

# **STALIN, THE QUANTISTIC MECHANICS, THE BIG BANG AND THE THEORY OF RELATIVITY**

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Is a fact that science in Soviet Union made advances and has contributed to many fields, mainly for military purpose in order to contrast the Western superiority. But, as Leonardo da Vinci and Galileo and many other inventors teach us, military research is a way to study science and get easily funds for future advances and discoveries.

But, at the same time, especially during Stalinist era, the ideology played a pivotal role into the science, stopping the inventive and the researches of the scientists. In order to stick to the Party line, the researches in URSS sometimes sound ridiculous.

This phenomenon (advances vs paroxysm) was well studied by Alexei B. Kojevnikov, Researcher of the Institute of History of Science and Technology in the Russian Academy of Science in Moscow who called it "*the main paradox of Soviet science*".

The most famous of this paroxysm and nonsense policy was the Zhdanovshchina policy (1946-1953)

In 1946 Andrei Zhdanov, the newly Stalin's appointed director of soviet cultural policy, underlined the doctrine that would shape the cultural and scientific life of Soviet Union until 1953. The Zhdanovshchina, this is the name of the guideline, stated that the artists, scientists and the intellectuals had to adapt their works, researches and studies to the Party line.

Milovan Djilas, Tito's closest aid met Zhdanov in 1948 during the famous trip to Moscow that took Yugoslavia out of Comintern: "*He was well educated and was regarded in the Politburo as a great intellectual. Despite his well-known narrowness and dogmatism, I would say that his knowledge was not inconsiderable. Although he had some knowledge of everything, even music, I would not say that there was a single field that he knew thoroughly - a typical intellectual who became acquainted with and picked up knowledge of other fields through Marxist literature.*"

Zhdanov, who was the father of Stalin's son-in-law and expected to be his successor, died in 1948.

His doctrine was accepted by almost all the soviet intelligentsia. Only few artists and scientist dare to work independently. One of them was Dmitri Shostakovich, who wrote a satirical cantata (*The Little Antiformalistic Paradise*) in which ridiculed the Zhdanovshchina (the opera was performance to the public only in 1989 by cellist and conductor Rostropovich).

Most tragic problems came when a politician who is completely ignorant of scientific subjects, wants to put limits and laws on scientific researches. And often tragedy flow into hilarity, too, as we know very well from our (not only) Western history.

On June 24<sup>th</sup>, 1947 Andrei Zhdanov enlarged his policy to the astronomy and cosmology fields, claiming that these science should be cleansed from the bourgeois ideas, based of lies and illusions. Objective scientific laws must be subjugated to the Party's idea. Among these ideas, the Big Bang, the quantum mechanics and the Einstein's Theory of relativity were target.

The quantum theory was refused because it does not describe the matter as an unique and real structure, apparently denying the materialism.

In the essays “*Against idealism in modern physics*” released in 1948, the theory of relativity was stamped as “*idealist*” and the “*Einsteinianism*” should be crushed.

The relativistic theory of a closed expanding universe was regarded as a “*cancerous tumor that corrodes modern astronomical theory and is the main ideological enemy of materialist science*”.

The most controversial and discussed theory was anyway the Big Bang, which, at that time, many scientists, even in Western world, didn't accepted yet. But while in the Western the rejection of the Big Bang by the scientific community was mainly because there were not clear proves that could confirm the theory, in Soviet Union the denial was purely ideological because it was politically incorrect.

The stalinian cosmology declared that the universe is infinite (no space limit, no matter limit), eternal (never began, never will end), matter is only a material manifestation of motion and energy (no wave-particle duality is contemplate), the galactic redshifts, discovered by Vesto Slipher in 1912, does not indicate that the space is expanding and all the theories must fit in the materialist and dialectical philosophy.

The Big Bang, was not accepted by Moscow because it was theorizing a creation which my resemble the Bible's Genesis. So, it was stamped as pseudo-scientific and idealistic theory.

This was also because its mainly originator was the Belgian physician and cosmologist Georges Lemaître, who was a Jesuit. No matter if later the same theory was turned into a physical model of the early universe by the atheist Russian-American nuclear physicist George Gamow and his collaborators Ralph Alpher and Robert Herman.

The soviet astronomer Boris Vorontzoff-Velyaminov attacked Gamow and its “*unscientific*” theory because it was invented by an “*Americanized apostate*”, that is a former soviet citizen who escape to USA.

The Stalin opposition to the Big Bang came also from the fact that the pope Pius XI himself backed the theory of relativistic cosmology.

Actually neither Lemaître nor Gamow intended the Big Bang as a creation, but the inadequate knowledge of physics and scientific terminology of Zhdanov and Stalin, drove them in such mistakes.

Lemaître himself was careful to distinguish between the “*beginning*” and the “*creation*” of the world. According to Lemaître, his version of the big bang model “*remains entirely outside any metaphysical or religious question (and) leaves the materialist free to deny any transcendental Being*”. In fact physicists argue that the Big Bang cosmology do not need the notion of a creator. And since 1951 the pope never used the Big Bang to express the scientific prove of the existence of God.

No matter, Zhdanov accused “*the reactionary scientists Lemaître, Milne and others (...) to strengthen religious views on the structure of the universe. These scientists were 'Falsifiers of science (who) want to revive the fairy tale of the origin of the world from nothing. ... Another failure of the "theory" in question consists in the fact that it brings us to the idealistic attitude of assuming the world to be finite*”.

The Zhdanovshchina drove for a decade the cosmology's studies in URSS. Scientists were obligated to find other ways to explain the Universe. It was a *cul de sac* of the science, since the Big Bang and, more, the theory of the relativity were banned.

In their scientific ignorance, Zhdanov and Stalin considered not only the Big Bang a “*fairy tale*” and an “*astronomical idealism which help clericalism*”, but also the Big Bang counter theory of Fred Hoyle, Hermann Bondi and Thomas Gold was considered politically incorrect and banned. Their steady state theory explains the Universe as

eternal (it has no beginning, nor end) and immutable. The matter was continually create in order to keep the density of the Universe constant.

Physicists and cosmologies that wouldn't follow the Party's guideline were harshly criticized: Lev Landau (Nobel Prize in Physics in 1962) and Abram Ioffe (Stalin prize in 1942 and *post mortem* Lenin Prize in 1960) were accused of "*groveling before the West*"; Peter Kapitsa (Nobel Prize in Physics in 1978) of propagating "*open cosmopoliticism*"; Iakov Frenkel and Moisei Markov of "*uncritically receiving Western physical Theories and propagandizing them in our country*".

The Zhdanovshchina was officially the cultural and scientific policy of Stalinist regime until the Stalin's death in 1953. In 1949 the All-Union Conference of Physicists was going to be organized by the Ministry of Higher Education and the Academy of Sciences in which 600 physicists were invited. The conference was supposed to impose the dogmas of the new physics definitely rejecting the "antimaterialistic" theory of relativity and the quantum mechanics.

There was only a problem: Igor Kurchatov, director of the nuclear bomb program, clearly told to Beria, head of NKVD and in charge of the project and whose ignorance in physics was equal only to his arrogance, as Kapitsa was used to say, that if the theory of relativity and the quantum mechanics were rejected, so the nuclear bomb would be rejected too.

Beria reported the meeting to Stalin, added that he was worried about the physicist's ideological unreliability.

The nuclear bomb was at the top of the priority, so 5 days before the conference's beginning, Stalin cancelled it.

Five month later, on August 29, 1949, the first soviet nuclear bomb was tested at Semipalatinsk, in Kazakhstan.

According to Lev Landau, the survival of the soviet physicists was "*the first example of successful nuclear deterrence*".