

TO MY COUNTRY AND THE WORLD: ANDREI SAKHAROV AND LITHUANIAN EMIGRANTS WITH A SCIENCE BACKGROUND ON RESPONSIBILITY, DEVELOPMENT, AND ENVIROMENTAL ISSUES



ILONA STRUMICKIENĖ

Adolfas Damušis Democratic Studies Center
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SUMMARY. The article is based on the premise that representatives of sciences, even living and working in different parts of the world and being piece of distinct political orders, form a global community based on shared knowledge of the world around us and work ethic. They also are interested in the impact of scientific and technological progress on individual societies and the world.

The article's structure was determined by the topics that both Lithuanian authors and Sakharov discussed in one way or another. The analysis of the texts of the physicist and human rights activist Andrei Sakharov and the post-WWII Lithuanian migrants, representatives of sciences, shows that all authors reflected the ongoing progress of science and technology and its massive impact on particular societies and the world. Furthermore, they emphasized the changing role of sciences representatives and the increase in their social responsibility.

Intellectual freedom, free dissemination of information, nuclear energy and its dangers, environmental issues captured the attention of either Lithuanian migrants with a science background or Sakharov.

The analysis of texts revealed that Sakharov was equally concerned about the processes in the Soviet Union and the world. At the same time, Lithuanian emigrants were interested in their dwelling countries and their occupied Homeland.

KEYWORDS: science, responsibility, nuclear energy, dissemination of information, natural resources.

INTRODUCTION

The texts we read the stories we follow sometimes create very unusual, though interesting, paths of thinking. This is the case, how the idea about stated of this article appeared. It was a juncture of two segments. The first came from my background as a historian of the Lithuanian diaspora. For many years, I have been reading and studying the texts of Lithuanian emigrants. There were authors with a science background (accademic scientists, technicians, engineers, teachers etc.).

The second segment has appeared from the broad commemoration activities of Andrei Sakharov's centennial in 2021. They fostered a wish to go deeper into the

ideas of this prominent scientist and human rights activist. Starting with his speech for Nobel Prize “Peace, progress and human rights” (1975) and some other texts, I was surprised to find similarities between topics and ideas discussed by Lithuanian migrants with a science background and Sakharov. This finding encouraged me to study more thoroughly if there is a resemblance between the texts of Lithuanian migrants, representatives of the scientific field, and Sakharov.

At first glance, this intention might seem artificial or irrelevant, however, the fact that Sakharov and some Lithuanian authors discussed the idea of a global community of scientists, specialists working in applied sciences, realizing their responsibility for broader society reassured my initiative. The idea that education and work in the field of sciences somehow shape and unite people worldwide has become a sort of indulgence to put individuals of very different fates and intellectual capacities into one context.

This paper aims to analyze the nonscientific texts of Andrei Sakharov, and Lithuanian migrants with a science background addressed to a broader public, track similarities and differences of the ideas in them, and present the context in which such thoughts appeared.

A thorough reading of the texts revealed that the scientific, technological, geopolitical, social development after WWII brought Sakharov and Lithuanian authors to reflect on the same topics. The issues related to nuclear weapons, peace, ecology and sustainable use of natural resources, global community of people with similar educational background and its responsibility to broader society, etc., draw their attention. They all gave heed to the same region (territories controlled by the Soviet Union) and had a desire to participate in the advancement of their homelands. Sakharov and Lithuanian migrants with similar scientific backgrounds, also shared a common concern over human rights and political freedoms. Sakharov expressed his care in various texts, interviews, and public speeches, while Lithuanian migrants with a science background, being a part of the Lithuanian diaspora, were more engaged in political lobbying activities, voicing the fact of Lithuania’s occupation and violations of human rights by the Soviet regime.

Even Sakharov and Lithuanian migrants, representatives of sciences, had never met each other in real life; the global fame of Andrei Sakharov reached the Lithuanian diaspora. Nonetheless, his scientific achievements were not widely presented to the readers of the Lithuanian diaspora press; more attention was gained from his struggle for human rights. The name of Sakharov appeared in the context of dissident movement in the USSR and had a place among Lithuanian dissidents’ prisoners of conscience. Sakharov, probably, did not know about the achievements and activity of Lithuanian migrants working in the fields of sciences; however, he knew and even mentioned some imprisoned Lithuanian dissidents (Nijolė Sadūnaitė,

Petras Paulaitis, Liudvikas Simutis, Algirdas Mirauskas, Šarūnas Žukauskas, Petras Plumpa) in his speech for Nobel Prize (Sakharov 1975: 8).

The intellectual heritage and activity of Sakharov, a prominent scientist and, at the same time, an uncompromised fighter for human rights and political freedom all over the world, have been gaining considerable attention from scholars and human rights activists, and even futurologists. But, on the contrary, the ideas of Lithuanian authors on global technological development, sustainable usage of natural resources, responsibilities of scientists, etc., are barely known even to the researchers of Lithuanian intellectual history in exile.

I hope that this paper will attract the attention of researchers to this particular realm of Lithuanian intellectual heritage and encourage the representatives of sciences in Lithuania to take a more active role in public activism. We can rephrase the words of US governor George Dewey Clyde which he said in 1957 at the Congress of the American Society of Civil Engineering that the disciplined thinking of representatives of sciences is very much needed in today's complicated life (Manomaitis 1971: 14).

SCIENTISTS ALL OVER THE WORLD SPEAK THE SAME LANGUAGE

The concept of “imagined communities” by Benedict Anderson, initially applied to explain the national communities, has been redefined and used to depict communities of different natures.

A professor of historical geography and intellectual history, Robert Mayhew employed this concept to describe the ideal of the early modern scientific community. It was a vision of an egalitarian world in which scientists could exchange their opinions without the tensions of national, religious, historical, or other barriers clouding their judgment (Mayhew 2005: 74). Even such an ideal community has never come into existence, science knows no geographical or political boundaries and speaks the same language of accurate quantitative expression. Scientists acknowledge themselves as a part of the global scientific community (Corillon 1989: 131). American journalist Harrison E. Salisbury, an author of “Foreword” to a collection of Sakharov's texts “Sakharov Speaks,” shared an insight that there might be something special about the way of thinking of representatives of sciences, which let them see more. Focused on Sakharov, he distinguishes physicists:

There is clearly something about the discipline of physics that causes a great physicist to look beyond the formulas, the theorems, the infinitely intricate hypotheses by which he tests and determines the natural laws of the universe and into the seemingly simpler but actually much more complex phenomena of man's society. Or, perhaps, this is an

illusion. Perhaps it is simply that with their finely tuned minds the physicists are able to penetrate more swiftly and more deeply the murk and bias with which human beings normally shroud their affairs. (Salisbury 1974: 6)

Salisbury's assumption might be relevant by talking not only about physicists but also about representatives of other sciences.

Science itself is a neutral process of organizing knowledge about the natural world based on the facts learned through experiments and observations. Nonetheless, it has never existed apart from society. Since ancient times, scientific knowledge has served as a critical factor in creating welfare, military power, and priority for specific states. However, not all appliances of scientific achievements led to the well-being of humanity; some of them caused pain and suffering to particular groups or even entire humankind. However, only after the Holocaust and atomic bombings of Hiroshima and Nagasaki did the destructive potential of science become globally evident.

It is not surprising that some eminent scientists and public thinkers after WWII started raising the question of the responsibility of science. They also initiated discussions on developing the code of universal human rights and urged a need to create measures protecting science and technologies from misuse (Chapman 2009: 5). Albert Einstein, Niels Bohr, Bertrand Russell, William Albert Noyes Jr., Julian Huxley, Johannes (Jan) Martinus Burgers, and many others have engaged themselves in discussions, creating human rights framework and implementing it (Sakharov 1983: 34; Chapman 2009: 5). Sakharov joined this "club" in the 1960s.

Rapid progress, growing specialization, and global threats of scientific appliances urged a need to inform governments and disseminate scientific knowledge to the public audience, warning about the dangers that applications of science might cause, etc. One might say that emergence of global risks (such as nuclear, ecological, technological, etc.) strengthened a global imperative to cooperate (Beck 2011: 1349) and shaped the engagement and activities of people with a science background.

CHANGING ROLE OF REPRESENTATIVES OF SCIENCES AFTER WWII

Global developments affected the lives and activities of Andrei Sakharov and Lithuanian migrants with a science background. They emphasized and discussed topics that came from their personal experiences and observation of their nearby setting and global tendencies.

Until the late 1950s, Sakharov concentrated on scientific work and applying its results into practice than publicly discussing the questions related to scientific

progress and its perils. Sakharov's extraordinary intellect, exceptional position in the Soviet society, and global fame gave him more confidence, which lacked the first generation Lithuanian migrants with a science background, who were searching for their place under the sun in the first decades after the war.

In 1944, experiences of terror and repressions during the first Soviet occupation (1940-1941) led many Lithuanians westwards. After three to five years spent in Displaced Persons (DP) camps, they found their new homes in the free world. Lithuanian migrants with a science background were more fortunate in finding jobs than their co-nationals of different professions. It was especially difficult for representatives of humanities to find a job according to their domains.

This tendency in the Lithuanian diaspora and observation of the global trends inspired the emergence of the texts on the role of sciences and humanities in modern societies.

Lithuanian authors indicated that science and its appliances had visibly changed humanity's material and even moral development, which led to the increasing significance of scientific representatives in society (Vėbra 1948: 1; Damušis 1969: 335-336).

The rupture between humanities and sciences and the globally deteriorating moral situation were popular topics among Lithuanian authors. Chemist Jonas Rugis notes (1956):

In society, the authority has passed from a writer or philosopher to an engineer or some other representative of sciences. In modern society, the engineer's role has increased, as have his tasks and responsibilities in the development of human and social life and culture. (Rugis 1956: 8)

Lithuanian authors were concerned over the insufficient readiness of engineers to become public intellectuals or leaders of society or a particular community. Therefore, suggestions came for sciences representatives to gain a broader humanitarian education (formal or informal) (Vėbra 1948: 1; Burba 1960: 1; Damušis 1969: 335-336). Delegates of different disciplines were gathering at Meetings of the Lithuanian Catholic Academy of Sciences and Lithuanian Symposiums on Art and Sciences and other events to better understand the progress occurring in sciences, humanities, and arts.

Like his Lithuanian "colleagues," Sakharov worried about the situation of humanities or creative intelligentsia globally and in the socialist countries, especially. However, the source of his anxiety came from observing intellectual unfreedom in totalitarian countries. For example, in his interview (1973) with Swedish journalist Olle Stenholm, Sakharov pictured the retreat of intelligentsia into:

narrow professionalism, into a kind of dual intellectual life at work and at home, into narrow circles of their friends, where people begin to think in different ways, and this dichotomy leads to hypocrisy and a further fall of morals and creativity of people. The results are particularly sharp in the humanistic as distinguished from technical intelligentsia. (Sakharov 1973a: 177–178)

In 1975, Sakharov elaborated more on the idea of what damage intellectual unfreedom could cause,

One condition of special importance is that in an atmosphere of intellectual freedom is an effective system of education and creative continuity from generation to generation possible. Intellectual unfreedom, on the other hand, rule by a doleful bureaucracy and conformism will first all destroy spheres of knowledge such as humanities, literature and art, and then invisibly lead to general intellectual decay, to the bureaucratization and formalization of the entire educational system, to a decline in scientific research, to the disappearance of the atmosphere of creative inquiry, to stagnation and disintegration. (Sakharov 1975: 5)

Surprisingly, observing social developments in free and oppressed societies, both sides (Lithuanian migrants and Andrei Sakharov) came to similar conclusions about changing role of representatives of science and representatives of the cultural intelligentsia. However, in Western societies the role of researchers, engineers, technologists, and sciences teachers increased due to natural development. Although different can be said about totalitarian societies, where this process was stimulated by the state's policy.

SCIENTIFIC PROGRESS AND RESPONSIBILITY

Either Lithuanian authors or Sakharov believed that scientific and technological progress is an unstoppable and irreversible process. They understood the positive and negative sides of it.

Sakharov was eloquent on the widespread influence of scientific and technological progress on the entire world. Not the same can be said of Lithuanian authors, who (with a few exceptions), gave more attention to the specific areas of human activity. Adolfas Damušis, a Lithuanian chemist, probably was the one who elaborated the most coherent vision on how science can influence future development. In 1972, his fellow Juozas Brazaitis recited Damušis idea: "The strengthening of technological life will give similar forms to all states in the political and socio-economic sphere, and will cause uniformity; also will ease individual expression in the field of culture" (A letter of Juozas Brazaitis 1972).

For Sakharov, it was apparent that science might improve life conditions and worsen them or even exterminate all humankind. In multiple texts, he emphasized the danger of uncontrolled progress. The utmost critical area to him was the unregulated military applications of scientific achievements, especially creating the thermonuclear weapons, which under conditions of global political polarization of humanity could turn the destruction of the planet and extinction of all human race.

In 1957, Sakharov started feeling personal responsibility for increasing radioactive contamination from nuclear explosions (Sakharov 1973b: 32). The realization that his activities might affect billions of people worldwide for several generations forced Sakharov into activism. He did not doubt that other scientists might share perceptions likewise; therefore, Sakharov talked not only about himself but also about representatives of sciences in general.

According to Sakharov (1981), professional knowledge, being better-informed, certain freedom is accompanied by double-sided responsibility. The first part of it draws on improving people's lives worldwide. The second one encourages researchers and other professionals working in the sciences to inform or even warn the governments and societies about the costs and eventual dangers of appliances of scientific achievements. He writes

With some important exceptions (primary affecting totalitarian countries), scientists are not only better informed than the average person, but also strive for and enjoy more independence and freedom. Freedom, however, always entails responsibility. Scientists and other experts already influence or have the capacity to influence public opinion and their governments. (Sakharov 1981: 26)

Further, Sakharov continues:

Because of the international nature of our profession, scientists form the one real worldwide community which exists today. <...> integration of the scientific community has inevitably progressed beyond narrow professional interests and now embraces a broad range of universal issues, including ethical questions. <...> Scientists, engineers and other specialists derive from their professional knowledge and the advantages of their occupations a broad and deep understanding of potential benefits – but also risks – entailed in the application of science and technology. They also develop an awareness of the positive and negative tendencies of progress generally, and its possible consequences. (Sakharov 1981: 25)

Sakharov believed that “Progress is possible and safe only under the control of Reason” (Sakharov 1975: 5) and scientists and other sciences representatives were among the holders of the Reason; therefore, their responsibility is to employ their knowledge, abilities, and other components of social capital for controlling the progress. Lithuanian physicist Eugenijus Manomaitis shared similar attitudes

(1971) towards the responsibility of people with a background in sciences. According to him, they should share their knowledge and guide society, which sometimes does not understand, what it wants (Manomaitis 1971: 14).

To sum up, Lithuanian authors, either Sakharov, believed that scientific and technological progress might improve the life quality of particular societies and all humanity in general. Moreover, they encouraged the representatives of the sciences to take an active role in the process.

GLOBAL, NATIONAL AND PROFESSIONAL ENGAGEMENT

The understanding of their particular responsibilities fostered the representatives of sciences into activism. Yet, there are differences between Lithuanian migrants and Sakharov.

In Sakharov's vision, the global community of sciences representatives is informal, based on educational background and a field of professional activity; he does not emphasize the role and importance of formal associations. Instead, Sakharov favors crossing the narrow professional interests and social boundaries. Lithuanian authors, contrary to Sakharov, on multiple occasions, stressed not only the importance of siding with various professional associations (international or the country they reside in) but also the urgency of being members World Lithuanian Engineers & Architects Association (Pasaulio lietuvių inžinierių ir architektų sąjunga) and its branches in different countries.

Associative socialization in the texts of Lithuanian emigrants and Sakharov is represented differently. Lithuanian exiles talk a lot about it, and Sakharov does not cover this topic. However, the fact that we do not find an invitation to join voluntary communities in Sakharov's texts does not mean that he did not understand the importance of associative socialization. No, this rather testifies to the reality of life in a totalitarian system, where any voluntary gathering of people was controlled and often impossible.

Meanwhile, Lithuanian emigrants lived in a free world, where associative socialization was a tradition of cultural and social life. Therefore, it was possible to continue the activities of pre-war and DP camp organizations and communities without hindrance, where community spirit was encouraged and even beneficial.

The specifics of Lithuanian migrants with a science background lies in strong-willed engagement not only to the professional community or to humanity in general, but Lithuanian nation specifically. This commitment came from experiences of forced emigration and general beliefs circulating in the Lithuanian diaspora. Like most Lithuanian exiles, Lithuanian migrants with a science background

thought that their departure would be temporary and that they soon would return to their Homeland. This belief encouraged the Lithuanian diaspora to actively lobby to restore Lithuania's independence, maintain national identity, and create plans for future independent Lithuania. In addition, the leaders of the Lithuanian diaspora inspired their co-nationals to accumulate social capital while living abroad and later use it for the welfare of their Homeland.

Many Lithuanian migrants with a scientific background got jobs according to their professions in the countries of immigration and became members of various professional associations. However, the commitment to their Homeland focused their constant attention on Soviet-occupied Lithuania and the processes there. Therefore, the concerns about development, ecology, and open access to the newest scientific and technological achievements were seen through the Lithuanian diaspora lenses.

Andrei Sakharov cared about his country nonetheless. His involvement in the creation of hydrogen weapons and later occurred activism also came from his primary concern over the situation of his country – the USSR. In his “Autobiographical note,” Sakharov remembers his motivation to join the research group which developed Soviet thermonuclear weapons in 1948: “We were all convinced of the vital importance of our work for establishing a worldwide military equilibrium, and we were attracted by its scope” (Sakharov 1981: 30). In his “Postscript to Memorandum” (1972), he speaks about “the country's spiritual regeneration,” having in mind the USSR (Sakharov 1972: 154).

Analyzing the texts of Sakharov and Lithuanian migrants with a science background, we can notice that in the case of Sakharov, the anxiousness over global processes is equal to or prevailing over the concern over developments in the USSR; Lithuanian authors, differently, focused themselves more on the situation in Lithuania than global issues. The answer to these distinctions might lie in understanding how meaningful the results of their professional activity might be. Surely, Sakharov understood that his work might affect all humanity and other life forms on Earth. However, in the case of Lithuanian migrants with a science background, the results of their work were mainly pointed to the societies they lived in and eventually to Lithuania.

INTELLECTUAL FREEDOM AND ITS RESTRICTIONS

For Sakharov, intellectual freedom was crucial in creating a global community for the representatives of sciences and human society in general. Intellectual freedom, in accordance to him, extends just a free exchange of information: “intellectual freedom is essential to human society – freedom to obtain and distribute information,

freedom for open-minded and unfearing debate, und freedom from pressure by officialdom and prejudices” (Sakharov 1968: 60).

His finely tuned mind reflected the triple threat to the freedom of thought, which comes “from deliberate opium of mass culture, from cowardly, egotistic, and philistine ideologies, and from the ossified dogmatism of bureaucratic oligarchy and its favorite weapon, ideological censorship” (Sakharov 1968: 60-61), therefore he continued to campaign for it. In his texts, Sakharov covered the topic of free acquiring and sharing of scientific and technological information. Per his perception, the right to enjoy the benefits of scientific and technical progress was vital for scientists to positively affect the local and global processes and reduce international tensions and polarization. Sakharov advocated this idea since 1968 when his manifesto “Progress, coexistence and intellectual freedom” started to circulate in public.

His appeal coincided with broader processes occurring in the postwar world. After WWII, the voices favoring attempts to regulate the misuse of scientific achievements intertwined with the endeavors to constitute the free dissemination of scientific and technological knowledge. The right to benefit from science was incorporated in the Universal Declaration of Human Rights (1948) and the International covenant on economic, social, and cultural rights (1966) (Chapman 2009: 1). However, as with other initiatives to secure human rights globally, this right became a battlefield between two superpowers during the Cold War. Countries tend to safeguard scientific knowledge, especially those that might increase military power and security. The Soviet Union and its allies supported the idea of the free exchange of information on scientific and technological development while hypocritically hiding such information themselves; the United States and its associates demonstrated a critical attitude towards this idea. In this context, Sakharov’s ideas correlated with Soviet policy, but there is no doubt about his noble intentions.

Lithuanian migrants with a background in sciences supported the policy of their host countries, especially when it came to the question of sharing information on nuclear technologies. For Lithuanian exiles, it was not only about the geopolitical balance of superpowers, but once again, about their oppressed Homeland and the possibility to free it in the future. Nuclear technologies dominated the post-war discourse on the free exchange of scientific and technological achievements. A few decades later, information and software scientist Pranas Zundė presented to the Lithuanian public the concept of informational systems and the notion of information as a valuable resource itself.

According to this US Lithuanian scientist,

There is a growing perception that information, especially scientific and technical information, is one of the resources of a nation and a state, that it has its value as much as other resources, for instance, natural resources; and those information resources must

be used wisely and in a planned manner. Increasingly, and more often, there is talk of “information policy,” which is, the ways and methods that a state should use to make the most of the information resources profitable, especially in its relations with other states. (Zundé 1978)

Lithuanian migrants with scientific backgrounds understood the value of scientific and technological knowledge they gained in the West and tried to share it with their Lithuanian colleagues coming to Soviet-occupied Lithuania for different events or courses. Despite the “Iron curtain,” they searched for opportunities to bring information to Lithuania and acted as carriers of valuable knowledge. In this way, creating a framework for a transnational community of Lithuanian representatives of sciences.

Regardless noble intentions of Sakharov and other fighters for human rights, the cumulative view of scientific knowledge did not gain universal acceptance during the Cold war period. Audrey R. Chapman noted that even now, the right to enjoy the benefits of scientific progress “is so obscure and its interpretation so neglected that overwhelming majority of human rights advocates, governments, and international human rights bodies appear to be oblivious to its existence” (Chapman 2009: 1).

Tendencies, contrary to his beliefs, never stopped Sakharov. To Olle Stenholm, a Swedish radio journalist, he comments: “Well there is a need to create ideals even when you can’t see any route by which to achieve them, because if there are no ideals then there can be no hope and then one would be completely in the dark, in a hopeless blind alley” (Sakharov 1973a: 173).

Therefore he continued promoting intellectual freedom and the free exchange of information.

Compared to Lithuanian migrants with a science background, Sakharov more explicitly discussed the issues related to intellectual freedom; Lithuanian authors, at the same time, concentrated more on the free dissemination of scientific and technological information.

NUCLEAR ENERGY AND ITS CHALLENGES

With the discovery of Uranium in 1789, nuclear energy science has started. As World Nuclear Association stated, the main developments in the science of atomic radiation and atomic change occurred from 1895 to 1945. Comparably, in the last six years of this period, the focus was on creating the atomic bomb. American scientists were the first who achieved fruitful results in this area. Successful tests were followed by the dropping the first atomic bomb on August 6, 1945, on Japan. The

devastating power of atomic weapons contributed to the end of WWII. However, it started a nuclear arms race on both sides of the “Iron Curtain”. Simultaneously to atomic energy’s appliance in the military realm, the direction towards peaceful use of atom has evolved (World Nuclear Association 2022).

The harnessing of nuclear energy in direct or indirect ways affected the lives of Andrey Sakharov and Lithuanian migrants with a science background.

All countries involved in the development of nuclear energy considered information associated with this topic as secret or restricted; therefore, the public lacked an understanding of what atomic energy is, how it works, and what perils it might cause. Therefore, in the late 1940s, the topics related to the atomic bomb were trendy worldwide. Lithuanian migrants were no exception.

Interest in the atomic bomb issues was fostered by a hope that a new and mighty American weapon might help free Lithuania and let Lithuanian refugees, gathering in DP camps, return to their Homeland. However, even the Lithuanian press published numerous texts based on publications in Western media; there was a lack of an authoritative voice by Lithuanians themselves. In 1946, Lithuanian chemist Adolfas Damušis, who in prewar Lithuania was engaged in creating of cement industry, wrote a three-part article called “The Atomic Age,” filling the existing gap. First, Damušis explained the basics of nuclear science, such as an atom, atomic reaction, atomic energy, an atomic bomb. According to him, this kind of weapon is only one form of utilization of nuclear energy, neither perfect nor accurate; nuclear-powered steam locomotives or airplanes would be more fascinating (Damušis 1946a: 2). Then, the Lithuanian chemist in detail described the tremendous destructive power of the atomic bomb (heat, to the sun like brightness, vibration, and, sure, radiation) and finished his article by expressing a wish that a highly colossal source of energy would serve the well-being of humanity and not its destruction (Damušis 1946b:5).

Lithuanian migrants with a scientific background shared a constant interest in the peaceful appliance of nuclear energy. Some representatives of the younger generation even started careers in this industry area. Moreover, they regularly updated the readers of the Lithuanian diaspora press and participants of various events with the newest developments occurring in harnessing nuclear energy. As a result, atomic energy was mentioned in the most detailed visions of future independent Lithuania (Damušis 1952: 1-2). However, when in 1974, the Soviet authorities started preparatory works for constructing Ignalina nuclear power plant; the Lithuanian diaspora criticized the project for its megalomania, inadequate location, and non-sustainable way of exploiting nature.

Summing up, Lithuanian migrants with a science background sure understood the destructive power of nuclear energy its crucial importance in balancing the

superpowers of the Cold War. However, they emphasized the peaceful use of the atom and believed that atomic energetics could be safely used in Lithuania.

Nuclear energy shaped the life of Andrei Sakharov differently. Being one of the most brilliant minds of his time, Sakharov was recruited to create the thermonuclear weapon, which itself was the second-generation nuclear weapon design. Working under the leadership of Igor Tamm (the winner of the Nobel Prize in Physics in 1958), he became an author or co-author of several key ideas for creating a hydrogen bomb (H-bomb). Despite his input into the work of a broader research group, Sakharov criticized the Western press for calling him “the father of hydrogen bomb.” Instead, he noted that Soviet H-bomb was a “collective invention” (Sakharov 1973b: 30).

Sakharov’s input into the development of peaceful nuclear energy is frequently omitted. Reacting to this tendency, in the “Introduction” (1973) to “Sakharov Speaks”, he shortly reviewed his contribution to this domain:

In the summer of 1950, almost simultaneously with the beginning of the work on the thermonuclear weapon, I.E. Tamm and I began work on the problem of controlled thermonuclear reaction; i.e., on the utilization of the nuclear energy of light elements for purposes of industrial power. In 1950 we formulated the idea of the magnetic thermo-isolation of high-temperature plasma, and completed estimates on the parameters for thermonuclear synthesis installations. This research, which became known abroad through the paper read by I.V. Kurchatov at Harwell in 1956 and through the materials of the First Geneva Conference on the Peaceful Use of Atomic Energy, was recognized as pioneering. In 1961 I proposed, for the same purposes, the heating of deuterium with a beam from a pulse laser. I mention these things here by way of explaining that my contributions were not limited to military problems. (Sakharov 1973b: 30–31)

Sakharov’s work undoubtedly assisted the strengthening of the military power of the Soviet Union and, paradoxically, created a devoted fighter for peace, disarmament, and human rights. Significant input into applying nuclear energy for military and peaceful purposes, many years of direct experience in the field, global fame earn Sakharov an image of a reliable expert on issues on nuclear energy.

He effectively used his social capital for delivering a message on not only the devastating harm of nuclear weapons testing but the fatal consequences of thermonuclear war. In 1968, Sakharov emphasized three aspects that make thermonuclear weapons a peril to all humankind: “the enormous destructive power of a thermonuclear explosion, the relative cheapness of rocket-thermonuclear weapons, and the practical impossibility of an effective defense against a massive rocket-nuclear attack” (Sakharov 1968: 62). Therefore, in his speech for the Nobel Prize, Sakharov called thermonuclear weapons “the greatest danger” to the world at that time (Sakharov 1975: 3). The global political polarization tension between the

two superpowers magnified the possibility of the catastrophic development of the events. Consequently, Sakharov advocated for radical, balanced disarmament, limiting the testing of nuclear weapons, harmonizing international relations, profound changes in the socialist block, and enforcement of human rights worldwide. In an open letter to Dr. Sydney Drell, Deputy Director of Stanford Linear Accelerator Center, he writes,

It is impossible to win a nuclear war. What is necessary is to strive, systematically through carefully, for complete nuclear disarmament based on strategic parity in conventional weapons. As long as there are nuclear weapons in the world, there must be a strategic parity of nuclear forces so that no side will venture to embark on a limited or regional war. Genuine security is possible only when based on a stabilization of international relations, a repudiation of expansionist policies, the strengthening of international trust, openness and pluralism in the socialist societies, the observance of human rights throughout the world, the rapprochement – convergence – of the socialist and capitalist systems, and worldwide co-originated efforts to solve global problems. (Sakharov 1983: 61)

If comparing the attitudes of Lithuanian migrants with a science background and Sakharov's approach towards nuclear energy, both acknowledged the fascinating power of the atom and the possibilities it grants to particular societies and humanity in general. However, Lithuanian migrants representing the field of sciences paid more attention to the peaceful harnessing of nuclear energy; and Sakharov concentrated on its military appliance. On the other hand, technological novelties in the field and development of atomic energetics in Soviet-occupied Lithuania attracted the attention of Lithuanian migrants with a science background. At the same time, Sakharov extended the topic of nuclear energy, appealing for radical changes in international relations on a global scale and the transformation of socialist societies into more open and democratic.

ENVIRONMENTAL ISSUES

Environmental issues are one more topic in texts of Andrei Sakharov's and Lithuanian migrants, representatives of sciences.

Due to comparably late processes of industrialization and urbanization, relicts of pagan beliefs, Lithuanians maintained a harmonious attitude toward the environment until the mid of 20th century. However, World War II and the subsequent Soviet occupation hindered the natural development of environmental consciousness. The occupant came determined to mobilize the human and natural resources fully and harshly for creating industry and military sectors able to compete with

the rivals on the other side of the “Iron Curtain”. As authors of a study on “An environmental history in Russia” indicate, there were cases when the Soviet engineers, who suggested a

circumspect approach to construction projects, dams, forestry enterprises, and so on risked facing charges of subversion or wrecking. Stalinism was therefore not only a polity and economic program, but also a transformationist doctrine that would rebuild nature and the people in it for the “socialist reconstruction” of the nation. (Josephson, Dronin, Mnatsakanian, Efremenko, Larin 2013)

Andrei Sakharov worked under such conditions as well. Environmental consciousness intensified only in the late period of the Soviet Union.

The concern for sustainable ecological development has been evolving differently in Western countries (Du Pisani 2006: 85-87). Until World War II, only individuals or particular interest groups expressed worries about separate areas, such as forests, clean water, air, dangerous work conditions, etc. However, in the second part of the 20th-century environmental concern covered broader layers of society and even the international community, molding a modern idea of “environmental protection” as a public and political commitment (Sellers 2018: 364). In addition, the reflections on war impact and nuclear threat, such as Russell-Einstein Manifesto (1955) (Atomic Heritage Foundation 2022), contributed to the maturation of environmental consciousness.

Ideas in the Western societies, such as growing concern on ecology, sustainable development, and conservation of nature, discussions on sovereignty over natural resources (Kouris 2020: 3), and evolving Catholic Social Teaching (Canadian Catholic Organization for Development and Peace 2022), shaped the attitudes of Lithuanian migrants on environmental issues.

As in other cases discussed in this paper, the worldview of Lithuania migrants was not limited just to the processes occurring in the societies they lived; they also focused their glaze on what was happening in Lithuania.

In the first years after the war, the Diaspora press alarmed Lithuania’s natural resources’ reckless and irrational destruction, especially forests. Lithuanian migrants also emphasized that the natural resources and various goods of their Homeland had been used not for the well-being of Lithuanian people but were transported to Soviet Russia (Ladas 1946: 5). As sustainable development had never been a principle molding the policy of the Soviet Union in Lithuania, Lithuanian migrants continued to criticize the Soviet Union for the destruction and exploitation of Lithuanian natural resources until the end of the occupation. The texts by Lithuanian migrants, representatives of sciences, on Lithuania’s general ecological and economic situation appeared, alongside with the ones were a specific

area of Lithuanian economy or industry was analyzed. Lithuanian authors usually commented on particular fields in which they had competence.

Lithuanian migrants, representatives of sciences, indicated that the Soviets had started the industrialization of Lithuania, which previously was an agricultural country. According to Lithuanian information and software scientist Pranas Zundė, industrialization would be a positive shift if it corresponded to the interests of the Lithuanian people; however, the Soviet authorities had different interests, such as creating social strata, which would support the Soviet regime in Lithuania (Zundė 1963: 88).

In 1971, oceanographer Almis Povilas Mažeika ailed about the catastrophic situation in Lithuania due to industrial pollution. He also noted that local authorities had not a decisive word regarding industrial development and environmental protection questions. Mažeika stated that pollution coming from the Kaliningrad district (semi-exclave part of the Russian Soviet Federative Socialist Republic, bordering Lithuania) paid an essential role in poisoning the nature of Lithuania as the local enterprises nonetheless. Simultaneously, he expressed hope that the situation might change for the better (Mažeika 1971: 3).

Flee of Kazys Ėringis (ecologist of Soviet-occupied Lithuania) Westwards in 1981 strengthened the knowledge of the Lithuanian diaspora about the ecological situation in their Homeland and witnessed that the hope expressed by Mažeika ten years ago did not materialize. Ėringis emphasized, “The expansionist economy of the Soviet Union damaged and devastated the environment in Lithuania and the other Baltic states <...>” (Ėringis 1983: 28).

Lithuanian nuclear engineer Kazys Almenas and ecologist Kazys Ėringis were the authors who criticized Ignalina nuclear energy plant the most. They both depicted very similar pictures. The Chernobyl disaster in 1986 strengthened the fear on the safety of this plant and the impact of the eventual nuclear accident on the survival of the Lithuanian nation. In 1989, Almenas writes,

The Ignalina power plant is a huge industrial facility which intruded into one of the unspoiled regions of Lithuania complete disregard of the wishes of the local population. With this facility a city with a sizeable Russian speaking population was created. Finally, the potential for danger that this facility poses has been well illustrated by the Chernobyl disaster. (Almenas 1989: 201)

The cement industry was one more area of Soviet-occupied Lithuania that gained the attention of Lithuanian emigrants with a science background. Adolfas Damušis, a chemical engineer, who worked in this field in prewar Lithuania, was particularly interested in how the cement industry was developing under the Soviet regime. He even visited the Akmenė cement plant on his first visit to Lithuania in 1989 (after 45 years of exile). Following Damušis, this plant occurred to be

one more example, that industrial development in Soviet-occupied Lithuania did not serve the well-being of Lithuania's people but sought to exploit the land and resources for imperial goals (Damušis 1989: 58).

The idea that the natural resources of a country belong to its people was prevailing among the Lithuanian diaspora and representatives of sciences as well. Naturally, therefore, Lithuanian migrants condemned the savage exploitation of the natural resources in their occupied Homeland.

If Lithuanian migrants with a science background observed the processes occurring in their Homeland from a distance, Sakharov lived in and worked in the system, which was determined to use all possible resources relentlessly for achieving its goals. Surprisingly, Sakharov's long journey to social and political consciousness and activism started with his concerns over environmental issues. In the Introduction to "Sakharov Speaks," he recalls:

Beginning in 1957 (not without the influence of statements on this subject made throughout the world by such people as Albert Schweitzer, Linus Pauling, and others) I felt myself responsible for the problems of radioactive contamination from nuclear explosions. As it is known, the absorption of the radioactive products of nuclear explosions by the billions of people inhabiting the Earth leads to an increase in the incidence of several diseases and birth defects of so-called sub-threshold biological effects <...>. When the radioactive products of an explosion get into atmosphere, each megaton of the nuclear explosion means thousands of unknown victims. And each series of tests of a nuclear weapons (whether they be conducted by the United States, the USSR, Great Britain, China, or France) involves tens of megatons; i.e., tens of thousands of victims. (Sakharov 1973b: 32)

This moral burden encouraged Sakharov into activism. He continuously appealed to the Soviet leaders to stop large-scale unnecessary nuclear tests. These attempts brought him into conflict with the authorities but, at the same time, contributed to discussions among the Soviet leaders; in 1963 USSR signed the so-called Moscow Treaty, which banned nuclear testing in the atmosphere, in space, and the ocean. Sakharov considered he assisted in this process (Sakharov 1973b: 34).

Concern over environmental issues in the USSR and worldwide is present in most Sakharov's nonscientific texts. He dedicated all chapters to "Pollution of environment" in his Manifesto "Progress, Coexistence, and Intellectual Freedom" (1968), where he named most of the problems related to pollution of the environment. According to Sakharov, industrial societies create danger for all planet. Therefore, only international cooperation might effectively solve this global problem, which he calls "the problem of geohygiene (earth hygiene)":

This problem can therefore not be solved on a national and especially not a local basis. The salvation of our environment requires that we overcome our divisions and the pressure of temporary, local interests. (Sakharov 1968: 77)

In his “Memorandum” (1971), he calls for creating an international consultative organ, an “International Council of Experts on the Problems of Peace, Disarmament, Economic Aid to Needy Countries, the Defense of Human Rights, and the Protection of the Environment.” (Sakharov 1971: 145). Even Sakharov acknowledged that all world faces the problems of geohygiene, he saw the USSR among the ultimate polluters. According to Sakharov, due to the bureaucratic nature of leadership, the Soviet Union was poorly capable of actually caring about the interests of future generations (for instance, protecting the environment) (Sakharov 1974). Only the *perestroika* movement raised hopes that the situation might change. Sakharov wanted to be a part of this change. He participated in the elections to the USSR’s Congress of People’s Deputies. His election platform (1989), among the other urging issues, stressed the need to create an efficient and environmentally friendly economy (Sakharov 1989). For achieving this, Sakharov proposed rather radical means, such as underground nuclear energy plants, closure of environmentally harmful industries, legalization and support of social movements fighting for environmental protection, termination of environmentally hazardous hydro-technical and other construction. In addition, he claimed that information on the actual environmental situation in all regions of the Soviet Union would be accessible to society (Sakharov 1989).

If setting side by side the outlooks of Lithuanian migrants, representatives of sciences, and Sakharov, it is evident that they all were concerned about environmental issues. However, the object of their concern altered. Lithuanian migrants were worrying about the ecological situation in their dwelling countries and Lithuania. In the texts of Sakharov, the worry over the global situation dominated, simultaneously acknowledging that Soviet authorities treated environmental issues as redheaded stepchild.

For both sides, it was evident that the Soviet Union sought neither create well-being for its people nor preserve the environment and natural resources for future generations.

Not being able to change the situation until the late 1980s, Sakharov emphasized the necessity of international cooperation in stimulating solving environmental pollution problems and sustainable usage of natural resources.

CONCLUDING REMARKS

Post-WWII Lithuanian migrants with a science background and Soviet physicist and human rights activist Andrei Sakharov due to education and work in

science-related fields, shared interest in scientific and technological development and its impact on particular societies and the world in general.

Activities and intellectual heritage of Lithuanian migrants and Sakharov witness that they all exceeded narrow professional interests and acknowledged the changing role of scientists and specialists working in various fields related to sciences. In their perception, the growing weight of sciences and technologies meant expanding the responsibility of sciences representatives to particular societies, the world, and future generations.

It is evident that Lithuanian migrants and Saharov shared similar moral standards and understanding of the mission of people with a science background; however, living and working under different geopolitical circumstances caused variant insights on particular issues. The information and narratives circulating in Western societies and the Soviet-controlled territories affected the worldview of Lithuanian migrants with a science background and Sakharov. In the case of Sakharov, we can observe the victory of the human mind and conscience. He was able to recognize the hypocrisy of the Soviet narratives and, despite the persecution towards himself and his family members, became a brave and uncompromised fighter for human rights, peace, and justice. In 1975, Sakharov published a book “My country and the world”. Its title illustrates that the prominent physicist and human rights activist extended his interest over the boundaries of his country (the USSR) and embraced with care all the world. A special mission formulated by Lithuanian intellectual leaders for the post-WWII migrants led to a different engagement of the Lithuanian diaspora. It concentrated on containing national identity, lobbying for Lithuania’s freedom, acquiring social capital (knowledge, experiences, contacts, etc.), and returning to a free Lithuania. Therefore Lithuanian migrants mainly were of interest to the countries they were dwelling in and their occupied Homeland.

The other differences, such as emphasis on the threat of nuclear weapons (by Sakharov) and a concentration on the development of a peaceful atom (by Lithuanian authors), came from different experiences and possibilities to make the change. In the case of Lithuanian migrants, it was a direct experience in the field of the peaceful harnessing of nuclear energy and observance of how this field develops in Western countries; Sakharov, simultaneously, being one of the creators of the Soviet hydrogen bomb, recognized the tremendous danger of thermonuclear munition, and used all his energy and social capital to become vocal about it.

Contrasting approaches to the free dissemination of information also came from diverse experiences, narratives, and geopolitical layouts.

Despite the decades which have passed since the issuing of the texts discussed in this paper, the ideas reviewed in them haven’t lost their relevance to current societies.

Accelerating scientific and technological progress still raises the question of how it should be used to ensure the well-being of particular societies and all the world, how to solve the present day issues, and simultaneously protect the interests of future generations. Human rights, intellectual freedom, free dissemination of information, sustainable development are up to now issues requiring answers on the personal, national, and international levels.

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Iłona Strumickienė

SAVO ŠALIAI IR PASAULIUI: ANDREJUS SACHAROVAS IR LIETUVIAI IŠEIVIAI APIE ATSAKOMYBĘ, VYSTYMAŠI IR APLINKOSAUGĄ

SANTRAUKA. Straipsnis remiasi prielaida, kad net skirtingose pasaulio vietose ir politinėse santvarkose gyvenatys bei dirbantys gamtos ir tikslųjų mokslų atstovai sudaro globalią bendruomenę, besivadovaujančią bendromis žiniomis apie mus supantį pasaulį bei darbo etika ir besidominčią mokslo bei technologijų pažangos poveikiu atskiroms visuomenėms ir pasauliui.

Straipsnyje analizuojami fiziko bei žmogaus teisių gynėjo Andrejaus Sacharovo bei pokario lietuvių išeivių, tikslųjų bei gamtos mokslų atstovų, tekstai apie mokslo ir technologijų pažangą bei poveikį atskiroms visuomenėms bei pasauliui, besikeičiančią tikslųjų ir gamtos mokslų atstovų socialinę padėtį, augančią jų visuomeninę atsakomybę bei aktyvumą, intelektinę laisvę ir nevaržomą dalijimąsi informacija, atominę energiją bei jos pavojus, aplinkosaugą. Straipsnio struktūrą lėmė temos, kurias vienaip ar kitaip aptarė ir lietuvių autoriai, ir Sacharovas.

Analizuojant tekstus, išryškėjo, kad Sacharovui vienodai rūpėjo procesai, vykę tiek Sovietų Sąjungoje, tiek pasaulyje, tuo metu lietuvių išeiviai buvo susirūpinę situacija jų gyvenamose šalyse bei okupuotoje Tėvynėje.

RAKTAŽODŽIAI: mokslas, atsakomybė, atominė energija, informacijos sklaida, gamtiniai ištekčiai.