

Terms Used in Percussion

“Ionisation”

By Michael Rosen

“Ionisation” was written by Edgard Varèse between 1929 and 1931. Although not the very first piece written for percussion ensemble it is probably the most well known and most influential and therefore deserves our scrutiny. (Note that “Rotativa” by Giacinto Scelsi was written in 1930; to hear a performance of this piece by the Oberlin Percussion Group go to https://www.youtube.com/watch?v=F_h9alYDTBo.)

Nicolas Slonimsky, to whom “Ionisation” is dedicated, conducted the premiere in New York at Carnegie Hall or Steinway Hall (sources differ on the location) on a concert sponsored by the Pan-American Association of Composers on March 6, 1933, conducting an ensemble that included the composers Wallingford Riegger, William Schuman, Henry Brant, Paul Creston, Carlos Salzedo, William Russell, and Henry Cowell—a regular “who’s who” of modern music at the time. Varèse himself played the sirens! The performance was described by a critic as “a sock in the jaw.” The piece was first published in 1934 by Max Eschig and republished by Ricordi in 1958. Let’s take an intimate look at this piece from all perspectives. We should first notice that the spelling “Ionisation” is the French spelling of the English word “ionization” in which the z is replaced by an s.

TERMS USED IN “IONISATION”

Although the terms used in “Ionisation” are translated in to English in the Ricordi Edition (NY, 1958, \$2.50 [!]), which is the only edition I have ever seen, I thought I would translate the terms in case you don’t have the score. Readers will then have translations of these terms as they might appear in other works. Most of the terms are in French and a few are in Italian. Those in Italian are indicated with (I). There are also a few terms that are ambiguously translated, which I have made note of. My comments are in square parenthesis.

Player 1

Grande Cymbale Chinoise: large Chinese Cymbal [translated in the score as Crash Cymbal. Did Varèse want a Chinese cymbal or was he mistakenly calling a Turkish

Cymbal a Chinese cymbal? I prefer a Chinese cymbal in this part.]

Grosse Caisse (très grave): very low bass drum

Cencerro: cowbell (indicated in the score as muffled)

Tam-Tam clair: high tam-tam

Player 2

Gong: gong

Tam-Tam clair: high tam-tam

Tam-Tam grave: low tam-tam

Cencerro (sourdino [I]): muted or muffled cowbell

Player 3

2 Bongos (aigu & grave): 2 bongos (high and low)

Caisse roulante: military drum with snares [Smaller than a field drum. This is translated in the score as a side drum, a generic term in Great Britain for a snare drum. However to a French percussionist it is larger than a caisse claire and smaller than a field drum.]

2 Grosses Caisses à plat (moyenne & grave): 2 bass drums laid flat (medium size and large)

Player 4

Tambour militaire: snare drum [A generic term, not a specific size but deeper than a caisse claire or a tambour rullante.]

Caisse roulante: see above

Player 5

Sirène Claire: high siren

Tambour à corde: friction drum [lion’s roar]

Player 6

Sirène grave: low siren

Fouet: slapstick

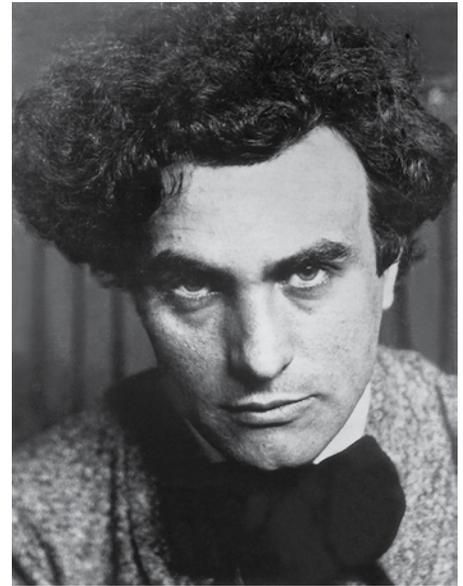
Güiro: guiro

Player 7

3 Blocs Chinese, clair, moyen et grave: 3 woodblocks, high, medium, and low [These are, in fact, woodblocks and not Temple blocks.]

Claves: claves

Triangle: triangle



An early photo of Varèse

Player 8

Caisse claire, détimbrée: high snare drum without snares

2 maracas, claire et grave: two maracas, one high and the other low

Player 9

Tarole: In the U.S. we would call this a piccolo snare drum [I use a 4 x 13 snare drum with wire snares.]

Caisse Claire: high snare drum [deeper than a piccolo snare drum]

Cymbale suspendue: suspended cymbal

Player 10

Cymbales: crash cymbals

Grelots: sleighbells

Cloches: tubular chimes

Player 11

Güiro: guiro

Castagnettes: castanets [I use a castanet machine.]

Glockenspiel à clavier, with resonators: keyboard orchestra bells [This

part can be played on a regular glockenspiel.]

Player 12

Tambour de Basque: tambourine
2 Enclumes, la première plus aiguë: 2 anvils, the first higher [I strike these with small metal hammers.]
Grand Tam-tam: very large tam-tam

Player 13

Fouet: slapstick
Triangle Grelots: sleighbells
Piano [This part can be played by a percussionist as it is not difficult.]

SHORT BIOGRAPHY OF VARÈSE

Edgard Varèse was born Edgard Victor Achille Charles Varèse on December 22, 1883 in Paris and died on November 6, 1965 in New York City. He spent the first ten years of his life in Paris and Burgundy. In 1893, his father moved with him to Turin, Italy in order to have Edgard study mathematics and engineering. Against the wishes of his father, with whom he had a strained relationship, Varèse began music study in 1900 with Giovanni Bolzoni. He entered the Schola Cantorum three years later in Paris, but could not tolerate the philosophy of instruction held by the director, Vincent d'Indy, who was a famous composer of the old school at the time. He quit his studies at the Schola in 1905 to enter the Paris Conservatoire to study with Charles Widor.

In 1907, Varèse married the actress Suzanne Bing. The couple had one child and divorced in 1913. He then married the American Louise McCutcheon and left Paris with his new wife for Berlin, where he developed a close friendship with the composer Ferruccio Busoni. During the next several years he met composers such as Richard Strauss, Claude Debussy, and Erik Satie, as well as the poets Guillaume Apollinaire and Jean Cocteau, who were all impressed with his compositions and new musical ideas. Not only was he concerned with music that he felt should imitate scientific principles, but he was also interested in new instruments—most particularly electronic instruments.

“Our musical alphabet must be enriched. We also need new instruments very badly... Musicians should take up this question in deep earnest with the help of machinery specialists. I have always felt the need for new mediums of expression in my work. I refuse to submit myself only to sounds that have already been heard. What I am looking for are new technical mediums which can lend themselves to every expression of thought and can keep up with that thought.”—Varèse

His approach to music was individualistic, personal, inventive, and bold.

Varèse returned to Paris, leaving all his compositions to that point in Berlin where they were tragically destroyed in a fire. After brief stints as a conductor with various orchestras, Varèse found himself out of work

“Music, which should be alive...needs new means of expression, and science alone can infuse it with youthful sap.”—

Edgard Varèse

and On December 18, 1915, boarded the S.S. Rochambeau sailing from France to New York City with eighty dollars in his pocket and a stack of letters of introduction in his suitcase. (An accomplished pianist, Varèse played two pieces by Debussy at a shipboard concert.) He had planned on a short visit, but stayed nearly a half-century and became a U.S. citizen. There he met important contributors to American music, promoting his vision of new electronic music instruments, conducting orchestras, and founding the New Symphony Orchestra.

Interestingly he also acted in a silent film titled *Dr. Jekyll and Mr. Hyde* by J.S. Robertson (1920). Go to <https://www.youtube.com/watch?v=-dwfmeiXBVo> where you will see Varèse at 38 years of age playing an Italian Nobleman in Scene One and a police chief in a top hat in Scene Two.

It was also around this time that Varèse began work on his first composition in the United States, “Amériques,” which was completed in 1921 but not debuted until 1926. It was at this time that Varèse founded the International Composers’ Guild, dedicated to the performances of new compositions of both American and European composers, for which he composed many of his pieces for orchestral instruments and voices—specifically “Offrandes” (1922), “Hyperprism” (1923), “Octandre” (1924), and “Intégrales” (1925).

In 1928, Varèse returned to Paris to re-orchestrate one of the parts in “Amériques” to include the recently invented *ondes martenot*, with which he was fascinated as a precursor to an electronic instrument. Varèse followed “Amériques” by composing his most famous non-electronic piece, “Ionisation,” which was composed in Paris between 1929 and 1931.

By 1933 Varèse’s music was hardly played at all. In the same year, while Varèse was still in Paris, he wrote to the Guggenheim Foundation and Bell Laboratories in an attempt to receive a grant to develop an electronic music studio. His next composition, “Ecuatorial,” completed in 1934, contained parts for theremin. Varèse, anticipating the successful receipt of one of his grants, eagerly returned to the United States to finally realize his electronic music, only to learn that his proposal had been rejected by the Bell Laboratories. Yet he kept insisting on

the necessity for new instruments that would “liberate sound and free the composer from the tempered system.”

“I don’t want to write any more for the old Man-power instruments and am handicapped by the lack of adequate electrical instruments for which I now conceive my music.”—Varèse

Varèse composed a solo flute piece entitled “Density 21.5” in 1936 and taught occasionally and sporadically for the next ten years, but wanted desperately to work with new instruments and suffered from a depression caused by his inability to compose. “Density 21.5” would prove to be his last composition for nearly 20 years.

It was not until 1953, when he was given a reel-to-reel Ampex tape recorder by an anonymous donor, that he was finally able to begin the work with electronic music that he had envisioned all his life. As early as the First World War he wrote: “I dream of instruments obedient to my thought and which with their contribution to a whole new world of unsuspected sounds, will lend themselves to the exigencies of my inner rhythm.”

It wasn’t until he was seventy that he had the opportunity of working in an electronic music studio. Varèse immediately began compiling the electronic sounds for his piece “Déserts,” whose acoustic instrument parts had been in progress for nearly three years. It was designed by Varèse to have alternating sections of acoustic instrumental music and electronic



Varèse circa 1963

“I was not influenced by composers as much as by natural objects and physical phenomena.” —Edgard Varèse

music. In 1955 “Déserts” became the first piece transmitted in stereo on French radio. Varèse returned to New York and stayed there for the next two years until he was asked to compose a piece for the World’s Fair in Brussels in 1958. The result was “Poem Électronique,” which made a tremendous impact upon the artistic community at the time. It was played back with 425 speakers in a large space and is credited with being the very first sound installation.

It was now that Varèse finally began to receive international recognition for his progressive and innovative work. His pieces began to be released on record, and some of his music began to appear in published scores. In 1962 He was recognized internationally with his election to the National Institute of Arts and Letters and the Royal Swedish Academy, and later he received the Brandeis University Creative Arts Award. A year later, he received the first Koussevitsky International Recording Award. Varèse spent his last years revising his earlier works and working on his last work, “Nocturnal,” but the piece was left unfinished at the time of his death in New York on November 6, 1965.

BACKGROUND OF “IONISATION”

In the early years of the 20th Century, the Italian Futurists, Carlo Carrá, Filippo Marinetti, Luigi Russolo, and especially Balilla Pratella published a manifesto about a new approach to music denouncing Romanticism.



Russolo, Marinetti and Piatti with the Intonarumori

Russolo followed in 1913 with his manifesto “Arte dei Rumori” (“The Art of Noise”). The group called themselves Futurists and created art, poetry, and music they called Intonarumori played by large elaborate box-like machines that roared, bubbled, croaked, grumbled, and sputtered.

Varèse was very interested in Russolo’s work and did a presentation of Russolo’s new “Rumorarmonio” (a keyboard harmonium-type instrument) in 1929 in Paris. The Futurists were fascinated and inspired with modernism, speed, and revolution in all its manifestations (including war), which they were convinced would change the world for the better. This idea captivated Varèse at the time. However, later he repudiated Russolo’s manifesto: “Italian futurists, why have you slavishly produced only what is commonplace and boring in the bustle of our daily lives?” One wonders what Varèse thought about the music of John Cage, who was very much interested in elevating the music of everyday sounds for musical consideration.

For more information about the Futurists go to the webography at the end of this article where you will find a photograph of the noise machines. Recently a group has researched and rebuilt the instruments. An arresting argument could be made that Futurism was the nascence of music for percussion ensemble, but that is a subject to be explored in another essay.

Varèse, who was called “the matinee idol of modernism” by Carol Oja in an article in *Making Music Modern* and the “master sculpture of abstract sound” by Alex Ross, invented the term “organized sound,” meaning that certain timbres and rhythms can be grouped together creating a whole new definition of sound. He is regarded as the “Father of electronic music.”

“Ionisation” is credited with being the first Western work for percussion alone having no basis in folklore. However, Giacinto Scelsi (1905–1988) wrote a piece called “Rotativa” in 1929 for 13 percussionists and wind ensemble, but orchestrated it for percussion and two pianos in 1938, so it is difficult to say who gets the accolade for writing the first composition solely for percussion. In any case, the implications of “Ionisation” questioned the meaning of the word “music” at the time. Viewed historically, it can be viewed as a return to a very ancient Eastern tradition of percussion music, particularly in the aspect

of timbre. Eastern concepts of sound and 19th Century Western formal concepts of structure and logic that merge in this piece, result in a musical expression that is universal.

THE SCIENCE OF IONIZATION

From the early 1900s to the 1930s, the concept of ionization was cutting-edge popular science when the notion of splitting the nucleus of the atom was in its infancy. Ionization is actually a much more mundane process in which an electron is removed from an atom. The atom was a fairly recent discovery then, and Albert Einstein was like a rock star of today. The intellectual audience would also have known about scientists such as Michael Faraday and Heinrich Geissler a few years later because they traveled extensively demonstrating electricity, electromagnetism, and the cathode ray to lay audiences in public lectures. This history of science brought to the public eye is evident today in the work of Carl Sagan and Neil Degrasse Tyson on TV.

Ionization typically acts on a neutral atom to remove a negatively charged electron, leaving behind a now positively charged atom. Eventually forces reunite the electron and return the atom to its original neutral state that, as we shall see later, is the basic morphology of Varèse’s composition. But first we should have a better understanding of what ionization is to better understand the piece, so bear with me for a paragraph or two.

Atoms are neutral, with an equal number of positive protons and negative electrons. Different types of atoms have a different number of protons but always a matching number of electrons, reflecting the overall neutrality of the universe.

Ionization is the process of converting an atom or molecule into an ion by changing the difference between the number of protons and electrons—the gain or loss of electrons. This process works differently depending on whether an ion with a positive or a negative electric charge is being produced. A positive electric charge (manifested as an electric shock) is produced when an electron bound to an atom or molecule absorbs enough energy from an external source to escape the electric potential barrier, releasing excess energy.

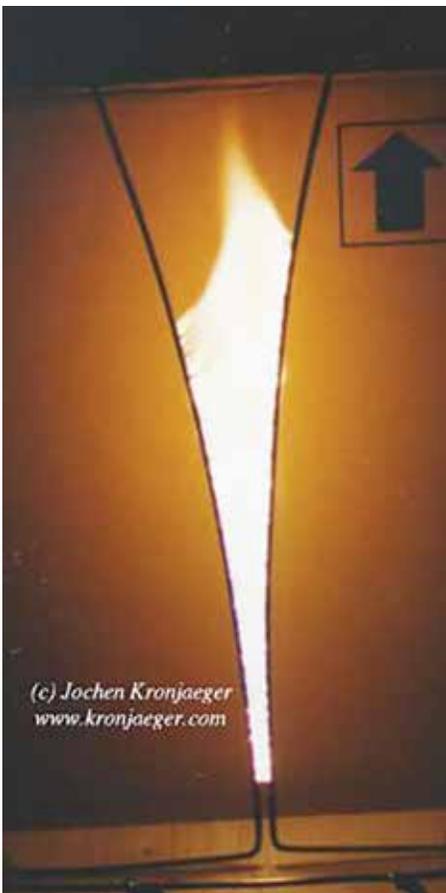
Other examples of the consequence of creation through ionization that are visible are the aurora borealis, the formation of stars, lightning, fire, the ionosphere, a florescent light tube, a neon sign, or St. Elmo’s fire (this occurs on the tips of long, tall objects such as the masts on ships during thunderstorms). The electric field around the object in question causes the ionization of air molecules, producing a faint glow easily visible in low-light conditions. Another example is the electric shock one gets when rubbing one’s feet on a carpet in wool socks and then touching a doorknob. The spark (shock) one gets, called static electricity,

is the energy flowing through you when the electrons return to the nucleus of the atom. This is known as grounding. This also happens on a common sparkplug in a car. A spark gap on the plug consists of an arrangement of two conducting electrodes separated by a gap usually filled with a non-conducting gas—air in this case. When a suitable voltage is supplied, a spark forms, ionizing the gas and drastically reducing its electrical resistance. An electric current then flows (or jumps) until the path of ionized gas is broken or the current reduces below a minimum value.

(Stay with me; I really am getting to the point.) In physics and chemistry, plasma is a highly ionized gas, and is usually considered to be a distinct state of matter that actually makes up the majority of the universe—but I digress. The act of creating this plasma through ionization that separates out electrons can be created in a laboratory with a plasma lamp or globe (see photo), Jacob's Ladder (see photo), or a even more dramatically with a Wimshurst Machine (see photo). We all know these machines from the horror movies



Plasma Arc



Jacob's Ladder

of the 1930s and '40s where several were *de rigueur* in the background of the laboratory of the quintessential mad scientist. It was that machine magically buzzing and spitting electric charges in the background that seemed to give life to the monster. (Remember "It's alive! It's alive!?"?)

My contention is that it is the direct representation of this visual and energetic effect that Varese captured in "Ionisation." When we probe closely into "Ionisation" we see the composer through a prism. How fitting to the science that influenced his work. [My thanks to Professor Stephen Fitzgerald, who teaches physics at Oberlin College, for his help and advice with this section.]

The purpose of this article is not to go into arcane details about Varese's views of science as related to his music. For this I refer readers to the excellent article by John D. Anderson entitled "Varese and the Lyricism of the New Physics." See the bibliography for details.

EARLY PERFORMANCE HISTORY

March 1933: U.S. premiere, conducted by Nicolas Slonimsky.

April 1933: Havana, Cuba, conducted by Nicholas Slonimsky.

July 1933: San Francisco, conducted by Henry Cowell, where the work was received more positively by critics. Redfern Mason, of the San Francisco Examiner said, "Atonal phantasmagoria. So striking. So novel and, at the same time, so beautiful that it catches your breath."

April 1934: New York (Town Hall), conducted by Nicolas Slonimsky. One critic from *The New York Times* was reserved in his view: "As for Mr. Varese's 'Ionisation,' it suggested possibilities, but in itself it could hardly be called music."



Wimshurst Machine

June 1951: Germany, conducted by Hermann Scherchen at the Darmstadt Festival. First broadcast performance to Britain.

1951: Urbana, Illinois at the University of Illinois in addition to other U.S. cities. Regarding this particular performance Virgil Thomson wrote: "The Varese 'Ionisation'...I fancy, [is] about to become a classic. This composer, once thought outrageously advanced, has of late been coming into general acceptance by musicians."

1953: Rome, conducted by Hermann Scherchen. In a letter to Dallapiccola, Varese wrote: "In case he [Scherchen] has difficulty in obtaining some of the instruments the work requires, please advise him to approach some of the American jazz bands (they must abound in Rome) and he will certainly find what he needs."

1957: England, Royal Festival Hall in London. First live performance in the U.K., conducted by Hermann Scherchen.

December 22, 1960: Metropolitan Museum of Art in New York with Frederic Waldman conducting. The concert was given in honor of Varese's 75th birthday. The performers included were Joseph Adato, Michael Colgrass, Elayne Jones, and Leonard Shulman, among others.

February 9, 1983: San Francisco, conducted by Frank Zappa in at a concert in memory of Varese and Anton Webern.

EARLY REVIEWS

Paul Rosenfeld, in *Musical Chronicle* (1966): "'Ionisation,' the wonderful, terrifying new composition by Edgar Varese appears to have been not at all fantastically named by its composer. By reason of their excessive hardness, excessive indeterminacy, and other points of dissemblance from the more humanly vibrating sonorities of string and wind instruments, the tones of the forty-one percussion and friction pieces...in themselves do suggest the life of the inanimate universe. The illusion, if illusion it be, of an analogy between the music and events or processes in the physiochemical fields, is reinforced by the volumes of the extremely simplified, skeletalized form, which explosive, curiously timed, and curiously responsive to one another, further suggest incandescent manifestations of material entities in space.... The new work is a complete if singular piece of music."

However, not everyone had as much insight about the piece as Rosenfeld, as this excerpt of a critique of the work from the *Musical Courier* indicates: "Varese's latest effort...contains almost nothing of traditional tonal quality, being scored for various gattling gun species of percussion, a dolorous and quaintly modulated siren, sleighbells, and an ingenious instrument that imitated the voice of an anguished bull." [No doubt the friction drum.]

From the New York performance the

“Our musical alphabet must be enriched. We also need new instruments very badly.”
—Edgard Varèse

critic from *The Los Angeles Times* said: “Not one serious listener would have missed the impressiveness of this work in which form, expressed in phrasing and dynamics, was as finely followed as in one of the classic conceptions of a contrapuntal master. Moreover, the work is significant in its pure concern with the methodic possibilities of percussion instruments, heretofore regarded as incapable of such functioning. Emotional depths are touched by ‘Ionisation’ as by a sculptural masterpiece of geometric abstraction.”

ANALYSIS

“Ionisation” opens with a neutral introduction that has a tantalizing suspicion of enthusiasm held under restraint and ends with a neutral coda, which Varèse expresses with calm and repose creating a loose ABA form of relaxation/tension/relaxation much the way ionization itself takes shape in nature.

The piece has two major structural elements. Although it appears to have a loose sonata form (see below), it is also rooted in and reminiscent of a variation form because of how the rhythmic theme, first played on snare drum, is modified and developed by other instruments and dealt with in hocket throughout the piece in a surprisingly playful manner and finally in dissolution at the end.

Juxtaposition and contrast are the essence of the piece. How the timbres evolve and change (ionize) is the foundation of the piece, while the tension created by these juxtapositions is essential to the forward motion of the work. Timbre is the paramount concern as is tension and color created by the combination and organization of groups of instruments—groups (units) of sound juxtaposed against and on top of each other that change nature not unlike organ stops creating a new coloristic instrument or a new alloy. We hear secco versus long sounds (maracas and snare drum, played also on the rim versus bass drum and tam-tam); high versus low sounds (snare drum, triangle, anvil, and maracas versus bass drum, tam-tam, and the low register of the piano); groups of instruments (drums versus metals); duple versus triple meter (these rhythms alternate in a seemingly random manner on

the small as well as large scale); long sounds together in groups of different instruments versus short sounds together in groups of different instruments; long and short sounds together, which is most obvious in the coda; density versus sparsity; colors and timbres (bright versus dark; shifting of colors of original theme on same instruments (snare drum sticks on snare drum then timpani sticks on same instrument); dynamics (*ff* versus *pp*).

Some who have written about the piece see a cultural identification with Latin American, Asian, and Western instruments, but I see them solely as sound sources without cultural reference. This notion superimposes an idea on the actual intent of the use of the instruments by Varèse. To interpret or hear “Ionisation” as a cultural experience does the piece a disservice and makes it uni-dimensional. It is these confluences of rhythmic dissonances, sound sources, textures, and timbres and how they change (ionize) that is the foundation of the work and are essential to the forward motion of the work, creating a certain tension that is released in the coda in what could be perceived as a kind of harmonic release; if not a harmonic resolution it is definitely a relaxation after the tension that was created by all the contradicting elements, including the tempo changes. Varèse creates this release with the use of fragmentation, augmentation, and dissolution in the coda. Blocks of sound are butted up against each other without transition creating an unmistakable tautness without apparent connective tissue, save the timbral juxtapositions that become an active participant in the process.

While thematic elements of rhythm and accent are certainly crucial to this work, the focus is upon the interplay of the sonorous aspects of percussion as structural elements. Pitch is immaterial; the piano and bells supply only resonance and sustained sounds. The pitch elements are actually color with a wide spectrum from high to low; metallic to wood; loud to soft; dark to bright; secco to resonance.

Nicholas Slonimsky in *Music Since 1900* states, “While the piece is expressed in what appears to be a sonata-type form, an insight into Varèse’s musical thought can be obtained by understanding his conception of the growth

and interaction of sound masses in space through developmental techniques such as expansion, projection, penetration, interaction, and transmutation.”

Chou Wen-Chung (*Perspectives of New Music*, 1966) explains that “Slonimsky’s analysis suggests a realization of extra-musical ideas: the ionization of molecules and processes of atomic charge. Given Slonimsky’s... close relationship with Varèse’s lectures, his account of the piece might actually be from Varèse, and in any case, when considering the transcripts from Varèse’s lectures, Slonimsky’s account seems to be derived from Varèse’s ideas. Slonimsky suggests a classical sonata form with the main subject suggesting a cosmic-ray bombardment introduced by an extra-terrestrial rhythmic figure on the tambour militaire while two sirens slide in contrasting motion over the whole spectrum of audible frequencies... the second subject, of an ominously lyrical nature, reflecting in palpitating rhythms the asymmetrical interference pattern of heterodyne frequencies, the development section being marked by the appearance of heavy nuclear particles in the metal group (anvils, gongs) as contrasted with the penetrating but light wood and membrane sonorities of the exposition.”

Although it would be good to have program notes for “Ionisation” Varèse is said to have been irritated by obscure and pompous program notes supposed to be essential to the appreciation of a work, so none were written by the composer.

SUMMATION

It is difficult for us today to realize the novelty of Varèse’s music when it was first performed. The principal question is this: Did Varèse think of the piece as the musical representation of ionization or just as an organization of sounds that later he recognized as ionization? He could have chosen a less programmatic neutral name for the piece. Was Varèse being revolutionary in titling a piece of music the name of a scientific phenomenon? Programmatic music seems an anomaly when one thinks of Varèse as a composer; however, in a quote from 1965 he states, “I was not influenced by composers as much as by natural objects and physical phenomena” (Schuller, p. 34). If we take this quote seriously, the compositional allusion to ionization seems more persuasive. Scientific titles for his compositions are not coincidental but rather specific to scientific phenomenon. They include (1) “Hyperprism” (Hyper: over, above, active, energetic, frantic, frenetic, more than; prism: a prism separates white light into a spectrum of colors; the word is also used figuratively with reference to clarification or distortion); (2) “Density 21.5,” which is the density of gold, the material from which an excellent flute is made; and (3) “Integrales” (a function satisfying a

given differential equation). These titles were not chosen on a whim but were well thought out.

Although one might recognize the layering of the parts in a somewhat cubist manner, that is not what “Ionisation” is about. Varèse does use layering but not with perspective in a way that Messiaen does. Varèse builds complex textures on top of each other. Like all of Varèse’s music “Ionisation” refers not to exoticism or jazz or technology or primitivism or dance or anything else but itself; this work is about its own sounds.

George Antheil wrote “Ballet Mecanique” in 1925 and Almadeo Roldan wrote “Ritmicas” in 1930, and therefore predated Varèse as works for percussion ensemble. But “Ionisation” is a much stronger piece that has had a lasting effect on percussion music and electronic music, as well as composers to this very day. No composer in Europe or the United States had written an all-percussion score prior to Varèse that has had such lasting value. The flood of pieces and musical movements inspired by “Ionisation” has yet to recede while its influence on the aesthetically moribund pop percussion music remains negligible, save for Frank Zappa. The work has a certain innate dignity of its own that served as the sparks from the anvil that has hammered out contemporary music.

For detailed analysis of “Ionisation” and more about Varèse I suggest readers investigate the following sources:

Chou Wen Chung: [http://www.chouwenchung.org/works/"Ionisation"](http://www.chouwenchung.org/works/)_p5.php
 Chou Wen Chung: “Varèse: A sketch of the Man and His Music.” *Musical Quarterly*, Vol. 52, No. 2 (Apr., 1966), pp.151–170.
 François, Jean-Charles; Francois, Jean-Charles (Winter 1991). “Organization of Scattered Timbral Qualities: A Look at Edgard Varèse’s ‘Ionisation.’” *Perspectives of New Music* 29 (1): 48–79.
 Andres Pierce Youatt: “Analyzing Edgard Varese’s ‘Ionisation’ using digital spectral analysis.” The University of Arizona, 2012, 85 pages; 1513382
 John D. Anderson: “Varèse and the Lyricism of the New Physics.” *The Musical Quarterly*, Vol. 75, No. 1 (Spring, 1991), pp. 31–49 (<http://www.jstor.org/stable/742126>)

There are several performances of “Ionisation” on YouTube. Of course I suggest the Oberlin Percussion Group performance at <http://www.youtube.com/watch?v=iEeTyA9CSGA>, but encourage readers to listen to many performances on YouTube to compare instrument choice, tempi, and style.

BIBLIOGRAPHY

Chou, Wen-Chung. “‘Ionisation’: The function of timbre in its formal and temporal organization,” *The New Worlds of Edgard Varèse: A Symposium*. Edited by Sherman Van Solkema. Brooklyn:

Institute for Studies in American Music, 1979.
 Chou, Wen-Chung. “Open Rather Than Bounded.” *Perspectives of New Music*. Vol. 5, No.1 (1966), pp.1–6.
Contemporary Composers on Contemporary Music. Edited by Elliott Schwartz and Barney Childs. New York: Holt, Rinehart and Winston, 1967.
 Hackbarth, Glenn, “The Sound-Mass in Varèse’s Early Music,” *Percussive Notes Research Edition*, Vol. 23, No. 3, March 1985
 Ouellette, Fernard. *Edgard Varèse: A Musical Biography*. Translated by Derek Coltman. New York: The Orion Press, 1966.
 Ross, Alex. *The Rest is Noise*, Farrar, Straus and Giroux, 2007
 Schuller, Gunther. “Conversation with Varèse.” *Perspectives of New Music*. Vol. 3, No. 2 (1965), pp.32–37
 Slonimsky, Nicolas. *Music Since 1900*. New York: Charles Scribner’s Sons, 1971.
 Louise Varèse. *Varèse: A Looking-Glass Diary, Vol. I: 1883–1928* (Davis-Poynter)
 Robin Maconie. Review of Book in *Jstor Magazine*, March 28, 2007
 Bernard, Jonathan W. (1987). *The Music of Edgard Varèse*. Yale University Press.

WEBOGRAPHY

<http://www.furious.com/Perfect/ohm/Varèse.html>
<http://www.britannica.com/eb/article-9074843/Edgard-Varèse>
http://trumpet.sdsu.edu/M345/knowledge_webs/A11Modern_MusicY/Edgard_Varèse.htm
<http://www.archive.org/details/VarèseSonicLiberation>
<http://ccrma.stanford.edu/CCRMA/Courses/154/Varèse%20images.html>
<http://ccrma.stanford.edu/CCRMA/Courses/154/Varèse.html>
<http://www.a42.com/node/536>
<http://www.a42.com/node/537>
<http://www.rhapsody.com/edgarVarèse>
<http://www.unknown.nu/futurism/> <http://cotati.sjsu.edu/spoetry/folder6/ng632.html>
http://members.tm.net/lapointe/Jacob's_Ladder.html
<http://www.kronjaeger.com/hv/hv/exp/jacob/>
http://en.wikipedia.org/wiki/Edgard_Varèse#Listening

“In music we composers are forced to use instruments that have not changed for two centuries.”
 —Edgard Varèse

Futurism

<http://www.unknown.nu/futurism/> <http://cotati.sjsu.edu/spoetry/folder6/ng632.html>
<https://www.youtube.com/watch?v=Lqej96ZVoo8>
 The Manifesto written by Futurist Musicians can be found at www.italianfuturism.org/manifesto/futuristmusiciansmanifesto

I always enjoy getting mail from readers to help us all do a better job of using the appropriate instruments and making our crazy terminology more clear. If you would like me to tackle a question about terms you are not sure of, please send it to mrosen@oberlin.edu and I will answer you directly, then put my response in a future article.

Michael Rosen is Professor of Percussion at Oberlin Conservatory of Music and is Director of the Oberlin Percussion Institute. He was Principal Percussionist with the Milwaukee Symphony from 1966 to 1972 and has performed with the Grand Teton Music Festival, the Cleveland Orchestra, the Metropolitan Opera Orchestra, and the Concertgebouw Orchestra. He has served on the PAS Board of Directors and is an Associate Editor of *Percussive Notes*. He has recorded for Opus One, Bayerische Rundfunk, Albany, Lumina, and CRI labels and is a sought-after clinician for marimba and cymbals. **PN**