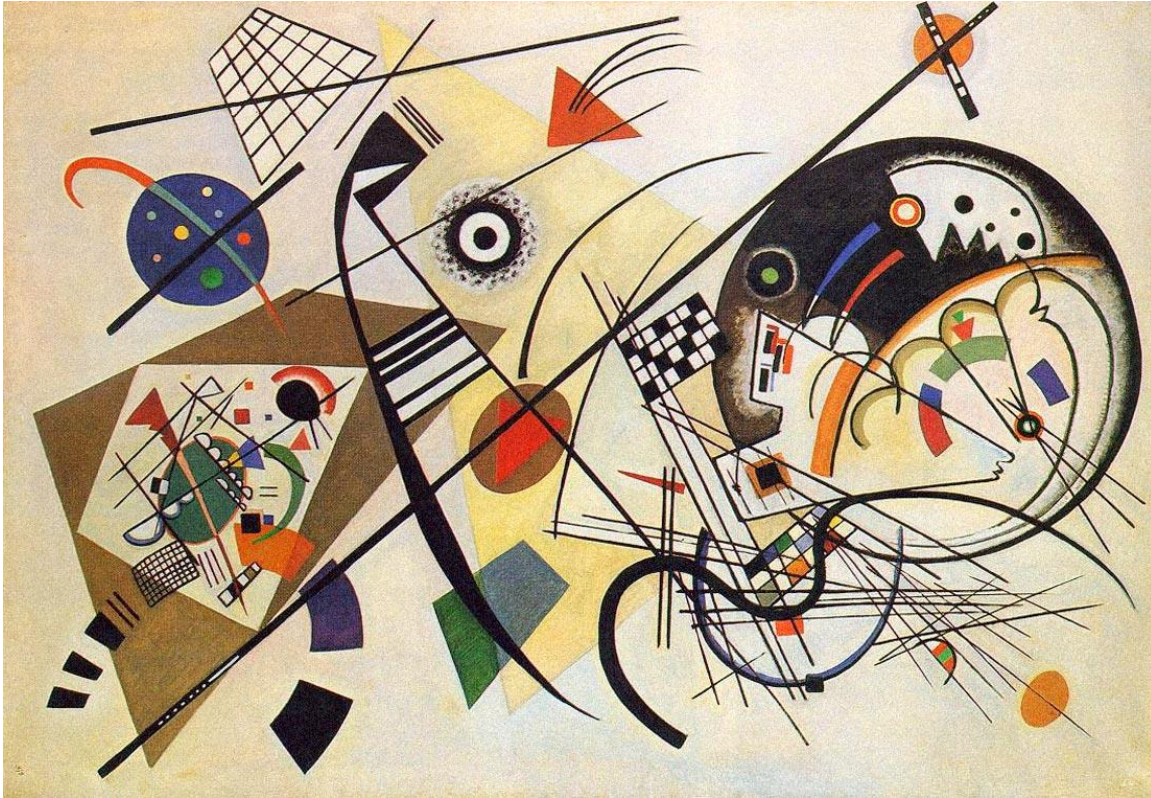


Figure 2. Kandinsky, W. (1923). *Geometric Abstraction*, Oil on canvas (140 × 200 cm). Dusseldorf. Kunstsammlung Nordrhein-Westfalen. <https://www.wassilykandinsky.net/work-256.php>

Orange, blue, black, and brown colors on white canvas, *Geometric Abstraction* titled painting, developed into a popular painting style and was produced when Kandinsky frequently explored abstract compositions of geometric shapes and bright colors (see Figure 2). The freedom of form and color and the arrangement of shapes were portrayed and implemented in his creation. These colors and shades transport the viewer through a band of primary and secondary hues that lead the eye on an unknown journey of coming across an ever-changing direction, from straight lines to curves and waves, all of which meander or strike dynamically through light and shade. Painting without a subject brought it closer to a 'pure' form of expression (Bolton, 2004, p. 234). Such intuitive concepts appear in an art form with spontaneous rhythm (Sharma, 2021). Thus, the main innovative aspects of abstract thought are creating melodious music in physical space, exploring the invisible inner reality, and presenting new color compositions for their own sake. It is an example of how abstract thought produces new knowledge.

Production of New Knowledge: For the Development of Human Civilization

New knowledge plays a vital role in the advancement of human society. Individuals begin their exploration of the physical world. Abstract thought attempts to explore the intangible aspects of reality as new knowledge. It constructs non-figurative and non-representational shapes and forms in mind, which is related to conceptualizing the plural state of imagination. Creativity, innovations, and discovery are the way of knowledge production. Art, science, engineering, design, media, stories, strategies, principles, decisions, and recommendations are sources of Knowledge production.

However, their inquisitive mind is not always satisfied with these visible things. The innovators perceive the gaps and blanks in their existence and the atmosphere around them. They

attempt to fill the gaps by inventing new forms in their minds and new things in reality. The questions arise in our minds regarding the universe, our world, human beings, and things around us. The quest for answers leads to abstraction and seeks the problems' solution. The hypothesis is always abstract until experiments and reasoning prove them. Abstractions are the trailblazer of scientific inventions and cultural innovations. Civilizations have evolved and developed, bringing new, unknown, and abstract things into practice. Innovators attempt to shape abstract concepts and ideas based on tangible things around them. In the initial stage, the inner visual form is abstract suggestive of non-objective expressions. However, the same abstract form may appear in concrete shape in the form of art, culture, scientific invention, and new civilization. Due to the creative quest for new and unknown, abstract thought does not depict recognizable objects, events, and scenes from the external world. However, the seeds of abstract thought grow into real things gradually.

The need for communication for the blind gives way to the invention of the brail script. The need for effective communication facilitates the invention of the telephone. The problems of calculating huge numbers bring calculators. The visions of automation lead toward figuring out sensitive computers. The human dream of reaching the moon contributes to the invention of the rocket. The invention of new things begins in our minds in the form of abstract thought. The abstract vision seeks materialization in real life. This results in experimentation, creation, and invention of new forms and things for the development of human civilization.



Figure 3. *Statuette of a Human-Headed Bull Neo-Sumerian period,*(2150–2000 B.C). Chlorite; Musée du Louvre, Département des Antiquités orientales Image © RMN-Grand Palais / Art Resource, NY. Photo: Hervé Lewandowski <https://easyreadernews.com/mesopotamian-art-sorta-kind-a-not-on-display-at-the-getty-villa/>

Statuette of a Human-Headed Bull of the Neo-Sumerian period is in biomorphic form. In this sculpture, the artist used a biomorphic shape. It is derived from the Greek words bios (life) and morphe (form); the term refers to abstract forms or images that evoke naturally occurring

forms such as plants, organisms, and body parts. It means that human imagination and thinking processes are things beyond reality or realistic form. They started to imagine and visualize the unbelievable and abstract form of the object or subject in the stranger. This example (see Figure 3) proves that the human thinking process started to imagine beyond existence or reality. This imagination and idea generates a new vision or dimension to expand as a new knowledge beyond the real world or towards the virtual world of abstraction

In the prehistoric period, human beings lived in the cave as hunter-gatherers. Later they conceptualized the house in their mind. Then, they materialized the vision in a real house in physical form. The abstract becomes concrete. The abstraction becomes the source of new knowledge that enhances human civilization. Abstract thought precedes every invention for human advancement. Tools were invented in the same manner. The imagination of reaching far away land paves the way for the invention of ships and vehicles. The dream of flying like a bird foreshadowed the conceptualization of aircraft. The needs of the self and society open the way to figure out new things. Abstract thought is inevitable in this state. The mind attempts to find a way out of the problem. The abstract vision in mind puts pressure to visualize it in concrete reality. The execution of the vision and experiment takes place in real life, which can materialize the dream. The visions and abstract thoughts lead toward the progress of civilization.

Before building a real house, we have the abstract concept of the building. We sketch a picture in our mind, which is imitated on paper and later executed in real land. The thought of building a house and a visual picture in our mind are related to abstract thought, which is later materialized in the form of a real physical house (see figure 4).

Abstract art also involves abstract thought. Understanding abstract art clarifies the concept of abstract thought more comprehensively. Abstract art does not imitate physical aspects observed in the external world. Aesthetic qualities are dominant in abstract visual composition. The perception of these unusual elements resonates with the mind of the viewers with long-lasting effects. The compositions renew our perceptions and experiences.



Figure 4. *Ziggurat of Ur* (2100 BCE). Built initially by Ur-Nammu, Circa.

Emotions and sentiments are abstract. Abstract art renders such sensations in the visuals (Arnason, 1988). In creative works, invisible aspects become visible. Inner spiritual qualities reveal themselves in the spontaneous rhythm of playful shapes (Kandinsky, 1977). Viewers' connection with these abstract works provides them relief from worldly troubles in an aesthetic manner. The joyful perception of artworks enhances social harmony. The language of visual art is universal. Visual language is a simple and effective medium of communication.

Abstract artists focus on forms and colors for their own sake instead of realistic representation. Abstract painting disconnects itself from the object (Sharma, 2020, p. 122). The resultant work becomes abstract art. The form focuses on subjective expression. Microsoft Encarta (2009) states that abstract compositions try to express subjective feelings. The trend developed in Classical Greece was opposed to paintings and sculptures. Abstract art is free from recognizable subject matters. The works evoke emotional intensity along with aesthetic pleasure. The artist is not concerned with objective reality as it appears but with the inner nature of the subject. The form is altered to emphasize the emotional experience. The ambiguous form can be interpreted in multiple manners.

Spontaneity and flow are focused in abstract art. The unknown shapes evolve in rhythm and glide smoothly in space, taking a tour of an unknown world. Graham-Dixon (2008) states: *Art without subject matter was a revolutionary concept in the early 20th century. Out went identifiable people and objects in came floating shapes – some resembling creatures, others geometric – blocks of color” (p.434)*. The canvas is full of unfamiliar images and strange colors, suggesting creative ideas beyond our recognition. Shah (2021) argues that abstract art is one of the best achievements of human civilization. The quest for new ideas and concepts leads us toward experimentation and innovation. Graham- Dixon (2008) argues that abstract art has spirit-enhancing qualities. Spirit is invisible. Abstract arts attempt to present the invisible dimensions of life. In this sense, abstractionism experiments with new and unknown elements. Abstract artists offer inner spiritual values in an artistic guise. Graham- Dixon (2008) further states:

These artists wanted to create art containing its own inner universe. Their approach to creativity was mystical and spiritual. Music provided a guide for abstract artists. Composers had long managed to sweep the listener into other worlds without needing to represent nature directly. Instruments did not imitate cocks' crowing or baby's chuckling. Yet the concert-goers readily imagined the countryside or memories of childhood. If music could be abstract, ordered, and emotionally charged, then so too could art. (p.434) Music does not have physical material. Similarly, abstract art is free from concrete matter. In this sense, the magical merits of music are mixed in the paintings (Shah, 2021). Music has become the source of inspiration for artists since it creates harmony having the power to release feelings in a cathartic manner. Abstract artists created a musical melody in visual forms.

The visual world faced double transformation at a time, i.e., it broke down the established European canon of mimesis in art philosophy and found the creation of unrecognizable objects in painting and sculpture in the early 20th century. This is how contemporary art gave rise to abstract art, in a sense, bringing forth art forms without recognizable contents in modern Western art.

The Great Artists Their Lives, Works and Inspiration Part 80 (1995) mentions that Kandinsky took a big and courageous step into the unknown upsetting the tradition of representing the external world around him. He rejected the recognizable images of objects on the canvas by taking the non-representational subject matter. Upjohn et al. (1958) state that Kandinsky tried to “create an abstract expression in which the inner spiritual essence of

expression would be spontaneously and intuitively conveyed in emotionally stirring colors and designs” (p.626). The presentation goes beyond the realm of visible nature that transcends the material reality into a spiritual one. Abstract art creates realities of its own. This is the production of new knowledge in some sense. In other words, the artist creates an “inner universe” with the help of his vision and imagination. Kandinsky (1977) asserts that only the colors and forms of abstract painting can converse with the viewers without recognizable subject matters.

Imaginary objects are presented in mere lines, shapes, and colors to portray emotions and feelings (Graham-Dixon, 2008). The unconventional form excludes identifiable images and figures. Non-figurative and non-representational expressions with spontaneity are the salient features of abstract artworks. This is the innovation of a new visual. The absence of external things creates an atmosphere for inner life. Kandinsky states: “I value only those artists who really are artists, that is, who consciously or unconsciously, in an entirely original form, embody the expression of their inner life; who work only for this end and cannot work otherwise” (qtd. in Stratton, 1977 p.vii). The inner life is invisible, but the artist attempts to present this life in visible form through colors. This is the innovative aspect of abstract art. Kandinsky (1977) feels the movement of spiritual life created by innermost thoughts and feelings in abstract art.

Kandinsky again states that the “*spiritual life, to which art belongs and of which she is one of the mightiest elements, is a complicated but definite and easily definable movement forwards and upwards*” (p.4). For Kandinsky (1977), abstract painting is not only connected with inner life but also with the spirit, and we seek to approach the problem of the spirit by way of inner knowledge (p.14). The inner knowledge seems closer to the inner spiritual life. When science and technology fail to provide scientific methods to deal with those questions that have to do with a non-material matter, thence spiritualism embraces all those unanswerable questions related to non-matters. Abstract thought and abstract painting have stressed revealing the unknown aspects of life and the world.

In Kasimir Malevich’s paintings, we cannot connect the composition with any physical things of the external world. Abstract paintings are subjective and non-representational (Sharma, 2021, p. 17). The shapes and colors evolve and collocate spontaneously. Abstract art uses a visual language of form, color, and line to create a composition that may exist with a degree of independence from visual references in the world (Adhakari, 2012, p.12). The shapes stand for themselves. According to Graham-Dixon (2008), his abstract paintings suggest sublimity. The creation of a sublime state is the creation of new knowledge. Ockvirk et al. (2002) mention that the work eliminates nature from art. Non-objective painting brings innovative forms from the imagination. The atmosphere created by the art is metaphysical, suggesting the existence beyond this visible world. The painting presents the poetics of color (Shah, 2021). This is an important invention in the domain of art. We need not relate work to the past and future along with the things in the context. It allows us to contemplate the painting itself (Martin & Jacobus, 1991). His works are non-representational and non-objective. Abstract arts are guided by abstract thought. Creating a new shape and experience creates new knowledge (see Figure 5).

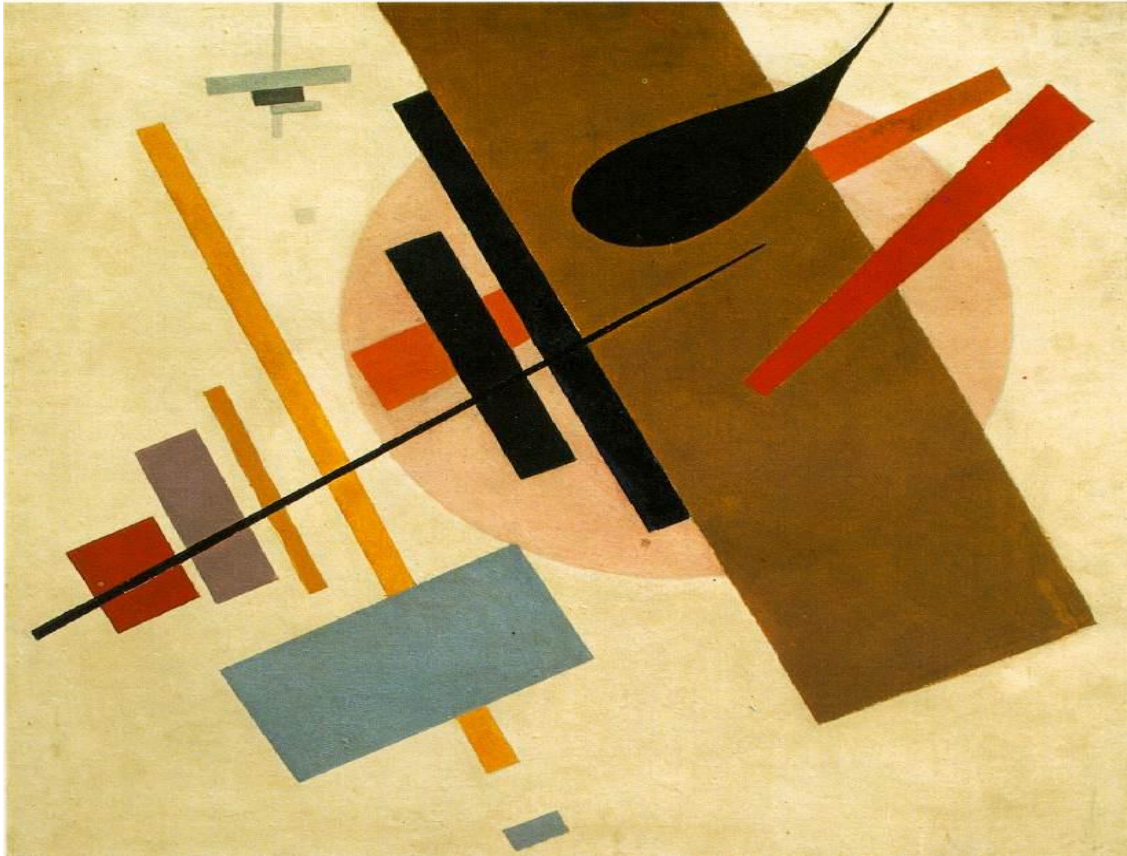


Figure 5. Malevich, K. (1916). *Supremus No. 55*. Oil on Canvas (80x80 cm).[https://commons.wikimedia.org/wiki/File:Supremus_55_\(Malevich,_1916\).jpg](https://commons.wikimedia.org/wiki/File:Supremus_55_(Malevich,_1916).jpg)

The term suprematism connotes that abstract art is based on pure artistic feeling rather than the visual depiction of objects. Supremacism is an early twentieth-century art movement focused on the fundamentals of geometric shapes like squares, circles, and rectangles used in a limited color range. Geometrical abstraction of Platonic form is, however, an epistemological and an ontological thesis along with an ethical and an aesthetical proposition that was a review in the early 20th-century abstract art in the form of two antithetical realistic, i.e., relative and absolute beauty (Shah, 2011, p. 3). When art concerns human-created beauty in the sense of either transient or eternal beauty, it helps to evoke stranger emotions aroused by newly created subjects. The sublimity in the painting overwhelms the viewer, including a feeling of isolation in a limitless world (Graham-Dixon 2008). Malevich's work, also known as *Supremus 57*, is the off-white background of the canvas; the composition of colorful geometrical shapes creates comfort in our eyes and provides a sense of visual pleasure. Shah (2021) writes:

Color combination in painting is concerned with aestheticism. Color attracts the attention of a beholder. The color beauty sustains the undivided attention of the beholder. This is how color invites constant and willful participation in and within the painting. Thus, the color heightens the degree of emotion and leads to contemplation of a certain magnitude. The contemplation opens up the way to the journey of eternity. All this is possible through the musical elements created by color harmony that becomes able to express the inner need; at the same time, it becomes able to touch the inner feelings. The feelings affect and influence the experience of the spectator. A certain

experience is related to the human body, mind, and soul. Thus, it reflects upon soul-touching feelings. That's why color is the spirit of the paintings. (Shah, 2021, p. 22)

Supremus conceived the artist as liberated from everything that pre-determined the ideal structure of life and art. Sharma (2021) describes:

Kasimir Malevich's Suprematist Painting presents the pattern of floating black trapeziums and red squares. The novel composition creates comfort in our eyes and provides a sense of aesthetic pleasure. We cannot connect the composition with any physical things of the external world. The shapes and colors evolve and collocate in a spontaneous manner. The shapes stand for themselves. (p.158)

Graham- Dixon (2008) points out that abstract artwork has painterly gestures; that is, the figures are not photographic and have the special quality of a painting. In this painting, he explored color and form in new dimensions that helped create new knowledge to open the new horizon in fine arts fields.



Figure 6. Gabo, N. (1941). *Spiral Theme*.

Constructivism was a particularly austere branch of abstract art founded by Vladimir Tatlin and Alexander Rodchenko in Russia around 1915. For example, Naum Gabo's constructivism titled *Spiral Theme* is abstract artwork. In this artwork, forms and shapes are unknown but create harmony and beauty. This artwork is not a natural form of worldly things or objects because of non-objective, non-representational, and non-figurative shapes, which are imagined and visualized forms of abstract thought. This imagined or constructed artwork is totally new, and the uniqueness helps to open new dimensions of perspective and the possibility of shapes, forms, and aesthetics, which is the production of new knowledge.

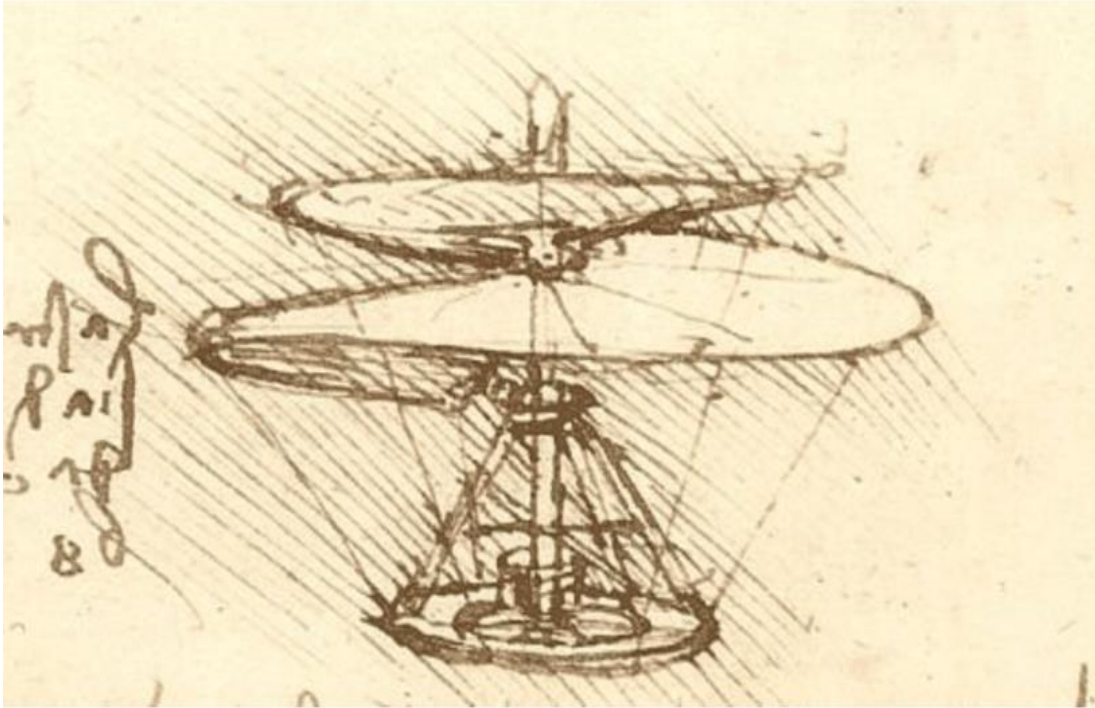


Figure 7. Vinci, L. d. *flying-machine*.

Leonardo da Vinci's most famous invention, the flying machine, is an example of imagination and visualization, as well as his eagerness for the potential of flight (see Figure 7). We have dreams, fantasies, wishes, and imagination. We are not happy and satisfied with what we have. We are searching for the unknown world, images, and ideas.



Figure 8. Robotics, R. (2016). *Sophia*.

At first, the strange and unknown things are invisible in the real world, but they may be available in our minds through intuition (Medin & Ross, 1989). We see the clouds in the sky and want to fly above the clouds. This is our imagination. This imagination leads us to take a flight in reality which was impossible in the past, but it might have inspired the innovators to make a

visual frame of the aircraft. We want to fly like a bird. This might have motivated the production of aircraft.

Hanson Robotics' most advanced human-like robot, Sophia, humanizes our imaginings and dreams for the future of artificial intelligence. It is an example of a unique combination of science, technology, and artistry; Sophia is a manufactured science fiction character depicting the future of AI and robotics and a display place for advanced robotics and AI research (see figure 8). Shah (2021) further describes:

It won't be inappropriate to credit abstract thoughts to being the benefactor of advanced humans today. Various inventions have simplified the lifestyle of humans today. Humans have always shown a keen interest in alternatives to difficult tasks and safe and convenient methods of livelihood. Many technologies have been introduced to enhance and comfort lifestyles, such as automobiles, computing, and Artificial Intelligence (AI). These are among us because of the fantasies and imaginations which showed a path for the development of such technologies. The abstract imagination made it possible to achieve 'more benefit from less effort.' (Shah, 2021, p. 3)

These examples result from imagination, visualization, and experimentation of abstract thought and new knowledge. The creation of new things always involves abstract thought (Boroditsky & Ramscar (2002). The inventions that we see now might have been abstract thoughts in the past. The same abstract is later materialized in concrete shape. Few individual creative minds bring something novel in abstract visual shape. Abstract thought is the most important key that has changed the world (Shah, 2021, p. 4). This statement shows the potential of abstract thought.

Human exploration has always shown a keen interest in alternatives to challenging works. In this way, various discoveries and inventions have simplified the lifestyle. They have sought a safe and convenient method of livelihood. New technologies, such as automobiles and computers, have been introduced to enhance lifestyles, including artificial intelligence. These are among us because of the fantasies and imaginations that showed a path for developing such technologies. Abstract creations sketched into visual arts have guided scientific inventions of later times. Then, the explorers work on those abstract thoughts to give a concrete form of theory, statement, and idea. Thus, new knowledge results from human imagination and visualization of abstract thought that developed human civilization.

Conclusion

Abstract thought is the key source for the production of new knowledge in the development of human civilization. It constructs non-objective and non-representational forms in the mind, related to conceptualizing the plural state of imagination and visualization, and it has formed the basis of creativity, experiment, and innovation. Abstract thought involves analyzing ideas, creating information, solving problems, composing new ideas, discovering new theories, developing new philosophies, and creating things that are the sources of new knowledge. Abstract thought attempts to explore the intangible aspects of reality as new knowledge. New knowledge always shows the path and creates new things. They figure out the new vision and attempt to materialize that in real life in the form of art, culture, technology, and civilization. Then, once an abstract form is in mind, the thing takes a concrete shape that presents new knowledge concerning the self and the world. In this sense, abstract thought is closely related to creations and innovations because human beings are not satisfied with what they have in front of them. They explore the world for new things and new experiences and go beyond the physical world into the realm of abstraction. Abstract art is one of the mediums that present new shapes and forms along with new theories of life and the world. Arts, cultures, and civilizations

originate in the human imagination or within the mind of the artists, and the innovators attempt to present the visual shape of the vision in real life that contributes to society. Abstract thought creates a new reality for the spectators since they have insightful dimensions. Therefore, abstract thought opens the door for creations in the field of art, culture, and science. As a result, the vision of abstract concepts leads to exploring an unknown for creation, invention, and innovation that constructs new knowledge. Humans developed their civilization because they can think, imagine, and visualize beyond external reality. Therefore, it can be concluded that abstract thought produces new knowledge, which is the key to developing a human civilization and gradually advancing it.

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