

## **Artistic, cultural and social aspects in 20th century European context**

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**Abstract:** *This article defines the historical, social, cultural and artistic context of the 20th century, an era grounded on previous achievements, yet of great inventions and great inventors. Creation in all its aspects reflects the complex and intricate connection between science and art. The remarkable discoveries in the technical and scientific field are under the auspices of the first decades of the century, many of them being the result of the development of technology, generating new disciplines such as atomic and nuclear physics, computer science, cosmonautics. It is the age of the theory of relativity and of its implications, of medicine, aviation, Nobel prizes and also the age of the cinema industry. Recording techniques are discovered and perfected, valuable performances being offered to the public beyond concert halls. The discovery of the ultrasound redefines the theory of the sound and generates the field of acoustics and ultrasonic.*

Key-words: the 20<sup>th</sup> century, science, art, innovation.

### **1. Introduction**

The history of the 20th century is marked by horrible events that shook the world to its foundations, generated atrocities, created vast emptiness in the cultural, artistic and historical heritage, crushing "under the metal tracks and by the power of the fist nations, peoples, traditions, beliefs, individual rights that had been painstakingly earned in the 19th century"(Popa 1994, 261).

Art mirrored all these aspects and brought to light a new language- brutal, shocking, grotesque, satirical, hideous, suiting the cruel reality. This is the age of the ugliness aesthetics, when human sensibility, although shaken to its foundations, manages to find inner resources, motivation and the necessary means to revive from ashes, discovering new creative forces and techniques of expression, thus mankind accepting that "Out of wounds, mildews and slinging mud / I've raised new and priceless beauties" (Arghezi 1990, 3).

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These realities shape the first decades of the 20<sup>th</sup> century when, “in the heat and in spite of so many convulsions and nightmares – which printed their mark in culture too – man’s creative mind seemed limitless, proving once again [...] the profound, yet simple truth stated by Mircea Eliade: culture is the only thing nations is remembered by”(Popa 1994, 261).

## **2. Innovation in different fields of activity**

### **2.1. Science**

A creative boom marked the 20<sup>th</sup> century, technical fields reinventing and adapting themselves to the new demands, piecing together the new foundation of creation. Some of the most important achievements of mankind in the technical and scientific field are under the auspices of the beginning of the century, many of them being the result of the development of military technology and of the so-called ‘total war’ (Popa 1994, 260):

1. due to onshore, air and water operations different types of vehicles were invented, perfected and adapted to the environment: the tank, the airplane (later the helicopter ), the submarine;

2. the discovery of the physical processes underlying nuclear energy was later applied to military technology;

3. because of its devastating effects on human beings, it influenced the rapid and spectacular development of different branches of medicine, among the most significant being: the discovery of the sulphonamide, penicillin (1929), the invention of synthetic vitamins in 1926, the development of genetic engineering, and so on;

4. the progress in communication is linked to the invention of the telegraph, radio and later television; the discovery of the ultrasound in 1918 by Paul Langevin (1872-1946), which revolutionised science and technology, generated new disciplines such as atomic and nuclear physics, computer science, cosmonautics; at the same time it was implemented in different fields such as medicine, metal processing, in the navy; in the musical field the discovery of the ultrasound generated new branches – acoustics and ultrasonic, redefining the theory of the sound.

Aviation is defined by an unprecedented boom, this being a field where Romanian engineers played an important part in the development of building and flying techniques. The beginnings of aviation were marked by a Romanian inventor and explorer, Traian Vuia (1872-1950) 1906, who made the first self-propelled flight in the world by an aircraft heavier than air, which was his own invention, being the first to succeed in a long line of flying attempts that preoccupied mankind; in 1910 Aurel Vlaicu flew over the English Channel by an aircraft he had invented.

The great discoveries of the 20<sup>th</sup> century are the result of the hard work and dedication of scientists, inventors and record breakers, prominent names for the beginning of the century: the German inventor – Ferdinand von Zeppelin (1838-1917), who in 1900 built the first rigid airship used in World War I; the Romanian inventors and explorers – Traian Vuia (1872-1950), considered to be “the father of aviation”, the first man in the world to have flown by an aircraft heavier than air that he had invented and Aurel Vlaicu (1882-1913), who crossed the English Channel in 1910 by an aircraft he had built and also the Fagaras Mountains in 1913; the Polish scientist – Marie Curie (1867-1934), the Nobel prize winner for physics in 1903 and for chemistry in 1911; the scientist who defined radioactivity – Guglielmo Marconi (1874-1937), winner of the Nobel prize for physics in 1909; the Swiss psychologist – Eugen Bleuler (1857-1939), who was the first researcher to have analysed and defined schizophrenia in 1911; Frederick Banting (1891-1914), whose research work about insulin and its role in modern medicine brought him the Nobel prize for medicine in 1923; Paul Langevin who discovered the ultrasound and succeeded the first shortwave radio communication between London and Sidney in 1925 and so on.

We cannot overlook an important name – Albert Einstein (1879-1955) – the scientist who revolutionized science and technology with his view of the world and ceaseless desire to decode the mysteries of the world. Winner of the Nobel Prize for physics in 1921, Einstein published *The Theory of Relativity*, summarized in the famous equation  $E=mc^2$  (mass – energy equivalence), which demolishes and reconstructs perspectives on the Universe.

We do not want to minimise Einstein’s amazing contribution to the progress of science by mentioning only one (yet maybe the most famous) theory. Instead we would like to bring up something of interest for us, namely the fact that Albert Einstein studied the violin and often played chamber music together with the physician Max Plank (1858-1947), with the violinists Josef Joachim (1831-1907) and Fritz Kreisler (1895-1962). The source quoted offers us a picture of Einstein playing the violin with the following footnote: “*Genius at play: Albert Einstein in his study at Princeton University in 1931*”.

## 2.2. Arts

In the second half of the 20<sup>th</sup> century the tendency towards syncretism became more and more obvious, maybe the most interesting example being the cinema industry, whose development is closely linked to the perfection of different parts that pieced together what we call cinematography (the starting point was represented by the invention of the filming-projection-copying equipment in 1895 by two brothers – Auguste (1862-1954) and Louis Lumière (1864-1948) – as well as the auto chromium colouring technique, also applied in photography).

A new industry was created that combined the filmed images with the actors' performance, the sound, music, script into a whole package, sending a strong message and appealing to the emotions of the audience.

It is interesting that the beginnings of cinematography are closely linked to a keyboard instrument – the piano – this being absolutely necessary for the first performances of this kind that had no sound, this technique being developed later.

"One of the happiest examples of a good marriage between technique and music was the discovery of different devices able capture and reproduce the sound, of an extraordinary importance in musical life, with beneficial and unexpected consequences" (Popa 1994, 263).

Such an important discovery for the artistic world was the invention of the phonograph by Thomas Alva Edison (1847-1931) (who was also the inventor of the electric bulb ), thus foreseeing new opportunities in the musical field, improving recording of great performances on stage that could be listened over and over again.

The evolution of technology developed recording techniques further on, another stage in this field being the invention of the gramophone, a device that recorded music on a record. The first to benefit from the recording technique used by the phonograph was the Polish pianist Josef Hofmann (1876-1957), the wonder child aged 12, admired by Rahmaninov who dedicated him Concerto No.3 for piano and orchestra and by the piano builder Steinway, who adapted a few pianos with small claps to his little fingers (Popa 1994, 264).

The German pianist Hans Guido Feiherr von Bulow (1830-1894) also used this technique to capture for eternity his own performances.

The development of music and compositional language is influenced by the evolution of musical instruments, in a perpetual interdependence and mutual determination, an intricate compositional language cannot exist without the necessary technical means, just as the development of different devices that record musical creation influences and encourages exploring all the technical and expression possibilities of the instrument.

Focussing our research on a special type of music written for piano solo, we have to mention the evolutional stages in the development of the instrument that shaped its fascinating amplitude, diversity and complexity.

As we know it today (from the modest classroom to the great concert halls), the piano is in its turn the result of a creative boom manifested in all the fields, without exception. Belonging to the group of musical instruments with strings, in the category of instruments mechanically activated by tapping, the piano is also part of the vast family of keyboard instruments. "This <<little Hercules>> as Edmond Rostand called it, which irritated Voltaire's delicate hearing and later was to become

not <<an instrument, but a hundred>> under Anton Rubinstein's fingers, so this <<Gravicembalo col piano e forte>> as it is written in his birth certificate in 1709, appears not as a casual and lucky invention, but as a necessity, or as a natural consequence of the changes happening in music.” (Popa 1994, 8).

This new technique which allows the recording of different artistic moments represented a turning point for classical music, allowing the public access to outstanding performances beyond the concert halls and, what is even more important, the capture of priceless values, unique and memorable artistic interpretations by names such as Camille Saint-Saëns (1835-1921) and Edvard Grieg (1843-1907). The famous house of records Gramophone Company in Paris is associated with the well-known pianist Louis Dièmer (1843-1919), who Alfred Cortot (1877-1962) and Alfredo Casella (1883-1947) studied with and "to whom César Franck dedicated his Symphonic Variations (1885) and played them in first audition at Pleyel Hall on the 1st of March 1888 and the same one to whom Ceaikovski dedicated his Concerto No.3 for Piano and Orchestra (Mi bemol op. 75) composed in 1893.” (Popa 1994, 265), and also associated with the Polish pianist and composer Ignacy Jan Paderewski (1860-1941).

Among other pioneers in recording classical music we can mention the name of the famous Italian tenor Enrico Caruso (1873-1921), who dominated the first two decades of the 20th century with his undisputable vocal qualities and with his impressive number of public performances. His unique voice lasts in time because of the recordings made in 1901 which brought fame to the well known American house of records RCA Victor.

Among the performances captured in time by these techniques we can mention G. Fr. Händel's oratory *Israel in Egypt* (recording on phonograph at the Chrystal Palace in London), creations by G. Fr. Händel, Domenico Scarlatti, Carl Maria von Weber, Frédéric Chopin, Franz Liszt – captured at the Gramophone Company in Paris (in 1903), the symphonic poem *Thus Spoke Zarathustra* by Richard Strauss and *The Piano Sonatas* by Ludwig van Beethoven played by Arthur Schnabel (1882-1951) – recorded at RCA Victor in USA; the present RCA Records was initially called “The Victor Talking Machine Company”, becoming later RCA Victor, one of the pilot brands of Sony Music Entertainment.

The quality of the recording obviously depended on the evolution and development of the devices necessary for this process, being a huge leap from the recording with the phonograph based on the wax cylinder to the invention of modern technology which uses the record, the pursuit of quality generating new means of capturing and playing the sounds accurately.

A new step towards perfecting recording techniques was represented by the use of the electrical microphone (a device used for converting the sound into electrical signal, then amplifying and sending it to a loudspeaker which decodes the signal and transforms the electrical impulse into sound), using the principles of thermodynamics (in 1925). 1931 marked a new event in the development of recording technology when RCA Victor launched an innovative component of the record by "bringing down the RPM speed to 33<sup>1</sup>/<sub>2</sub>, resulting in the expansion of the frequencies up to 30 Hz in 1934. [...]" (Popa 1994, 265).

It is common knowledge that the great Romanian composer and musician Constantin Brăiloiu (1893-1958) – the founder of the Romanian Composers Society (a prestigious institution set up in 1928) and of the Folklore Archive tested recording techniques with a gramophone, recording no less than 40 vinyl records in 8 years (between 1951-1958) reunited under the title *Collection universelle de musique populaire enregistrée*.

During World War II a very important part in military operations was played by the magnetic tape, which was later used by Columbia House of Records beginning with 1948 because of its extensive frequency possibilities (and also low costs).

The second half of the 20th century introduced stereophony in 1958, a notion explained as "the procedure of reproducing recorded sounds defined as the reconstruction of space reappearance of sound sources which gives the listener the feeling that he is near the source" (DEX 1998, 1019), which preoccupied Romanian composers at that time, opening roads to further research in the theory of the sound.

Innovation extends in all fields of activity and in all spheres of creativity, drawing in like a magnet the intellectuals of that time, all sharing the same thirst for knowledge, irrespective of nationality or artistic language in great cultural centres such as Paris. Leading figures gather around them artists that shared the same ideals, acting as catalysts in the heat of artistic and creative life. Such was "The Society of Six", founded in 1918 around Erik Satie (1866-1925), bringing together Georges Auric (1899-1983), Arthur Honegger (1892-1955), Luis Durey (1888-1979), Darius Milhaud (1892-1974), Francisc Poulenc (1899-1963) and Germaine Tailleferre (1892-1983). Other prominent figures of the XXth century artistic life are: Guillaume Apollinaire (1880-1918), Jean Cocteau (1889-1963), writers – Anna Brâncoveanu, countess of Noailles (1876-1933), philosophers – Henri-Louis Bergson (1859-1941) and Sigmund Freud (1856-1938), writers – James Joyce (1882-1941), Franz Kafka (1883-1924) and Eugen Ionescu (1909-1994), painters – Pablo Picasso (1881-1973) and Le Corbusier (1887-1965), sculptures – Constantin Brâncuși (1876-1957), musicians – Igor Stravinski (1882-1971) and Arnold

Schöenberg (1874-1951), ballet dancers – Sergei Diaghilev (1872-1929), promoting avant-garde artistic movements in arts.

For the Romanian musical framework, the first half of the XX<sup>th</sup> century was a time of profound transformation. Based on the creative efforts of XIX<sup>th</sup> century predecessors the strengthening and affirmation of the Romanian composition school will be supported by the very beneficial and also expected social-political context, for the shaping of the idea of national art, the turmoil of this period representing a catalyst for stimulating creativity in the purest and most authentic Romanian spirit. At the same time, the contact of Romanian musicians with the innovations of European composers and the consolidation of the new impressionist and post-impressionist composition techniques, from Debussy and Ravel to the ‘Group of the five’, the great interest expressed towards modalism as a result of its proximity to the folk song, as well as the knowledge of certain expressionist works of reference, will find again their influence in the shaping of the new composition languages in the early XX<sup>th</sup> century Romanian creation.

### **3. Conclusions**

As shown before, the creative boom that marked the 20<sup>th</sup> century resulted in the reinvention and adjustment of technical means to the new realities and demands, all mirrored in different aspects of creation.

Some of the most important achievements of mankind in the technical and scientific field are under the auspices of the first decades of the century, outputs of hard work and determination to progress and stages in a long line of attempts to improve and succeed.

The speed of technological change increased steadily and art, more than any other field, kept pace with this development. Styles, trends, movements, followed one after the other in a dazzling succession and interchange as artists tried to expand their sphere of influence, inventing new means, approaching new topics of interest, using new methods. The development of communications inspired artists but also educated a large audience who gained access to priceless works of art.

Innovation is the element that animates all the aspects of the cultural and artistic life of the 20<sup>th</sup> century and not only. We cannot forget that this century, grounded on previous social, cultural and artistic achievements, is the century of great inventions and inventors, creation in all its aspects reflecting the complex and intricate connection between science and art.

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