Plotinus' Rational Approach to Artistic Beauty Through Imagination, and its Reflection on Picasso and Einstein's Creative Thought

Aphrodite Alexandrakis

This article was originally published in

Platonism and its Heritage, Selected Papers from the 19th Annual Conference of the International Society for Neoplatonic Studies

Edited by John F. Finamore, Ioanna Patsioti and Giannis Satamatellos

ISBN 978 1 898910 985

Published in 2023 by The Prometheus Trust, Chepstow, UK.

This article is published under the terms of **Creative Commons Licence BY 4.0**

Attribution —You must give appropriate credit, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

No additional restrictions —You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.

The Prometheus Trust is a registered UK charity (no. 299648)

www.prometheustrust.co.uk

Plotinus' Rational Approach to Artistic Beauty Through Imagination, and its Reflection on Picasso and Einstein's Creative Thought

Aphrodite Alexandrakis

Albert Einstein said "Imagination is more important than knowledge. For knowledge is limited whereas imagination embraces the entire world, stimulating progress, giving birth to evolution." Following Einstein's principle, Picasso, referring to his painting *Les Demoiselles d'Avignon* (1907), added: "Everything you can imagine is real..."²

Similarly, eighteen centuries earlier, Plotinus held that the rational, conscious, human activity consists of the *imagination* ($\varphi a v \tau a \sigma \tau \iota \kappa \acute{o}v$) and innate knowledge ($\delta \iota a v o \eta \tau \iota \kappa o v$). For "intellectual activity is accompanied by a mind-picture $\tau \eta \varsigma v o \acute{\eta} \sigma \epsilon \omega \varsigma \varphi a v \tau a \sigma \iota a \varsigma$ ". We are the activity of the intellect; so that when that is active, we are active. And while $\delta \iota \acute{a}v o \iota a$ can be independent of *imagination* (has its own consciousness), *imagination* works along with $\delta \iota \acute{a}v o \iota a$. Hence, a *synergy* takes place between the $\delta \iota a v o \eta \tau \iota \kappa o v$ and the $\varphi a v \tau a \sigma \tau \iota \kappa o v$ as creative powers. Both the $\delta \iota a v o \eta \tau \iota \kappa o v$ (innate knowledge) and the $\varphi a v \tau a \sigma \tau \iota \kappa \acute{o}v$ are found in the human intellect's experience and therefore, they mirror the rational activity of the soul. Accordingly, Plotinus says, "…the arts do not simply imitate what they see: they go back to the rational principles from which nature derives…" Hence, the rational basis of artistic creations.

The aim of this paper is not the historical development of the notion of *fantasia* ${}^5(\varphi\alpha\nu\tau\alpha\sigma i\alpha)$ *imagination*, for this has already been done. Naturally, from the historical point of view, long before Plotinus, Pythagoras, Plato, Aristotle, and later Proclus, they were all thinking about what *Imagination* – $\varphi\alpha\nu\tau\alpha\sigma i\alpha$ - is, and how it functions in the

¹ George Sylvester Viereck, "Saturday Post," October 26, 1929.

² https://www.gregfaction.com.

³ Ennead, 1.4, 23-25.

⁴ *Ibid.* V.8.1, 35-37.

⁵ See: E. Warren, Imagination in Plotinus. *The Classical Quarterly*, Nov.1966).

mind. According to some authors, Plotinus established the notion of *fantasia* against mimesis, that is, copying – *imitation*, as the main cause of artistic and scientific stimulation of the mind for creativity. However, for him, the beauty of the perceptual world's images derives from the intellectual world of the mind (thinking). And while the *cosmos* for Plato is only a perceptual image, Plotinus uses the example of the sculptor who creates because the *form or*, the image of what he creates is in his mind. He thinks about it through his *imagination* – $\varphi \alpha v \tau \alpha \sigma (\alpha - he visualizes it. Hence, it is a conscious experience; without it, there is no conscious experience. Below it is the$ *sense imaginative soul*, and below,*nature*. This form's origin is not sensual (from the world of sense) but ... a direct intuition. Interestingly, for Proclus, like the ancients,*fantasia*and*nous*are identical. 9

My goal is to explore the nature, role, and importance of the Plotinian thought and meaning of the concept of *imagination* (mental image) in scientific and artistic thought of the early twentieth century; specifically, on Einstein's and Picasso's thought. They both shared the same concept independently. This does not suggest any direct influence of Plotinus on Einstein or Picasso, but a similar way of thinking between a third century philosopher and a twentieth century scientist and artist.

My interest in Plotinus' thoughts on the notion of *imagination* ($\varphi a v \tau a \sigma i a$) was stimulated and inspired by three books and articles I read on Einstein and Picasso's views on how a mathematical and/or artistic idea is the result of one's imaginative power, $\varphi a v \tau a \sigma i a$, which originates in the mind. That idea reminded me of its resemblance to the way Plotinus thinks about $\varphi a v \tau a \sigma i a$. And even though there is no direct influence of thinking between them and they are twenty centuries apart, Plotinus the philosopher, Einstein the physicist, and Picasso the artist created their theories by being stimulated by their *imagination* $\varphi a v \tau a \sigma i a$ in the same way, and that resulted in the creative process of the mind.

⁶ See: Eva, T.H, Brann, *The World of the Imagination,* (1990). M.W. Bundy J.M. Studies in Language and Literature, vol. 7,

⁷ J.M, Cocking, A Study in the History of Ideas, 1991.

⁸ Ennead, I.8.1.

⁹ Cocking, p.50.

¹⁰ Arthur I. Miller, *Einstein, Picasso: Space Time, and the Beauty that causes Havoc* (New York, New York, 2001.

Insights of a Genius, New York, 1996, Colliding Worlds, 2014.

In 1905, Albert Einstein's Special Relativity Theory made a breakthrough that influenced the world of science and, interestingly, it also impacted the world of the Arts resulting in an abstract style. This influence was crucial to Picasso's revolutionary new way of thinking about painting through the execution of his abstract atemporal compositions.

Like Plato and Plotinus, Einstein's Special Relativity Theory resulted in the distrust of the senses by both the twentieth century scientist (Einstein) and artist Picasso. Both Einstein and Picasso believed that "art and science are means for exploring worlds beyond expressions, beyond appearances, that direct perception deceives."11 and "thinking not seeing leads to truth." Hence, the return to the Platonic and Plotinian rational ideas. And like Boethius who said "the ultimate object of reality is atemporal,"12 the same idea holds for Plotinus, Einstein, and Picasso. Thus, contrary to all scientific and artistic theories expressed up to that time, Einstein and Picasso created new theories in science and new artistic styles triggered by and based on *imagination* and *inspiration*. Their inspiration went along with and contributed to their rational thought and functioned as a messenger to the creator's (scientist/artist) unique possession of *imagination* (το φανταστικόν), which in turn is triggered by the intellect $(vov\varsigma)$ and provides a consciousness of the thinking process.

Einstein's trust in the power of *imagination* and creativity is reflected in the following statement: "Imagination is more important than knowledge; for knowledge is limited, whereas *imagination* embraces the entire world, stimulating progress, giving birth to evolution."¹³ Thus, imagination is a conscious experience in thinking of new ideas. This idea is again underscored in another powerful statement of Einstein's, and which was the inspiration to writing this paper. He said that "...when he was a teenager, he imagined himself riding on a beam of light and wondering about the consequences." This means his imagination (internal vision), 14 in a deep sense, preceded his thought; his perception of his "seeing" (imagining) of nature was the necessary

¹¹ Steven G. Brush, "Einstein, Picasso: Space, Time and the Beauty that Causes Havoc." Physics Today: 54, 12, 49 (2007), 1-5.

¹² Michael Chase, "Time and Eternity from Plotinus and Boethius to Einstein." Researchgate.com, ΣΧΟΛΗ Vol.8.1., Jan. 2014.

¹³ "The Saturday Evening Post," 1929.

¹⁴ Whittaker, Dillon, and others.

forerunner of all thinking that followed.¹⁵ Hence, as he held, thinking not seeing leads to truth.

It is my conviction that Einstein and Picasso's approach to the *imagination* as the basis of and stimulus to creating scientific and/or artistic theories, echoes Plotinus' theory of *imagination* seventeen centuries earlier, as presented in his *Enneads*. The function and importance of imagination will be explored as analyzed by several Neoplatonic scholars and/or artists' minds. It will be held that there is an agreement in thought between Plotinus' notion of *imagination* and that of Picasso and Einstein. That will reveal the role and power of the *imagination* as a rational and inspirational source of human understanding. ¹⁶ This process of mind is of utmost importance in understanding the source from which certain artistic, philosophical, and scientific ideas spring.

Both Einstein and Picasso's theories on the role and importance of the *imagination* and its rational function in constructing scientific theories and/or creating works of art was crucial to understanding. We know that for Plotinus, artistic and scientific creations are rooted in imagination. He says:

...the arts do not simply imitate what they see, but they run back up to the founding principles from which nature derives ... for Pheidias too did not make his Zeus from any model perceived by the senses but understood what Zeus would look like if he wanted to make himself visible...¹⁷

Hence, the artist's direct perception of the intelligible world through his imagination.

Certain Plotinian concepts on the function of both the artistic and scientific thinking process will be discussed. Based on this, Einstein's position on the importance of *imagination*, and Picasso's painting "Les Demoiselles d'Avignon" will be brought up as an example and result of his imagination's influence by the contemporary, new mathematical/scientific theories such as Princet's and Poincare's Non-Euclidean Geometry, its emphasis on four-dimensional space, and the elimination of perspective. It will be seen that Einstein's *imagination* on his statement of "his riding on a beam of light" was the result of his thinking

¹⁵ Ihid

¹⁶ *Ibid*.

¹⁷ Ennead, v.8.1., 6-11.

of space – cosmos – through his inspirational imagination - φαντασία. The idea was in the scientist's mind, that is, he thought of it through his imagination since he was a teenager. Accordingly, as Plotinus put it. "... We are the activity of the intellect ... του νοουντος ενέργεια. 18 Thus, when the intellect is active, we are active. 19 Our imagination is our consciousness of things around us but always separate from the object of awareness αντίληψης.²⁰ Plotinus points out that:

... As regards the soul, when that kind of thing in us which mirrors the images of thought (διάνοια) and intellect (νους) is undisturbed, we see them and know them in a way parallel to sense – perception, along with the prior knowledge that it is the intellect and thought that are active.²¹

Since imagination is our consciousness of and mirrors whatever surrounds us and comes in parallel to sense perception but is more reliable, because as mentioned it is triggered by our *intellect*, thought, for we are "...του νοουντος ενέργεια" (the activity of the intellect). Importantly, for Plotinus, an intellectual activity is accompanied by a mind-picture. 22 Consequently, imagination becomes $v \acute{o} \eta \sigma \eta \varsigma$, which is the basis for artistic and scientific activity.

As mentioned, Plotinus' conscious human activity consists of the imagination φανταστικόν and innate knowledge διανοητικόν. indicates a synergy between thinking and the imagination as creative powers. Both the φανταστικόν and διανοητικόν are found in the human intellect's experience and they, therefore, mirror the rational activity of the soul/mind/intellect/vovc. This synergy between the imagination, φανταστικόν, and the Intellect, νους, takes place through αντίληψής (awareness) that plays an important role. This Plotinian kind of "synergy," this Plotinian thought, is expressed in both the twentieth century scientist's (Einstein's) ideas and interestingly, in the artist's (Picasso's) thought. More specifically, it is found in Einstein's statement below and on a certain painting by Picasso. Since the human mind is in direct communication with and has access to the intelligible world, what

¹⁹ *Ibid*, I.4.9, 14-17.

¹⁸ *Ibid*.

²⁰ The notion of αντίληψής and its importance has been analyzed by E.W. Warren, 'Imagination in Plotinus', The

Classical Quarterly, v.1, No. 2, (Nov. 1966), Cambridge Univ. Press, pp 277-285.

²¹ Ennead, I.4.10, 14, 15.

²²Ibid., I.6.1.

the artist/scientist creates is of a divine nature, that is, it is created by his imaginative $vov\varsigma$ by following the rational principles.

This is clearly indicated in:

- 1. Einstein's statement that he imagined "riding on a beam of light in space" and his belief in the importance, power, and creative force and role of imagination...
- 2. Picasso's statement: "Everything you can imagine is real." This statement's reflection is mirrored in his painting: Les Demoiselles Avignon painted in 1905, and in Plotinus statement:
- 3. ...the arts do not simply imitate what they see, but they run back up to the forming principles from which nature derives and since they possess beauty, $\kappa\alpha\lambda\lambda\sigma\zeta$, they make up what is defective in things. For Pheidias too did not make his Zeus from any model perceived by the senses but understood what Zeus would look like if he wanted to make himself visible."²³

Thus, the artist becomes the mediator sensible and ideal, and his interests are "the ultimate values of the universe." ²⁴

Plotinus' above statement is mirrored in Picasso's painting: "Les Demoiselles D'Avignon" painted in the early twentieth century (1905). Like Plotinus, both Einstein and Picasso, the physicist, and the artist, inspired by their own "Plotinian" internal vision- imagination- along with thinking, are driven to think. It is a Plotinian synergy between φαντασία -mental image of consciousness: imagination and the intellect νους, taking place through αντίληψής (awareness). This communication of fantasia and nous for both the scientist and the artist led them to create their own theories on the same principle in both the scientific and artistic field. As the mathematician *Poincare*, who was Picasso's main influence on discovering and painting the fourth-dimension with no perspective, put it, "the scientist's quest for this special beauty, the sense of the harmony of the cosmos..." is in parallel to Plotinus' statement "...just as the artist chooses from among the features of his model, those which perfect the picture and give it character and life..."²⁵ Accordingly, when Einstein said "thinking not seeing leads to truth," he, like Plotinus, meant - thinking through his "internal vision" - his imagination φαντασία, which precedes thought.

²³ Ennead, v.8.I, 35-41.

²⁴ J. P. Anton, Plotinus" Conception of the Functions of the Artist, *Journal of Aesthetics and Art Criticism*, Vol. 26. No.1, 1967.

²⁵ A.I.Miller, *Colliding Worlds* New York, 2014, p. 27..

As mentioned earlier, Einstein's -φαντασία- imagination (internal vision), made him wonder even as a teenager when he uttered the statement of seeing himself riding on a beam of light. Later, his interpretation of the *cosmos* on the basis and in terms of mathematical equations, was the result of his "internal vision," his imagination. His imagination acted as the stimulus on his intellect (vovc) resulting in thought (διάνοια). This scientific approach to beauty and harmony of the cosmos echoes the Plotinian search of special beauty where "...the artist chooses from among the features of his model those who perfect the picture and give it character and life."26 Accordingly, when Einstein said "...thinking not seeing leads to truth," like Plotinus he meant thinking through his *internal vision*, his φαντασία, *imagination*.

During that time, 1905, Einstein had just finished his Special Relativity Theory, while Picasso was still working on his breakthrough controversial painting, "Les Demoiselles D' Avignon" that was completed in 1907 and became the foundation of Cubism. Like the Ancients, both men, the artist, and the physicist, were working on the idea and belief that "...art and science are means for exploring worlds beyond perceptions, beyond appearances and... direct viewing deceives....²⁷ as they both knew it in science and in art.

It has been noted that Einstein's approach to space and time was not primarily mathematical. Notions of aesthetics were essential to his discovery in 1905 of relativity and a new representation for light, and then in 1907 of a means to widen relativity theory to include gravity. Nor were Picasso's studies of space totally artistic in the narrow sense of this term, as his interest in scientific development reveals. Picasso's new aesthetic for The Demoiselles was the reduction of forms to geometry.²⁸

Like Plato and Plotinus, Einstein and Picasso believed that direct viewing (perception) deceives, therefore leading to a distrust for the senses. This kind of thought resulted in Einstein's refutation of the theory of Absolute Space and Time. Simultaneously Picasso, influenced by the mathematicians, Princet and Poincare, dethroned perspective in art²⁹ and created a flat surface consisting of flat geometric shapes without perspective. Hence, he chose a style that he could translate into

²⁶ A.H. Armstrong, *The Cambridge History of Later Greek and Medieval History*, Cambridge University Press, 1967.

²⁸ A. I. Miller, Einstein, Picasso, N.Y. Basic Books, 2001, p..4.

²⁹ *Ibid.* p.4.

a conceptual one. The concepts of this style were based on Einstein's Relativity Theory of absolute space and time³⁰ for which he abandoned perspective and used flat geometric shapes. While Einstein's intuition included the question for generality, like Plotinus, both Einstein and Picasso were interested in expanding the concept of synergy between thinking (το διανοητικόν) and imagination (φανταστικόν). They both understood the importance and role of imagination as a creative intellectual tool in triggering and inspiring creative ideas in the mind. They knew that *imagination* involves and triggers thinking that leads to creative thoughts. Both men's influence by Princet and Poincare's writings is reflected in their thinking of space in a new way through imagination as their tool. This idea is like Plotinus' reference to Pheidias' visualization and thoughts when he created Zeus, the chryselephantine statue in the temple of Zeus. His visualization process through fantasia, imagination triggered the new, rational idea in his mind.

As mentioned, like the ancients, Einstein refused to take perceptive time as being true or valid. His notion of time was that of the ancient philosophers, and like Proclus later, *atemporal*. He wrote that the equations of physics were interpreted in a way that "led to asymmetries that do not appear to be inherent in the phenomena. This led him to the discovery of his <u>Relativity Theory</u> in 1905 and introduced the notion of asymmetry in the 20^{th} century. As 20^{th}

Based on this idea, he created the theory of <u>Absolute Space</u> and <u>Time</u>. This theory had a great impact and influence on Picasso's work. Following non-Euclidean four-dimensional ideas, in 1907, he constructed a geometrically shaped design on canvas in his painting *Les Demoiselles d'Avignon*, which is a conceptual work. The painting shows all four perspectives viewed at once and all abstract geometrically designed figures on the foreground. Thus, the reduction of the composition to geometrical forms. Therefore, the language of this painting style was geometry. The painting is a visual imagery expressed in geometric language. His concern was that of space and time on canvas and its aesthetic representation in an aesthetically satisfying way. And just as in science, the elements of his composition shift between

³⁰ *Ibid.*, p. 250.

³¹ Michael Chase, <u>Time and Eternity from Plotinus and Boethius to Einstein.</u> CNRS, Paris, Jan. 2014. Scholle, 8 (1):67-100. Researchgate.net.

³² Colliding Worlds, p.9.

symmetry and asymmetry. Thus, for Picasso, geometry became the language of his art for as did Plato and Plotinus, he distrusted the senses. He painted a world beyond appearance and perception to be explored through art and science in the fourth dimension. Hence, geometry became the language of the new form of art: Cubism and new notions of space and time became the foundation of his artistic creations. When Picasso was asked about the fourth dimension, he answered that he depicted the fourth dimension on the abstract face of one of the women in the foreground. Thus, like Boethius, the ultimate object of reality for Einstein, Picasso, and Plotinus is atemporal.

That kind of design was the result of Picasso's imagination, influenced by his learning of time and space as being atemporal. He wanted to show all four perspectives at one. Interestingly, he depicted the fourth dimension in the abstract face of one of the foreground's painted women, and reduced all natural forms into geometric shapes, painted in four dimensions without the traditional perspective. Picasso's geometry became the language of his art, for like Plato and Plotinus we cannot trust our senses. The world beyond appearances and perception could therefore be explored through art and science in a fourth dimension. Thus, new trends were created in both science and art. Those trends were devised and filtered by the scientific and artistic creators through their imagination and resulted in harmony. For harmony is the result of contraries (Unity in multiplicity).

Einstein and Picasso's theories of scientific and artistic creations were inspired by their imagination and are rooted in Plotinus' theory of imagination φαντασία in which direct perception deceives. *Imagination*, internal vision, φαντασία, in collaboration-synergy-with the intellect νους, through awareness αντίληψης, results in thinking of and creating artistic and scientific theories. Thus, imagination is an intellectual power, like thinking. (oιον νόησης) and the image is the result of awareness of it κρίσις και αντίληψής.

Like philosophical ideas, science, and art (at least, serious art works) are means for exploring worlds beyond perceptions, beyond appearance. A synergy takes place in nous between the $\delta i \alpha v o \eta \tau i \kappa \delta v$, and imagination (φανταστικόν). This synergy results in rational thought (activity) and therefore, as Plotinus put it, "...the arts do not simply imitate what they see...they go back to the rational principles from which nature

derives..."³³ And at that moment of creation... "the boundaries between art and science cease to exist and they *aesthetically* play a central role."

This is the moment during which fantasia, *imagination*, is present, and leads to and triggers rational thoughts and ideas. Therefore, direct viewing deceives. As mentioned earlier, this kind of thinking later resulted in Einstein's refutation of the theory of Absolute Space and Time. Simultaneously, Picasso, influenced by the mathematicians Princet and Poincaree, dethroned perspective in art. Hence, Picasso chose a style that he could translate into a conceptual one based on Einstein's influence of *Relativity Theory*. While Einstein's intuition included the question for generality, like Plotinus, he and Picasso were interested in expanding the concept of *synergy* between thinking and *imagination* (διανοητικο και φανταστικο). They both understood the importance of *imagination* as a creative intellectual tool in triggering and inspiring creative ideas in the mind.³⁴ Thus, their theories were the result of their *imagination*'s inspiration.

Art and science are means for exploring worlds through $\varphi a v \tau a \sigma i a$ beyond perceptions, beyond appearance. As Plotinus put it, "...at the moment of creation, a *synergy* takes place in vovs (intellect) between Thought ($\delta\iota a v o \eta \tau \iota \kappa \delta v$) and imagination ($\varphi a v \tau a \sigma \tau \iota \kappa \delta v$)." This *synergy* results in rational thought (activity) and so, for Plotinus, "...the arts do not simply imitate what they see... they go back to the rational principles from which nature derives..." And at that moment of creation "...the boundaries between art and science cease to exist and aesthetically, play a central role.

It was the power of imagination, $\varphi a v \tau a \sigma i a$, along with consciousness, thinking, $\delta \iota \dot{a} v o \iota a$, that the ancient Greek philosophers were wondering and thinking of questions about nature, man, space, beauty, and the natural world. Their wonder and imagination led them to thinking and creating logical theories about nature, humans, beauty, and the Universe. Like Plato and Plotinus, Einstein, and Picasso were seeking a world beyond sense perception...the deep structure of objects and representations. And like Plotinus, both men emphasized the cosmic dimension of the aesthetic vision. 36

³³ Ennead, v.8.10, 37.

³⁴ Aesthetics and Creativity, (Einstein and Picasso), p. 4.

³⁵ Enn. v. 8. 10, 37

All three men (Plotinus, Einstein, and Picasso) thought that to understand nature deeply, one must go and look beyond perceptual appearances for they are not real. Like Plotinus, both Einstein and Picasso used their deep insights φαντασία which leads to issues and nuances hidden from those unable to penetrate beyond technical difficulties; hence, they created the fourth dimension of Cubism. Creativity for Plotinus, Einstein, and Picasso is the result of conscious thought: imagination. It is imagination that inspires the artist/scientist/ philosopher to create a theory. Only human beings have consciousness; nature does not. Man's consciousness leads to imagination (mental image).

Finally, all three thinkers: Plotinus, Einstein, and Picasso, held that:

- direct viewing deceives.
- art and science are means for exploring worlds beyond perception, and
- *imagination* is the cause and source of <u>thinking</u> and <u>creativity</u>.

Thus, for all three thinkers, Plotinus, Einstein and Picasso, creativity is the result of a conscious thought springing out of φαντασία through διάνοια, dianoia.

Bibliography

- Armstrong, A.H., 1989, Plotinus, The Enneads, Cambridge Mass., Harvard University Press.
- , 1967, The Cambridge History of Later Greek and Medieval Philosophy, Cambridge University Press.
- Brann, Eva, T.H. 1991, The World of Imagination, Rowman, and Littlefield Publishers Inc. New York.
- Brush, Steven. 2002, *Physics Today, Letters to the Editor*, p.12.
- Chase, M. 2014, "Time and Eternity from Plotinus to Boethius to Einstein," ΣΧΟΛΗ, .8.1. www.nsu.Classics shole.
- Cocking, J.M. 1991. Imagination, New York.
- Deck, N.J. 1967. Nature. Contemplation and the Philosophy of One: A study in the Philosophy of Plotinus. University of Toronto Press.
- Dillon, John, 1977, The Middle Platonists, 80B.C. to AD 220. Cornell University Press.
- , 2003. The Heirs of Plato: A Study of the Old Academy (347-274 BC., Oxford University.

76 Platonism and its Herirage

- Guthrie, W.K.C. 1962, *A History of Greek Philosophy, Vol. I*, Cambridge University Press.
- Hamilton, Edith, Huntington, C. Cairns, 1961. *The Collected Dialogues of Plato*, Princeton University Press.
- Miller, A.I., 1996. Insights of A Genius. New York.
- ______, 2001, Einstein, Picasso, and Space, Time, and the Beauty That Causes Havoc. New York, Basic Books.
- , 2014, Colliding Worlds, New York.
- Morrow, Glenn, R., 1992. Tr, Princeton University.
- Singer, I., 1996, *The Harmony of Nature and Space*, vol.3. The John's Hopkins University Press.
- Van Horn, J., 1927, Studies in Language and Literature. Urbana, Illinois.
- Warren, E.W., 1996, Imagination in Plotinus, *The Classical Quarterly*, v.16, 2, pp. 277-285.