Lysenkoism: The Danger of Political Correctness

Emily G. Badger

Senior Division

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What is truth? A simple definition of truth would be anything that can be tested and proven in a universal process, for example, the scientific method. What happens in an environment where truth is not allowed to be tested? What would the consequences be? Unfortunately, there was a time in history when this was true, and it was strikingly recent. In the late 1920's Mendelian genetics were replaced by Lysenkoism in Soviet Russia, just before the start of World War II. Though the conflict started as a dispute of truth within scientific circles, it quickly became evident that Lysenko's underlying motive was not to make scientific discoveries, but to gain political power. The tragic result of politically correct truth replacing scientific truth was mass starvation and ultimately the crippling of a world superpower.

To understand how such a catastrophic event could occur, it is necessary to understand the political climate of the Soviet Union at the time. First, it is important to note that Russia was a communist state, which meant there was an intense hatred of anyone who was considered *bourgeois*, a member of the middle class who upheld the interests of capitalism rather than communism (Collins English Dictionary). *Bourgeois* members of Russian society were hated because they were property owners; they were not considered to be working for a living and thus were the enemy of Communism. Being called *bourgeois* in Russia at this time was essentially a death sentence, as those who disagreed with Communist values were "removed" by the government. Anyone who was not a physical laborer, like a farmer, was at risk of being labeled bourgeois, and those with higher education were in even more danger. A less educated person would be respected in this society because they would be considered part of the people (Peter Ferrara).

In this climate, Trofim Lysenko, the man who devised and implemented Lysenkoism, was readily accepted (James Crow 1-2). He was born into a peasant family in 1898, and did not learn how to read or write until the age of 13. He had a lower level of education compared to other scientists at the time, with only two years of education at a rural school followed by classes at a gardener's school (Edouard Kolchinsky). Lysenko's work was marked by his complete denial of Mendelian genetics and the existence of genes, which is evident in how he presented his experimental "conclusions" (Sarah Zielinski). The science of Mendelian genetics is characterized by the storage of genetic instructions in the DNA of a cell, and the transfer of those instructions to the offspring. Lysenko specifically rejected how this was used to pass genetic material from parents to their children, preferring to believe that the traits of the offspring could be changed by forcing the parents to live in a stressful environment. Theoretically, this would create offspring that would thrive in environments in which their parents had previously struggled (Edouard Kolchinsky). Lysenko's theories and eventual fame arose from his research on vernalization, a well-known agricultural phenomenon where seeds of crop plants are exposed to cold to stimulate germination. He claimed that vernalization had supposedly hastened maturity and increased the yields of his experimental crops (Edouard Kolchinsky). While this may have happened, he used this to draw faulty conclusions to support his rejection of genetic theory. His proposed theories became known as Lysenkoism.

Lysenkoism was based on the belief that physical attributes were transferred physically from the parent cells to the offspring rather than through genes. A simple example of this was the idea that if all the leaves were broken off a plant, the future generations of that plant would produce no leaves (Peter Ferrara). Lysenko's main application of this theory was an attempt to

make grain plants grow better in the cold climate of Russia. He theorized that vernalization was forcing the plants to grow better in the cold, and that this could be used to rapidly make plants, animals, or even people change into more “practical” forms (Matt Schudel). Lysenko’s distorted science would never have been applied without political influence.

The Soviet Union had many qualified and well-known scientists, such as Zhores Medvedev. Medvedev had extensive experience in microbiology, biochemistry, and genetics, and early in his career he had worked in Soviet laboratories. In his time working at these laboratories, Dr. Medvedev published nearly one hundred research papers. Later, his career was derailed due to his political activism, and he regularly exposed fraud in Soviet scientific programs (Matt Schudel). Clearly, this did not earn him any favor from the Soviet government, and they actively searched for a way to criminalize him and other *bourgeois* scientists. Among these despised scientists was one of Lysenko’s biggest rivals, Nikolai Ivanovitch Vavilov. Vavilov was a Soviet geneticist, botanist, plant breeder, and an avid traveler. He had been a student at the Moscow Agricultural Institute, winning a prize for his thesis on garden slugs. Vavilov then studied abroad with William Bateson, a famous English biologist (James Crow 2). He was well known for his research on genetic inheritance in plants, which he studied by carefully cross breeding plants to discover what gave certain varieties resistance to diseases or harsher climates (Edouard Kolchinsky). While Lysenko’s attempts to make cold resistant plants had the appearance of rapid success, Vavilov was making similar developments in his own plants. In fact, Vavilov was very close to cross-breeding a strain of grain that would produce high yields in Russia’s short growing season (James Crow 3). But Vavilov’s research, though successful, was slow, and Lysenko claimed he could deliver the same results in a much shorter time (James Crow 3). Any well-

educated scientist could tell that Vavilov was more qualified, but that didn't matter; something significant had changed. Joseph Stalin, the leader of Communist Russia, had given Lysenko his support (Edouard Kolchinsky). Thus politics became involved in Soviet science.

After that, it did not take long for the scientific stage of Russia to change completely. Although Lysenkoism was not fully supported by the whole government yet, many scientists became afraid of Lysenko: "Because of Lysenko's political power, Soviet geneticists abstained from criticizing his theories at their conferences" (Edouard Kolchinsky). They were afraid of what would happen to them and their families if they dared to oppose Lysenko, and by extension, Stalin. Surely such a minor change in agricultural science could not harm them more than if they contradicted Stalin. Unfortunately, these same scientists were the first of many casualties brought about by this seemingly minor shift in political power.

The first major victim of Lysenko's newfound support was none other than Nikolai Vavilov, who, once renowned and praised for his work, was now held in disrepute. He stubbornly refused to follow "the politically expedient path of supporting Lysenko's theories" (James Crow 2). On August 6th, 1940, Vavilov was arrested and sentenced to death for "belonging to a rightist organization, spying for England, sabotaging agriculture" and other similar charges, even though his only crime was disagreeing with political authority (James Crow 2). Although the death sentence was lifted later on, Vavilov still spent the rest of his life in prison, and died on January 26, 1943 (James Crow 1). By 1948, Lysenko had become the head of Soviet biology using a speech partially written by Stalin. In his speech he denounced Mendel and called all such science "enemies of the people". Anyone, scientist or otherwise, who dared disagree with Lysenko and his teachings was purged from society; some were sent to Soviet gulags and others simply

disappeared (Sarah Zielinski). Peter Ferrara, a graduate of Harvard College, stated that "The V.I. Lenin Academy of Agricultural Sciences announced on August 7, 1948 that thenceforth Lysenkoism would be taught as the only correct theory. All Soviet scientists were required to denounce any work that contradicted Lysenkoism."

To convince the masses that Lysenkoism was the only true science, any critics were denounced as b*ourgeois* fascists. It then became very simple to claim that the science of genetics was made up by these rich property owners that were already hated. Propaganda was used to further blemish scientists' reputations. *Pravda*, a popular political journal, discredited two Soviet geneticists, Zhebrak and Dublin, in an article titled "Antipatriotic Acts in the Guise of Scientific Criticism". They were rebuked for believing in "pure science," "single biology," and for having the "petit *bourgeois* impertinence" to say that Lysenko was not being rewarded for his success in genetics, but rather in agriculture. Stalinist propaganda was being used to drown out true science by popular vote

In a British medical journal being written at this time, C.D. Darlington directly quoted *Pravda's* article: "A backward part of our Soviet intelligentsia still carries a slavish servility for *bourgeois* science, *whose rotten roots it is necessary to pull out decisively and pitilessly*" (Emphasis added). Darlington reacted to this saying that there is "no denial that Russian geneticists have been put to death; there is merely a threat that the survivors will be pitilessly eradicated" and that "…none of us imagines that the threat is anything less than a matter of life and death for the individuals concerned." It did not matter what was being taught when those in authority had the power to silence any opposition. Some Soviet scientists were rewarded for creating fake data and destroying counter evidence to further solidify Lysenko's

credibility (Peter Ferrara). Propagandistic journals such as *Pravda* helped to support Lysenko and give him undeserved credibility, while covering up disappearances and arrests that were spreading like wildfire (The British Medical Journal) (Edouard Kolchinsky). Dr. Medvedev was imprisoned at a psychiatric hospital for a time before fleeing the country with his wife and one of his two sons; the other was left behind in a Soviet jail (Matt Schudel). It is unknown how many scientists were killed or arrested; the only thing known for certain was that agriculture in Russia was rapidly collapsing.

Lysenko's original call to fame was his supposed transformation of spring wheat into winter wheat. Had this been true, agriculture would have boomed in this time. Unfortunately, the opposite was true. The records of Lysenko's experiments show that the spring wheat he had used contained only two sets of chromosomes, while his winter variety had three (Sarah Zielinski). This meant he had not actually changed his grain variety, but it had likely become contaminated. When his ideas were put into practice, disaster ensued; crops rotted, soil became depleted of nutrients, and most notably, famine spread through the country as the crops failed (Matt Schudel).

Lysenko's hand in these famines is very visible in one such catastrophe known as the Great Chinese Famine, which took place from 1959 to 1961. This occurred when Mao Zedong, the leader of Communist China, implemented Soviet agricultural policies in his eight-point agricultural "constitution" (Michael Lynch 77). Two of these eight points were direct teachings of Lysenko and his colleague, Terentiy Maltsev.

Lysenko taught that planting each generation of seeds closer together than the last would make them accustomed to the reduction in growing room, and thus more could be grown in a

small plot of land. This caused the crops to compete for nutrients and root space, leading to stunted growth. Maltsev taught the farmers to dig unusually deep into the soil, up to two meters down rather than the 10-20 centimeters they had previously plowed. He claimed that this would bring up fertile soil from deep in the earth, while instead it buried the fertile topsoil, again contributing to the seedlings' diminished growth (Michael Lynch 77).

Millions died of starvation when these methods were forced into practice by Mao. The conservative death count is 15 million, while most scholars consider 30 million to be more accurate. Some sources even claim that up to 45 million Chinese civilians starved to death in just these three years (Leslie Holmes 32). To put those numbers in perspective, the approximate death toll for the Holocaust, which is considered one of the cruelest and deadliest events in human history, is 17 million (Donald Niewyk).

Ultimately, many millions of civilians died because of Lysenko's faulty science, but despite his failure, Lysenko was in charge of Soviet agriculture for years (Matt Schudel). Why? The answer is that politics became involved; to quote Peter Ferrara:

> "Lysenkoism was 'politically correct' (a term invented by Lenin) because it was consistent with certain broader Marxist doctrines. Marxists wanted to believe that heredity had a limited role even among humans, and that human characteristics changed by living under socialism would be inherited by subsequent generations of humans.Thus would be created the selfless new Soviet man".

This shows that Lysenko's priorities were never to create a successful winter crop; he simply wanted political power, which he gained through making empty promises. Progress in Soviet biology stopped, and Lysenko maintained his political control until Stalin's death in 1953.

Despite this, the practice of Lysenkoism was only abandoned for Mendelian genetics in 1964, and Lysenko himself was not removed from power until 1965 (Peter Ferrara). This left Soviet Russia irreparably behind of the rest of the world's scientific advancements, as James Crow stated: "Stalin, by supporting Lysenko's bizarre Lamarckism, set Soviet genetics a generation behind." Because of this, Russia's economy was crippled, leaving them behind in today's science-fueled environment. When politics are allowed to influence science, facts cannot be expected to remain pure. As Charles Leone said so poignantly back in 1952: "Science cannot long remain unfettered in a social system which seeks to exercise control over the whole spiritual and intellectual life of a nation. *The correctness of a scientific theory* can never be adjudged by its readiness to give the *answers desired by political leadership*" (Emphasis added). In this world of information and learning, the tragedy of politically infected science can hopefully be avoided in the future, but only if the public is allowed and encouraged to challenge what is accepted as true, no matter how unpopular it may be.

Works Cited

Primary Sources

Collins English Dictionary. "Definition of ‘bourgeois’." *collinsdictionary.com*, www.collinsdictionary.com/us/dictionary/english/bourgeois.

I used this source to find the proper contextual definition for *bourgeois* as the word was repeated many times in my research and I desired to know why it was of such importance. This is a reliable source because it is an extensive dictionary that had contextual definitions from different time periods rather than just the context it is used in today.

Schudel, Matt. "Zhores Medvedev, dissident Soviet scientist who was arrested then exiled, dies at 93." *The Washington Post*, 17 Nov., www.washingtonpost.com/local/obituaries/zhores-medvedev-dissident-soviet-scientist-who-was-arrested-then-exiled-dies-at-93/2018/11/17/34f934fa-ea82-11e8-b8dc-66cca409c180_story.html?noredirect=on&utm_term=.2c715cad3a85.

This source provided a useful, firsthand account of the scientist Zhores Medvedev, one of the few scientists to escape Russia. I was unable to find many primary sources for this topic due to the involvement of propaganda at the time, so finding an interview helped me to understand how the scientists were silenced. It is a reliable source because Medvedev was interviewed about his experiences.

"Genetics And Science In the U.S.S.R." *The British Medical Journal*, vol. 2, no. 4528, 18 Oct. 1947, pp. 616-618. *jstor.org*, www.jstor.org/stable/20370977.

This source was invaluable because it was written as a reaction to the events in Russia, rather than looking back on them. This makes it reliable as it has not been altered to fit the political climate of our time. It also provided some wonderful quotes from Russian journals that I otherwise would not have been able to find. It is a correspondence of several experts discussing the credibility of the rumors they had heard of Lysenko and his teachings, and whether or not they should intervene.

Secondary Sources

Crow, James F. "Perspectives." *Genetics*, vol. 134, no. 1, May 1993. *genetics.org*, www.genetics.org/content/134/1/1.

This was a very useful source, as it told the story of one of Lysenko's major political rivals. It contained information about Nikolai Vavilov's arrest and political alienation as well. It is a reliable source because it is from a journal dedicated to genetics.

Ferrara, Peter. "The Disgraceful Episode Of Lysenkoism Brings Us Global Warming Theory." *Forbes*, 28 Apr. 2013, www.forbes.com/sites/peterferrara/2013/04/28/the-disgraceful-episode-of-lysenkoism-brings-us-global-warming-theory/#21bb48c07ac8.

I only used the first half of this article, but nonetheless it was incredibly helpful in providing many quotes and information on the political nuances of Soviet Russia at the time of Lysenkoism. It is reliable because it was written by a Harvard graduate who specializes in analyzing economics.

Holmes, Leslie. Communism: A Very Short Introduction. Oxford University Press, 2009.

I used this source to get an estimate for how many people died in the Great Chinese Famine, which was directly influenced and caused by Lysenkoism.

Kolchinsky, Edouard I., et al. "Russia's new Lysenkoism." *Current Biology*, vol. 27, no. 19, 9 Oct. 2017, pp. R1042-R1047. *sciencedirect.com*, www.sciencedirect.com/science/article/pii/S0960982217309491.

This source provided helpful background on Lysenko and how he conducted his experiments. It is reliable because it came from a scientific journal, and was published recently so any new information that surfaced since the events themselves have had time to be studied.

Lynch, Michael J. *Mao's China 1936-97*. 3rd ed., Trans-Atlantic Publications, 2015.

This source provided details about the Great Chinese famine, of which Lysenkoism's teachings were a major factor. This is a reliable source due to the author's extensive knowledge on the subject and the professional way it was presented.

Niewyk, Donald, and Francis Nicosia. *The Columbia Guide to the Holocaust*. 2000.

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Zielinski, Sarah. "When the Soviet Union Chose the Wrong Side on Genetics and Evolution." *Smithsonian.com*, 1 Feb. 2010, www.smithsonianmag.com/science-nature-when-the-soviet-union-chose-the-wrong-side-on-genetics-and-evolution-23179035.

This source explained the specific scientific views of Lysenkoism and summarized the political reasons behind Stalin's support of Lysenko. It is a reliable

source because it was published by the Smithsonian. It is also consistent with my other sources, especially regarding the Soviet attitude toward geneticists.