RIIKKA NISONEN-TRNKA

Science with a Human Face

The Activity of the Czechoslovak Scientists František Šorm and Otto Wichterle during the Cold War

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ACADEMIC DISSERTATION
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In this study I write among others about academic travels, contacts and cooperation. The study itself, with all its detours, has been a journey. The journey started in Prague. The streets, avenues, archives and libraries of Prague constituted the milieu and one of the main reasons inspiring me to start this project. As Franz Kafka wrote: ”Prague never lets you go”.

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I have personally experienced the importance of scientific communities, making it not only or merely an interesting research topic. The University of Tampere and the Department of History and Philosophy have formed one of those communities. I want to thank people in the Department for their help throughout the duration of this project.

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context I want to thank Sari Autio-Sarasmo, Antti Sarasmo, Iina Kohonen, Ira Jänis-Isokangas, Pia Koivunen, Simo Leisti and Suvi Kansikas. I hope our pizza meetings will continue. Important and inspiring discussions with colleagues and friends have also taken place in many other contexts. I am thankful to Professor György Péteri, Dr. Ivan Tchalakov, Dr. Piotr Kosicki and Dina Fainberg to mention only a few. Furthermore, I am thankful to Jan and Věra Trnka for their assistance during this process.

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Such a long PhD process cannot be disconnected from life. I am grateful to have family and friends who have always remained on my side no matter what. I want to express my gratitude to Nelli Piattoeva, who has shared this journey all the way from the beginning and has been a great friend during all challenges as well as moments of happiness. I am deeply indebted to Tom Junes who has kindly proofread my final text, but his help and support exceeded the standard of collegial assistance. I am grateful to my sister Reetta for many things varying from assistance with babysitting to her computer skills, but most of all for her friendship.

My parents Marja-Liisa and Jyrki brought me up in an environment in which it was natural to view things critically, be curious about the world and

read books. I want to thank them for encouraging me to learn, but also for supporting me in other arenas of life.

Those who had to witness the frustrations of finalising this study have done it so well that it has made the problems look much smaller than they first did. My daughter Olga does not yet know life without mom writing her thesis – of course she could not care less. Thank you for bringing lightness to my days. Now it's time to read more fairytales. Thank you Mikko for your love and for reminding me that there's no place like the right time.

Helsinki

April 2012

Summary

This research analyses the activities of prominent scientists in Czechoslovakia during the Cold War. The research highlights the active role of individual scientists and investigates their participation in national and international scientific communities as well as their manifold survival strategies and room for manoeuvre. The role of natural scientists in society is illustrated by case studies of two chemists, František Šorm – the President of the Academy of the Czechoslovak Sciences – and Otto Wichterle –the inventor of the soft contact lens. The individual scientists recognised the dependence of their research on world science. They had to engage in constant negotiations with the state, which in turn attempted to limit this necessity because of its own political and ideological dependency on the Soviet Union. As the case studies exemplify, individuals with sufficient authority, scientific capacity and access to the Party structures could, however, use their bargaining powers to influence science policy. At the level of the natural sciences the Communist Party was dependent on the expertise of scientists and had to consult them on issues that were relevant among others for solving larger economic questions. The strategies of the two scientists to navigate in their professional lives do not always fit the stereotypical dichotomy of "communist" and "non-communist" but are far more nuanced. The study argues that the amount of the freedom granted to natural scientists varied in time and was a consequence of many factors.

One of the historical events influencing the scientists' amount of freedom was the Czechoslovak invasion in August 1968. It had dramatic consequences for Czechoslovak society for years to come. It forced the case study scientists to give up their highly ambitious professional careers. The world-class scientists became persona non gratae and were followed by the State Security Police. In this research, the August 1968 occupation of the country by the Warsaw pact forces and its aftermath presents itself as a historical watershed.

The study is divided into three parts. The first part offers a historical background with a particular emphasis on the period of the Nazi occupation and the subsequent period of socialism until 1960. From the era of relative autarky and restricted contacts with the outside world in the 1950s, Czechoslovakia went further than other countries of the socialist bloc in its aspiration to improve Western cooperation. International cooperation was one of the priorities of Czechoslovak natural scientists. When the opportunity was given, scientists

published in international journals, participated in conferences, organised them, and were involved in international scientific organisations. The second part covers the gradual liberalisation of the 1960s and the events of the Prague Spring in 1968. Czechoslovakia gradually acknowledged the necessity to cooperate with Western universities and scientific communities. Moreover, problems in the intra-bloc cooperation worked as a catalyst for further Western cooperation. Through participation in these scientific communities scientists gained Western recognition. In order to maintain its international reputation Czechoslovakia had to acknowledge the meaning of those organisations. The third part of this study investigates the consequences of the occupation and the era of so-called normalisation until the collapse of communism in 1989. By the end of the 1960s – from the point of view of the Soviet Union – Czechoslovakia had crossed the line of what was permitted. The invasion and its aftermath were an example of how politics forcefully interfered in the realm of science and influenced the life of individual scientists.

The research relies on empirical and critical qualitative analysis of sources. The research uses social and political history approaches by setting the case study examples into the wider social and political context of the time. It thus looks at Czechoslovak society through the prism of academia. The research focuses on cooperation, interactions and attempts to avoid divisions into polar categorisations. Instead of opting exclusively for either a macro or micro level perspective, three levels are used in the analysis: a micro level (individual level), a middle level (the Academy of Sciences) and a macro level (the state and international level). The case studies of prominent chemists exemplify all three levels as well the interactions between the respective levels. Macro level source material used in this study consist mainly of the documents of the Central Committee of the Communist Party of Czechoslovakia, the Ministry of Foreign Affairs and the State Security Police. At the middle level this study uses material from the archives of the Academy of Sciences such as reports on science policies and foreign exchanges, documents of chemical institutes, the patent department and travel reports of scientists. At the micro level, correspondence, biographies, autobiographies and interviews are the most important sources.

In this study, the innovation of the soft contact lens represents a high-level "Eastern" achievement in science and technology. The study shows how the liberalisation process of Czechoslovak society created conditions for technology transfers from East to West as happened with the soft contact lens. The transfer required both government support and an opening up towards the West. Without these conditions the transfer of the lens would have not been

realised, but Otto Wichterle was someone who rose to the challenge. The licence for the soft contact lens was sold to the USA in 1965 and after that it revolutionised the contact lens industry worldwide.

Hence, in this study the natural sciences are used as an example of a phenomenon of penetration of the Iron Curtain from East to West. The focus is on forms of cooperation without direct relation to Cold War competition in armaments production. These forms of scientific cooperation therefore rather supported further and more efficient contacts and connected the two societal systems. In Czechoslovakia, the desire to succeed in the worldwide "revolution" of science took more radical form in the late 1960s than elsewhere in Eastern Europe. Concepts like the Scientific and Technological Revolution and the integration of world science began to appear in the official rhetoric on scientific issues from the mid-1960s onwards. It seems that Czechoslovakia grasped the opportunity offered by the notion of the Scientific and Technological Revolution.

As a result of the Warsaw Pact invasion and the following normalisation, these ideas supporting academic freedom were shelved for two decades. However, at the level of individual scientists, these ideas which had been allowed to be expressed openly in the late 1960s survived – symbolised by the election of Otto Wichterle as the President of the Czechoslovak Academy of Sciences after the Velvet Revolution. After 1989 Czechoslovakia began to rapidly re-establish academic contacts with Western scientific communities. At least at the level of freedom of movement, the ideas and hopes of the Prague Spring reformers of science were finally fulfilled.

Abbreviations

AVČR - Akademie věd České republiky

Baťa - Baťa Company (Baťovy závody)

CERN - the European Organization for Nuclear Research (Conseil Européen pour la Recherche Nucléaire)

CMEA - the Council for Mutual Economic Assistance

CPCz - Communist Party of Czechoslovakia (Komunistická strana Československa, KSČ)

CPSU - Communist Party of the Soviet Union (Kommunisticheskaya Partiya Sovetskogo Soyuza, KPSS)

CSAS - the Czechoslovak Academy of Sciences (Československá akademie věd, ČSAV)

CSCE - Conference for Security and Co-operation in Europe

DAAD - Deutscher Akademischer Austausch Dienst

DUBNA - the Joint Institute for Nuclear Research

FIAT - the Field Intelligence Agency Technical

GDR – The German Democratic Republic

Gestapo - Geheime Staatspolizei (Secret State Police)

HS - Humbold Stiftung

IFIP - International Federation for Information Processing

IG Farben - I.G. Farbenindustrie AG

IMC - the Institute of Macromolecular Chemistry of the Academy of Sciences

IOBC - the Institute of Organic Chemistry and Biochemistry of the Academy of Sciences

IUPAC - the International Union of Pure and Applied Chemistry

KAN - Club of Committed Non-party Members (Klůb angažovaných nestraníků)

Lacy-Zarubin Agreement - Agreement Between the United States of America and the Union of Soviet Socialist Republics on Exchanges in the Cultural, Technical, and Educational Fields (1958)

NASA - National Aeronautics and Space Administration

NATO - The North Atlantic Treaty Organization

NPDC - National Patent Development Corporation

PolyHEMA - hydroxyethyl methacrylate (chemical product)

Pugwash - The Pugwash Conferences on Science and World Affairs

SAV - The Slovak Academy of Sciences (Slovenská akademie věd)

StB - State Security Police (Státní bezpečnost - StB)

UNESCO - United Nations Educational, Scientific and Cultural Organization

USA - The United States of America

USW - the Union of Scientific Workers (Český svaz vědeckých pracovníků)

VŠCHT - the School of Chemical Technology (Vysoká škola chemicko-technologická v Praze)

WFScW - the World Federation of Scientific Workers

List of frequently appearing persons

- Beneš, Edvard (1884–1948): President of Czechoslovakia 1935-1938 and 1945-1948.
- David, Václav (1910–1996): Foreign Minister of Czechoslovakia 1953-1968.
- Djerassi, Carl (1923–): Austrian-born American chemist and writer. Contributed to the development of the first oral contraceptive pill.
- Dreifus, Maximilián: Czech-born ophthalmologist.
- Dubček, Alexander (1921–1992): First Secretary of the Communist Party of Czechoslovakia and President of Czechoslovakia 1968-1969.
- Feldman, Jerome: American lawyer and businessman; co-founder of National Patent Development Corporation.
- Friml, Karel: General Secretary of the Academy of Sciences 1970–1977.
- Gottwald, Klement (1896–1953): Leader of the Communist Party of Czechoslovakia 1948–1953.
- Havel, Václav (1936–2011): Czech playwright, essayist and dissident; later President of Czechoslovakia and the Czech Republic (1989–1992 and 1993–2003).
- Heyrovský, Jaroslav (1890–1967): Czech chemist and Nobel Prize Winner in chemistry in 1959.
- Husák, Gustav (1913–1991): President of Czechoslovakia 1975–1989; First Secretary of the Communist Party of Czechoslovakia 1969–1987.
- Keldysh, Mstislav (1911–1978): President of the Soviet Academy of Sciences (1961–1975); scientist in mathematics and mechanics.
- Kopeček, Jindřich (1940–): Czech chemist; worked in Wichterle's institute; later Distinguished Professor at the University of Utah.
- Kožešník, Jaroslav (1907–1985): Czech scientist in applied mechanics, thermomechanics, cybernetics and automation; President of the Academy of Sciences 1970-1981.
- Kubánek, Vladimír: Czech chemist.
- Lím, Drahoslav (1925–2003): Czech chemist; co-inventor of the material used for soft contact lenses.

- Lukeš, Rudolf (1897–1960): Czech chemist.
- Lysenko, Trofim (1898–1976): Ukrainian agronomist; rejected Mendelian genetics. Lysenko's work was officially discredited in the Soviet Union in 1964.
- Macek, Josef (1922–1991): Czech historian.
- Málek, Ivan (1909–1994): Czech biologist, Academician; Vice-President of the Czechoslovak Academy of Sciences 1961–1965.
- Masaryk, Tomáš Garrigue (1850–1937): President of Czechoslovakia 1918–1935
- Mlynář, Zdeněk (1930–1997): Czech lawyer and politician; reformer of the Prague Spring; signatory to Charter 77.
- Morawetz, Herbert (1915–): Czech-born chemist; Professor at the NYU Poly, New York.
- Morrison, Robert: American businessman and investor.
- Nejedlý, Zdeněk (1878–1962): Czech historian and musicologist; the first President of the Czechoslovak Academy of Sciences 1953–1962.
- Novotný, Antonín (1904–1975): President of Czechoslovakia 1957–1968; First Secretary of the Communist Party of Czechoslovakia 1953–1968.
- Obzina, Jaromír (1929–2003): Czech Minister of Interior 1973–1983.
- Patočka, Jan (1907–1977): Czech philosopher; spokesperson for the Charter 77.
- Pollak, Martin: American lawyer and businessman; co-founder of National Patent Development Corporation.
- Prelog, Vladimir (1906–1998): Croatian born chemist and Nobel Prize Winner in chemistry 1975.
- Richta, Radovan (1924–1983): Czech scholar; the co-author of the "Civilization at the Crossroads".
- Růžička, Jaroslav: Head of the Bar Association in Czechoslovakia.
- Sakharov, Andrei (1921–1989): Soviet nuclear physicist; dissident and human rights activist.
- Šík, Ota (1919–2004): Czech economist; one of the key figures of the Prague Spring reforms.

- Široký, Viliam (1902–1971): Prime Minister of Czechoslovakia 1953–1963.
- Šorm, František (1913–1980): Czech chemist; President of the Czechoslovak Academy of Sciences 1962-1969.
- Šormová, Zora (1915–?): Czech chemist, wife of František Šorm.
- Štrougal, Lubomír (1924–): Prime Minister of Czechoslovakia 1970-1988.
- Suslov, Mikhail (1902–1982): Second Secretary of the Communist Party of the Soviet Union from 1965; unofficial chief ideologue of the Party until 1982.
- Sviták, Ivan (1925–1994): Czech philosopher.
- Svoboda, Antonín (1907–1980): Czech information scientist.
- Vaculík, Ludvík (1926–): Czech writer and journalist; author of the Two Thousand Words Manifesto.
- Vodnanský, Jiří: Czech engineer; Wichterle's co-worker in the 1970s.
- Votoček, Emil (1872–1950): Czech chemist; linguist and composer.
- Wichterle, Otto (1913–1998): Czech macromolecular chemist; inventor of the soft contact lens.
- Wichterlová, Linda (1917–): Otto Wichterle's wife.
- Zahradník, Rudolf (1928–): Czech chemist; President of the Academy of Sciences of the Czech Republic 1993–2001 (after Otto Wichterle).

Introduction

Scientists with Human Faces

The main building of the Academy of Sciences on the Národní Street in Prague was among the first objects occupied during the early hours of the Czechoslovak invasion on 20-21, August 1968.[1] Shocked by the unexpected events the President of the Czechoslovak Academy of Sciences, František Šorm, soon sent a letter to Mstislav Keldysh, the President of the Soviet Academy of Sciences, stating that:

„*the irrational, illegal violent occupation by the five Warsaw Pact armies over our country has been going on for almost five days. (...) The whole-hearted love and brotherly relation that the Czech and Slovak people cherished especially towards the nations of the Soviet Union resulting from centuries of traditions suddenly gave way to feelings of heavy injustice and even hate that can last for decades. (...) The occupation has seriously harmed science as well.*"[2]

František Šorm anticipated rightly that the occupation would have dramatic consequences, but could not yet foresee how widespread the damage would be and how the invasion would seal his own destiny. Resulting from his stand against the occupation, Šorm, a loyal communist and a member of the Communist Party's Central Committee, eventually lost all his political posts, his job as the head of the major scientific organisation of Czechoslovakia and even his career as an internationally renowned biochemist and the director of the Institute of Organic Chemistry and Biochemistry (IOCB). Due to the so-called normalisation measures that followed the invasion, Šorm was no longer allowed to travel abroad and was thus practically cut off from the international scientific community. A number of Czechoslovak scientists encountered a similar fate, among them Šorm's peer and former fellow-student Otto Wichterle.

However, despite a shared fate, significant differences characterised Šorm's and Wichterle's biographies. Wichterle had never been a member of the

1 Míšková, Alena; Barvíková, Hana; Šmidák, Miroslav, Československá akademie věd 1969-1972. Restaurace komunistické moci ve vědě. Sešity ústavu pro soudobé dějiny 30, AV ČR, 1998, 22.
2 Jindra, Jiří, František Šorm – závěr politické kariery. In: Česká věda a pražské jaro, sborník z konference. Edited by Zilynská, Blanka & Svobodný, Petr. Karolinum, Praha 2001, 155: Šorm's letter to Keldysh is published here in its original length. All translations from the Czech sources are by the author.

Communist Party and had openly criticised the flaws of socialist society as far back as the 1950s. Until the occupation, the Communist Party had tolerated his often acerbic remarks and radical suggestions because he was able to offer something extraordinary to the state, namely his intellectual capacity. Wichterle was a well known macromolecular chemist and the director of the Institute of Macromolecular Chemistry (IMC). The most valuable fruit of his talents was the innovation of the soft contact lens. The selling of the licence of the patent to the USA in 1965 was a significant achievement of "socialist" science and technology and one of a few successful transfers of technology from East to West. Wichterle, a renaissance man of his time and surroundings: scientist, engineer, entrepreneur and a societal critic in the 1950s and 1960s, was relieved of his duties after the occupation. Šorm the communist and Wichterle the non-communist ended up as personae non gratae of the normalised society of the 1970s. This is a story of these two men, their careers, activity and participation in the academic world during the Cold War.

The aim and object of research

Foremost, this research is about what constituted being a prominent scientist in a socialist society. The research presents an approach that highlights the active role of prominent individual scientists and investigates their participation in national and international scientific communities in the context of the Cold War as well as their manifold survival strategies and room for manoeuvre within this framework. The role of natural scientists in society is illustrated by case studies of František Šorm and Otto Wichterle and linked to the wider context of modernisation and economic developments, including the necessity to cooperate with the West. The phenomenon of science[3] will be viewed with a strong emphasis on political and social aspects of the surrounding world both in the national and international context. While most studies on science and scientists in Czechoslovakia have focused mainly on the local context, this study puts emphasis on transnational aspects. As the historians Michal R. Gordin and Karl Hall have noted, in order to understand the impact of the autarkic periods, one needs to explore how significant the interactions were at other times.[4] The time period covers the years between 1945 and 1989 –

3 In this study the concept of science is used similarly to the broad Czech and German expressions *Věda* and *Wissenschaft* (or Russian *Nauka*). It thus covers all the major fields of academia, basic and applied research, natural sciences, social sciences and humanities. As the study focused on natural sciences, the concept of science, however, mostly refers to the disciplines under the notion of exact sciences.

4 Gordin, Michael R., Hall Karl, Intelligentsia Science Inside and Outside Russia. In: Intelligentsia Science. The Russian Century, 1860-1960. Edited by Gordin, Michael, D., Hall, Karl & Kojevnikov, Alexei. Osiris 23. The University of Chicago Press, USA 2008, 14.

this wide time span enables to follow how political and economic changes in society influenced the activity of scientists. It also lets us follow how Czechoslovakia's international scientific cooperation changed and developed over the years.

Instead of opting exclusively for either a macro or micro level perspective, three levels are used in the analysis instead: a micro level, a middle level and a macro level. The main focus is on the micro level, individual actors and their possibilities for manoeuvre. The study argues that the amount of the freedom granted to the natural sciences was a consequence of many factors and varied in time. The strategies of the two scientists to navigate in their professional lives do not always fit to the stereotypical dichotomy of "communist" and "non-communist" but are far more nuanced. The research will show how the scientists, regardless of their political convictions, often acted in a way that was "contradictory" to the way the political orientation could make one assume to act. It is not possible to find out how real those orientations were, and, as far as the course of history is concerned, it is irrelevant. Relevant is how political orientations and other tools were possibly used to achieve certain professional and scientific goals.

The key persons of this study were renowned scientists who were part of the intellectual elite of Czechoslovakia. The relationship of a socialist state to its scientists as well as to other intellectuals was different from the one in democratic societies: more often than in the West, leaders of socialist countries had to manage problems with intellectuals. The leadership regarded them as both a valuable segment of society and as potential or actual enemies.[5]

In this complex atmosphere scientists had to find different kind of ways to practice their professions or express their ideas – varying from direct opposition to collaboration with the political elite. The study discusses these strategies and choices as well as ambitions and aspirations behind the strategies. Naturally, the scientists were not always consistent in their thinking and there was ambivalence in their statements and activities. The system which until the very end of its existence controlled the political uprightness of its citizens certainly did not diminish ambivalence and hesitation.

5 Shlapentokh, Vladimir, Soviet Intellectuals and Political Power. The Post-Stalin Era. Princeton University Press, USA 1990, 9-10, 15. Although the study does not dwell on the theme of intelligentsia, it considers the case study persons as part of the intellectual elite of Czechoslovakia. The concept of intellectual is used here by utilising formal criteria, such as the level of education and involvement in creative work. The different kind of approaches and roles within this group will be discussed in the study, including their relation to the political elite. Moreover, such concepts as professional and civic prestige, power and protection and technocracy will be brought up as essential elements involved in the stories of scientists. See: Shlapentokh 1990, ix, x, 15. On scientists as part of intelligentsia in Russian and Soviet contexts see: Gordin, Michael R. & Hall, Karl 2008, 8-9.

Despite the value of scientists in Cold War competition, partly because of these human dimensions that were unavoidably present in the activities of individual scientists, their loyalty was never fully taken for granted. In the eyes of the leadership, scientists, as well as other intellectuals, had the role of accomplishing the tasks set by the state.[6] In the Soviet Union, the necessity of international cooperation and "world science" challenged the strict dichotomy between East and West that the Party emphasised. Scientists, who had actively developed contacts with Western colleagues during the relatively open wartime era, were easy targets.[7] Even though Stalin's death ended this hard-line stance, to a certain extent the dilemma remained the same and contacts with the West always led to both profit and mistrust among politicians.

This dilemma was to a great extent caused by the fact that scientific achievements profit from a movement of ideas. Hence, in the long run total isolation would have been almost impossible to achieve and maintain. In a country like Czechoslovakia, which was centrally located in Europe, the reduction of international cooperation after the communist coup in 1948 marked a clear contrast to earlier traditions in which intense international communication had played an important role. Science has strongly conferred benefits on itself in the area of communication. Scientists have always communicated, by whatever means available. The importance of the international dimension of science had already significantly increased by the middle of 19th century. In the 20th century a global system of communication and scientific cooperation was created.[8] During the Second World War the achievements of science, in all the tragedy, clearly demonstrated governments what money and scientific manpower were able to advance. The Cold War further impugned the idea of the "scientific internationalism"[9] as the hostility of the divided world hampered scientific contacts and communication between East and West. At the height of the Cold War, in the 1940s and 1950s, there was a period of relative isolation when contacts with the West were reduced to a minimum.[10] In the context of the Cold War, the natural sciences and in particular those disciplines with military importance played an important role in the struggle between the superpowers. Furthermore, the division of the world into two ideological and economic blocs helped construct dichotomies in the sphere

6 Shlapentokh 1990, 11.
7 Pollock, Ethan, Stalin and the Soviet Science Wars. Princeton University Press, USA 2006, 5-6.
8 Greenaway, Frank, Science International. A History of the International Council of Scientific Unions. Cambridge University Press, UK 1996, 2-3.
9 Herken, Gregg, Commentary. In the Service of the State: Science and the Cold War. Diplomatic History, Vol. 24, No. 1 (Winter 2000), 108. Scientific internationalism had been a popular notion during the interwar years presuming that scientists' first allegiance was to science.
10 Havránek, Jan, Czech Universities Under Communism. In: Universities under Dictatorship. Edited by Connelly, John and Grüttner, Michael. The Pennsylvania State University Press, USA 2005, 176; Niederhut, Jens, Grenzenlose Gemeinschaft? Die scientific community im Kalten Krieg. Osteuropa 10/2009, 59.

of natural sciences: the binary categories of "socialist" and "capitalist" were entrenched even within disciplines such as chemistry and physics. However, even during the more frozen period of the Cold War, there was a certain interconnectedness of scientific practices of the both sides of the Iron Curtain. As Alexei Kojevnikov has put it, this interconnectedness was part of a general process that changed science in the course of the twentieth century.[11]

In the context of the Cold War and in comparison with the social sciences the strong relation of natural scientists to international discourse and the lesser degree of politicisation concerning their activity makes the example of natural sciences particularly important.[12] Circulation of research results and communication across borders took place in manifold ways, such as the participation of scientists in international scientific meetings and organisations. At the level of science and scientists, the Iron Curtain was not as impenetrable as the post Cold War understanding of history has suggested. Above all, international contacts established and maintained during the Cold War created the basis for the rapid extension of scientific and academic networking after the Velvet Revolution.

Both competition and cooperation accelerated the establishment of scientific contacts through the Iron Curtain. As Ethan Pollock has stated, geopolitics and military conflicts were not all that the Cold War was about. Stalin assigned two key roles on the "ideological front" of the Cold War to Soviet scholars. Firstly, they had to criticise Western ideas, and secondly, they had to export Soviet ideas to the newly emerging socialist states in Eastern Europe and Asia. The idea behind this aim was that communism as the only viable way to organise society required a certain ideological coherency, which scholars and scientists could provide. Scientific breakthroughs were one of the best ways to prove the merits of a materialist worldview. Intellectual achievements were believed to serve as symbolic measures of the superiority of the Soviet system. [13]

According to Alexei Kojevnikov the main paradox of Soviet science was the fact that its impressive scientific achievements took place in the context of a repressive political system. Coming to terms with this presented a major problem since during the Cold War neither of the powerful ideological adversaries wanted to acknowledge the paradox. Both Soviet and American

11 Kojevnikov, Alexei, The Phenomenon of Soviet Science. In: Intelligentsia Science. The Russian Century, 1860-1960. Edited by Gordin, Michael, D., Hall, Karl and Kojevnikov, Alexei. Osiris 23. The University of Chicago Press, USA 2008, 135.

12 Niederhut, Jens, Wissenschaftsaustausch im Kalten Krieg. Die ostdeutschen Naturwissenschaftler und der Westen. Böhlau Verlag, Germany 2007, 2.

13 Pollock 2006, 5-6.

officials claimed that science and democracy were natural allies. The communists on the one hand saw Soviet policies as solidly scientific and democratic as science itself, making that the paradox simply did not appear to them.[14] On the other hand, anticommunist Western thinking denounced the Soviet system as constituting the very opposite of democracy and accused it of being harmful to science by focussing on its weaknesses as with the notorious Lysenko case. Herein, reference was made to the *ideologisation* of science i.e. the attempt to force ideology onto a discipline.

The Cold War division has led to a still too stereotypical picture of the socialist societies. The crumbling infrastructures and environmental degradation as revealed after 1989 made it difficult to believe that the educational level in these countries, especially in science and technology, had been very high.[15] In this study, the innovation of the soft contact lens represents a high level "Eastern" achievement of science and technology. As Odd Arne Westad has noted, one of the surprises after the Cold War has been that neither the nuclear bombs nor nuclear power came to decide the Cold War. Therefore Westad called for more attention to other connections and implications of the relationship between the Cold War and science and technology.[16] The soft contact lens was by no means an innovation with military significance. Yet, unlike most of the Cold War related military innovations, the soft contact lens had influence on the daily life of thousands of people around the world. It is furthermore an interesting example of interaction between the two sides of the Iron Curtain bringing together not only people with different kind of worldviews but also different styles of negotiating and trading; different expectations and motives. The transfer of the contact lens tells something about the values on both sides of the Curtain, such as varying styles of consumerism: a vanity product was invented in a socialist country only to make its real breakthrough only in the American society.

Studies dealing with science and socialism have increasingly extended to cover socialist countries outside the Soviet Union. This is a positive development because the depiction of the Cold War, the post-Cold War era and the respective role of scientists would remain incomplete as long as smaller countries and smaller actors would not be properly examined and integrated into research. Ignoring them would create an exaggerated picture of Soviet dominance over other socialist countries and also suggest that Soviet science

14 Kojevnikov, Alexander, Stalin's Great Science. The Times and Adventures of Soviet Physicists. Imperial College Press, UK 2006, xii.
15 Freeze, Karen Johnson, Innovation and Technology Transfer during the Cold War. The Case of the Open-End Spinning Machine from Communist Czechoslovakia. Technology and Culture, Vol. 48, No. 2, 2007, 252-253.
16 Westad, Odd Arne, The New International History of the Cold War: Three (Possible) Paradigms. Bernath Lecture. Diplomatic History, Vol. 24, No. 4 (Fall 2000), 551-565.

would have developed in a vacuum, whereas in reality a genuine scientific community existed within the Eastern Bloc. For one this research contributes to the demand for widening the spectrum by looking at one of the Eastern European countries outside the Soviet Union, namely Czechoslovakia. Above all the Czechoslovak case is interesting for the history of Cold War Europe because of its close vicinity to the Iron Curtain itself. The country had a strong industrial background and before the Communist takeover in 1948, science in Czechoslovakia had been very Western-oriented. At the level of ideas and objects, Czechoslovakia was a potential and a logical passageway from East to West and West to East. The focus of this study lies on the Czech part of the country for pragmatic reasons: the two persons who constitute the subject of the case studies were Czechs and their respective institutes were located in Prague.

The study is organised primarily through a chronological prism but entails nonetheless an analytical approach and is divided into three parts. The first part offers a historical background of the early lives of the two scientists chosen as case studies with a particular emphasis on the period of the Nazi occupation and the early years of socialism in Czechoslovakia until 1960. The second part covers the gradual liberalisation of the 1960s and the events of the Prague Spring in 1968. The August 1968 occupation of the country by the Soviet and Warsaw Pact military and its aftermath presents itself as a historical watershed. The third part of this study investigates the consequences of the occupation and the era of so-called *normalisation* and the 1970s and 1980s until the collapse of communism in 1989.

Through these parts the study will present a historical narrative covering the period of socialism in Czechoslovakia. The first part of the study, the 1940s and 1950s, was a time of restructuring Czechoslovak science according to the Soviet model. The study shows how individual scientists were able to participate in and influence the processes which were nevertheless directed from above. Moreover, it discusses the limitations of this sovietisation. As such, the 1960s signified profound changes to the cultural, economic and scientific life of socialist Czechoslovakia. In its second part, the study highlights a crucial, but somewhat neglected aspect of the Prague Spring – the importance of technology and science in the drive to prevail in the international competition between the blocs. As Dolores Augustine notes, during the 1960s, socialist ideology increasingly came to be infused with a belief in technology and the East wished to overtake the West through the

so-called "Scientific and Technological Revolution".[17] In Czechoslovakia, the 1960s were characterised by a strong faith in modernisation and the hope that socialism could be reformed. At that time a strong pragmatism penetrated the sphere of economic thinking that transgressed conventional ideological guidelines. Czechoslovakia tried to keep track of certain developments understood by contemporaries as an essential part of the Scientific and Technological Revolution.[18] Consequently, in the 1960s, the importance of scientists as well as other experts increased significantly in socialist societies. The building of a socialist society— a process which in Czechoslovakia was declared to have been achieved in 1960— and the race between East and West for world supremacy created pressure to accelerate progress in the fields of science and technology.

Against the backdrop of this evolution the August 1968 occupation of the country by the Soviet and Warsaw Pact military and its aftermath presents itself as a historical turning point. This caesura is the subject of the last part of this study. This period came to seriously hamper Czechoslovak science and limit the possibilities of many scientists and their participation in the international scientific community. Those who had been active in reforming society in the late 1960s were now under suspicion of the new decision makers. Moreover, the invasion had far-reaching consequences concerning the role of intellectuals in the broader context of socialism. As Vladmir Shlapentokh has stated, the developments in Czechoslovakia were a final warning regarding the implications of allowing intellectuals too much influence. In Czechoslovakia the space allowed for intellectual activism had transcended the safe limits. From the Soviet perspective, individual activism and organisations undermined the fundaments of the socialist regime, in particular the Party monopoly. The invasion sealed the fate of Soviet intellectuals as the leadership became convinced of the danger of its "technocratic" policy toward intellectuals, which valued their professional competence over their political orientations.[19]

The third part deals with the consequences of the invasion vis-à-vis Czechoslovak science and scientists. The normalisation measures severely hurt the scientific community in Czechoslovakia. Numerous scientists and

17 Augustine, Dolores L, Red Prometheus. Engineering and Dictatorship in East Germany, 1945-1990. The MIT Press, USA 2007, xii. The notion of the Scientific and Technological Revolution was originally a Western concept developed by Marxist Western philosophers. The origin of the concept seems to be uncertain. In some sources J.D. Bernal has been mentioned as the father of the concept whereas in others the credit has been given to Bertrand Russell. Wilczynski J, Technology in Comecon. Acceleration of Technological Progress through Economic Planning and the Market, Macmillan, London 1974, 6; Richta, Radovan, Civilization at the Crossroads. Social and Human Implications of the Scientific and Technological Revolution. International Arts and Sciences Press, Prague 1969.
18 Richta 1969, 16; Wilczynski 1974, 6; More about the Scientific and Technological Revolution and the Czechoslovak science in: Nisonen-Trnka, Riikka, The Prague Spring of Science: Czechoslovak Natural Scientists Reconsidering the Iron Curtain, Europe-Asia Studies. Vol. 60, No. 10, December 2008, 1756.
19 Shlapentokh 1990, 173.

scholars lost their jobs as a consequence of their activities during the Prague Spring and the reluctance to change their opposing attitude towards the invasion and the presence of the Soviet troops in Czechoslovakia. As most of the natural scientists were dependent on laboratories, equipment of their institutes and teamwork, being cut off from actual research work and national and the international scientific community led to a gradual, but relatively rapid exclusion from new developments in research. Through the case study persons the research discusses different strategies to cope with the hardships up until the collapse of communism in Czechoslovakia after the so-called Velvet revolution in the autumn 1989.

These three parts will provide answers to the following questions. At the macro level the most important research questions are: how did socialism and the idea of international science and the need to increase cooperation with the West cohere?; how did the Czechoslovak state approach and react to the strivings of the individual scientists?; what were the means of limiting or supporting cooperation especially with the West? At both the macro and middle level the study looks at how the necessity of international cooperation and contacts was articulated at different levels. More precisely: how did the organisational middle level differ from the macro level expectations? At the micro level the main questions are as follows: what forms of activity did the individual scientists pursue in their different roles to achieve their goals and how large was their room for manoeuvre in the context of socialism?; what were the concrete ways of communicating and cooperating with foreign partners?

Methodology

The research relies strongly on empirical research and critical qualitative analysis of sources. Above all, the research uses social and political history approaches by setting the case study examples into the wider social and political context of the time. It thus looks at Czechoslovak society through the prism of academia. The research attempts to avoid divisions into polar categorisations and instead, uses cooperation and interactions as its tools.[20] The research does not represent an "internal" history of science for it does not explore developments of a certain field of research or how new facts have been discovered. More than merely a way of understanding or explaining

20 A similar approach had been introduced recently by Alexei Kojevnikov in his chapter on the phenomenon of Soviet science. Kojevnikov 2008, 134.

things, science is viewed here as a social activity, a set of values and beliefs and a means of relating and communicating ideas among people.[21]

The research tries to avoid a sharp paradigmatic division between the state and society.According to the Czech historian Michal Pullmann, Czech historiography concerning the contemporary period has been characterised by this kind of division. The "totalitarian-history narrative", as Pullmann has called it, has been the predominant approach in the national historiography. The central concept in Czech historical writing after 1989 has been the "regime" (režim) which does not merely denote the administrative system, but has become a historical agent in its own name which in the usual dichotomist setting uses its power in a one-sided manner against the object of control, constituted by society (společnost) at large. According to this perception, the "regime" was a monolithic oppressor which gained its legitimacy from outside, more precisely from the Soviet Union, while society on the contrary was given a rather passive, yet innocent position. The focus on the relation between these two has, according to Pullmann, formed a black-and-white mould into which all kinds of stories have been fitted. The reason why Pullmann sees the model as problematic is the fact that whereas the regime has been presented as the main agent of history, society has merely remained reactive. The activity of groups of people or individuals has therefore not been perceived to have played an important role because this activity has been studied through the same mould: individuals have been presented according to simplified categories: as victims, as heroic fighters against the evil regime or as opportunists. This dichotomist reduction of the bigger picture ignores the fact that people's motives always contain different kinds of ambivalent elements and hesitations. Another flaw in this model of interpretation is, as Pullmann points out, the idea of the regime as the omnipotent machine of control and management which stands in contradiction to simultaneous depictions of the regime as being ineffective or even inoperative. It seems that the concept of the regime has nested itself in historical writing, but is nonetheless often applied without any deeper reflection or definition.

Moreover, the idea of the total regime has left a lot of space on investigation of dissent narratives. Representing people with high morals those narratives have offered an alternative to history writing that has concentrated on the evils of the socialist regime. This is perhaps connected to a certain therapeutic mission that has understandably characterised contemporary historiography in the Czech Republic after 1989. Although anachronistic, but interestingly enough, the totalitarian model has enabled an eschatological image of the

21 Reardon-Anderson, James, The Study of Change. Chemistry in China 1840-1949. Cambridge University Press, USA 1991, 7.

communist period as a one-way process with an inevitable end – the eventual collapse of communism. Pullmann explains that the marginal role played by the social history approach in contemporary Czech historiography throughout the 1990s was very much a result of the fact that the social history approach does not support the therapeutic method of the totalitarian-narrative since it has to observe various sides of one phenomenon. As Pullmann suggests, historians should accept that motives which drive people to act nevertheless contain manifold elements. In this sense, under communism, conformists or those who were labelled later as such were on the one hand not merely driven by fear or opportunism, but also by their personal understanding of what constituted a good life and their desire to achieve it. On the other hand, non-conformist activity did not necessarily imply a heroic stance but could simply have been motivated by religious or ideological convictions.[22]

The three-level approach offers a useful tool for investigating the complexity of this phenomenon, in which it is ultimately impossible to differentiate between the "real" intentions or actions of scientists and the state's policies. However, there is no such thing as official and unofficial functioning binary system. As long as scientists possessed an official position in an institute, they were part of the system and part of its intellectual elite. Investigating all these levels simultaneously reveals ways of communicating expectations, reactions, intentions and other issues that are relevant for the research. The official and unofficial are not two homogenous camps pinned against each other. The Party, state and scientists were all torn by rivalry and competition. Above all the dynamics of their interactions were also profoundly influenced by two actors: the first being the Soviet Union, the second being socialist society.[23] Moreover, as Kimmo Rentola has stated, the same actors and historical events appear often quite differently in sources of different institutions.[24] At the middle level there are scientific organisations, in particular the Czechoslovak Academy of Sciences (Československá akademie věd, CSAS[25]) and its institutions; at the macro level are the international politics related to scientific cooperation, the Czechoslovak state and its science policy in the context of the Cold War.

The case studies of prominent chemists exemplify all three levels as well the interactions between the respective levels. Thus, the research analyses practices "behind the scenes", in particular the possible impact of the bargaining skills of individuals. Individual scientists appear at all three levels but form the particularly important part of the micro level. Scientists are

22 Pullmann, Michal, Sociální dějiny a totalitněhistorické vyprávění. In: Soudobé dějiny, 03-04/2008, 704-707.
23 Augustine 2007, xv.
24 Rentola, Kimmo, Sua lähde kaunis katselen. Historiallinen aikakauskirja 2/2007, 302.
25 The Czech abbreviation is ČSAV.

viewed as actors within society and in transnational contexts, inseparable from various political, economic and cultural elements. It is not the aim of this study to represent a coherent biographical narrative on the careers and lives of the key persons. Neither does the study aim at mapping a detailed picture of their participation in science policy. In the case studies the research has concentrated on aspects relevant to the research questions. The activity, improvisation skills and persistence of an individual as well as building and exploiting their contacts are among the most important elements discussed in the study.

Investigating those elements the study also reveals interactions between scientists and the "system". As the historian Dolores L. Augustine has noted, individuals were mostly not driven by simple opportunism or by blindly ideological thinking. Instead, their lives were, "like all lives, messy and driven by complex and contradictory forces".[26] The individual cases can offer answers to questions related to personal life and career strategies: desires and motivations. As Christopher P. Loss has stated, a decision to commit oneself to a particular political ideology, for example communism, belongs to the realm of personal desire and motivation – a sphere that can be investigated merely by looking at the individual case studies.[27] In order to illuminate these aspects at the individual level in a more conceptualised manner, the research makes use of the analysis presented by Vladimir Shlapentokh on intellectuals and political power.[28] In his study Shlapentokh has not only discussed the "love and hate" relationship between intellectuals and the state but also examined the changing role of intellectuals in the different eras of socialism and motives behind their activities as either servants of the regime or dissidents, including fear, desire for prestige and political and professional ambitions.

In this study, the main example of the institutional middle level is the Czechoslovak Academy of Sciences established in 1953. There were three parts of the Academy of Sciences in Czechoslovakia: The Czechoslovak Academy of Sciences, the Slovak Academy of Sciences and the Czechoslovak Academy of Agricultural Sciences. The example of this study is the Czechoslovak Academy of Sciences. It was the main "milieu" in which the scientists of this study practiced their professional life. The Czechoslovak Academy of Sciences was the most important representative of Czechoslovak science abroad and therefore serves as the best example for the institutional level.[29] It offers an interesting example to set the institution in the political

26 Augustine 2007, xx.
27 Loss, Christopher P, Party School: Education, Political Ideology, and the Cold War. The Journal of Policy History, Vol. 16, No. 1, 2004, 110.
28 Shlapentokh 1990.
29 A AV ČR – Fond Prezídium ČSAV, 55. prezídium ČSAV (November 28, 1973).

and societal contexts beyond the Soviet Union. In the words of Stanley B. Winters the Academy: *„bestrode research and scholarship in Czechoslovakia like a colossus"*.[30] The Academy was responsible to the government for all basic research. Therefore, the universities were restricted largely to teaching, receiving only very limited support for research.[31] The Academy of Sciences had to serve two interest groups: on the one hand those defending scientific interests; on the other hand the "apparatchiks" who were trying to integrate political principles in the institution. Prominent individuals had an important function in trying to serve this double-role. Besides František Šorm, the biologist Ivan Málek and the information scientist Jaroslav Kožešník had a lot of influence within the Academy leadership during the period in question.[32]

As stated above, the focus of this study lies on the natural sciences, particularly on chemistry and chemists. The decision was determined by the fact that persons concerned in the two case studies were both chemists and directors of chemical institutes. Moreover, chemistry was considered to be one of the most important fields in the natural sciences at the time and there were, moreover, several world-class institutions and scientists with international networks in Czechoslovakia. Chemistry, physics and biology were the fields of research in which significant progress was made during the communist period. This did was not left unnoticed in the West.[33] The research concentrates on the chemical institutes inside the Czechoslovak Academy of Sciences, which were directed by the respective persons in the two case studies. The Institute of Organic Chemistry and Biochemistry (IOCB) was listed as the leading institute of the Soviet bloc in several areas of organic and biochemistry. The Institute of Macromolecular Chemistry (IMC) coordinated and emphasised research in macromolecular chemistry on the level of the entire Soviet bloc.[34] The structure of science in the socialist countries differed from that in the West. In the latter, basic research was carried out at universities in a less coordinated way than in the East: scientists in the capitalist countries had intense personal contacts with each other enabling an efficient exchange of experiences. Applied research in the West was to a great extent in private hands. In the socialist countries on the other hand, the Academies of Sciences coordinated activities and solved tasks of science according to plans. Applied

30 Winters, Stanley B, Science and Politics: The Rise and Fall of the Czechoslovak Academy of Sciences. Bohemia Band, Vol. 35, 1994, 268.

31 Materials and Man's Needs: Materials Science and Engineering. Supplementary Report of the Committee on the Survey of Materials Science and Engineering. Volume IV. Aspects of Materials Technology Abroad. National Academy of Sciences. Washington D.C. USA 1975, 8-39.

32 Kostlán, Antonín, Československá akademie věd a vědecký exil v letech 1952-1970. In: Sto českých vědců v exilu. Eds. Štrbánová, Sona, Kostlán, Antonín. Academia, Praha 2011, 58.

33 Materials and Man's Needs: Materials Science and Engineering. Supplementary Report of the Committee on the Survey of Materials Science and Engineering. Volume IV. Aspects of Materials Technology Abroad. National Academy of Sciences. Washington D.C. USA 1975, 8-39.

34 Slamecka, Vladimir, Science in Czechoslovakia. Columbia University Press, USA 1963, 91, 95.

research in the socialist states was done mostly in applied research institutes under various ministries and led by a uniform plan.[35] In the socialist states, the central planning did not meet the demands of actual research. One of the main problems was that the planning failed the task for which it was actually created – to provide a link between basic research and industrial research. As was noted in the USA in the 1970s, the planning system in Czechoslovak science was moreover inefficient for promoting interdisciplinary research involving different institutes. Thus, due to the problems of this bureaucratic system personal contacts and direct information exchange proved particularly important.[36]

The macro level concentrates mostly on the policy of the Communist Party in relation to international scientific cooperation. Comparisons with other socialist countries, especially the Soviet Union, have been used insofar as there has been relevant literature on such examples. As for the investigation of scientific contacts with the West, the main focus lies on the USA and West Germany – the old and new science superpowers of the West. This selection also provides an example of contacts both with Western Europe and the Western world outside of Europe. West Germany is furthermore an important example because it had been the number one foreign partner of Czechoslovakia in many fields of science, culture and trade before the Second World War and despite the mutual hostility after the war, it was a neighbouring country that eventually became attractive to Czechoslovakia. The main Cold War enemy, the USA, was nonetheless attractive for Czechoslovakia due to its high level of technology and advanced domain of natural sciences. In this study, the concrete case of the technology transfer between Czechoslovakia and the USA justifies its selection. During the research process this country-based limitation has meant that the author has examined mainly documents concerning these two countries.

35 A AV ČR – Osobní fond František Šorm (FŠ) (Personal papers of František Šorm, unarranged), Úvodní poznámky k nástinu thesí Spolupráce Evropských států ve věde (April 16, 1968).
36 Materials and Man's Needs 1975, 8-39.

Contextual Framework

In this chapter the contextual framework and the central concepts will be presented. The contextual framework of the study is the milieu in which the scientists practiced their profession. This milieu is formed primarily by the Czechoslovak state, its science policy and academic institutions on the one hand and international cooperation and *scientific communities* on the other hand. The state, which was far from immune to developments outside its borders, eventually set the frames for room for manoeuvre for individuals and determined the limits of their activities. Within these frames scientists developed and practiced different kinds of manoeuvring skills in order to better advance their ambitions. They used various strategies to succeed and survive in their professional life. These strategies are at the foreground of this study. Much more than in the West, the scientists had to balance with the tension between what they saw as advantageous for their profession and what the state expected from them and in what ways and to what extent it supported them. The primary survival strategies of scientists discussed in this study can be divided roughly in the following categories: local contacts and networks (including also competition and collegial rivalry), certain rhetorical strategies such as political convictions (*apolitical* and *political*), and the participation in international scientific and professional fora.

The main actors of this study, natural scientists, were part of a scientific community that exists both in the national and international spheres. Scientific community is used here to refer to the professional communities or groups to which scientists belonged and where they communicated their scientific ideas. International scientific organisations in which the scientists participated and which will be mentioned in this study can be roughly divided into those which were organised more to provide a forum for specific scientific discussions such as the International Union of Pure and Applied Chemistry, IUPAC. On the other hand there were organisations that were based on the ideas that developed in the historical context of the 1930s (the rise of Fascism and the Nazi use of science) when a new model of scientific internationalism emerged, mixing science and politics. This kind of organisations included for example UNESCO, the World Federation of Scientific Workers as well as the Pugwash movement.[37]

37 Petitjean, Patrick, The Joint Establishment of the World Federation of Scientific Workers and of UNESCO After World War II. Minerva (2008) 46, 248. The Pugwash Conferences take their name from the location of the first meeting, which was held in 1957 in the village of Pugwash, Nova Scotia, Canada. The stimulus for that gathering was a Manifesto issued in 1955 which called upon scientists of all political persuasions to assemble to discuss the threat posed to civilization by the advent of thermonuclear weapons. More on Pugwash see chapter From Isolation to Industrialisation.

Referring to the concept of Benedict Anderson, Jens Niederhut has called scientific community an *imagined community*. The precondition for such a community is the communication of its members through personal contacts and/or in written form (publications, correspondence).[38] Concrete places of communication are scientific organisations in which scientists can, ideally, exchange their ideas free from governmental or political influence. The concept of scientific community emerged in connection and reaction to the Second World War and was based on the ideas of the Hungarian-born scientist Michael Polanyi and the American sociologist Robert K. Merton, who among other things stressed the universalism of science. After 1953, the concept was adopted for wider use. For example, the atomic scientists praised the concept and the idea of scientific internationalism, which had a strong pacifistic connotation. In practice, the idea of international scientific community was a product of its time and its advocates had to face numerous obstacles. The travel restrictions of scientists from the socialist countries were among the most important of those. Therefore, the idea served more the Western scientists and their communication. In any event, international scientific communities offered a zone in which scientists from both ideological systems could cooperate.[39] The communities thus provided a tool to penetrate the Iron Curtain. But to what extent did the individual scientists identify themselves with these communities? Were they like fish in the water of international circles promoting their scientific goals or were the travels motivated by other, more pragmatic and perhaps sometimes purely materialistic factors? And, to what extent were patriotic and national aspects driving forces behind the international activities of scientists? Accordingly, Linda L. Lubrano has stated that even though the intellectual content of the natural sciences is basically similar in different countries and the processes of research have certain universal characteristics, science is definitely as much so a national product. She has written that:

> *„the universal and culturally specific characteristics of science are difficult to delineate, since science exists simultaneously in both national and international contexts. The same is true of politics. (...) The national and international characteristics of science merge vicissitudes of national and international politics when countries exchange scientific information and personnel."*

The core values of science, such as the free flow of scientific information and the free travel of scientists have been restricted by the practice of industrial

38 Niederhut 2007, 5.
39 See for example Niederhut, Jens, Grenzenlose Gemeinschaft? Die scientific community im Kalten Krieg. Osteuropa 10/2009, 58-61.

secrecy and by the pressures of professional competition.[40] Moreover, scientists were interested in both international prestige and in prestige the state was able to offer to them.

The restrictive policy of the socialist state conflicted with the process of what Akira Irye has called *cultural internationalism* which at the time was gaining momentum around the globe.[41] In this study the phenomenon of cultural internationalism forms an alternative or parallel context to that of the Cold War. This is above all to underline that the Cold War did not dictate all activities of the time period in question. Akira Irye has argued that individuals and groups of people from different states have sought to develop an alternative community of nations and peoples on the basis of their cultural interchanges. Their efforts have significantly altered the world community and immeasurably enriched our understanding of international affairs. The inspiration behind these endeavours, as well as the sum of their achievements is what Irye thus calls cultural internationalism: "*internationalism is used to refer to an idea, a movement or an institution that seeks to reformulate the nature of relations among nations through cross-national cooperation and interchange*".[42]

Accordingly, the transnational activities of scientists can have assumed to have had an impact on their thinking throughout the Cold War. As it was the aim of the communists to make their project global, cultural internationalism cannot be seen as a project existing merely in the West. In fact, the communist project in Eastern Europe has been the largest deliberately designed experiment in globalisation in modern history. As György Péteri has noted, the communists were conscious of their world-revolutionary mission of globalising the acclaimed "most developed social formation". On the other hand, communist elites could not completely forget about the economic, technological and socio-cultural backwardness of their countries. They were increasingly concerned about their regimes' poor economic and technological performance.[43]

In the case of Czechoslovakia, this study pays special attention to the Scientific and Technological Revolution and integration of world science, which, as will be shown, were a part of the country's striving to succeed in this process of internationalisation. It is plausible to claim that the Scientific

40 Lubrano, Linda, National and International Politics in US-USSR Scientific Cooperation. Social Studies of Science (SAGE, London and Beverly Hills), Vol. 11 (1981), 452-453.
41 Later this phenomenon has been labled for example as *globalisation*.
42 Irye, Akira, Cultural Internationalism and World Order. The Johns Hopkins University Press, USA 1997 1997, 3.
43 Péteri, György, Introduction. In: Nylon Curtain. Transnational and Transsystemic Tendencies in the Cultural Life of State-Socialist Russia and East-Central Europe. Edited by Péteri, György. Trondheim Studies on East European Cultures & Societies. No. 18. Norway 2006, 6-7.

and Technological Revolution provided the state and the scientists with a rhetoric tool to advocate their aspirations of increasing international contacts. By the beginning of the 1960s, the Scientific and Technological Revolution was a highly topical issue in the entire socialist bloc. It was closely linked to the modernisation aims of the Khrushchev leadership[44] and it was supposed to lead to the transformation of production forces so that science would be the leading force. In Czechoslovakia, the Scientific and Technological Revolution was explained as a similar historical process as for example industrialisation – thus, following the logic of historical materialism. In the socialist countries, the precedence of science over technology and of technology over industry was at the core of this alleged "revolution". This in turn gave a lot of weight to the role and importance of natural sciences in the process. As the President of the Soviet Academy, Mstislav Keldysh put it in 1961: "*In the new historical situation...it is necessary that the natural sciences, representing the main basis of technological advance and the main source of the most profound technological ideas should exceed the rate of development of technology*."[45] The Scientific and Technological Revolution should not be seen as an exclusive socialist phenomenon but as a global process which was going on both in the East and the West.[46] In the West, the ongoing process in which the importance of technology in production was rapidly growing was labelled differently: a second or third industrial revolution or as the famous mathematician Norbert Wiener called it the Cybernation Revolution.[47]

The importance of technological development was given a lot of weight at the time. Transfers of technology, knowledge and knowhow were one form of international cooperation between East and West. Through communication and cooperation something was *transferred* across borders. This may have been a concrete object such as a journal, an article, a chemical product, piece of technology or laboratory equipment, or a more abstract object: a lesson, lecture or an academic discussion. All these forms of exchanging information can be seen as part of transferring *knowledge* through the Iron Curtain.[48] In this study, the most concrete example of such a transfer is the case of the soft contact lens. Historians of the Cold War period have commonly referred

44Autio-Sarasmo, Sari, Knowledge through the Iron Curtain. Soviet Scientific and Technical cooperation with Finland and West Germany. In: Reassesing Cold War Europe. Edited by Autio-Sarasmo, Sari and Miklossy, Katalin. Routledge, USA 2011, 66.

45 Richta 1969, 41.

46 Rindzeviciute, Egle, Constructing Soviet Cultural Policy. Cybernetics and Governance in Lithuania after World War II. Linköping University 2008, 193.

47 Richta 1969, 13-14.

48 Investigating such different forms of transfers was the aim of the research project Knowledge through the Iron Curtain – Transferring Knowledge and Technology in Cold War Europe in the Aleksanteri institute, University of Helsinki 2007-2009. See the project website: http://www.helsinki.fi/aleksanteri/kic/index.htm. As for results of the project see: Reassessing Cold War Europe. Edited by Autio-Sarasmo, Sari & Mikossy, Katalin. Routledge Studies in the History of Russia and Eastern Europe, UK 2011.

to *transfers* either as transfers of ideas within the socialist bloc, such as the Soviet Union exporting its models of political organisation to Eastern Europe, or transfers of ideas and technologies from West to East. From both perspectives the smaller East European countries have been viewed merely as receivers.[49] Such an approach perpetuates the stereotypical picture of the Cold War whereby socialist countries are associated almost exclusively with poor quality products and with the borrowing or theft of western innovations. It is well known that transferring scientific and technological achievements from East to West was much rarer than the other way around. As Karen Freeze has noted, the socialist system precluded the successful commercialisation of most innovations which therefore remained in the laboratory.[50]

As mentioned before, for the Czechoslovak state scientific cooperation with the West was a great paradox and a perpetual dilemma reflecting the complex relationship between science and politics and moreover the position of a small country in relation to the Soviet Union and the wider world. Despite the obvious necessity, the communists always feared the unintended consequences of contacts with "the enemy", which could become a threat to the "information barrier" that was an integral part of the system or which could undermine the unity of people vis-à-vis the common project of communism.[51] The state had to balance between a policy of closing its borders (isolation) and a necessity to use the West as a model (openness). Forms and intensity of communication between the two blocs varied in time. Because of the Cold War rhetoric *competition* was often highlighted more than cooperation with the West, and policy makers actually articulated cooperation through competition. Scientists became – often unwillingly – actors of the Cold War economic and military rivalry, even though they themselves were primarily interested in their research, which required as free a circulation of information as possible.[52]

It is well known that in socialist states social networks were crucial in overcoming problems in acquiring goods, services and information.[53] Contacts

49 Connelly, John, Captive University. The Sovietization of East German, Czech and Polish Higher Education 1945-1956. The University of North Carolina Press, Chapel Hill, USA 2000; Academia in Upheaval. Origins, Transfers and Transformations of the Communist Academic Regime in Russia and East Central Europe. Edited by M. David-Fox and G. Péteri. Library of Congress, USA 2000.
50 Freeze 2007, 253.
51 Štrbánová, Sona & Spížek, Jaroslav, Vzestup a pád mikrobiologického ústavu ČSAV: šedesátá a sedmdesátá léta. In: Věda v Československu v období normalizace 1970-1975. Práce dějin vědy, svazek 4, Výzkumní centrum pro dějiny vědy. Praha 2002, 226.
52 The phenomenon of competition in socialist society is presently being investigated in the project Competition in Socialist Society in the Aleksanteri Institute at the University of Helsinki. See: http://www.helsinki.fi/aleksanteri/competition/project/index.html.
53 Salmi, Anna-Maria, Social Networks and Everyday Practices in Russia. Kikimora Publications, Saarijärvi 2006, 24.

and networks of scientists are present in most studies concerning the history of science, albeit not always conceptualised, but only rarely have researchers looked at contacts in the context of transsystemic and transnational scientific exchanges with the aim to find out how contacts were formed and what were their implications despite restrictions. The burden of an extensive bureaucracy hindered straightforward access to the decision makers and thus contacts played an even more important role. By paying attention to the contacts of the scientists it is possible to examine how information on particular achievements spread throughout the international scientific community. This study will look at the contacts of scientists as tools to overcome certain professional problems or achieve important professional goals. In the case of scientists these networks included the aspect of protection and patronage, both on national and international arenas. Here, the Russian concept *blat* may be useful.[54] As Alena Ledeneva explains, blat was about using informal contacts based on mutual sympathy and trust. It can also refer to influence and protection. According to the definition of Ledeneva, it is a distictive form of non-monetary exchange, a kind of barter based on a personal relationship. Not only object but rather mutual regard and esteem were exchanged. These kind of blat relations were not always dyadic. Thus, blat transactions could be circular: A provided a favour to B, B to C, C to D, and D (perhaps) to A. The important point is that there could be no immediate repayment. Psychologically, mediation was very important because it was easier to ask somebody else, not for oneself.[55] This study does not aim at a systematic mapping or analysis of the networks of the case study scientists. Due to the mosaic nature of the source material and the breadth of the topic it would be a mission impossible. Instead, contacts and networks are used merely as one of the methods that may help discover aspects that were crucial regarding issues of interaction and competition, but also as one of the strategic tools of scientists to navigate in their professional life.

When exchanges, transfers and contacts took place through the Iron Curtain, the phenomenon was always to a certain extent political. Even though the natural sciences were characteristically apolitical, scientists became involved in or were influenced by the politics of the Cold War. The *politicisation* of natural scientists had been a common phenomenon in Europe and the USA already at the time of Hitler's ascendancy to power and in the subsequent war. Even though practicing science did not require expressing political opinions, scientists could not escape the politics of their governments. Reinhard Koselleck has emphasised the distinction between the political function

54 There is no Czech equivalent for the notion of blat. Different expressions were used for referring to similar phenomenon, such as "protekce" (protection) or "mít někde strejda" (to have an uncle somewhere).
55 Ledeneva, Alena, Continuity and Change of Blat Practices in Soviet and Post-Soviet Russia. In: Bribery and Blat in Russia. Negotiating Reciprocity from the Middle Ages to the 1990s. Edited by Lovell, Stephen, Ledeneva, Alena and Rogachevskii, Andrei. School of Slavonic and East European Studies 2000, 184-186.

and the particular political implication a discipline may or may not have. Koselleck has written that "*the pure natural sciences do not have any political implications if judged by their subject matter: their results are universally communicable, and taken by themselves, they are apolitical*". As Koselleck points out, this does not mean that the utilisation of the natural sciences would be less influential than that of the humanities or social sciences.[56]

The political consciousness of scientists was increased by their well-grounded belief that common people, including politicians, did not have any idea about the potential of modern science and what could be achieved through it. The dedication of the Soviet Union to science made many contemporary Western scientists believe that the Soviet government would be capable to use this potential.[57] The era of politicised science reached its peak during the Second World War as scientists were for the first time recruited for military projects. In the West antifascism led to the creation of a nuclear war potential, but the scientists themselves were horrified of what they had achieved. After the war scientists in the West became less radical in part because they noticed that Soviet and other Eastern European scientists had to adapt to rules and ideals that would have been considered irrational elsewhere.[58] Most of the Western scientists saw the Soviet Union and its satellites as poor countries whose scientists were to be pitied. In the East, the politicisation of science took on different forms. Under Stalin's guidance, the USSR went further than any previous state in placing the support of science at the centre of its stated purpose. Stalin believed that science was the key to modernisation. Engels, Lenin and Stalin understood Marxism as being scientific and inextricably tied to the methodology and laws of the natural sciences.[59]

This study argues that among natural scientists in Czechoslovakia *communist* or *non-communist* conviction or *political* and *apolitical* positions were partly strategic tools used for promoting different kind goals. At the rhetorical level *political* and *apolitical* have become more important in the discourses after the collapse of communism and often appear in the sources produced after 1989. It is important to underline that when these concepts were associated with certain persons or groups they were understood differently in the East and in the West. In socialist states political conviction referred to a person with a Party membership and was thus synonymous for communist. Sometimes those who did not join the Party saw themselves as being *apolitical*. The

56 Koselleck, Reinhart, The Practice of Conceptual History. Timing History, Spacing Concepts. Stanford University Press, USA 2002, 14.
57 Hobsbawm, Eric, Äärimmäisyyksien aika. Lyhyt 1900-luku. (Age of Extremes). Osuuskunta vastapaino, Tampere 1999, 679-681.
58 Hobsbawm 1999, 682.
59 Pollock 2006, 3.

idea of an apolitical stand or *anti-politics* was conceptualised in particular by Václav Havel who before 1989 positioned himself as a person who did not wish to participate in the political process, but only as a critic of politics.[60]

This did not necessarily mean an apathy or antipathy towards all political affiliations, as the notion has been mostly understood in the West. Above all, in the socialist society it was a label for someone who stayed outside of communist affiliation for whatever reason. Significantly, these concepts represent extreme positions whereas in reality most people probably did not care about these labels on everyday bases and many found themselves somewhere in between the two extremes. There were phenomena in the socialist society, which were not communist by content. These were for example popular culture, folklore or religion.[61] Natural sciences can be seen as one of these less ideologically charged activities. Being apolitical fitted well to the realm of natural sciences because after the most severe Stalinist period nobody expected that natural scientists would commit themselves to ideology. Religion and popular culture were sometimes seen as threats to communism but natural sciences mostly not. The fact that natural scientists were relatively free from ideological pressures provided the individual scientists also more freedom in terms of political convictions. It gave them an opportunity to use the apolitical position or identity to promote goals, which actually were political. Therefore, advocating new ideas and thus influencing political processes was not necessarily considered to constitute political activity. The study addresses this complex phenomenon on a number of occasions.

This research does not discuss the extreme positions but focuses rather on those people who cannot be primarily called neither "real believer" communists nor dissidents. These people may have been critical towards the state policies at times therefore being part of resistance but have chosen to remain within the structures. Barbara Falk has stated that resistance as a category includes the idea of a "*gray zone*" referring to the zone between regime support and opposition.[62] Jiřina Šiklová used the concept in her article *The "Gray Zone" and the Future of Dissent in Czechoslovakia* in 1990: with the gray zone she referred to the group between the socialist establishment (the Party officials and alike) and the dissidents (those who reject the policy of the Party establishment). The gray zone is located between these two groups next to what Šiklová called a "silent majority". The people in the gray zone were those who remained "within the structure"; people with minimal political

60 Havel, Václav, Dálkový výslech. Rozhovor s Karlem Hvížďalou. Rozmluvy, England 1986, 13.
61 See for example Junes, Tom, Student Movements and Student Politics in Communist Poland. Academic Dissertation. Leuven 2011, 12.
62 Falk, Barbara J., Resistance and Dissent in Central and Eastern Europe. An Emerging Historiography. Forthcoming in East European Politics and Society. Quoted with the permission of the author.

involvement. They cooperated with the establishment and accepted benefits in exchange. At the same time they agreed with the views of dissidents and associated with them. They were worried that their collaboration could be held against them.[63]

Šiklová underlines that the fact that some people remained outside of the sphere of activity during the Prague Spring cannot be necessarily seen as a conscious choice: on the contrary it was often a coincidence.[64] On the other hand, people who ended up as dissidents or were proclaimed by the state as its opponents also often came to be so by accident. In many sources those who supported the Prague Spring reforms have been commonly labelled as liberalisers, critics and reformists.[65] At that time, because the state provided them with the opportunity to act, they were not outside the power structures – where dissidents have been often situated.[66] As Paulina Bren has suggested in her study on the culture of communism after the Prague Spring, the binaries of official culture versus unofficial culture and of the Party elite versus dissident elite have been too exaggerated. In Bren's view, the gray zone rather expanded and reached into both trenches of "official" and "unofficial".[67]

The case of Otto Wichterle and his activity as a critic of society throughout the time span of the study offers an interesting example concerning this issue. He was a critic and a reformer who after the invasion was forced to step aside from public arena but nevertheless stayed within the structure and did not become one of the dissidents. František Šorm, on the other hand, was first positioned within the immediacy of the political elite, but ended up as someone who was considered to be hostile towards the establishment.

Sources and Literature

The sources that have been used in this study can be roughly divided according to the above methodological categorisation of micro, middle and macro levels. Macro level documents consist mainly of the materials of the Central Committee of the Communist Party of Czechoslovakia.[68] These materials are located in the National archive (Národní archiv – NA). Furthermore, macro

63 Šiklová, Jiřina, The "Gray Zone" and the Future of Dissent in Czechoslovakia. Social Research, Vol. 57, No. 2 (Summer 1990), 349-352.
64 Ibid 1990, 355.
65 Williams, Kieran, Prague Spring and its aftermath. Czechoslovak Politics 1968-1970. Cambridge University Press, UK 1997, 16.
66 Falk, Forthcoming.
67 Bren, Paulina, The Greengrocer and his TV. The Culture of Communism after the Prague Spring. Cornell University Press, USA 2010, 7-8.
68 Materials of the presidium, secretariat and ideological commission.

level materials include materials of the Ministry of Foreign Affairs in the archive of the ministry (Archiv ministerstva zahraničních věcí – A MZV) and the materials of the State Security Police (Státní bezpečnost - StB) located in the Security Services Archive (Archiv bezpečnostních složek - ABS). At the middle level this study uses materials from the archives of the Academy of Sciences of the Czech Republic (Masarykův ústav – Archiv Akademie věd – A AV), such as reports on science policies and foreign exchanges, materials of chemical institutes, the patent department and travel reports of scientists. At the micro level, correspondence, biographies, autobiographies and interviews are the most important sources.

The documents of the Communist Party and the Ministry of Foreign Affairs often concern issues such as science policy, international scientific cooperation as well as cultural contacts and exchanges with the West. A large part of these documents consists of plans and reports commenting on scientific contacts and prospects of contacts with foreign countries. They mostly present overviews on the issue with positive and negative remarks, detailed lists of countries with which Czechoslovakia had cooperated and descriptions of such cooperation in practice. Moreover, the respective countries were divided in categories, most commonly as socialist or capitalist. While the list of socialist countries normally began with the Soviet Union, i.e. the number one partner in science, the capitalist countries were listed according to varying models. For example Scandinavian countries (which always included Finland) commonly constituted a separate category at the top of the list indicating a more neutral zone and thus, a more appropriate partner than the rest of the capitalist world. These plans and reports include concrete information about the countries with which Czechoslovakia had scientific contacts; what kind of cooperation existed; what the policy-makers supported or did not support (often theses suggestions come from the Academy of Sciences) and what kind of changes or evolutions took place for the period under study.

The documents of the StB consist of operative reports on individual scientists. Several cases in the Czech Republic and other former socialist countries where the materials have been used for revealing past collaboration of public figures with the Secret Police have made the materials an object of both academic and more popular debate on the ethics of using those sources. The purpose and function of the Secret Police have raised further questions about the credibility and value of these materials as historical sources. As always, methodology is what counts. When the purpose of producing such materials and the wider context are taken into account, the materials constitute valuable sources of information omitted in more public documents. In this study,

the StB sources have been an important addition which has among others helped to investigate the picture of the persons in the respective case study as reconstructed by those who were responsible for producing such materials. The StB materials also show how the control mechanism worked and how the individuals had to adapt to its demands.

In the latter case it is important to note that a travel account was required from all scholars and scientists who visited the West and in the Academy of Sciences, scientists were obliged to list people with whom they were in contact.[69] This practice included not only listing people they met while travelling but also reporting their correspondence. While abroad, it was for example forbidden to talk with Czechoslovak emigrants. A written travel report had to be compiled within a month's time after returning home by everyone who had been sent abroad. It had to be handed out in two copies, one for the department of foreign affairs inside the Academy of Sciences and one for the scientific collegia.[70] This means that such accounts had both a political and professional function. This double-function is clearly present in the respective accounts and as historical sources, different sorts of information can be obtained from them. Firstly, they provide an insight into scientists' general impressions and perceptions of a visited country and the people they met there. However, keeping in mind the political control i.e. what was expected from scientists (self-censorship and newspeak), these perceptions have to be seen against this background. Secondly, such reports shed light on programs and results of trips and more detailed information on professional matters. Thirdly, these accounts reflect the policies of the state: political control and its limitations – travel reports were not produced merely for professional purposes but also in order to gain information on the political conditions of a target country while they were also a way of controlling the loyalty of scientists to the state and measure his/her political uprightness. As Slava Gerovitch states, newspeak was not a linguistic practice imposed on Soviet scientists but a particular discursive strategy developed by scientists in their efforts to adapt to a specific political, ideological and socio-economic situation and to manipulate that situation to their advance.[71] In the travel accounts too, scientists used a specific language and chose their themes accordingly. When travels were directed to the West, the language coloured by the Cold War confrontation was present.

The purpose of travel reports was different depending on the political situation and the higher the position of a scientist, the less required from a travel report.

69 A AV ČR – Fond Prezídium ČSAV, 55. prezídium ČSAV (November 28, 1973).
70 A AV ČR – Fond Prezídium ČSAV, 14. prezídium ČSAV (September 2, 1965). Využití zahraničních styků – cestovní zpráva.
71 Gerovitch, Slava, From Newspeak to Cyberspeak. A History of Soviet Cybernetics. The MIT Press, USA 2002, 9.

The travel reports compiled by natural scientists and those representing technical scientific fields clearly differed from those made by the historians or social scientists. Natural scientists did not have to justify their trips so much through ideological statements and jargon, because of the much more apolitical nature of their research and the economic value they brought to the state. Accounts of natural scientists and technicians were usually extensive detailed reports on scientific issues, sometimes also containing photos of machines or facilities. Such reports clearly had the practical function of importing knowledge from the West, which in certain cases can be assumed to have constituted espionage. From the point of view of individual scientists, the most important aspect of these travels was of course to gain and spread scientific knowledge as freely as possible. When reporting, natural scientists were able to concentrate more on professional aspects than social scientists or humanists. Travelling abroad was justified by the prerequisite of science, presuming access to the international community, whereas historians among others had to sometimes "earn" a ticket abroad through actions which were essentially political.

The materials located in the archives of the Academy of Sciences also include correspondence with various foreign colleagues and partners and other materials that can be found in the personal collections of the scientists chosen for the case studies. Whereas the personal collection of Otto Wichterle has been ordered, the collection of František Šorm has not. Biographies, autobiographies, and interviews have been used that reveal elements that institutional histories cannot. These include motivations, ideology and career strategies. The most important autobiographical source for this study is the memoirs of Otto Wichterle (Vzpomínky).[72] Presenting a rather chronological and extensive narrative on his role in the world of science without forgetting the political context, the memoirs have been considered a valuable work on the history of science in Czechoslovakia after the Second World War.[73] In his memoirs Wichterle elaborates on his public life while venturing only little into his private life. The book has been published both in Czech and in English. Additionally, a number of other scientists' memoirs have been used as sources. In the Czech Republic two recently published memoirs by Rudolf Zahradník and Herbert Morawetz have been useful for this study, especially since the author interviewed both scientists personally.[74] Finally, the memoirs

72 Wichterle, Otto, Vzpomínky. Impreso, Praha 1992. (The English edition: Wichterle, Otto, Recollections. Prague, 1994)
73 Míšková, Barvíková, Šmidák 1998, 8.
74 Zahradník, Rudolf, Laboratorní deník. Začjsme bojovali. Academia Praha 2008; Morawetz, Herbert, Mých devadesát let. Academia, Praha 2008.

of the American writer and scientist Carl Djerassi *The Pill, Pygmy Chimps and Degas' Horse* have provided additional insights.[75]

In addition to the above sources, the oral history method has proven its worth in trying to answer questions to which the official documents cannot provide explanations. To this aim the author has had discussions with Otto Wichterle's wife Linda Wichterlová, the Czech chemist Rudolf Zahradník (the President of the Academy of Sciences after Otto Wichterle), the Czech-born chemist Herbert Morawetz among others. Interviews and conversations with contemporaries have been used mainly to complete written sources such as memoirs. The source criticism of the oral history method usually emphasises the selective nature of the human memory. The interviewees look at the past events with hindsight, which may have been coloured by the result of a certain historical process, in this case the collapse of communism. Moreover, the role of the interviewer affects how the interviewees react. For example the fact that the interviewer represents a different background, gender, generation or nationality than the interviewee should be taken into account. These have been factors that have been taken into consideration both while preparing for the interviews and later when analysing them.[76] The people who have been interviewed for the purpose of this study were asked to talk about a third person (in particular Otto Wichterle), which is another challenge for analysing interviews. Most of the people were cautious when asked to describe motives or actions of another person. More so, when the one in question is their family member.

There are only a few written works dealing with the topic of the case study persons from the actual time period concerned. One of these is the book *Communist Entrepreneurs* by the American businessman and journalist John W Kiser III. This book introduces several examples of scientists and innovators coming from Eastern Europe. From the point of view of this study the book is important because one of the chapters deals with Otto Wichterle and is based on an interview with the latter. Moreover, Kiser offers explanations concerning the Americans' interest in the innovations that were made in the East. With such a rather positive approach to the topic, the book serves a rare but important contemporary account.[77]

In as far as Czechoslovak history of science in the era of socialism has been studied, it has not been examined earlier from a similar viewpoint, namely

75 Djerassi, Carl, The Pill, Pygmy Chimps and Degas' Horse. New York: Basic Books, 1992.
76 On methodology of oral history in the context of socialist society see for example Vaněk, Miroslav, Orální historie v soudobých dějinách. ÚSD, Praha 2004.
77 Kiser, John W III, Communist Entrepreneurs. Unknown Innovators in the Global Economy. Franklin Watts, USA 1989.

with an emphasis on international dimensions. Until present no synthesis on Czechoslovak science policy during the socialist period has appeared, but in recent years historians' interest in history of science has increased in the Czech Republic. Most of the accounts have exploited the rich archival materials of the Academy of Sciences and focused mainly on issues related on individuals' role in science policy. František Šorm, his personality and involvement in science policy have been discussed by the historians Jiří Jindra and Martin Franc. Jindra has viewed Šorm's role in science policy rather critically emphasising his ideologically coloured opinions.[78] In 2010, the Czech historian Martin Franc published a book on Biologist Ivan Málek, the "greatest rival" of František Šorm within the administration Academy of Sciences. Based on extensive archival work on Málek's personal papers, the book focuses on Málek's involvement in science policy as well as his career and activity in the same historical period as this study. In a number of ways, the book has provided valuable information and comparison to this research.[79] Interestingly, Málek´s example can be used as a mirror to Šorm revealing many similarities between these mutual enemies. Another example of historical research on individual scholars is Bohumil Jiroušek's book on the historian Josef Macek, another influential figure within the Academy of Sciences.[80] Although Jiroušek's example deals with a historian he has used Secret Police documents as materials and thus set his case study in a wider political context.

Among the most important background literature dealing with the theme of science and politics in Czechoslovakia have been the conference publications by the Research centre of the history of science (Výzkumné centrum pro dějiny vědy) which adheres the Academy of Sciences of the Czech Republic.[81] The three following volumes: *Věda v Československu v letech 1953-1963* (Science in Czechoslovakia in 1953-1963), *Česká věda a pražské jaro* (Czech science and the Prague Spring) and *Věda v Československu v období normalizace 1970-1975*[82] (Science in Czechoslovakia in the era of the normalisation, 1970-1975) have been particularly valuable for this study because they have taken into account not merely the organisations, individual scientists and institutes but included the political context to a certain extent as well. The numerous publications of the Institute for Contemporary History (Ústav pro

78 Jindra, Jiří, Přírodní vědy a KSČ. In: Věda v Československu v letech 1953-1963. Sborník z konference, Archiv Akademie věd České republiky, Praha 2000, 487-488.
79 Franc, Martin, Ivan Málek a vědní politika 1952-1989 aneb Jediný opravdový komunista. Masarykův ústav a Archiv AV ČR, Praha 2010.
80 Jiroušek, Bohumil, Josef Macek. Mezi historií a politikou. Výzkumné centrum pro dějiny vědy, Praha 2004.
81 Centre for History of Science in the Czech Republic.
82 Věda v Československu v letech 1953-1963. Sborník z konference, Archiv Akademie věd České republiky, Praha 2000; Česká věda a pražské jaro. Sborník z konference, Praha 2001; Věda v Československu v období normalizace 1970-1975. Práce dějin vědy, svazek 4. Výzkumní centrum pro dějiny vědy, Praha 2002.

soudobé dějiny AV ČR) that deal with the period in question have also been used. Those include for example the publication *Československá akademie věd 1969-1972. Restaurace komunistické moci ve vědě* (the Czechoslovak Academy of Sciences 1962-1972. The restoration of the Communist power in Science).[83] The Czech historians in the above mentioned institutes and research centres as well as in the archives of the Academy of Sciences have published several articles touching on the topic of science in the socialist era but focus more on the local context and use a certain, more limited group of sources instead of combining them to reconstruct a broader view on the subject.

Apart from the particular sphere of science this study has benefitted from a number publications dealing more generally with aspects of contemporary political, social and economic history of Czechoslovakia and the socialist bloc such as *A History of the Czech Lands*; *Hospodářské a sociální dějiny Československa 1918-1992*; *Východ. Vznik, vývoj a rozpad sovětského bloku 1944-1989* and the books by Karel Kaplan on the CMEA[84] and Czechoslovakia to mention but a few. [85] As far as political history of Czechoslovakia is concerned,the works of Kieran Williams and Vladimír Kusin have been useful.[86] Moreover, one of the few exceptions where Czechoslovakia's scientific or technical achievements in the international context have gained attention or have been examined from an international perspective is a case study carried out by the late American historian Karen J. Freeze on the transfer of Czechoslovak technology to the West.[87] John Connelly's comparative study on higher education in three socialist states, Czechoslovakia, East Germany and Poland, has been of great importance for this research. In his book Connelly used the university as an institutional example through which he reveals that such organisation as well as implementing Soviet practices to different countries is inseparable from the local political and social cultures.[88] Connelly's approach was inspiring in order to consider these cultural and other factors in relation to the institutional example of this study, the Academy of Sciences.[89] Also, the late Czech historian Jan Havránek has written on Czech

83 Míšková; Barvíková; Šmidák 1998.
84 The Council of Mutual Economic Assistance, established in 1949.
85 A History of the Czech Lands. Edited by Pánek, Jaroslav; Tůma, Oldřich. Charles University in Prague 2009; Hospodářské a sociální dějiny Československa 1918-1992. 2. díl období 1945-1992. Edited by Průcha, Václav a kolektiv. Nakladatelství Doplněk, Brno 2009; Východ. Vznik, vývoj a rozpad sovětského bloku 1944-1989. Edited by Vykoukal, Jiří; Litera, Bohuslav; Tejchman, Miroslav. Nakladatelství Libri, Praha 2000; Kaplan, Karel, Rada vzájemné hospodářské pomocí a Československo 1957-1967. Univerzita Karlova v Praze 2002.
86 Williams 1997; Kusin, Vladimir V., The Intellectual Origins of the Prague Spring. The Development of Reformist Ideas in Czechoslovakia. Cambridge University Press, UK 1971.
87 Freeze 2007.
88 Connelly 2000a.
89 In his book Connelly focused on universities and leaves the Academy of Sciences aside. Moreover, his study deals predominately with social scientists and humanists, not with natural scientists.

universities under communism touching among others on the topic of travel restrictions. His chapter has been published as part of a collection of articles dealing with universities and communism in different "dictatorships".[90]

Moreover, work on other socialist countries and their science has been highly valuable as a point of comparison. Among these is Jens Niederhut's study of scientific relations between the GDR and the West which deals with the topic of contacts and cooperation of scientists between East and West.[91] Within the framework of the history of science in socialist states hitherto research has mainly focussed on the complex relationship between power and knowledge and the role of science and scientists in the context of a dictatorship thereby highlighting such phenomena as the effects of Cold War competition in science or the 'sovietisation' of science.[92] Furthermore, a few books have been published on the relationship between science and state under communism. Among these, authors like Nikolai Krementsov[93], Dolores L. Augustine[94] and György Péteri[95] have distanced themselves from the simplified picture of a "victimised scientific community" versus the oppressive state while increasingly emphasising the role of individual actors. For example, Nikolai Krementsov has stated that although the Party pursued its own political and ideological aims the outcomes were often unexpected, reflecting herein the needs of the scientific community as much as those of the Party hierarchy, which itself was profoundly fragmented.[96] This approach is connected to the broader discussion on the nature of the socialist system. By showing that individuals influenced the system, the totalitarian interpretation of society has become questioned.[97] Michael R. Gordin, Karl Hall and Alexei Kojevnikov have published a volume dealing with intelligentsia science. In their approach scientists as intellectual actors as well as transnational dimensions have been taken into account.[98]

Above all, the general array of research concerning various aspects connecting East and West in the Cold War era has been important for the theoretical

90 Havránek 2005.
91 Niederhut 2007.
92 For example: Graham, Loren R, Science in Russia and the Soviet Union. A Short History. Cambridge University Press, USA 1993; Krementsov, Nikolai, The Cure, A Story of Cancer and Politics from the Annals of the Cold War, The University of Chicago Press, USA 2002; Academia in Upheaval 2000; Augustine 2007.
93 Krementsov 2002.
94 Augustine 2007, xvii.
95 Petéri, György, Academia and State Socialism. Essays on Political History of Academic Life in Post-1945 Hungary and Eastern Europe. Columbia University Press, USA 1998.
96 Augustine 2007, xiii (Augustine quotes Krementsov 1997, xi).
97 Ibid 2007, xiv.
98 Intelligentsia Science. The Russian Century, 1860-1960. Edited by Gordin, Michael, D., Hall, Karl and Kojevnikov, Alexei. Osiris 23. The University of Chicago Press, USA 2008.

framework of this study in particular work regarding international cultural and scientific exchanges and transfers of people, knowhow and technology.[99]

99 See for example: Richmond, Yale, Cultural Exchanges and the Cold War. Raising the Iron Curtain. The Pennsylvania State University Press, USA 2003. Yale Richmond has written about cultural exchanges between the USA and the Soviet Union focusing on cultural agreements, scholarly exchanges, science and technology, NGOs, exhibitions and journalists and diplomats; Niederhut 2007; Winter Kept Us Warm: Cold War Interactions Reconsidered. Edited by Autio-Sarasmo, Sari and Humphreys, Brendan. Aleksanteri Cold War Series1/2010. Helsinki 2010; Nylon Curtain. Transnational and Transsystemic Tendencies in the Cultural Life of State-Socialist Russia and East-Central Europe. Edited by György Péteri. Trondheim Studies on East European Cultures & Societies. No. 18., Norway 2006.

PART I: Between Dogmatism and Optimism

The Beginning of the Long March: Otto Wichterle and František Šorm before 1948

The Communist period and the people who lived in that system cannot be properly examined without an understanding of the preceding developments and the life experiences of said people. Without considering the impact of earlier phases on the thinking, activity and decision-making of individuals, there is a great risk to reconstruct explanations that are too narrow or one-sided. Such an approach would exaggerate and overemphasise one historical period, such as Communism, while embellishing the illusion of the preceding period as an automatic counterbalance to all developments that took place during Communism. As will be shown here, the thinking and activity of Otto Wichterle and František Šorm were influenced to a great extent by their family backgrounds and earlier life experiences.

In this sense, the early life experience of Otto Wichterle already imbued him with the feeling that he differed from his peers. Wichterle was born in 1913 in the Moravian town Prostějov as the youngest son of an agricultural machinery entrepreneur. He thus spent his childhood in the region that was first part of the Austro-Hungarian Empire and which in 1918 came to known as the independent state of Czechoslovakia. His ancestors had been active in establishing various enterprises in the region and both his maternal great grandfather and grandfather had been engaged in societal affairs. Otto Wichterle was the youngest of five siblings. When he was only six years old he was injured while playing in the family's summer villa. He subsequently fell seriously ill with a continuously fever. The pediatrician informed the parents that their youngest son had an unusually and prematurely developed heart and that he would most probably have not more than a year to live. The sick boy was therefore not allowed to go to school and was home schooled. Due to his illness Wichterle had also been forbidden to play and exercise physically as much as healthy children were allowed to – a factor that he himself suggested as having encouraged his interest in learning. Nevertheless, years passed but Wichterle did not die. Instead he recovered completely. The entry examination to a normal school was such a success that he was placed

in a class with older pupils. But there, he was bullied due to his age, size, long hair and background.[100]

In 1931-1935, Wichterle studied chemical engineering at the Institute of Chemical and Technological Engineering (Technical University – České vysoké učení technické) in Prague. Wichterle, who had moved to Prague from a small town where politics had not played an important role, did not remain immune to political debates at the university. The student activity was a reflection of the overall radicalisation of society caused by the economic depression and social problems, such as high unemployment and poverty. These problems had culminated as a result of the world economic crisis of 1929. In 1932, foreign trade had practically collapsed and the economy had slid into a depression. The position of the communists was growing but at the same time right-wing extremists and fascists gained a lot of popularity as well.[101] At the university, the radicalisation was very visible. There were two groups among the students: the right-wing majority and the leftist minority. As Wichterle later explained it, instead of politics he was interested in solving problems related to studies and found like-minded students only among the leftist group.[102] Wichterle's own reasoning which emphasised his merely scientific interests in contrast to any kind of political passions should be seen in the right historical context. He wrote his memoirs after the collapse of communism: as an understandable rhetoric strategy to distance himself from any connections to the communists he instead put stress on pragmatic motives. Unfortunately – for the author of this study – by doing so Wichterle did not reveal a lot about his opinions concerning social and economic problems in the society before the war. Whatever his real convictions were, conservative professors and students saw him as a left-winger. Moreover, for those professors, Wichterle's participation in a study trip to the Soviet Union in 1933 served as proof of his alleged left-wing activities. The social struggles in Czechoslovakia were reflected among the student body since practically every student was somehow politically engaged.[103] Above all, Hitler's rise to power in neighbouring Germany had generated strong emotions among intelligentsia as such.[104]

Not only students were discontented with the existing conditions in the field of science. Although Czechoslovakia was among the most industrialised

100 Wichterle 1992, 13-14.
101 Harna, Josef, First Czechoslovak Republic. In: A History of the Czech Lands. Edited by: Pánek, Jaroslav; Tůma, Oldřich. Charles University in Prague 2009, 416-418.
102 Wichterle 1992, 24.
103 Ibid 1992, 26.
104 Harna, Josef 2009, 420-422.

countries[105] in the world at that time, science was diffused and research was carried out in various institutes, universities or large corporations such as Bat'a and Škoda Works. The possibilities for serious scientific and technical research were limited while the existing facilities were small.[106] As Wichterle stated in the late 1980s:

> *"After World War I, under the First Republic of Tomas Masaryk, the Czech government didn't support science in a significant way. There was the Academy of Sciences, but that was like the British Royal Academy—resembling rather a voluntary debating club. There was little chemical industry. Except for sugar production, some dyes, and additives for the leather industry, there were no industries which required much chemical science. It was only after the Communists took over that science received strong government support. By adopting the Russian model, the Party made a commitment to support science at the highest levels".*[107]

Wichterle obtained his doctoral degree in 1936 under the renowned Professor Emil Votoček (1872-1950), a sugar chemist, talented linguist and composer. Following his graduation Wichterle worked as an assistant lecturer to Votoček. The laboratories of Votoček and Rudolf Lukeš (1897-1960) – the latter a famed organic chemist – had produced many excellent scientists with impressive international careers, including the Sarajevo-born Vladimir Prelog (1906-1998)[108], the later Nobel laureate.[109]

The young doctor soon encountered dramatic historical changes. As a result of the Munich Agreement, Germany began occupying the surrendered territories on 1st October 1938. Approximately 78 % of the territory was given to the newly created Sudentenland Reichsgau and the remainder was attached directly to the German Reich. In March 1939 the German army occupied the Czech Lands' territory and Adolf Hitler's order issued the formation of the Protectorate of Bohemia and Moravia. In the meantime, Slovakia declared an independent Slovak state, in practice a puppet state of Nazi Germany. The German Reich represented the real holders of state power, while the Czech authorities functioned as their executive organs. The subjection of the Czech Lands to the Reich's interests manifested itself most conspicuously in the

105 According to Josef Harna Czechoslovakia ranked between the 10th and 15th place in the world of industrial and living standard indexes. Harna 2009, 408. In some sources it has been stated that Czechoslovakia ranked even better.
106 Jindra, Jiří, The Sovietization of natural sciences in Czechoslovakia (1945-1960). In: Sovietization in Romania amd Czechoslovakia. History, Analogies, Consequences. Edited by Zub, Alexandru and Solomon, Flavius in cooperation with Tůma, Olřich and Jindra, Jiří. Romanian Academy „A.D. Xenopol" Institute of History, Romania 2003, 44; Kiser 1989, 94.
107 Kiser 1989, 94.
108 Prelog was awarded the Nobel Prize in Chemistry in 1975. Available at: http://nobelprize.org/nobel_prizes/chemistry/laureates/1975/prelog-autobio.html, accessed June 5, 2009.
109 Kopeček, Jindřích, Obituary Otto Wichterle (1913-98). In: Nature. Available at: http://www.nature.com/nature/journal/v395/n6700/full/395332a0.html, accessed May 13 2008.

economy. The Czech Lands represented one of the most important industrial and weapons arsenals of Germany for the entire course of the Second World War. The occupation did not go without resistance. Actions of defiance to the occupation were met with repression by the Nazi occupiers. These incidents influenced academic life as well. The medical student Jan Opletal was killed by the Germans in an anti-German student demonstration on 28th October 1939. The demonstration at his funeral served as an excuse for the closing of Czech universities on the 17th of November 1939.[110] This was followed by the arrest of a number of students and professors, particularly those of Jewish origin, and their deportation to concentration camps. More than a thousand university students were rounded up and sent to concentration camps. As stated by the Czech historian Jan Gebhart, this was not a haphazard reprisal, but part of a thorough campaign of annihilation of the Czech intelligentsia.[111] Wichterle was not a Jew, but because of his political activities, he feared arrest. In order to avoid the latter he looked for employment, which was in his words the best way to stay safe. He was offered a position at the research institute of Rubber Technology of the Baťa Company[112] located in the Moravian town Zlín. Baťa was at the time the largest manufacturer of shoes in the world, which also produced other products such as plastic fibres and tyres. The owner of the company, Jan Baťa, who himself had left for the USA, tried to recruit people from the closed universities to work in his factories. The Baťa Company thus became a haven of possibilities in otherwise difficult circumstances as for a number of people it offered the chance to continue or even further develop their scientific work. They could give lectures, publish books and articles and exploit the well-equipped laboratories of the company.[113]

Unlike Wichterle's previous working place at Votoček's laboratory, where a strong German and French orientation had been apparent, the patent applications in the Baťa institute had to be written in English, which was also the language of most of the literature in the library. This helped the employees to learn the new language of world science – ironically though, this took place in a country occupied by the Nazis. In the Baťa institute Wichterle led a working group concerned with studying polyamides. The group developed the technology for the manufacture of caprolactam, which is a chemical intermediate similar to the one developed by *Du Pont*[114] in the

110 Gebhart, Jan, Czechoslovakia in the years after the Munich Agreement and in the Second World War (1938-1945). In: A History of the Czech Lands. Edited by Pánek, Jaroslav; Tůma, Oldřich. Charles University in Prague 2009, 442-444.
111 Ibid 2009, 444.
112 Bat'a or Bat'ovy závody was established in 1894 in Zlín by Tomáš Bat'a.
113 Wichterle 1992, 33; Connelly 2000, 85.
114 American company Du Pont was founded in 1802 as a gun powder mill. It is currently the world second largest chemical company.

1930s to produce nylon[115]. These techniques became the foundation for the Czechoslovak polymer industry after the Second World War.[116] The trademark "Silon" was not launched before the 1950s, first due to the concealment of the invention from the German occupiers and later due to problems of the post-war industry. Interestingly enough, the German researchers at IG Farben[117] had developed similar technology parallel to Wichterle. Nevertheless, thanks to his employment at Baťa, Wichterle was able to continue his work without losing touch with the research practice.

However, during the Nazi occupation, Wichterle's political activities, such as gathering together with people with similar ideas and reading books forbidden by the Nazis reflecting his earlier engagement in left-wing politics,[118] led to a four-month-long imprisonment by the Gestapo in 1942.[119] From the beginning of the occupation the Czech resistance had clashed with the security apparatus of the Nazis. During the Protectorate several waves of arrests in the ranks of resistance took place. However, the illegal networks continued to develop.[120] In his book on the sovietisation of higher education John Connelly has claimed that wartime experiences offer one explanation for the behaviour of the educated elite in the 1950s. In the Czech case, this alluded to the wartime passivity of professors on the one hand and the resistance of students on the other.[121] Although Connelly's study is limited to the "Stalinist" era, it is possible that Wichterle's wartime experiences, in particular his imprisonment, encouraged him to societal critic during the communist period. Despite the restrictions, some scientists found ways to continue their research during the Nazi occupation. For example the later Nobel laureate Jaroslav Heyrovský was able to keep his laboratory operational and carry on with his experiments, although without students or co-workers.[122] After the war he and many others had to go through a vetting process with regards to possible collaboration with the Nazis.[123] The same practice touched Wikov, the family enterprise of Wichterle's father and relatives, which was set under a process of scrutinising

115 Used for instance in the production of women's stockings or surgical cord.
116 Hudlický, Miloš, My Reminiscences on Professor Otto Wichterle. 1/Vol. 3, No. 6. The Chemical Educator. Springer-Verlag New York, INC. 1998, 1-9. Available at: http://journals.springer-ny.com/chedr, accessed June, 2005. See also: Kopeček, Jindřich, Obituary Otto Wichterle. Available at: http://www.nature.com/nature/journal/v395/n6700/full/395332a0.html, accessed May 13, 2008.
117 I.G. Farbenindustrie AG was a German chemical industry conglomerate.
118 A AV ČR - Osobní fond Otto Wichterle (OW) (Personal papers of Otto Wichterle), bod 11. záznamu o výsledku pracovně politického hodnocení. 22.10.1970.
119 Wichterle 1992, 43-45.
120 Gebhart 2009, 446.
121 Connelly 2000a, 6.
122 Ibid 2000a, 85.
123 Wissenschaft in den böhmischen Ländern 1939-1945. Edited by Kostlan, Antonín. KLP Praha 2004; Butler, J.A.V. & Zuman, P., Jaroslav Heyrovský. Biographical Memoirs of Fellows of the Royal Society, Vol. 13 (Nov., 1967), 173.

for possible collaboration with the Germans.[124] Although no evidence of Nazi collaboration was found, Wichterle's notably "bourgeois" background nevertheless became a burden in the socialist era and it served to provide motives for repressive political measures against him.

Czechoslovakia was relatively little hard-hit materially by the war. With the exception of its former Jewish and German population, the country did not face such a radical discontinuation in the post-war era as did some of its neighbouring countries like Poland.[125] The Czech universities were reopened starting from May 1945 with twice as many students enrolling as there had been in the 1930s. In the immediate aftermath of the war, the communists tightened their grip in the field of higher education. In the first post-war government the Communists took control of the Ministry of Education. However, according to the late Czech historian Jan Havránek, generous state support for student veterans, anti-German nationalism and post-war enthusiasm for social reforms were factors that mitigated any government interference in university matters.[126]

In the first post-war elections in Czechoslovakia in 1946, the Communist Party secured a relative majority of the vote. It was the only Communist Party in the region that had remained legal and been a mass party before the Second World War. Above all, its programme was attractive to a significant part of Czechoslovak society. This popularity has been explained by a number of factors: the experience of the 1930s Great Depression, which had created a demand for a welfare state, which was associated with socialism by many; the Munich Agreement and the mistrust towards the Allied Powers which had supported the Munich Agreement; the resistance experience; and the role of the Soviet Union in defeating Nazi Germany.[127] Between 1945 and 1948 Czechoslovakia was "a new model of regulated democracy". In the words of Jiří Kocian, the foundations were laid for the regime of a people's democracy.[128]

The actual events that led to the establishment of the people's democracy took place in early 1948 when the Czechoslovak communists provoked a political crisis leading the non-communist members of the government to resign.

124 Archiv Ministerstva vnitra České republiky (Archive of the Ministry of Interior of the Czech Republic - A MV) – obor archiv bezpečnostních složek MV, 305-508-1. Prostějovské továrny na stroje Wichterle a Kovařík, akc. spol. šetření podle § 7 dekr. Č. 100/45Sb.2 (April 2, 1949).
125 Berend, Ivan T, Central and Eastern Europe, 1944-1993. Detour from the Periphery to the Periphery. Cambridge University Press, Great Britain 1996, 4-6.
126 Havránek 2005, 169.
127 Kocian, Jiří, Czechoslovakia Between Two Totalitarian Systems (1945-1948). In: A History of the Czech Lands. Edited by Pánek, Jaroslav; Tůma, Oldřich. Charles University in Prague 2009, 465.
128 Kocian 2009, 466.

They took advantage of having their man running the Ministry of Interior. The communists then proceeded to take over the control of the complete department. They appointed members of the Communist Party to top positions in the National Security Corps (the police force) and the State Security (the Secret Police). They managed to transform the state's security apparatus into their political tool.[129] This in the end amounted to a coup leaving them in absolute control of the state. On February 25 President Beneš was forced to endorce Klement Gottwald's new government.[130] Beneš resigned in June 1948 and Gottwald then took over the highest office. The Communist Party enjoyed high esteem in Czechoslovakia and it was therefore able to quickly introduce profound changes to public life, including major purges in national committees, trade unions, nationalised enterprises and universities. Moreover, top management and functionaries were replaced throughout the public sector. The communist regime was creating its own elites. The communists appointed working-class personnel to key positions in the state administration. Another significant change was the nationalisation of economy. The process of nationalisation was started after the war, but many of its results had in fact proved unfavourable. The post-February nationalisation was first and foremost a political act. Economic reforms went beyond nationalisation. The Communist Party aimed to eliminate small business and collectivise agriculture.[131]

Wichterle's active career as a scientist began at the time of this political turmoil. After the war he had tried to look for possibilities to continue the research he had been carrying out in the Baťa factories. Wichterle therefore returned to Prague where he completed his *habilitation*[132] research, published books on organic and inorganic chemistry and further explored the research on plastics. Within a year after the communist coup d'état in 1948 he became a Professor of macromolecular chemistry at the School of Chemical Technology in Prague (Vysoká škola chemicko-technologická, VŠCHT).[133]

The Stalinist period which ensued following the communist takeover in 1948 has been mostly reconstructed as being harmful in relation to culture, education and scholarship. From the perspective of the natural sciences

129 Pernes, Jiří, The Establishment and First Crisis of the Communist Regime in Czechoslovakia. In: A History of the Czech Lands. Edited by Pánek, Jaroslav; Tůma, Oldřich. Charles University in Prague 2009, 493.
130 Larmola, Heikki, The "Czechoslovak Path": A Communist Route to Power Monopoly in 1943-1948 Within the Framework of "Mitteleuropa", Great Power Setting, and the Soviet Sphere of Interests. A Neorealistic and Historical Approach. Helsinki 2003, 408.
131 Pernes 2009a, 502-506.
132 The traditional habilitation and doctorate were in the early 1950s replaced by degrees of "kandidát" and doctor of science.
133 Kratochvíl, Pavel, Otto Wichterle, průkopník makromolekulární chemie (1913-1998). In: Učenci očima kolegů a žáků. Edited by Šmahel, František. Academia, Praha 2004, 94.

the same era seems to defy this perception. As noted above, before the establishment of communism in Czechoslovakia there had been only a few possibilities for serious scientific and technical research and scientists were discontented with their working conditions.[134] For many contemporaries, communism as the 'scientific world ideology'[135] had been the key to solving the existing problems regarding scientific work. In this sense, the Czech communists claimed that the 'bourgeois society' of the First Republic (1918-1938) had undervalued its natural scientists.[136] According to the communist ideology they saw an opportunity to strengthen the position of science in society. The fact that Wichterle became a professor in 1948 and maintained the position throughout the most severe years of sovietisation is proof of the significance of the natural sciences in 'building' communism. It was essentially paramount to support those fields even when the scientists were not deemed ideologically eligible by the new regime. Natural sciences were expected to advance economic and technological development and therefore be important tools of the modernisation process.

However, among scientists there were those who were genuinely attracted to the communist model for its potential in promoting the development of the natural sciences. František Šorm was one of such people and he incidentally became one of the most influential men of science in Czechoslovakia after the communist takeover in 1948. František Šorm was born in Prague in February 1913 in the family of a civil servant. A fellow student and peer of Wichterle, the lives of two men often paralleled. Šorm graduated from the Technical University of Prague at the Chemical-technological faculty in 1935 and received his doctorate in 1936 – the same year as Wichterle.[137] During the Second World War Šorm worked as a research chemist in the Association for Chemical and Metallurgical Production (*Spolek pro chemickou a hnutní výrobu*) in Prague under Professor Rudolf Lukeš. Šorm completed his *habilitation* immediately after the war when the Czech universities reopened in 1945. A year later he was nominated as a Professor at the VŠCHT. His first academic post was at the newly-established Department of Technology of Organic and Explosive Mixtures (Ůstav technologie lučebnin organických a výbušných). According to his later student, Antonín Holý, he was already capable at that time of providing his co-workers with different research positions in industry

134 Jindra 2003, 44; Janouch, František, Science under Siege in Czechoslovakia. The Bulletin of the Atomic Scientists, Vol. 32, No 4, April 1976, 7.
135 The 1960 Constitution of the Czechoslovak Socialist Republic stated: 'In accord with the scientific world ideology, the society of working people fully utilises the results of science for the management of society and in planning future development' (Ústava ČSSR Prague, Orbis, 1960), Art. 18, Par. 2. In: Slamecka 1963, 7.
136 Winters, Stanley B., Science and Politics. The Rise and Fall of the Czechoslovak Academy of Sciences, Bohemia Band, Vol. 35 (1994), 275, 281.
137 A AV ČR – Fond FŠ, životopis F. Šorma 19.5.1958.

or gaining necessary material resources for research which subsequently helped him to develop the newly established department.[138]

František Šorm was thus a determined and skilful organiser. But the beginning of his university career was linked to his politicisation. For Šorm communism offered perspectives for the future providing opportunities for scientific work on a larger scale and for a greater variety of people than ever before. In 1958, František Šorm himself outed his political convictions in his curriculum vitae.[139] According to his account, there were two women who had an important influence on the formation of his political views– his mother and his wife. The mother, who had a proletarian background, endeavoured to imbue a strong social awareness in her son. This awareness was further strengthened while Šorm was working at the Škoda factories during his doctoral studies in the mid-1930s. There, he came into contact with working class people, and, in his own words, came to understand them well. When Šorm met his wife this sensitivity for social issues then evolved into more concrete activities. According to Šorm's own account, he already had left-leaning sympathies in high school thanks to his wife, who was politically conscious and a member of Kostufra.[140] In contradiction, Otto Wichterle claimed in his memoirs that František Šorm had been among the few students in the 1930s who stayed aloof from politics at that time.[141] Why these accounts vary remains, however, unanswered. Nevertheless, according to Šorm, the foundation of his belief in communist ideology was linked implicitly to his experience during the war. He described it as follows: "*The loss of freedom, the occupation had a deep impact on me politically and I think that I became a convinced communist already during the war*".[142]

According to Šorm's explanation, during the war Šorm and his wife Zora gathered a group of young people around them with the aim to educate them politically. Right after the war, Šorm and most of the youngsters became members of the Communist Party of Czechoslovakia (CPCz). Šorm soon got involved in its political organisation and became a member of the commissions of chemistry and research of the Central Committee of the Communist Party.[143] In 1950 Šorm was also appointed professor of organic chemistry at the faculty

138 Holý, Antonín, Prof. Ing. František Šorm, DrSc. akad. Available at: http://jergym.hiedu.cz/~canovm/objevite/objev5/sorm.htm, accessed April 5, 2007.

139 A AV ČR – Fond FŠ, životopis F. Šorma 19.5.1958. Significantly, the curriculum of that year is far more focussed on political aspects than other curricula in the years to come – in the same year he was chosen as the candidate of the Central Committee of the Communist Party and was without doubt required to convince the Party of his pureness and loyalty towards it.

140 Kostufra was a Czechoslovak communist student organisation established in 1922. It existed until 1938.

141 Wichterle 1992, 26. According to Wichterle Šorm was one of those who „fundamentally did not participate in any political activities".

142 A AV ČR – Fond FŠ, životopis F. Šorma 19.5.1958.

143 A AV ČR – Fond FŠ, životopis F. Šorma 19.5.1958.

of natural sciences at Charles University, where he stayed until 1952. Like many other new Communist enthusiasts, he saw the Soviet Union as the model country for science and education and participated actively in what he believed would significantly improve Czechoslovak science. Furthermore, as a good and loyal communist he could achieve a lot. According to one source Šorm was described as "*not a man about whom you could easily tell anecdotes. He was very serious, a strong Communist, a fundamentalist*." [144] Yet, it has often been stated that Šorm was able to advance the Czechoslovak natural sciences in a way that crossed ideological and political boundaries. The American chemist Carl Djerassi described these two sides – the scientist and the communist – of his personality:

> *'Šorm was personally charming and scientifically open, but when it came to Hungarian events, he mouthed the party line – in keeping with the distracting picture of Stalin (his cunning eyes seemed to follow me whichever way I sat during our conversation) that hung on the wall behind his desk'.*[145]

However, not all people around Šorm saw him as a "real believer". Ironically, whereas those who have identified themselves as non-communist have emphasised Šorm's communism, the most enthusiastic communists sometimes questioned his ideological conviction. Accordingly, already in 1950, as a group of Czechoslovak scientists had travelled for a short visit to the Soviet Union, Šorm's future rival in the Academy of Sciences, Ivan Málek – known as a hardline communist – made critical notes about his travelling companion. The Czech historian Martin Franc has studied Málek's correspondence with his wife from the trip. In the letters it becomes evident that Málek changes his perception on Šorm's attitude towards the Soviet Union. According to Málek, Šorm did not appear as enthusiastic about Soviet science but pursued a rather pragmatic approach seeing it as the opportunity to improve his future career options. In Málek's opinion, Šorm was, on the one hand, happy to have been selected among a group of scientists who were to represent the future elite of Czech science, but on the other hand, he did not intend to waste valuable time on adoring Soviet science. Šorm travelled back home earlier than the main delegation. The two men had disagreements not only on a personal level or in relation to their attitude towards Soviet science. What Málek did not seem to understand was for example that Šorm was already then convinced that scientific work should be based on team work, delegating tasks to his

144 Garfield, Eugene, The Restoration of František Šorm: Profilic Czech Scientist Obeyed His Conscience and Became a Nonperson. April 13, 1992. Essays of an Information Scientist: Of Nobel Class, Women in Science, Citation Classics, and other Essays, Current Comments Vol 15, 1992-1993. Available at: http://www.garfield.library.upenn.edu/essays/v15p051y1992-93.pdf, accessed June 16, 2010.
145 Djerassi 1992, 191.

co-workers. The disagreements between Málek and Šorm during the trip poisoned their relationship for decades.[146]

This kind of rivalry was not present in the relationship between Šorm and Wichterle. They did not compete in the same league: Wichterle as a non-communist did not have access to the elite of the scientific management. Wichterle and Šorm were more colleagues and former fellow-students than friends. But their relationship was based on mutual respect and their communication was informal: in their correspondence they used the informal "Ty" (you) instead of "Vy". Their different positions in society had an impact on their relationship and communication. According to Wichterle's wife the two men – not to mention their families – did not meet too often. She referred to Šorm's communism as something that affected their communication – the Party membership and activity polarised people and built an invisible wall between members and non-members preventing a truly mutual understanding. Linda Wichterlová felt that because "one did not know how to speak with the communists, so he/she remained silent". In her opinion, the two men were also notably different characters, Šorm was cautious a type whereas Wichterle was more lively.[147] Although, the relationship between Šorm and Wichterle was based rather on pragmatism mutual trust remained nonetheless.

Perhaps partly due to his childhood experience Otto Wichterle became a person who marched to the beat of his own drum rather than blindly adapting to any external expectations. A child who was not supposed to live long recovered from its health problems hence anything was possible in life. He chose to study what he desired and formed his own opinions on issues. On the other hand, his background guaranteed him opportunities that many others would not have had at the time and freed him from material worries. He was able to focus on his work and other interests. Both Wichterle and Šorm grew up in a democratic society and in bourgeois surroundings. They both also witnessed the politicisation of the 1930s at the universities. The Nazi occupation in particular influenced their later approaches and positions in society after the communist takeover in 1948. Both at some point participated in political debates against fascism. Significantly, both were able to continue working during the war, thus there was no serious cut-off from their professional paths and perhaps their then work in the research institutes provided them with some new kind of knowhow which became useful in the later phases of their lives. At the latest Šorm took the side of the communists after the war. Not uncommon at the time for a Czech, communist ideology offered not only an alternative and solution against fascism but the Soviet Union

146 Franc 2010, 32.
147 Interview with Linda Wichterlová by the author, October 20, 2008, Prague.

also seemed to constitute an attractive model for modern science. Šorm, just like many non-communist scientists in Czechoslovakia, was looking forward to the reorganising of academic institutions and science policy of his home country. However, despite the enthusiasm for communism, Šorm lived and had been educated in a country, which cultural and economic traditions varied significantly from the Soviet Union. Such mental horizons would persist in a society and its academic institutions that were to be "sovietised" after 1948.

"The Soviet Union, our Model"[148]

Introducing the Soviet model of higher education and research in Central Europe was, in the words of the American historian John Connelly, a revolutionary act.[149] By 1953 all higher education institutes bore the hallmarks of the Soviet model. In Czechoslovakia, the Soviet Union was presented as a model as constituting a short cut in the effort of solving problems in developing socialism.[150] Furthermore, this sovietisation had a huge impact on disciplines inside those institutions, especially the social sciences and humanities that were often completely restructured so that they would comply with the principles of Marxism-Leninism. The transfer of a "Soviet-type"[151] academic regime was facilitated with the help of Soviet advisors. However, their participation in the policy preparation and implementation was at best moderate. It were the Czechoslovaks themselves who got carried away with sovietisation. Ironically, after the deaths of Stalin and Gottwald, leading Soviet authorities advised the Czechoslovaks to take a more moderate approach to the sovietisation of their universities. The Soviets told a Czechoslovak delegation visiting Moscow that there had been too much change in their country: "Ideas are not old clothes that one can simply take off and change". It is also interesting that in many cases Soviet advice as such was not decisive in the construction of East European higher education. According to Connelly, the Soviet leadership's relative passivity in East European educational affairs contrasted with their behaviour in other spheres such as industry, defence and international affairs. In order to explain this Connelly offers among others the fact that the Soviet leadership did not trust its diplomats to understand foreign cultures. It was suspicious of any uncontrolled relations between its own citizens and those of the East European satellites. Above all, culture and

148 A popular slogan in the 1950s. Janouch 1976, 7.
149 Connelly 2000a, 19.
150 A AV ČR – Fond FŠ, Svátek naší socialistické vědy. Rudé právo May 1, 1953.
151 "Soviet-type" academic regime is the concept used by David-Fox, Michael and Péteri, György, On the Origins and Demise of the Communist Academic Regime. The authors address that despite all the variations within the not-so-monolithic "bloc", it is possible to use such concept. In: Academia in Upheaval 2000, 5.

education did not have an immediate effect on Soviet imperial power in the region.[152]

Rebuilding the scholarly community and setting up a 'socialist' framework for research proved difficult while the politically motivated changes were largely inconsistent. The efforts included various measures which affected organisations, disciplines and individual scientists. However, diverging rules concerning different institutions led to some paradoxical outcomes. The most apparent attempts to secure the ideological purity of the scholarly community were carried out in the form of several political purges[153] at the universities and colleges in the aftermath of the communist takeover. The idea was to create a new educated elite from within the working class, which in Czechoslovakia would have meant radical changes as traditionally higher-educated people represented a middle-class background. The purges were considered necessary for rebuilding society and they varied in scope and scale in different socialist countries.[154] Thus, as John Connelly has shown, the country-specific historical and cultural factors had their impact on the realisation of purges. In the Czech lands, the purges were severe in the humanities and social sciences, but less severe in natural sciences. In Poland similar purges were never enforced, because the Polish professoriate stood united in opposition to communism. In Poland, professors were a small elitist group in what was predominantly an agrarian state. In contrast, in the Czech lands, the concept of „socialism" inspired much enthusiasm and – as Connelly states – associations with the Soviet Union were positive. Even some leading non-Communists intellectuals saw Czechoslovakia as a synthesis of the West and the East.[155]

According to Jan Havránek, the Stalinist purges in Czechoslovakia did not affect many full professors, with the exception of those teaching what Havránek calls ideological subjects – law, history, philosophy, economics and biology. [156] Some professors were sent to labour camps in the years 1949-53. In the Czech version of the Stalinist show-trials, the so called Slánský trials[157], a professor of financial law, Otto Fischl, was executed.[158] Although

152 Connelly 2000b, 147, 149-151.

153 The term purge (in Czech čistka or Russian чистка) had been a common practice of the Communist Party with the aim of getting rid of those members of the Party who discredited it. However, in the course of history the term gained a connotation to the misrule of Stalin and thus new meanings. See for example Manák, Jiří, Čistky v Komunistické straně Československa 1969-1970. Sešity ústavu pro soudobé dějiny 28, AV ČR, 1997, 6.

154 Connelly 2000a, 72.

155 Ibid 2000a, 78. Connelly refers to Václav Černý.

156 Havránek 2005, 174.

157 Rudolf Slánský was a Czech Communist politician. He had held the post of the party's General Secretary after the Second World War. See for example: Východ. Vznik, vývoj a rozpad sovětského bloku 1944-1989. 2000, 261; Pernes 2009a, 513-514.

158 Havránek 2005, 174. In the Slánský trials the 14 accused (among them 11 Jews) were accused for "Trotskyite-Titoist-Zionist activities" in the service of American imperialism.

Czech universities were purged after the communist takeover of 1948, these measures had hardly touched the natural sciences at the level of the professoriate.[159] The Communist Party believed that historians or sociologists could be easily replaced, perhaps following the same logic according to which it was possible to substitute many disciplines close to the social sciences by Marxism-Leninism. As Anton Ackerman, an East German top cultural functionary stated in 1949:

> *"When a reactionary philosopher or historian leaves (for West Germany), we smile. But the situation is different with physicians, mathematicians, or technicians, whom we need and cannot replace."*[160]

This explains why the state allowed people like Otto Wichterle to remain active in science. He was a tricky, yet useful person for the Communist Party. Wichterle did not avoid conflicts with the state. A first such clash with the higher Party organs took place in 1952 during a meeting of high school teachers in the Municipal House in Prague. There, after an extremely long talk of a communist pedagogue, Wichterle criticised the speech and its content: he opposed the idea of the communists treating education and certain scholarly disciplines merely as an exigency. According to Wichterle, studying should be based on interest and not necessity. After his speech, he was greeted with a storm of applause but the Party representatives reacted by announcing a break. Subsequently Ota Šík, who at the time was a docent of the Political high school (Vysoká škola politická) and later, during the Prague Spring, one of the most famous economic reformers of the state[161], stood against Wichterle and argued that as a 'son of capitalists' Wichterle should not even be participating in the meeting. After that Wichterle was not offered the opportunity to speak for himself. The case was relayed to the Presidium of the Academy of Sciences[162], where František Šorm was expected to discuss the issue with Wichterle. According to Wichterle, Šorm fulfilled this task in a decent way. [163]

The reports of the Secret Police from the same period reveal how complicated a case Otto Wichterle was for the state. In 1952, Wichterle's political stance, character and property as well as his position and influence in the world of science were analysed by the Secret Police, the StB.[164] The StB was among

159 Connelly 2000a, 132.
160 Ibid 2000a, 71.
161 In his memoirs Wichterle noted that in the 1960s he played tennis with Ota Šík who introduced himself to Wichterle by telling that he was the man who used Wichterle's background against him in the 1950s. Wichterle had replied that he had forgotten the whole episode a long time ago. Wichterle 1992, 120.
162 Note that in 1952 Wichterle was not yet in the Academy, which was moreover established only in 1953. It is possible that he has not remembered the year correctly in his memoirs.
163 Wichterle 1992, 119-120.
164 A MV StB, 305-463-1.

others concerned with the fact that Wichterle acted as an advisor for the Ministry of Chemistry, thus having the possibility to influence the political decision-making process. Furthermore, in his role as a university professor at the Technical University he would, as the report stated, „lead and influence" the Ministry of Chemistry. From the StB's point of view the concern was well grounded – since for a non-Party member Wichterle had a lot to say on issues concerning chemical industry.

Since the war Wichterle had been involved in chemical industry. He had been particularly active in participating in the planning of the manufacture of polyamide fibres (the material used among others for nylon stockings). In the field of polyamides the Czechs had retained several patents from the time of the Nazi occupation. Their technology was more advanced than an equivalent German-Soviet technology that was used in the city of Gorki after the war. There, the production units had been built with the assistance of German prisoners of war who earlier had been working for IG Farben. Wichterle was able to prove the advantages of the Czechoslovak technology and in doing this he furthered the establishment of a large production plant in the Slovakian town of Žilina in 1951. Soon after that, however, Wichterle had to limit his activity in industry as his academic duties took up too much of his time. Nevertheless, he was left with an advisory function in the scientific commission of the Ministry of Chemical Industry.[165] A non-communist who had such an influence on decisions of economic importance was clearly a risk for the state.

The StB agent "Chvojka" received information on Wichterle and other chemists.[166] One of the methods of the StB agents to tail and receive information from them was to visit the chemists at their work places and pretend to ask for assistance in looking for a job. The StB was particularly interested in Wichterle's activities and political stance during the Nazi occupation and thereafter. The ensuing report reconstructed a picture of a member of bourgeoisie with according political opinions. Wichterle's imprisonment in a Nazi jail was not mentioned at all. On the contrary, the StB report claimed that the chemist had been well off and lived in luxury (v přepychu), although admittedly his behaviour had been modest. According to the report, Wichterle had stated at the time of the liberation of Prague by the Red Army that "*it would have been better if the Americans would have come first*".[167]

165 Wichterle 1992, 52-54.
166 Including people like Benjamin Macek and Rudolf Lukeš.
167 ABS – FMV sign. 305-463-1.

A positive attitude towards the West was one of the most common arguments used by Secret Police agents to make a person seem suspicious and this was no different in Wichterle's case. The StB considered Wichterle's opinions on scientific matters as ideologically doubtful. According to the report of the StB, Wichterle had been against using empty corn cobs in the chemical industry because „*the Americans are also giving up using them*" – this was at variance with the knowledge of a StB informant according to whom using corn would allow to save a lot of resources that were imported from the West. This is an illustrative example of the use of the black-and-white Cold War discourse during the most severe years of Stalinism. Even later, simply talking about certain issues that clearly belonged to the sphere of the natural sciences might still have been an act that roused suspicions. For example, speaking publicly about the discovery of the structure of DNA was still an overtly political issue in 1957. As Herbert Morawetz stated, "*if the structure of DNA defined inheritance, then man could not be changed by the new society*".[168]

The StB recommended that Wichterle's activities should be followed as long as he would have such an important role as advisor, because his opinions „might harm the Czech economy".[169] The difference between a potential and actual threat was very vague especially when the communists had to admit that they were dependent on the expertise of an individual who did not subscribe to the communist ideology. The StB's opinion was that although he had not expressed his political opinions publicly neither before nor after February 1948 due to his ignorance to political parties or mass movements, Wichterle could be classified as "*if not completely reactionary then at least as a person who does not have a too good relation to the establishment*."[170]

In the eyes of the StB, Wichterle's middle-class background and classical education made him a well-educated person who knew how to behave in all situations making him quite popular. Tennis, Wichterle's beloved hobby, did also not go unnoticed by the police. It was another symbol of his bourgeois class origin, an essentially Western and a middle-class activity which Wichterle loved so much as to play it with his wife even in the early afternoon "when everybody else was working".[171] Thus, the busy university professor, whose activity as an industrial advisor in the first place raised the suspicions

168 Morawetz 2008.
169 ABS – FMV sign. 305-463-1.
170 ABS – FMV sign. 305-463-1.
171 Interestingly, tennis has been a popular sport in Czechoslovakia and the Czech Republic. There are a number of successful tennis players in the Czech republic (as well as in former Czechoslovakia). The most famous one of them, the nine-time Wimbledon champion, Martina Navrátilová fled the country in 1975 after, as she has herself claimed, having troubles with the regime for spending too much time in the USA. See: McCurry, Justin, Ashamed Navrátilová regains Czech Nationality. Available at: http://www.guardian.co.uk/world/2008/mar/11/navratilova.czech, accessed October 24, 2011.

of the StB, was at this point represented as a person who would have plenty of free time – something that went against the ideal of the workers' state as it was deemed proper that one should sacrifice one's time for the ideal of building communism. In the official ideology, work was a matter of honour, prowess and heroism.[172] In reality, Wichterle was skilled in managing his time – unlike many others, he did not take a lot of work home and when he came home from the office, he focused on his children. After they went to bed at seven, Wichterle again worked for while his wife would "darn socks or wash the dishes". Due to his ability to focus and the fact that his wife took care of the housework, he thus had time for his hobbies, tennis – which he played up to the old age – but also visiting the theatre or attending concerts.[173] It were Wichterle's provocative opinions together with his background that made him suspicious – but even the Secret Police had to admit that Wichterle was not living in a boastful or provocative manner since although he was well off he did not show off what he had. The StB therefore gave him credit for possessing a certain degree of modesty: "*So far it has not been observed that he would have visited some night clubs (noční podniky) and would "make a night of it*".[174]

Paradoxically, as the case of Wichterle shows, the expertise in such key areas as industry and science was not merely in the hands of communist scientists. There were also non-communists like Otto Wichterle, who held important positions and had an at least indirect influence on scientific matters. By holding important positions these people took part in the reorganisation of science. The concept of sovietisation proves to be complicated because it suggests perhaps too strongly that the goal of the reforms and scientific activities would have been determined by the Soviet Union. As František Janouch, a Czech scientist who fled to Sweden after the events of 1968, wrote in the international journal 'Bulletin of the Atomic Scientists' in 1974: „*Sovietisation, both forced and voluntary, carried out under slogan „the Soviet Union, our model" did not yield only negative results*".[175]

Another important feature of the reorganisation of Czechoslovak science was the attempt at its *ideologisation*. In this process of ideologisation it was important to emphasise and define the difference between an alleged capitalist and socialist science. František Šorm wrote about the division between the capitalist and socialist approach and use of science. In his words, in the capitalist world science would be "forced to serve the blind pursuit

172 Shlapentokh, Vladimir, The Stakhanovite Movement: Changing Perceptions over Fifty Years. Journal of Contemporary History, Vol. 23, No. 2, Bolshevism and the Socialist Left (Apr. 1988), 260.
173 Interview with Linda Wichterlová by the author, October 20, 2008 in Prague.
174 ABS – FMV sign. 305-463-1.
175 Janouch 1997, 7.

of maximum profit"; while in a socialist society science was in accordance with the needs and interests of the working people.[176] Science had indeed a unique role to play in communist ideology. In 1953 Šorm described this role accordingly in the Czechoslovak chief Party organ Rudé právo as follows: *"science is the base for socialism; socialism grew from science and wittingly builds on science in order to recreate nature and society for the better of humankind."* [177] The idea of "socialist science" originated in the Soviet Union with an attempt to apply socialist ideas into practice. Natural scientists could claim that their work reflected reality as did Soviet ideology. Unlike "bourgeois ideology" which was believed to be based on lies and illusions, Soviet ideology was "an accurate depiction of material world". [178] The communists had from the beginning inherited a perception of science as an important ideological ally and a major force of economic, social and political progress. They moreover expected the rational scientific worldview to unseat the power of religion. High expectations were thus extended to the social sciences and the humanities. Above all, Marxism belonged to science in this wider sense by modelling itself upon the natural sciences and applying a naturalistic method of explanation for the study of human society and history.[179]

Part of this ideologisation was the categorisation of some existing theories as capitalist or imperialist and respective suggestions to replace them with socialist ones. Ideologisation was characteristic for the early years of introducing communist ideology to Czech society. In the Soviet Union, by the beginning of the 1930s, ideologists more and more commonly classified science itself as bourgeois as opposed to merely some interpretation of science. The theory of relativity, quantum mechanics, and Mendelian genetics were increasingly labelled as linked to the capitalist world in which they originated.[180] In the 1950s, books were published in Czechoslovakia aiming to prove that the most important scientific and technical discoveries had originated in the Soviet Union. Characteristically, these books were often translations from Russian. [181] It was also important for the communists to show in their propaganda how their politics had impacted positively on science and research. For example, the results of the research carried out by Wichterle and his colleagues during the war at the Baťa factory in Zlín were presented in the communist Rudé právo in 1947 as a brand new innovation made after

176 A AV ČR – Fond FŠ, Mezník v rozvoji naší vědy. November 25, 1953 Rudé právo („Věda je základem socialismu, socialismus z vědy vyrostl a na vědě uvědoměle staví, aby přetvářel přírodu a společnost pro lepší život člověka").
177 Ibid.
178 Pollock 2006, 3-5.
179 Kojevnikov 2008, 118.
180 Graham 1993, 121-122.
181 Jindra 2003, 45-47.

war by "Stakhanovian Party members" without reference to the participation of non-Party members.[182]

One of the most notorious attempts at the ideologisation of science in a socialist state is Lysenkoism in genetics. The ideas of the Ukrainian agronomist T.D. Lysenko (1898-1976) about plants were nothing revolutionary but fit well with the political and societal situation of the Soviet Union of the 1930s.[183] In Czechoslovakia, biology was also the field of study that became the most deformed by the ideologisation of the natural sciences.[184] However, the rhetoric on science was ambivalent. Slava Gerovitch's writings on Soviet science in the late Stalinist era show parallels in this respect to the Czechoslovak situation in the 1950s:

> *"The question of how to treat science produced by a Cold War enemy – as a value-neutral body of knowledge or as an ideological Troyan horse – acquired central importance in Soviet public discourse on American science in the early years of the Cold War."*[185]

Cold War propaganda played a visible role in this process. As Gerovitch notes, the concept of 'two worlds – two ideologies in science' had become relevant.[186]

In Czechoslovakia, the *ideologisation* and *sovietisation* of science took place as simultaneous processes that nonetheless have to be seen separately. While ideologisation refers to the attempts to force ideology onto a scientific or academic discipline, sovietisation can be understood as applying the Soviet model of research to another country. According to the American historian John Connelly the concept of sovietisation is *"used to describe the general processes leading to the emergence of Soviet type societies with a little attention on to the exact relations between native and Soviet communists*"[187]. As Connelly has shown, there were significant limitations to sovietisation in the countries he investigated, including Czechoslovakia. Connelly's research also helps to understand how scientists in the Czechoslovak Academy

182 Wichterle 1992, 49.
183 Graham 1993, 124-125; 132-133. Lysenko tried to shorten the period of growth of cereals and other plants so that they could be harvested before the lowest temperatures arrived. Lysenko saw that his ideas would succeed better if presented with the help of dialectical materialism. The success of these ideas was based on their evidently practical goals, promising quick results and improvements in societal problems such as agriculture. The Stalinist decision makers were attracted by the populism of Lysenko's plans, and strong propaganda was directed against the critics, who were – among others – accused for representing "foreign science". Lysenko's biology was abandoned in the Soviet Union as late as in 1965 after Khrushchev's overthrow.
184 Jindra 2003, 49-51; Franc 2010, 65.
185 Gerovitch 2002, 15.
186 Gerovitch 2002, 15; Gerovitch, Slava, "Mathematical Machines" of the Cold War: Soviet Computing, American Cybernetics and Ideological Disputes in the early 1950s. Social Studies of Science, 31, 2 April 2001, 253-54, 259.
187 Connelly 2000, 5.

of Sciences were able to resist some more serious ideologisation attempts thereby managing to create a relatively wide spectrum for free research. In chemistry, the most eminent example of an attempt to ideologise the discipline was the critique of the theory of resonance. The theory became an example of 'bourgeois Anglo-American trends'. The critique of the theory resonance was, however, rejected by Otto Wichterle, Jaroslav Heyrovský and František Šorm, among others. According to the Czech historian Jiří Jindra, it was to the credit of these top chemists that Czechoslovak chemistry withstood certain ideological pressures and retained its place on the world stage.[188] The natural and technical sciences preserved significant continuities both in personnel and milieu[189] and it seems that individual scientists, even non-communists, were able to advance them. One of the reasons was that: "*the more precise the science, the more difficult it was to force ideology into the discipline*."[190] Loren R. Graham offers continuity as one of the possible explanations as to why "science is more robust" than often believed. Thus, even in the case of the Soviet Union, although the contacts with Western scientists were reduced or cut off temporarily, many scientists had been in step with world science. They were often friends and former students of international scientists who then transferred their knowledge inside their own country to their respective students.[191]

In spite of the attempts to bring science in line with ideology, the importance of continuity in scientific work had to be recognised. Language represented an important issue in this context. During the 'frozen' phase of the Cold War, the English language, the *lingua franca* of the natural sciences, together with Western journals represented a tool to transfer Western ideas to the socialist bloc. As a backlash, Soviet scientific books began to be translated into Czech and lectures were organised to propagate Soviet theories. For example, the Czechoslovaks' chemical journal *Collection of Czechoslovak Chemical Communications,* published in English, had been discontinued and replaced by a Russian language version. However, thanks to František Šorm the *Collection* was soon brought back to the original line and language. In addition, Šorm managed to maintain Western journals in the library of his institution.[192] Thus, already in the 1950s, the 'communist manager of science' had undertaken concrete steps to secure continuity in his field. This can be seen as proof of his pragmatism as a scientist. By making sure that the English language remained

188 Jindra 2003, 52-53.
189 Connelly 2000a, 15.
190 Jindra 2003, 56.
191 Graham 1993, 199
192 Turková, Jaroslava, Vědecká aspirantura v ústavu organické chemie a biochemie ČSAV v letech 1959-1962, 227. In: Věda v Československu v letech 1953-1963. Sborník z konference, Archiv Akademie věd České republiky, Praha 2000, 228.

in active use among Czechoslovak natural scientists, Šorm and others enabled their participation in the international scientific community. After the War English began to gain ground as the most important language of international scientific communication in many fields with international significance. In communication with foreign colleagues language skills were an essential precondition. In Czechoslovakia, the natural scientists had relatively good language skills. The knowledge of German but also French in the field of science was traditionally strong. Although Czech and Slovak languages are Slavonic languages, the people in Czechoslovakia lacked experience with the Russian language and understanding or communicating in Russian was not unproblematic. It was partly because of the language problem, that the lectures of visiting Soviet professors were not popular at Czechoslovak universities in the 1950s.[193]

The Sovietisation and ideologisation of science were not only processes linked to the building of socialism. They were also Cold War related issues: in the early 1950s, the Cold War influenced science and scientists on both sides of the Iron Curtain. In the USA, the programme for Cold War science at the universities continued at full speed. McCarthyism had an impact on the level of individual scientists. Many of them were let go without any formality while some of those with tenure had to endure a process of investigation by a faculty-administration committee. As Raymond Siever has put it, the "Cold War programme" was supported or ignored by apolitical scientists who just wanted to get their work done. But there were those who came to defence of scientific colleagues under attack. For some university scientists, being denied security clearance meant the forced abandonment of their career ambitions because they could no longer work in a sensitive area; for many it meant the loss of their job. According to Shiver, it was a "*bad time, but we cannot say that advances in science suffered greatly. Had it continued for a long time our science might have ended like Soviet science, subject to extreme distortion and terrorization by the political masters*."[194]

In a number of ways, the 1950s was a time of idealism and introducing new practices in the whole Czechoslovak society. To establish a completely new social system required getting rid of old practices. This led to learning by trial and error. Sovietisation of higher education was not the number one priority of the Soviet Union in Czechoslovakia. Purges which were connected to the sovietisation of science proved to be more limited in the natural sciences than

193 Connelly 2000a, 146-147.
194 Siever, Raymond, Doing Earth Science Research During the Cold War. In: The Cold War & the University. Toward an Intellectual History of the Postwar Years. Edited by Noam Chomsky et al. The New Press, USA 1997, 155-156.

in most other fields of education. As the example of Otto Wichterle clearly shows, it would have been an impossible task for the communists to replace the country's natural scientists with more politically loyal professionals. Building a new society did not require merely loyal communists, but also sharp minds to contribute to solving scientific and technological issues. The difference between a potential and actual threat was vague. Therefore, even people who were not considered politically reliable were sometimes used for tasks that needed certain professional skills. As the following chapter will show, approaches towards professionalism over ideological and political loyalty varied in different institutions. This further implies that certain processes (including sovietisation or liberalisation) in society were not always simultaneous or logical and that the goals were understood differently in different institutions.

Communism with Continuities: The Establishment of the Czechoslovak Academy of Sciences

Perhaps the most concrete achievement of the sovietisation of Czechoslovak science was the establishment of the Czechoslovak Academy of Sciences in 1952. It was a project which the Communist Party eagerly advocated and an inevitable result of the communist takeover in 1948. The reasons for establishing the Academy were linked to the flaws of the existing structures of science in the post-war period and ensuing demands to reorganise research. Communists had not been the only ones who supported the reorganisation of academic research, but in the end, as in other fields of life, they were the most successful.[195]

The Soviet Union was a self-evident model for restructuring Czechoslovak scientific institutions. Therefore, the Soviet Academy of Sciences as the main representative of the country's scientific research was the example for the people's democracies of how to institutionalise research. The Soviet Union had been the first country with a government policy and public support for science[196] and it had focused much more on the natural sciences than the countries in Central Europe traditionally had. It therefore offered an attractive model for those who wished for a more efficient science policy. It is important to notice that although the practical implementation and structure of the Academy was based on the Soviet example, there had been „academies" in Czechoslovakia and elsewhere in the Western world before and the Soviet Academy had been influenced by its Western counterparts. But the academies

195 Winters 1994, 274-275.
196 Graham 1993; Roll-Hansen, Nils, The Lysenko Effect: The Politics of Science. Humanity Books 2005.

in Czechoslovakia, especially the Czech Academy of Sciences and Arts (ČAVU) were and remained honorific learned societies and never made the transition to a modern research academy of sciences among others by lacking the resources to do so. During the First Republic the state had constant economic, social and technical problems with which neither the universities nor the academies had sufficient resources to deal with.[197]

Against this background it is understandable that not only communist natural scientists welcomed the organisational changes. The goal of the Czechoslovak Academy of Sciences to combine research and industrial applications furthered the strengthening of physical, chemical and technical research. According to Stanley Winters, the formation of the CSAS was an attempt by the Communist Party to enforce a „science policy" that would organise the sciences and technology for state and Party purposes.[198] The idea was not new at the time, neither in the East nor in the West.

In 1951, as the concrete preparations to establish the Academy of Sciences intensified, two different proposals emerged as to how the project should be realised. The first one emphasised a discontinuity of re-organising science, while the second represented a limited continuity and tolerance towards the prominent Czechoslovak natural scientists if they would prove their loyalty to the state. The second approach was more successful.[199] Officially, the Czechoslovak Academy was inaugurated on 17 November 1952. As Antonín Kostlán has stated, in the field of natural sciences the Academy of Sciences did not become a predominantly political and ideological institution unlike many other institutions of higher education and research in Czechoslovakia.[200] In the first half of the 1950s the Academy of Sciences was stabilising its position. There were statements that emphasised its mission as a representative of science in the socialist camp and its independence from the West. The most important function of the Academy was to conduct basic research. In this sense the institutes were nearer to the universities than to the applied industrial research institutions. However, they had better material equipment and personal to take up complex, long-term projects. A relation between the Academy and the universities existed for example in the form of external teaching positions. The members of the Academy were mainly elected from among the country's most distinguished scientists. They enjoyed

197 The first Czech national scientific institution was the Academy of Sciences of Emperor Franz Josef for the Sciences, Literature and Arts (Česká akademie pro vědy, slovesnost a umění císaře Františka Josefa) established in 1890 and later renamed the Czech Academy of Sciences and Arts. The other academy in independent Czechoslovakia was the Masaryk Academy of Work (Masarykova akademie práce) established in 1920 which was the most important insitution for engineers and applied scientists in the post-war years. Winters 1994, 269-271.
198 Winters 1994, 274.
199 Kostlán 2011, 54-55.
200 Ibid 2011, 55.

notable privileges such as a regular stipend which they received in addition to their normal salary. All branches of the natural and social sciences were represented in the Academy with the exception of agriculture and medicine.[201]

Zdeněk Nejedlý – a renowned historian and musicologist – was chosen as the first President of the Czechoslovak Academy of Sciences. He had served earlier as President of the „predecessor" institute, the ČAVU. During the Second World War, Nejedlý, the „Red Grandpa" (rudý dědek)[202] had worked as a professor at Moscow State University and had been a researcher in the Soviet Academy of Sciences. No wonder that he commanded respect in the Party as a suitable advocate of the Soviet model. Nevertheless, he had been among the advocates of continuity in restructuring Czechoslovak science.[203] Nejedlý was also a member of the Czechoslovak Government. According to the Czech historian of science Antonín Kostlan, Nejedlý's position in the government created the false conception that the Academy of Sciences had a direct representative at the highest level of power, even after Nejedlý had served his term. This was however not the case as top academicians were given less significant posts as rank-and-filers in the Central Committee in the years that followed.[204]

František Šorm certainly did not lack influence in the Academy of Sciences from the beginning, although many of the most important persons in the Academy – including Nejedlý – were not fond of him. In 1957 and in 1961 Šorm was elected as the vice-President and in 1962 as the President of the Academy of Sciences. Šorm did not merely play an important role in the administration of the Academy but he also worked for the establishment of the Institute of Organic Chemistry and Biochemistry of the Czechoslovak Academy of Sciences (*Ústav organické chemie a biochemie*) and became its first director. Before that, biochemistry did not have an independent position as a scientific discipline in Czechoslovakia. According to Šorm's student Antonín Holý,[205] Šorm was already at that time aware of the future meaning of biochemistry.[206] He believed that a scientist should not do "science for

201 A AV ČR – Fond FŠ, Tjeckoslovakiska Vetenskapsakademien och dess forskningaverksamhet. Anförande av professor František Šorm, vice president i tjeckoslovakiska Vetenskapsakademien, Prag, vid konferens på Ingeniörsvetenskapsakademien den 29 oktober 1959.

202 Nejedlý's nickname. See: Winters 1994, 273.

203 Kostlán 2011, 55.

204 Kostlán, Antonín, Československá Akademie Věd v letech 1952-1970. Česká věda a pražské jaro, sborník z konference. Edited by Zilynská, Blanka & Svobodný, Petr. Karolinum, Praha 2001, 98.

205 Antonín Holý (1936-) is a Czech chemist who has cooperated on the development of important antiretroviral drugs used in the treatment of HIV and hepatitis B. Antonín Holý is the author of more than 400 scientific discoveries and holds 60 patents. He is the most quoted Czech scientist of recent years.

206 Holý, Antonín, Profesor František Šorm - 90. výročí narození. In: Akademický buletin. Available at: http://abicko.avcr.cz/bulletin_txt_show_clanek.php?Cislo=04/2003&Poradi=11, accessed October 21, 2008; A AV ČR – Fond FŠ, životopis F. Šorma (Akademik František Šorm předsedou ČSAV).

science", but should be able to think out of the box and try to keep in mind the wider aims of research. Šorm never verbalised the aims, but it became evident from the way he organised research and from his efforts to create a symbiosis of different disciplines. For Holý, Šorm offered a model for an interdisciplinary approach.[207]

Šorm was a highly disciplined person, well aware of how to build a successful career and who devoted his time to science. The family situation supported this, since Šorm's wife Zora, an excellent chemist herself, worked as a scientist in the same institute.[208] As a researcher, Šorm specialised in the chemistry of natural products, especially terpenes and steroids.[209] According to the Czech chemist Michael Volný, Šorm was one of the first chemists in the world who realised the potentials of chemistry to biology and medicine. He was one of those who initiated medical chemistry of natural fabrics. He was aware that chemical structures received from nature may have principal qualities as therapeutical fabrics but that their use required deeper knowledge of molecular structures of biological systems.[210] Between 1945 and 1980 he was listed as the author or co-author on more than 1100 papers, 150 patents and a number of books including course books of biochemistry and organic technology. According to Holý, writing those books was an effort to modernise the teaching of chemistry in the Czechoslovak colleges.[211] For his work Šorm received a number of national and international prizes and recognitions: he was a member of 12 Academies, doctor honoris causa in Brussels and in Moscow, received the medal of the American Chemical Society. As Antonín Holý stated felicitously, the political position of Šorm did not help him gain international recognition, which can be seen as proof of his qualities as a scientist. In reality it was both Šorm's political position *and* his skills as a scientist that made him a powerful man. Accordingly, in 1967 he was apparently suggested as a candidate for the Nobel Prize in Chemistry. In

207 Pacner, Karel, Příběhy české vědy. Available at: http://karelpacner.cz/?str=vyd&id=20&n=pribehy-ceske-vedy--uryvky, accessed October 15, 2008.

208Pacner, Karel, Příběhy české vědy. Available at: http://karelpacner.cz/?str=vyd&id=20&n=pribehy-ceske-vedy--uryvky, accessed October 15, 2008; Interview with Linda Wichterlová by the author October 20, 2008 in Prague.

209 A AV ČR – Fond FŠ, Curriculum 1960.

210 Šorm advanced knowledge of sesquiterpenoids and explained the structure of different isoprenoid compounds. He also initiated the study of natural peptides, especially neurohypophyseal hormones and their analogues. His school of protein chemistry established the primary structure of chymotrypsin and trypsin. While studying the amino and acid sequence in polypeptide chains, Šorm, for the first time, deduced a tentative genetic code. His studies of antimetabolites of nucleic acid consitituents as potential cancerostatitics or virostatics led to the synthesis and determination of the mechanism of several highly active compounds, for example, 5-azacytidine and 6-azauridine. He was also active in the field of insect juvenile hormones. Volný, Michael, Akademik František Šorm zemřel právě před 27 lety aneb proč je naše debata o minulosti konstantně ve slepé uličce. http://www.blisty.cz/2007/11/16/art37352.html, accessed February 3, 2008.

211 The high number of publication is partly a result of his co-autorship in papers written by his colleagues. However, according to Antonín Holý, he mostly agreed to the co-autorship in situations when he considered that he had in some way contributed to the work. See: Holý, Antonín, Prof. Ing. František Šorm, DrSc. akad. Available at: http://jergym.hiedu.cz/~canovm/objevite/objev5/sorm.htm, accessed April 5, 2007.

one of the folders in his personal collection in the archives of the Academy of Sciences there is a text titled „Nobel commission". According to a statement in one of the documents in the folder, Šorm

> *„has attained highly important and generally acknowledged results in other fields of chemistry of natural substances, particularly with respect to his most recent achievements in the field of terpene chemistry, he undoubtedly deserves the award of the highest scientific distinction".*[212]

The diligent scientist was also demanding boss. The directors were responsible for their institutes – any departure from the practice or suspicion of a co-worker's political loyalty became a thorny issue with which the head of the institute had to deal. According to contemporaries' opinion, Šorm, a pragmatic person, had the talent to choose his co-workers by stressing their professional skills over political commitments. But his approach did not make him a widely popular person:

> *„His attitude to his fellow scientists, however, was grounded in his personal assessment of their abilities and qualities and sometimes quite biased. He often openly criticised those he felt were inept. Thus, in the balance of his life, the scales were tipped with many enemies."*[213]

Šorm spent his weekends reading scientific texts and during the week he came to work early. He expected similar discipline from his co-workers: "*Reading newspapers in the lab was a mortal sin, punishable by transfer to a less prestigious institution*."[214] He was not a boss who would stay in his office but was instead in constant contact with his co-workers, eager to be the first one to hear about new results. [215]

Descriptions of a person and his/her position as a boss are always subjective and different stories are thus contradictory.[216] When put into the context of the time, Šorm's attitude towards work and his co-workers was nothing exceptional. Neither was the fact that he was a demanding boss merely linked to his communism. Similarly demanding bosses were everywhere and the "culture" of directorship was generally authoritarian. One of such

212 Garfield, Eugene, The Restoration of František Šorm: Profilic Czech Scientist Obeyed His Conscience and Became a Nonperson. April 13, 1992. Essays of an Information Scientist: Of Nobel Class, Women in Science, Citation Classics, and other Essays, Current Comments Vol 15, 1992-1993. Available at: http://www.garfield.library.upenn.edu/essays/v15p051y1992-93.pdf, accessed June 16, 2010; A AV ČR – Fond FŠ, Curriculum. There are Šorm's curriculas and a text "Nobel commisson on some of the papers".

213 Garfield, Eugene, The Restoration of František Šorm: Profilic Czech Scientist Obeyed His Conscience and Became a Nonperson. April 13, 1992. Essays of an Information Scientist: Of Nobel Class, Women in Science, Citation Classics, and other Essays, Current Comments Vol 15, 1992-1993. Available at: http://www.garfield.library.upenn.edu/essays/v15p051y1992-93.pdf, accessed June 16, 2010.

214 Ibid.

215 Ibid.

216 Štrbánová & Spížek 2002, 222.

authoritarian directors in the Academy of Sciences was the director of the Polarographic Institute Jaroslav Heyrovský, the Nobel Prize Winner in 1959 who was not a communist. The man whose favourite quotation was "Work, finish, publish" by Michael Faraday could wait at 8 am in the institute – with a watch in his hand – for the late-comers to arrive.

> *"He had the feeling that the day-time in the laboratory is for experimental work and the evaluation and reading should be done in the evenings. He hated dust on the instruments (´You have to brush it every morning, like your teeth´), reading newspapers in the laboratory and in particular smoking."*[217]

The shift of society towards a more technological orientation was apparent in the fact that after Nejedlý all Presidents of the Academy had come from within the ranks of natural scientists. In 1953, the man who would become the first of them, František Šorm, wrote about the importance of the new institution in Rudé právo. Language emphasising the Cold War division was strongly present as Šorm highlighted that the February Revolution in 1948 had freed the country from the cultural dependence of Western capitalist states. According to him, science was used by the imperialists against the working people, for killing the masses as well as gaining the maximum of material profit. Referring to the nuclear bomb, Šorm thus treated science as constituting something apolitical and universal in the socialist states, but nevertheless a potential instrument of evil when in the hands of capitalists. In this kind of thinking, coloured by the Cold War, science and technology were used by the capitalists to promote exploitation and war, but socialists used them to the benefit of all mankind.[218] Two years later Šorm praised the positive impact of the February 1948 events on the development of science in his country. He stated that the "bourgeoisie" had never had any real investment in supporting scientific research: in earlier times necessary scientific and technical research results were taken from large foreign capitalist companies without any interest in the theoretical activity of sciences.[219] Because the Academy was established so soon after the communist coup, it was possible for the communists to use it and its scientific successes as a symbol and proof of how communism advanced Czechoslovak society. Using an instrumental historical approach was useful in creating a picture that any advance in Czechoslovak science was the result of communist design. The fact that Šorm and many others had received their education in a "bourgeois" environment was purposefully omitted.

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217 Butler, J.A.V., Zuman, P, Jaroslav Heyrovský. Biographical Memoirs of Fellows of the Royal Society, Vol. 13 (Nov., 1967), 175, 178.
218 Augustine 2007, xvii
219 A AV ČR – Fond FŠ, 10 let lidové demokratické republiky. Rozkvět naší vědy. Rudé právo, 5 May 1955.

The achievements of the Academy of Sciences were not merely rhetorical as the CSAS and the number of institutions grew rapidly. One of its greatest successes in the 1950s was the Nobel Prize for chemistry awarded to Jaroslav Heyrovský in 1959 – he became the first Czechoslovak to win the prize.[220] Heyrovský, born in 1890, had of course done most of his active research work in an earlier period, in the 1920s and 1930s. But at least symbolically, the Academy of Sciences had reason to be proud of such an international acknowledgement. In the same year that Heyrovský won the prize, the Ministry of Foreign Affairs highlighted the importance of the natural sciences. According to the Ministry, foreign scientific relations should yield maximum profit for the development of science and technology. Special emphasis was put on technology, chemistry and physics as well as those fields that would advance the development of the socialist economy.[221] In a speech at a conference in Sweden, František Šorm, vice-President of the Academy at that time, spoke about the function and structure of the Czechoslovak Academy of Sciences. The importance of the natural and technical sciences herein was openly stressed.[222]

Establishing the Soviet-modelled institution of the Czechoslovak Academy of Sciences was foremost the result of the overall policy of sovietisation which penetrated the whole society, but it was also affected by long-term discontent among non-communist scientists with the hitherto organisation of science in their home country. Therefore, at the level of natural sciences the Academy was relatively open to ideas that had very little to do with communist ideology. When the plans to establish the Academy of Sciences became more concrete, the advocates who promoted the line that allowed continuities were more successful than those who wanted to get rid of all that was inherited from earlier times.

František Šorm was in an important position at the Academy from the very beginning and represented the more pragmatic and scientific approach. However, the Cold War thinking and Stalinist policies were nonetheless present in the rhetoric concerning science policy in the first phase of the "socialist" organisation of science.

220 Winters 1994, 281.
221 A MZV – PK 45, 5.11.1959-26.11.1959: Zahraniční styky ČSAV s ostatních resortů státní spravy v oboru kultury a vědy.
222 A AV ČR – Fond FŠ, Tjeckoslovakiska Vetenskapsakademien och dess forskningaverksamhet. Anförande av professor František Šorm, vice president i tjeckoslovakiska Vetenskapsakademien, Prag, vid konferens på Ingeniörsvetenskapsakademien den 29 oktober 1959.

Scientists behind the Iron Curtain

Despite the restructuring of Czechoslovak science having some positive outcomes, problems nevertheless began to surface. Among some of the serious impediments was the lack of contact with the international scientific community, especially in the form of academic travelling. The sovietisation and ideologisation of science in Czechoslovakia meant a practical orientation towards the traditions of the Soviet science and increased cooperation between the two countries – but simultaneously a deterioration of contacts with the West. The Czech historian Alena Míšková has divided the first decade of the formation of international cooperation of the Czechoslovak Academy of Sciences during the period from 1952 to 1962 into two phases: a first phase during the years 1952-1956 and a second during the years 1956-62. More so, prior to 1956 contacts with the West were minimal.[223]

The restrictive policy concerning foreign contacts was part of the ideology inherited from the Soviet Union – in the Soviet Union these policies introduced by Bolsheviks and in particular by Stalin in the 1930s had been also, as Jeffrey Brooks has shown, a sharp reversal rather than the continuation of a longer tradition.[224] Even in science the Party pursued autarky. As a rule, in the Soviet Union until the late 1950s only card-holding Party member scientists were allowed to travel to the West.[225]

However, in the 1950s a fear of contamination accounted for the small number of Soviet and East European professors who could actually visit each other's countries. Soviet professors needed an invitation in order to visit another socialist country – a process that was time-consuming – while relatively few East Europeans were allowed to visit the Soviet Union. Most of the visits were made by students, who as members of the younger generation were believed to be able to construct an unbiased picture on the Soviet Union. The Czechoslovak government had taken early advantage of the opportunities to "strengthen and deepen the contacts with fraternal Slavic peoples". From the outset, Czechoslovakia allowed more students to visit the Soviet Union than did Poland or the GDR. In early 1956 there were 1,211 Czechoslovak students in the Soviet Union. As Connelly states, these students were enrolled

223 Mišková, Alena, Vytváření mezinárodní vědecké spolupráce ČSAV v letech 1952-1961. In: Práce z dějin Československé akademie věd Studia Historiae acedemiae scientiarium bohemoslovacae Fasc. 1, Ústřední archiv ČSAV, Praha 1986, 167-168.

224 Brooks, Jeffrey, Official Xenophopia and Popular Cosmopolitanism in Early Soviet Russia. The American Historical Review, Vol. 97, No. 5 (Dec. 1992), 1432.

225 Josephson, Paul, Stalinism and Science: Physics and Philosophical Disputes in the USSR, 1930-1955. In: Academia in Upheaval. Origins, Transfers and Transformations of the Communist Academic Regime in Russia and East Central Europe. Edited by David-Fox, Michael and Péteri, György. Library of Congress, USA 2000, 115.

overwhelmingly in technical, natural and medical sciences. Scholarly exchange with the Soviet Union improved in the post-Stalin era although even after 1956 tension remained between the desire to supplant Western influence and the fear of ideological contamination: "*This kept the practice of fraternal relations as complicated as ever*."[226]

In 1953, František Šorm presented the limitation of Western contacts as a positive development in the Czechoslovak press. In line with the communist newspeak, he used the negative concept of cosmopolitanism among others as a reason for this limitation.[227] Although the natural sciences were commonly considered as apolitical,[228] the political decision makers in the socialist countries in the 1950s saw it differently. Thus, decisions concerning foreign contacts followed the same logic. Whereas earlier generations had had traditional links to the West, the new generation now looked to the East and took the Soviet Union as a model of the most progressive science and understood that the most important goal of science was to work for the benefit of the working people. The young generation similarly opposed cosmopolitanism which according to František Šorm was connected to an inferiority complex and lack of confidence in one's own power – factors that had hindered scientists of the older generations to engage in more creative scientific work.[229]

Based on Šorm's public statements from the early 1950s, Jiří Jindra has noted that his harsh attacks on Western values on science were not a dignified language for a scientist of Šorm's calibre. Jindra has presented an interesting example from the discussion on science and its purpose that took place in Czechoslovakia in 1953-1954. At first, the President of the Academy, Nejedlý had stated that the "speciality" of Czechoslovak science was to serve the people and help the workers to better develop and exploit the natural riches of the country. At that time many scientists in Czechoslovakia were sympathetic to the notion that most research should have some practical pay-off.[230]

226 Connelly 2000b, 154-155.
227 A AV ČR – Fond FŠ, Svátek naší socialistické vědy. Rudé právo May 1, 1953.
228 See: Koselleck 2002, 14.
229 A AV ČR – Fond FŠ, Svátek naší socialistické vědy. Rudé právo May 1, 1953. Later this reasoning changed significantly and in a text from the late 1980s the lack of Western contacts and the relative isolation from Western science before 1956 was explained as caused by Cold War policies of the capitalist states, in their effort to isolate socialist countries and their scientific communities by setting an almost complete embargo against all means of scientific work of socialist countries, exchanges of Scientific and Technical information and personal scientific contacts. See: Mišková 1986, 175-176.
230 Materials and Man's Needs 1975, 8-39.

Half a year later, Radio Free Europe issued an appeal for Czech science not be in service of the people, but in the service of the "objective truth". After the programme in question Šorm had reacted on the pages of Rudé právo in a harsh way:

> *"Never! Czechoslovak scientific workers do not need the advice of the lowbrows serving American monopolists. Precisely because our work is scientific, we see clearly what our position in that struggle is. We firmly refuse and condemn the freaky suggestions of the collaborators of dollars (dolarových zaprodanců). We will further work persistently and convinced in seeking for objective truth with the aim to aid as much as possible the building of socialism and communism in our home country and with the awareness that by doing so we will contribute for our traitors to end up to where they belong, on the dump of history".* [231]

Interestingly, Šorm did not seem to react on the content of the discussion about the "objective truth" but showed his (as well as the institutions which he represented) irritation to the alleged superiority of the Americans. Thus, more than a truly ideological statement, it was a political act influenced by the Cold War division. Against this background it is not surprising that that any kind of scientific cooperation with Western countries was an extremely thorny issue. In order to understand the nature of this kind of discourse it is important to note that the Cold War did not influence only the thinking and activities of scientists in the socialist societies, but also had a great impact on American scientists in particular in the late 1940s and early 1950s. In the USA, Cold War anti-communism narrowed scientists' immediate political strategies and their vision for expanding their own social role and capacity to challenge the status quo.[232]

Accordingly, in the mid-1950s the international scientific cooperation of the Academy consisted mainly of exchanging information. In relation to international science, the Academy had to develop its line gradually in accordance with political, societal and economic realities. The most intense cooperation within the Eastern bloc took place with the respective Academies of Sciences in the Soviet Union, the GDR, Poland and Hungary.[233] One of the tedious questions though was the role that a socialist country should play in the international scientific community. This question was particularly important for the Academy as it was clear that it was the most prominent representative of Czechoslovak science at the international level. The possible membership of

231 Jindra 2000, 488.
232 Wang, Jessica, American Science in an Age of Anxiety: Scientists, Anticommunism and the Cold War. The University of North Carolina Press, USA 1999, 9.
233 Míšková 1986, 174.

Czechoslovakia in international scientific organisations such as UNESCO was an open question that was considered necessary but politically problematic. In the beginning of the 1950s, Czechoslovakia chose for a cautious approach, a decision which was very much influenced by the international situation and reality of the time and the Academy was only represented through its individual members in international organisations, and thus not in its capacity as an institution.[234]

In 1955, the Academy nevertheless had to reconsider its approach to foreign contacts. The experience of the first years of its existence had proven that changes were necessary. Mutual cooperation with socialist countries had hitherto been based on cultural agreements with those countries. The Academy decided to look into new forms of cooperation.[235] The question of openness was not only linked to the cautiousness caused by the Cold War thinking and the ideological rift between East and West, but continuous economic difficulties formed a major factor hindering cooperation with foreign countries. Travels to the West were expensive. In the West, this was perceived as proof that the socialist countries lagged behind in every possible way. Moreover, the shortage of foreign currency that was needed for the purchase of modern equipment and Western literature was a constant problem. Funds were also lacking for international contacts.[236] The Academy and the Central Committee of the Communist Party constantly brought up the topic of economic shortage. Those scientists who were allowed to travel had to take care of their own funding: they mostly covered the costs of travelling with the honoraria which they received for lecturing or, conversely, the inviting Party paid for their trips.[237]

The economic problems which were brought up were a consequence of the restructuring of economy since the communist takeover in 1948, which had led to crucial changes and the reconstruction of the Czechoslovak economy. Czechoslovakia was economically the most advanced of the CMEA countries. Its industry was allocated oversized tasks as it had to make significant contributions to the industrialisation of other CMEA countries and rebuild and expand its military production. In 1949 Czechoslovakia was criticised by the other member countries for not sufficiently cutting back its trade with the West. In the other countries of the socialist bloc as well as in Czechoslovakia the idea spread that Czechoslovakia had the potential to become the "machine shop" of Eastern Europe. For political reasons Czechoslovakia adopted

234 Ibid 1986, 175-176.
235 Ibid 1986, 177.
236 Janouch 1976, 7-8.
237 Wichterle 1992, 67.

economic models from the Soviet Union almost mechanically – meaning that practices came from a country with completely different economic conditions.[238]

Because of Czechoslovakia's role in which it was expected to support the industrialisation of other countries it was unable to solve problems caused by high raw material costs or its foreign trade problems in relation to world market. Furthermore, the investment in the armaments production had strained the Czechoslovak economy to breaking point. Until 1953 the industrial potential increased significantly but resulted in unbalanced growth not only neglecting the agricultural sector and the consumer goods industry, but also the transport, communications, housing and tertiary sector. At first this growth was regarded by the state as evidence of success. The problems, however, became more evident by 1954 but criticism was not tolerated and there were no effective instruments capable of rapidly correcting planning mistakes.[239]

In a situation where travelling was costly and ideologically risky, the activity required support from the top of the hierarchy. However, the Academy's chairmen were not unquestionable supporters of international travels. Although Šorm had gradually begun to see international cooperation as an integral part of science, he was not a supporter of longer stays abroad for study purposes. At the beginning the critical approach towards travelling was probably related to the distrustful atmosphere caused by the Cold War – as was represented above in the example of Šorm's reaction on the discussion concerning the "seeking for objectivity" – and to the fact that Czechoslovakia had to confirm its position and loyalty inside the bloc. Šorm's attitude reflects his acceptance of the prevailing policy but also the fact that he was outstandingly efficient and expected the same from others. According to his student and later colleague Antonín Holý, Šorm associated foreign trips with the objective to gain the required information as quickly and effectively as possible without wasting valuable time away from the laboratory back home. Šorm's cautious attitude did not mean, however, that he would have not understood the importance of study trips for learning and importing new methods.[240]

The first half of the 1950s meant the restriction of scientific contacts with the outside world. At least at the rhetoric level even people like Šorm campaigned against the West using the colourful expressions of the Cold War world. In

238 Hospodářské a sociální dějiny Československa 1918-1992, 2009, 262.
239 Teichová, Alice, The Czechoslovak Economy 1918-1980. Routledge, UK 1988, 136-140.
240Holý, Antonín, Organický chemik František Šorm, In: 23 Učení očima kolegů a žáků. Edited by Šmahel, František. Academia, Praha 2004, 27-28.

practice it soon became clear that the positive development of the CSAS and its institutions would not bear fruit endlessly if the organisation would stick to autarkic policies. In Czechoslovakia, even during the most severe phase of isolation the impact of Western ideas in science could not be completely cut off. Scientists had inherited contacts and educational traditions from earlier generations. Ten years of severe restrictive politics were harmful but compared with the situation in the Soviet Union, where the isolation policy had begun much earlier, it was a relatively short period of time.[241] Already towards the second half of the 1950s, things started to change.

Opening up after 1956

Khrushchev's secret speech at the 20th Party Congress of the CPSU in 1956 was the beginning of policy changes in the whole Soviet bloc. The other side of the Iron Curtain had already expressed its interest to increase cooperation with the Soviet bloc in "the spirit of Geneva". In 1955 in Geneva the USA, Great Britain and France proposed a seventeen-point programme to remove barriers to exchanges in a number of fields, including science. The Soviet Union showed some interest, but did not yet accept any concrete suggestions. Instead the Soviets suggested that they could consider bilateral or multilateral agreements. After the 20th Party Congress, the time was ripe for cooperation. That year the Soviet Union already made cultural agreements with Belgium and Norway, followed the year after by similar agreements with France and the Great Britain and subsequently with the USA in 1958.[242] At the more specifically technologically-oriented level, cooperation with the West had begun even earlier. Accordingly, the Soviet-Finnish agreement on scientific-technical cooperation was signed as early as 1955.[243]

In Czechoslovakia the impact of the 20th Party Congress was much slower than in other socialist countries like Poland or Hungary. At the level of democratisation of socialist society the impact was in fact reverse, turning the country into a more conservative direction. In light of archival sources it seems that before the Party Congress of the CPSU Czechoslovakia had been more open to certain liberalisation at the level of cultural and academic contacts. Interestingly, already in 1954 the 10th Party Congress of the CPCz had made

241 The Russian nuclear scientist Roald Z. Sageev has described his first encounter with the Americans in an illustrative way: „To our surprise, we met a group of modest and similarely embarrased young people. After a few moments of reservation and restraint, we finally came together to discuss scientific issues. We understood each other. It was like a miracle to meet extraterrestials who understood your own language and to be able to follow what they told you.". See: Sagdeev, Roald Z., The Making of A Soviet Scientist. My Adventures in Nuclear Fusion and Space from Stalin to Star Wars. John Wiley & Sons, USA 1994, 72.
242 Niederhut 2007, 257-258; Richmond 2003, 14-15.
243 Autio-Sarasmo 2011, 140.

an alignment to broaden contacts with the capitalist countries. According to a report of the Foreign Ministry from 1956, the Communist Party had noticed that it would be necessary to deal with the policy of the West, which was exploiting cultural contacts in order to spread its ideology. The report further noted that cultural contacts with the West had begun developing in 1955, but should be further increased. In the report Czechoslovakia was presented as a country which had a special role towards the capitalist countries due to its geographical location, level of industrialisation and high living-standards. Because of those factors the capitalist countries were believed to pay special attention to what was happening in Czechoslovakia. The analysis went on by suggesting that the traditional role and contacts could be exploited both in the West, but also in other 'people's democracies'.[244]

This kind of enthusiastic and daring suggestions did not last long. The consequences of the Hungarian Revolution in 1956 served as a warning to the Czechs.[245] However, it must be said that the eventual shift to more tolerant policies at the level of international scientific contacts probably took place gradually, with occasional efforts by the decision makers to obstruct the development. Therefore the process of gradual liberalisation does not appear at any way straightforward and was probably viewed and experienced very differently by the persons in question. Not only political, but also economic problems were a significant reason behind Czechoslovakia's critical attitude towards an opening up towards the West. After the communist takeover, Czechoslovakia had restructured its economy according to the CMEA division of labour, which had made it an "empire of mechanical engineering" within the Soviet bloc during the early years of the communist rule. According to the Czech historian Karel Kaplan, this restructuring had led to the isolation of the Czechoslovak economy from the West. However, Czechoslovakia's economy was not prepared for the overall changes in the mid-1950s. The thaw of the Cold War reduced the demand in arms production, which formed an important part of Czechoslovak industry. After 1955 the interest of other socialist countries in Czechoslovak machinery declined, as due to the relaxation of the Cold War tension trade with the capitalist countries had become easier and the other CMEA countries bought their machinery more and more from the West. Due to these reasons Czechoslovakia supported an increase of autarky within the CMEA.[246]

A continuation of the strict isolation policy was, however, no longer possible. Until the mid-1950s Czechoslovakia had been able to withstand US economic

244 A MZV – PK, 12.1.1956-22.3.56 (Zpráva 16.2.1956).
245 Pernes 2009a, 518-519.
246 Kaplan 2002, 81-82.

sanctions by relying on Moscow, but then the economic needs of the country began to change. It could not resist the developments beyond its borders and needed access to new technologies, materials and financial resources.[247] Thus, despite the slow adaptation to the opening up towards the West, there were concrete signs of changing politics in the field of science as early as the late 1950s.[248] As a direct result of Khrushchev's speech, the content of which spread in Czechoslovakia through foreign broadcasts and was disseminated nonetheless among Czechoslovak communists despite not being officially published, a student revolt broke out culminating around the time of the Majales festival in the spring of 1956. It were in fact chemistry students, including Michael Heyrovský, the son of the later Nobel Prize Winner Jaroslav Heyrovský, who were at the forefront of this revolt.[249] Although, the revolt failed and was silenced, Czechoslovakia did gradually softened its attitude towards Western cooperation. In the field of science this was explained as part of a process of overcoming the Cold War while the Western literature refers to it as a "partial repudiation of scientific dogmatism".[250]

Although the decision makers in Czechoslovakia's science field admitted that changes would be necessary, these were explained by the dissatisfaction with the previous model of international scientific cooperation. The country had to reconsider its role in the international scientific community. In the early 1950s international cooperation had not functioned well even within the Soviet bloc. The first step was thus to improve intra-bloc relations. One of the first and particularly significant international scientific projects inside the socialist bloc was the agreement to establish the Joint Institute for Nuclear Research (DUBNA)[251] in the Soviet Union. The agreement was signed in Moscow in March 1956 by ten socialist countries. Czechoslovakia was asked to send experts to Dubna – in fact, in the first years of the existence of Dubna most of its foreign scientists came from Czechoslovakia. Dubna offered scientists professional conditions that were otherwise not available in Eastern Europe.[252] One of the Czech scientists in Dubna, František Lehar, who has written about his experiences in the institution, explained that in the beginning the working

247 Lukes, Igor, Changing Patterns of Power in Cold War Politics: The Mysterious Case of Vladimír Komárek. Journal of Cold War Studies, Vol. 3, No. 1, Winter 2001, 88.
248 Mišková 1986, 194.
249 On the student revolt see: Matthews, John P.C, Majales: The Abortive Student Revolt in Czechoslovakia in 1956. Cold War International History Project. Working Paper No. 24, Washington D.C. 1998, 5-37.
250 Slamecka 1963, 39.
251 In 1954 the European Organization for Nuclear Research (CERN) was established near Geneva to unite the efforts of West European countries in studying the fundamental properties of the microcosm. About the same time socialist countries took a decision to establish the Joint Institute for Nuclear Research. Specialists from 12 countries came to Dubna in 1956. The town became international. Starchenko, Boris M, Dubna Town of Science. Available at: http://ftp.jinr.ru/dubna-e.htm, accessed February 13, 2009.
252 Míšková 1986, 182. On the Czechoslovak experiences of working in Dubna see Lehar, František, O Zlaté kleci a jiné vzpomínky. Akropolis, Praha 2003.

conditions there were better than at its Western equivalent, CERN.[253] Although the institute gradually lost its leading position there were concrete efforts to keep up the high academic level of research: Lehar states that many leading scientists of Dubna tried to solve problems for example by choosing scientists who were primarily skilful, regardless of their possible Party membership. They also organised international conferences and invited Western scientists to Dubna. Even if the efforts did not lead to great successes, the institute managed to maintain its international character during the whole period of its existence.[254] Projects like Dubna were among other things important in creating a new kind of thinking in the field of science: large team work and international scientific cooperation. Moreover, this can be seen as an example of *cultural internationalism*. The model for this came from the West, but it was set into different cultural settings of the Soviet Union.

The earlier practice, mutual agreements between socialist countries, gradually gave way to new forms of cooperation. Among the most important were multilateral agreements between Academies of Sciences of different socialist countries. Perhaps surprisingly, scientific and technical cooperation in the frames of the CMEA was not one of the priorities of the Academy of Sciences. Apparently the problem was that the Academy, as only one of the many participants of the Sofia agreement of cooperation, did not receive sufficient information on this practice and therefore scientific and technical cooperation was given only a marginal role in foreign cooperation within the Academy of Sciences.[255] This may reflect the overall problems of the practical side of the CMEA: the continuous disagreements of the organisation in which countries with very different political and economic interests and levels of science and technology tried to find mutual agendas.[256]

From the state perspective, the question of scientific relations with the West and the participation in Western scientific communities was particularly problematic. Czechoslovakia could not ignore the importance of Western science but as a middle-size country and loyal ally of the Soviet Union, it had to remain cautious. The first concrete steps to participate in the Western scientific community took place in 1956 when the Czechoslovak Commission for cooperation with UNESCO was established. Participation in the framework of UNESCO was considered to be important in particular within the natural sciences. One of the motives of Czechoslovakia was its aim

253 The reason for this was thathere had been a functioning institute under another name for the last eight years before the establisment of the Joint Institute.
254 Lehar 2003, 10-11.
255 Míšková 1986, 199.
256 For a recent account of the CMEA integration problems see: Kansikas, Suvi, Trade Blocs and the Cold War. The CMEA and the EC Challenge, 1969-1976. Academic Dissertation. Helsinki 2012.

to send Czechoslovak experts to the West "within the framework of technical assistance" in order to gain results of research done in the most developed Western states and to receive scholarships for the Czechs. The importance of the relationship with UNESCO is exemplified by two facts: firstly, František Šorm was elected into one of the UNESCO commissions responsible for the natural sciences for the years 1958-61 and, secondly, Czechoslovakia decided to participate in the general meetings of UNESCO. The first steps of a larger scale participation in international scientific activities were taken as Czechoslovakia participated in the World Exhibition in Brussels in 1958.[257]

Sending representatives abroad was not the only important form of international scientific activity. Equally important were the travels of foreign scientists to Czechoslovakia. In 1957 the first large scale international scientific conference with the participation of scientists from both East and West was organised in Prague – it was apparently the first such event that had ever been organised in the whole socialist bloc. In the process and developments preceding it, Wichterle played an important role. Wichterle, as almost all the other scientists with a few exceptions, had not been allowed to travel to the West throughout the first years of socialism. Wichterle's first and only trip between 1945 and 1956 had been to Germany in 1947, where Czech technical experts (among other allies of the war) were given the possibility to collect technical information as a „trophy" in the American occupation zone. The centre of this action was the Field Intelligence Agency Technical (FIAT) in Karlsruhe.[258] Under communist rule, Wichterle was not allowed to travel for the first eight years. Wichterle's era of physical absence from the Western scientific communities drew to a close by chance in 1956. The cancellation of his travel ban is an important background factor leading to the conference and thus a good example of the role of an individual in influencing important issues. It furthermore exemplifies the meaning of communication between scientists and the importance of both local and international networks in these processes.

It is noteworthy that in the mid-1950s Wichterle already spoke so openly about the importance of foreign contacts. In 1955, only a year before Wichterle was finally allowed to travel, he had written to Šorm in order to thank him for "showing interest in the case of his brother." [259] The issue was political: Wichterle's brother, who lived in Slovakia had run afoul with the Secret Police in Slovakia, which tried to force him to collaborate. After being badly persecuted he finally managed to get away from Slovakia and apparently

257 Míšková 1986, 194-195.
258 Wichterle 1992, 58-59.
259 A AV ČR – Fond OW, Letter to Šorm dated in July 13, 1955.

needed help to find a new place for himself and his family to live and work.[260] The document indicates that there had been plans to make a written complaint over his traumatic experiences and Šorm would have assisted in pointing to which address it could be directed. The brother, however, had given up the idea as he had found a new job.[261] The example reflects the practice – the Russian „blat“ or "protection", where one utilised his or her contacts in order to overcome problems. In the case of Wichterle´s brother, Wichterle worked as his link up the ladder of political hierarchy; and Wichterle had turned to Šorm, who presumably was in the position to provide the necessary protection due to his dominant position.

It was without doubt profitable to be a chemist and know Šorm personally. In the few texts and stories that have been published on him or mention him, the way he could and often would try to help others stands out. The Czech-born chemist of Jewish origins, Herbert Morawetz, who had fled to the USA before the Nazis, asked Šorm for assistance in a matter that had nothing to do with chemistry. At a symposium in Prague in 1957 he told Šorm that as his family had escaped the Nazis, some family souvenirs might have been left in the safe of one factory and asked if Šorm could help him to get them back.

> *„When I visited Prague during the following year, I was told by a former schoolmate that his sister-in-law, who worked for the ministry of Light Industry, had come across correspondence, with the Ministry of Foreign Affairs, whether an object in the Úpice factory safe should be released to Morawetz family. What a great example of Communist bureaucracy! Yet, if I thought this was the end of it, I was mistaken. A few years later, I received a phone call in my American home from a member of the Czechoslovak delegation at the United Nations asking whether he could call me. I was wrong: He brought me a box with my father's movie.“* [262]

This and other examples illustrate how important personal contacts and networks were not only professionally, but also to occasionally help solve other kinds of practical problems. Finding more official ways to overcome these problems would have often been much too difficult because of the heavy burden of the bureaucracy. Of course this kind of system required the right kind of people who were willing to take on the role of a middleman. Šorm seemed to be one of them.

In the same letter, Wichterle further wrote that he had been informed of not

260 Wichterle 1992, 10.
261 A AV ČR – Fond OW, Letter to Šorm dated in July 13, 1955. This is one example of how Wichterle and Šorm communicated not merely in purely scientific matters. Šorm was already then considered as a person with power, able to influence on different kind of matters.
262 Morawetz 2006, 102-103.

being allowed to attend a conference in Zurich. He ironically noted that after learning about the course of events, he had given up preparing his lectures and had turned into a "loaferish holiday-maker". His method, thus, was to appeal to Šorm by emphasising the consequences of preventing him to travel as a waste of intellectual resources. Instead of representing his country and its science in the world, he would not be able to provide any profit. Wichterle then asked Šorm to pass on his regards to some of the scientists who would participate in the conference. Šorm could tell Vladimir Prelog that Wichterle was sorry that while being in the "home jail" he was not able to discuss his book personally, as Prelog had expected. Whether Wichterle had realistic expectations that he could have participated in the meeting, remains unclear. The letter to Šorm was in any case an act to try to influence the one who had the power. In his letter, Wichterle moreover expressed his opinion on the Czechoslovak attendance at the conference. He hoped that the Czechoslovaks would actively take part in discussions and show that "*we are not all just passive nuts (koulové), unable to move in international circles*".[263] Using a tone of a highly profiled scientist, not letting aside his acquaintance with the world-level scientists who were eager to meet him, he tried to get a political message through – travel restrictions harmed scientific work. At the same time as the country would discuss the necessity to promote Czechoslovak and socialist science in the world, Wichterle criticised the reality in which not even the most prominent scientists were allowed to give this promotion a try because they were not allowed to travel. At this point, cosmopolitanism as a threat had been forgotten; scientific communities were now seen as prestigious realities. Wichterle himself had obviously realised that the government used him in the same way as "a jester had been used in medieval courts: to tell the king the truth". That is why, according to Herbert Morawetz, he felt safe.[264]

A year later Wichterle expressed these opinions directly to the Prime Minister of Czechoslovakia, Viliam Široký. This time Šorm proved to be a successful mediator in Wichterle's cause. At a conference of pedagogues, Šorm introduced Wichterle to the Prime Minister who was interested in Wichterle's work in which the Czechoslovak process of making caprolactam was compared with the Soviet one.[265] In his study, Wichterle argued that the local process was more economic than the Russian one.[266] Široký, impressed by what he heard, evidently asked Wichterle whether something was missing in his work. Wichterle replied that the main disadvantage was the lack of contact with foreign science, because the Czechoslovaks could not participate in foreign

263 A AV ČR – Fond OW, Letter to Šorm dated in July 13, 1955.
264 Morawetz 2006, 136.
265 Wichterle 1992, 55.
266 Kiser 1989, 71.

conferences. Široký's interest led to an important advance in Wichterle's work. As an example of what kind of international scientific activity could advance his work, Wichterle mentioned the international polymer conference in Israel. Široký promised to arrange the issue. In a couple of days, rather surprising for Wichterle who had not believed that Široký would keep his promise, he was issued travel documents to attend the IUPAC conference in Revohoth, Israel. Wichterle described the experience:

> *„Everything went perfectly well except for the fact that due to a lack of knowledge on the exchange rate, the amount of Israel pounds they provided me for the trip would have not been enough even for a modest breakfast".*[267]

The example illustrates the importance of personal contacts well. With František Šorm playing the middle man, Wichterle's research and needs gained attention at the top level of the state. Thus, although Wichterle called the course of events a 'chance' (náhoda),[268] it was hardly that. His position in the scientific elite and close links to industry and thus to the economic life of the country gave him a relatively good position to observe processes in various fields from world politics to the economic realities of the country.

The IUPAC conference in Israel proved to be a crucial turning-point in Wichterle's career. It was the first chance to present his research in abroad in front of an international audience and furthermore it marked changes in Czechoslovak science as a whole. In Israel, Herman Mark (1895-1992),[269] the „father of polymer science", asked Wichterle to organise an IUPAC symposium on macromolecules in Prague in 1957. Phone calls were made from Israel to ask František Šorm, who was apparently impressed by the idea and contacted the government. It is interesting that even before Šorm was chosen as the President of the Academy of Sciences in 1962 he held great influence over important issues. As a matter of fact his influence has most probably made some in the West even to believe that he was already at the time the actual President of the Academy of Sciences.[270] His international reputation gave Šorm's person more credibility. Already in the late 1950s, Šorm's institute became internationally recognised and its work highly esteemed. The IOBC was one of the largest inside the Academy. One of Šorm's best-known partners was Carl Djerassi, known for the invention

267 Wichterle 1992, 63.
268 Ibid 1992, 61.
269 Herman Mark was a Vienna born chemist, who had worked in the German I.B. Farbenindustrie Ludwigshafen in the 1920s and 1930s. As a son of a Jewish father, Mark fled to the USA in 1938. Morawetz, Herbert, Biographical memoirs: Herman Francis Mark. Available at: http://www.nap.edu/html/biomems/hmark.html, accessed August 16, 2007.
270 See Kiser 1989; 73. Franc 2010, 170.

of the birth control pill. In the middle of 1950s he and Šorm initiated a collaborative project on insect hormones between the American firm *Zoecon* and the Czechoslovak Academy of Sciences. This was, as Djerassi writes in his autobiography, the first such formal arrangement between an American corporation and the Academy. Djerassi and Šorm exchanged reprints of their respective publications in the fields of common interests: steroids and terpenoids.[271] Due to Šorm's prominence as a scientist the politicians at home had to acknowledge him, which made him more powerful in advancing science: for example to „fight against bureaucratic obstacles that were put on the way of international cooperation".[272]

The idea of the macromolecular conference was approved by the state and the organisation of the conference began immediately after Wichterle's return to Prague. The symposium was the first of its kind, both in socialist Czechoslovakia and in the whole Eastern bloc. The organisation of a conference of such a scale meant huge arrangements not least because it was supposed to work as an example for similar events in the future.[273] The country had no previous experience in organising such large events, which required for example accommodation and transportation of participants; and simultaneous interpretation of presentations. Firstly, it was *the* possibility for Wichterle and his colleagues to promote Czechoslovak science in the world. Secondly, it was a way to prove to the decision makers that organising international conferences would profit the state. Organising a conference in Czechoslovakia moreover offered many Czechoslovak scientists the rare possibility to converse with their foreign colleagues. The state saw the profit too: with a special government degree the state gave a remarkable amount of money for the organisation because it was clear from the beginning that the participation from abroad and currency gains would well cover the sum.[274]

The number of participants exceeded a thousand, of which 530 came from abroad. Many prominent chemists were present, including Nikolai Semenov, who had been awarded the Nobel Prize in chemistry only a year before; Giulio Natta and Karl Ziegler, who were together awarded the Nobel Prize in 1963.[275] The conference was successful in fulfilling the above mentioned aims. On the one hand, it worked as a business card for Czechoslovak science and especially for young Czechoslovak chemists at the beginning of their careers in the field of macromolecular chemistry. On the other hand, the politicians were pleased

271 Djerassi 1992, 192.
272 Holý, Antonín, Prof. Ing. František Šorm, DrSc. akad. Available at: http://jergym.hiedu.cz/~canovm/objevite/objev5/sorm.htm, accessed April 5, 2007.
273 Mišková 1986, 196-197.
274 Wichterle 1992, 64.
275 Kiser 1992, 73.

of the financial profit the conference brought. Significantly, the conference had probably impressed the Soviets as well, because the next IUPAC conference was organised in Moscow.[276] Although the conference likely worked as a calming example of changing policy, the contradictory attitude of the state was demonstrated by the essence of the "estébáky", the men of the Secret Police, the StB, following the conference. According to Wichterle, the StB installed listening devices in the accommodation of foreign guests.[277] It is likely that the intelligence apparatus used the opportunity to gain scientific information through espionage. In the time when it was already clear that the conference was going on well and successfully, a group of representatives of the Central Committee participated in some of its sessions. In Wichterle's opinion they did this because they "needed to give someone credit for the success". Ironically an American colleague told Wichterle while they were observing this group: "It is interesting that those people there behave in a very similar manner to our bosses in the USA."[278]

Both the successful symposium and the changes in the Academy of Sciences helped Wichterle to participate on the international scene more actively. In 1959 he was, for example, allowed to travel to a conference in Delhi and give lectures at various Indian universities. This was the occasion that prepared him better to participate in the international scientific community. Before the conference trip Wichterle had not known that he was supposed to give lectures. He had not prepared beforehand and had no materials with him except for the Oxford Dictionary pocket book. His only experience of lecturing in English was from the Prague symposium. Knowing that he was not able to refuse, he started to prepare for the lectures. After a month's trip around India he had the feeling that he had finally learnt proper English.[279]

Paradoxically, Wichterle, as the main organiser of the successful conference in Prague, was removed from the university only a year after the event and then reassigned to the Academy of Sciences. These processes reflect how complex the issue of science and international contacts was for the state. The same contradictory approach can be seen at the state level in its argumentation on international scientific cooperation. A good example of the same complexity is that in 1958 the Ministry of Foreign Affairs stated that the positive developments in the cultural relations with the USA during 1956 had again deteriorated in 1957. According to the Ministry report, the Americans used cultural relations to purposes that were characteristically political and

276 Mišková 1986, 196-197.
277 Wichterle 1994, 64.
278 Wichterle 1994, 65.
279 Ibid 1994, 65.

ideological with the purpose of creating pro-American sentiments in the circles of „petit bourgeois". The Ministry furthermore complained that those Czechs applying for a normal tourist visa were made to answer to a questionnaire which included an account of political engagement of an applicant from the previous 10 years. This meant that members of the Communist Party were not able to travel to the USA for "revolutionary purposes" (za podvratnými učely) with the normal visa. The new modification of this rule meant that no member of a communist organisation would be allowed to travel to the USA.[280] It was not expected that the relations with the USA would improve in 1958.

But Czechoslovakia's relations with the West were of course dependent on developments inside the Soviet bloc. In many ways Czechoslovakia was one of the most conservative countries of the Eastern bloc – the changes in the end of the 1950s slowly followed the framework set by the activity of the Soviet Union. One of those was the US-Soviet "Agreement Between the United States of America and the Union of Soviet Socialist Republics on Exchanges in the Cultural, Technical, and Educational Fields" signed in 1958. The agreement, called the Lacy-Zarubin Agreement, included, as listed by Yale Richmond, exchanges in science and technology, agriculture, medicine and public health, radio and television, motion pictures, exhibitions, publications, government, youth, athletics, scholarly research, culture and tourism.[281] Yale Richmond offers "the simple answer" as to why the Soviets signed the agreement. According to him, the Soviets were accustomed to putting things on paper – it would have been impossible to conduct exchanges without formal agreement. They also needed an agreement to make the planning and budgeting easier. Richmond notes that for the Americans the agreement ensured that the exchanges would be conducted on a reciprocal basis.[282]

When the agreement was made, the Czechoslovak Ministry of Foreign Affairs stated that although the negotiations had been secret and not commented on in press, the public had been following them with great interest. "The public" (světová veřejnost) saw in the agreement a possible beginning of an improvement of relations between the socialist and capitalist countries. The Czechoslovaks believed that the interest of the USA in cooperation with the Soviet Union would be lasting.[283] In the official argumentation the Czechoslovaks brought up the agreement as a potential tool for propaganda: the agreement would for the first time enable to acquaint the wider American

280 A MZV – PK 32 (7.2.1958-27.3.1958), Zpráva o kulturních a vědeckých stycích s USA.
281 Richmond 2003, 15.
282 Ibid 2003, 16-17.
283 A MZV – PK 32 (7.2.1958-27.3.1958), Zpráva o kulturních a vědeckých stycích s USA.

public with the culture, science and technology of the "leading socialist state". The Czechoslovaks were expecting that the relations between the two superpowers would have a positive impact on the international situation and that the agreement would create better conditions for the development of cultural relations for other countries with the USA as well. In theory cooperation with the USA was an attractive alternative but so far the Czechoslovaks were too concerned with certain practical obstacles[284] and, even more importantly, with Soviet opinion. The ministry expected that if the exchanges between the Soviets and the Americans would increase, the Americans would start putting pressure on Czechoslovakia. Therefore, as the ministry planned, it would be better to consult Moscow first in order to find out what the Soviets would expect from a small country in a given situation. In the report the Czechs were thinking in general terms about the future of contacts with capitalist states. As the smaller countries would not be able to keep up contacts on such a large scale as the Soviets, it might be wise to think of a possible division of labour between the countries.[285]

Khrushchev's secret speech in 1956 had its impact on Czechoslovakia. It influenced the natural sciences perhaps more rapidly than many other fields of life. By the mid-1950s the "sovietised" practices had exposed their flaws. The international situation now enabled to participate more in the Western scientific communities: this took place for example by increasing Czechoslovak presence in international academic organisations. The IUPAC conference of 1957 was one of the concrete turning points in Czechoslovakia's policy towards increased openness after the period of relative isolation. At the micro level this opening up crucially affected Wichterle's situation. His professional room for manoeuvre widened which enabled him to eventually become an internationally renowned scientist. However, this development was not straightforward and as the following chapter and a closer look at the middle level will show, there were still competing interests and a lot of tension between different interest groups.

Academy as an Asylum

The dependence on the intellectual capital of natural scientists formed an everlasting dilemma for the state. One concrete and radical attempt to resolve this dilemma took place in the aftermath of the Hungarian Revolution of 1956

284 The report stated that as long as the Americans required to participate in the process of choosing people for the exchanges, the Czechs saw official exchanges as impossible. Also the question of visa requirements was seen as a practical obstacle towards official cooperatiom.

285 A MZV – TO – tajné 1960-64 USA 4a. Zpráva o situaci na úseku výchovy a vědy v USA za 1. pololetí 1960, Washington 29.5.1960. Classified report of the Embassy of Czechoslovakia in Washington, D.C.

when the Party attempted to reassert control and purged the universities in 1958. The purges were a part of the overall screening process carried out in the country. As Jiří Pernes has stated, at the end of the day the Communist leaders were most wary of the intellectual, artistic and cultural circles as the main source of the potential threat to the regime. As Martin Franc has stated, the purges have so far gained only a little attention in historiography, but in any case the reasons that led to the purges were numerous. Among the most important factors, as has been stated by Pernes, was the effort to deal with those people who were not convenient or trustworthy.[286] Removing many prominent scholars and scientists from their posts served for years to poison the atmosphere in scientific institutions of the country.[287] According to Kostlán, the fact that the purges were implemented among natural scientists in the institutes of higher education made individual scientists give up the illusion that the Party would provide stable and wide support to natural sciences because it needed them. They felt no longer safe.[288] However, it seems that it was not a mere illusion, but a redefinition of what was considered sufficiently useful for the state. Despite the purges, the Party still needed scientists. Yet, after the purges, the scientists themselves probably became more aware that the state did not value scientists as such nor treated science as having any kind of absolute value, but was increasingly interested in the concrete benefit science could bring to the state – the more concrete, the better.

As Jan Havránek has pointed out, political demands at the Academy of Sciences were not as "strict as those made on university teachers, and a number of scholars who were primarily interested in research sought refuge here".[289] From the point of view of many scientists, the Soviet model institution paradoxically became a place that provided „academic asylum" for a number of scientists. The Academy of Sciences was thus a more "liberal regime" for those natural scientists than the university.[290] One reason why the state allowed this kind of practice was probably the fact that in the Academy of Sciences the purged professors no longer held important teaching positions and thus could not transfer their ideologically suspicious ideas directly to students – but could similarly carry out their research which could profit the state economically.[291]

286 Franc 2010, 118-119. Franc refers to Pernes, Jiří, Snahy o upevnění komunistického režimu v Československu na přelomu 50. a 60. let. In: Historík v soudobých dějinách. Milanu Otáhalovi k osmdesátým narozeninám. Edited by Tůma, Oldřich & Vilímek, Tomáš, Praha, Ústav pro soudobé dějiny AV ČR 2008, s. 177-200.
287 Janouch 1976, 7.
288 Pernes, Jiří, Communist Czechoslovakia on a Journey from Consolidation of Totalitarianism Towards a Liberalization of the Regime (1959-1967). In: A History of the Czech Lands. Edited by Pánek, Jaroslav; Tůma, Oldřich. Charles University in Prague 2009, 526; Kostlán 2011, 58.
289 Havránek 2005, 176-177.
290 Wichterle 1994, 61-65, 88; Mišková 1986, 12-13; Havránek 2005, 177.
291 Tchalakov, Ivan. Personal discussion May 5, 2010. Apparently Wichterle in his university post addressed the topic of Stalinist methods in science in a very critical way. Documentary film: Wichterle (2005) by Tomáš Kudrna.

The practice of accepting talented people who had been purged from the universities to the Academy required the activity and involvement of individual scientists, in particular František Šorm, who was the first main scientific secretary of the Academy. Accepting those people presents a real paradox because the purges of 1958 were executed also in the Academy of Sciences. What makes this historical reality yet more confusing is the fact that the commission responsible for the purges was dominated by natural scientists, especially Ivan Málek and Jaroslav Kožešník – but František Šorm did not participate in the organisation of the purges. Whether Šorm's absence in the screening committee was linked to the efforts of some representatives of the apparatus of the Central Committee to limit Šorm's power, as Franc has suggested, would require further investigation.[292] On the other hand a fact that reveals something about Šorm's attitude towards the purges is that in the Institute of Chemistry none of the 14 leading scientific workers were removed. According to Franc, this shows that Šorm was much more consistent in defending his co-workers than for example Ivan Málek, whose own Biological Institute was purged more efficiently.[293] Perhaps this can also be interpreted in the way that Šorm was then already more concerned with professionalism than ideology. Šorm was closely following what was going on in the world science. He supported those who worked hard and showed their potential even if they were not Party members. He adopted new research perspectives in his own institute, offering young scientists new opportunities.[294]

For some, the access to the Academy institutes basically „changed their lives". Later Professor Václav Pačes, who worked in Šorm's institute after he was removed from the university describes both the institute and its boss as exceptional.[295] He had the opportunity to help many of those who had been purged from their university positions. Another one of those who found „asylum" in Šorm's institute was Antonín Holý, who was left out of a position at the Charles University because of a statement against the Soviet intervention in Hungary. In his top-level role Šorm had a lot of power to decide whom to accept. According to Pačes, Šorm was able to practice this, because the actual President of the Academy at the time, Nejedlý was

292 Franc 2010, 121-122.
293 Ibid, 127.
294 Holý, Antonín, Prof. Ing. František Šorm, DrSc. akad. Available at: http://jergym.hiedu.cz/~canovm/objevite/objev5/sorm.htm, accessed April 5, 2007.
295 Turková 2000, 227; Pacner, Karel, Příběhy české vědy. Available at: http://karelpacner.cz/?str=vyd&id=20&n=pribehy-ceske-vedy---uryvky, accessed October 15, 2008.

senile. [296] According to Rudolf Zahradník, Šorm helped those whom he liked and trusted professionally: with one phone call he would place a person somewhere in a good position.[297] In Zahradník's words, Šorm had manners of an "imperial magnate or an Austrian nobleman". But Zahradník too gives credit to Šorm for taking to heart the fate of many scientists expelled from the universities in the purges of 1958.[298]

One of the University professors purged in 1958 was Otto Wichterle. Although the purge was politically grounded, the dismissal of Wichterle resulted in his own opinion from disagreements with the dean of the faculty over the issue of how the curriculum should be organised. The disagreement over the "basic pedagogical philosophy" had a political character. Unlike the dean, Wichterle did not support the Soviet base model of the Mendeleev Institute in Moscow, which was supposed to function as the example for the chemical faculty in Prague. Instead, Wichterle was strongly behind interdisciplinary research.[299] Accordingly, perhaps partly due to Šorm's influence despite his bourgeois background and the fact that he lost his position at the University, Otto Wichterle got a new chance in the Academy. [300]

As this chapter has illustrated policies in different institutions varied considerably. Ironically, the Soviet-type institution, the Academy of Sciences, proved to be a more liberal regime for natural scientists than the universities. At the micro level it is possible to observe that individuals, including Šorm, played their part in how these policies developed. They used their power to select appropriate people to work under them. Thus, sometimes the victims of the purges at the universities were granted better opportunities elsewhere. Such was the case with Otto Wichterle.

Man and the Molecules

In the 1950s there was no specialised institution in Czechoslovakia pursuing basic research in polymer science, yet the research was becoming more and more important. In the history of Czechoslovak science the 1950s have been

296 Pacner, Karel, Příběhy české vědy. Available at: http://karelpacner.cz/?str=vyd&id=20&n=pribehy-ceske-vedy--uryvky, accessed October 15, 2008; Tváře české vědy. Rozhovor s RNDr. Antonínem Holým, DrSc., Dr.h.c. (See: http://www.tvarevedy.com/interviews/index.php?interview=19). Antonín Holý is one of the most famous Czech scientists at the moment.
297 Interview with Rudolf Zahradník by the author April 23, 2005 in Prague.
298 Zahradník 2008, 254. The way Šorm acted was not, however, unique inside the Academy. For example Ivan Málek, the head of the Microbiological Institute of the Academy of Sciences and a man with a lot of political influence was able to accept several people who had been purged to his institute. Štrbánová & Spížek 2002, 226.
299 Kiser 1989, 74.
300 Kostlán 2001, 96.

called "the golden years of macromolecular chemistry". [301] In particular the implementation of the industrial production of polycaprolactam and the success of the IUPAC[302] International Symposium on Macromolecules in 1957 had strongly impressed the socialist state. In the Academy, Wichterle was offered the opportunity to establish a completely new institution.[303] Although Wichterle had a lot of freedom of choice, the realisation of his ideas did not immediately please everyone. In the beginning even Šorm was apparently sceptical about the way the IMC was going to be organised, mainly because he was afraid that it would turn out to be a sort of "l'art pour l'art", where methods are developed only for the sake of methods. Wichterle and his colleagues, however, were convinced of their chosen policies.[304]

Wichterle was not alone; his colleagues Blahoslav Sedláček, Miloslav Kolinský and Drahoslav Lím, in particular, were closely involved in the establishment of the IMC. The brand new institute needed employees and the best way was to go directly to the universities to recruit young researchers while they were still students. As Wichterle managed to demonstrate the economic profit that the production of caprolactam in Czechoslovakia could bring to the state, a rather untypical question was presented to Wichterle by the Minister of the Machine Industry: "You have shown us what you can do for us, what can we do for you?" Wichterle asked for 500,000 dollars of hard currency to provide the IMC with modern equipment. The request was granted.[305]

From the beginning the IMC attached equal importance to polymer chemistry and polymer physics. Not typical for the time, Wichterle stressed the importance of applied studies, which in his words required the same inventiveness and creativity as more exact studies[306]. Of course, Wichterle did not develop his ideas for the institute in a vacuum. John W. Kiser suggests that Wichterle had been influenced by "his friend" Hermann Mark, who had organised polymer research at the Brooklyn Polytechnic. Wichterle was a strong supporter of the interdisciplinary. Although polymer research is inherently interdisciplinary, the polymer research institutions in the world were characterised by the antagonism of physicists and chemists working under one roof. To avoid this, Wichterle supported the parity of chemical and physical contributions; all who contributed to a paper were considered as authors.[307]

301 Kraus 2004, 261.
302 International Union of Pure and Applied Chemistry.
303 Kostlán 2001, 96.
304 Wichterle 1992, 139-140.
305Kratochvíl 2004, 95-96; Kiser 1989, 77.
306McElheny, V.K, Research and Industry in Czechoslovakia. Science, vol. 153, 1966, 622.
307 Kiser 1989, 78-79.

In the brand new institute, Wichterle and his colleagues, in particular Drahoslav Lím, continued their research on hydrogels. Lím played a crucial role in developing the material, which was known as polyHEMA (hydroxyethyl methacrylate). The results of the work on the first samples of hydrogels were published in *Nature* in 1960[308] and they attracted the attention of scientists worldwide.[309] The idea behind this research was developed already in the early 1950s. The invention of the soft contact lens was assisted by several coincidences and the timing was also important. In 1952, on a train between Olomouc and Prague, Otto Wichterle, a university professor at the time, observed a fellow passenger. The latter turned out to be an ophthalmologist working for the Health Ministry commission. He was reading about metal implants for eyeball replacement. The two started a conversation and Wichterle suggested that it would be better to make such parts from hydrophilic organic polymers that would blend better with the rest of the eye. He mentioned the possibility of using cross-linked polymers,[310] which were unknown at that time. Wichterle did not yet have such material, but was sure that he could synthesise some. He also mentioned plans for his department to start investigating a class of polymers called hydrophilic, or water-loving, gels. In Czechoslovakia, research on hydrogels had begun to develop in the 1940s and 1950s, but at this stage there was still no specialised institution pursuing basic research in polymer science.[311] As it turned out, Wichterle's idea about pursuing research on hydrogels did not meet with approval at the Technical University's Institute of Chemical Technology, where Wichterle worked at the time.

The invention of the material was the first step, but at this stage it was still unclear how exactly it could be used to produce lenses. Wichterle was firmly convinced that the material could be used in optics.[312] In Wichterle's own words, he knew nothing about lenses before inventing them. In fact, he conducted several kinds of experiments and produced different medical products out of the material. The optical industry in Czechoslovakia was not well-developed at the time. According to Wichterle, the 'poor years' of this period motivated him in his search for something new. Wichterle himself later described these challenges as an advantage – it was precisely during this period that he made a number of discoveries which would prove to be crucial to his later enterprise.[313]

308 Wichterle, Otto and Lím, Drahoslav, Hydrophilic Gels for Biological Use, Nature, Vol. 185, 9 January 1960.
309 Kopeček, Jindřich, Obituary Otto Wichterle (1913-98). Available at: http://www.nature.com/nature/journal/v395/n6700/full/395332a0.html, accessed May 13, 2008.
310 Hydroxyethyl methacrylate.
311 Kraus 2004, 261.
312 A AV ČR – (19-I), Recorded interview of Wichterle, 12 December, 1981. Interviewer Professor Neal J. Bailey, Ohio State University.
313 Ibid.

The establishment of the Institute of Macromolecular Chemistry and its growth form an important example of the aims in the field. It also constitutes an example of Wichterle's influence over a whole field of research. The applauding Western statements are good proof of the international significance of the IMC, which was long lasting. In 1990, the *New York Times* listed three examples of outstanding research organisations in the "East bloc", two of them located in the Soviet Union: the Shemyakin Institute of biology and the Institute for Structural Macrokinetics. The third, located in Czechoslovakia, namely the Institute of Macromolecular Chemistry, was nominated "a world leader in polymers".[314]

Otto Wichterle had been given the opportunity to establish a brand new institute in the Academy of Sciences. The professor who had been purged from the university became the director of one of the most famous research institutes of Czechoslovakia. He proved his talent to the state and finally gained state support for his research. This was not merely a coincidence, but reflects changes in Czechoslovak society, which started to take place in the first half of the 1960s.

314 Holusha, John, Business Taps the East Bloc's Intellectual Reserves. New York Times, February 20, 1990. Available at: http://query.nytimes.com/gst/fullpage.html?res=9C0CE1DB143CF933A15751C0A966958260, accessed July 25, 2007.

PART II: The Prague Spring of Science

The Advent of the Scientific and Technological Revolution

In Czechoslovakia, the deep economic crisis that reached its peak in 1961 was the main factor that forced the Czechoslovak decision makers to look for practical solutions to solve the societal problems. Illustratively the annual increase of national income in Czechoslovakia decreased from 7% in 1961 to 0.5% in 1962.[315] Alena Teichová has explained the main problems of the Czechoslovak economy through the fact that Czechoslovakia was a highly industrialised but small country with limited supplies of raw materials. Although the economic crisis of 1961-1963 affected all CMEA countries, it reached its nadir in the Czechoslovak economy with negative growth rates.[316]

Changes at the international level also influenced Czechoslovakia. As the historian Jan Pauer has stated, the process of overcoming the legitimation crisis that had been caused by de-stalinisation engendered a demand for ideological modernisation. A tool for this was the Scientific and Technological Revolution.[317] The isolation policy gave way to more effective cooperation both inside and outside the Soviet Bloc, even with the West. Accordingly, during the intellectual thaw of the late 1950s and early 1960s the natural scientists in the Soviet Union began to speak up on topics beyond their own special realms. Loren L. Graham has claimed that this was a clear indication of their growing influence and ambitions. Soviet scientists met their Western colleagues at conferences where they discussed peace and security. Many intellectuals, and especially scientists, hoped for a new Soviet political order in which they would play influential roles.[318]

In Czechoslovakia, the Soviet example encouraged demands for change. The desire to reform economy and the Scientific and Technological Revolution were among the most important factors that forced the leaders to reconsider

315 Among the CMEA countries the decrease was the most radical. See: Metcalf, Lee Kendal, The Council of Mutual Economic Assistance. The Failure of Reform. East European Monographies. Columbia University Press. New York 1997, 56.
316 Teichová 1988, 142, 149.
317 Pauer, Jan, 1968 in der Tschechoslowakei. Aufbruch und zweimaliges Begräbnis. In Osteuropa, 58. Jg., 7/2008, 33.
318 Graham 1993, 167-168.

their attitude toward intellectuals. It is plausible to argue that Scientific and Technological Revolution was a tool for scientists to advance their professional goals. The intellectual capital of scientists was becoming increasingly important, which improved their status and prestige. The whole nation was supposed to participate in the development of the production forces.[319] Thus, the economic and social problems in the beginning of the 1960s had a paradoxically positive impact on the general development of society since the problems accelerated the quest for solutions. It was a two-way street: although from the side of the decision makers there was still opposition to any reforms, the state, however, slowly created favourable circumstances which enabled reforms and the active participation of experts.[320] The state endeavoured to make economy more efficient and competitive and thus, to increase trade with the West. Above all, the Communist Party needed experts to fulfil this goal.[321]

The social and economic factors of the 1960s also had a strong impact on the Academy of Sciences. Even though the 1950s had seen significant growth and the establishment of many scientific disciplines and institutions, by the beginning of the 1960s scientists began to be more aware of the disadvantages of the overall science policy. In addition to the above mentioned economic reasons, the abolition of the personality cult served as a second principle legitimising changes.[322]

Already in 1960, the Academy's budget for planning and international relations was increased in comparison with the previous year because, as was noted in the document by the Ministry of Foreign Affairs, those contacts were considered important for Czechoslovak science. [323] The main concern of the Academy of Sciences was the inadequate application of scientific research into practice. From the point of view of chemists this meant weak interaction between industry and research. The real issue was the excessively centralised planning and the Academy's lack of independence in decision making.[324] Some attempts to resolve these problems were carried out in 1962-63. A new organisational model and legislation gave the CSAS more freedom than before. During the administration of František Šorm from 1962

319 Pauer 2008, 33.
320 Hospodářské a sociální dějiny Československa 1918-1992, 625.
321 Williams 1997, 4.
322 Skilling, Gordon H, Czechoslovakia's Interrupted Revolution. Princeton University Press, USA 1976, 132; Kaplan 2002, 16-17.
323 A MZV – PK 54 (6.10.1960-30.6.1960), Charakteristika kulturních, školských a vědeckých styků se zahraničím a propagace ČSSR do zahraničí na rok 1961.
324 A AV ČR – Fond FŠ, Lidé – život – doba. Československý rozhlas, Praha. Vysílání 3.5.1968.

onwards, nominations to the board of the Academy were increasingly based on scientific rather than political criteria.[325]

Šorm's election to the presidency itself reflected the change in policy. The election took place in 1962 following the death of Zdeněk Nejedlý. The election process did not pass without elements of personal and professional rivalry. The leadership of the Central Committee of the Communist Party decided to designate Šorm instead of Jaroslav Kožešník or Ivan Málek who both had been potential candidates. According to Martin Franc, Šorm was chosen despite critical remarks concerning his person made at the meeting of the Central Committee leaders. Those remarks were mentioned in a letter by the Central Committee sent to the political bureau:

> *"especially his inclination to be ambitious; he sometimes performs too sharply and does not always appreciate collective opinion. Because of these qualities, he is not well-liked by a number of scientists even though his high scientific level and efficiency are generally acknowledged. (....) He is, however, high-principled and open to criticism, so all prerequisites exist that he may get rid of these shortcomings."* [326]

The criticism was to a great extent based on personal rivalries within the top-hierarchy of the Academy, especially to tensions between Šorm and Málek. For Málek his greatest rival's election to the position of the Academy President was a shocking experience. He expressed his disappointment rather openly, whereas the other potential candidate, Jaroslav Kožešník supported Šorm's election without reservation. Málek interpreted Kožešník's strategy rightly as opportunism. Kožešník had been known to be favoured by the late President and for criticising Šorm behind his back. It is important to note that the disagreements between Málek and Šorm were in essence personal. The two giants of science never got along well. But at the level of political decision-making they were apparently considered rather like-minded as far as their opinions on fundamental issues on science and science policy were concerned.[327]

According to Martin Franc, "most historians"[328] have seen Šorm's election as proof of a policy change from emphasising ideological aspects towards a more professional emphasis. In Franc's opinion, Šorm's professional qualities

325 Mišková & Barvíková & Šmidák 1998, 14-15.

326 Franc 2010, 169. According to Franc the critical remarks came from Josef Havlín who had the responsibility to maintain relations between the Central Committee of the Communist Party and the CSAS. Franc further notes that also Ivan Málek, who was without doubt dissapointed to have not been elected himself, supported Šorm's election but with one critical remark. He stated that the task of the Party sections should be to take care that Šorm would not repeat the mistakes for which he had been criticised. Šorm did not forgive Málek's remarks.

327 Franc 2010, 170.

328 Franc 2010. Franc does not specify who these historians are.

were not the only factors that pawed his way to presidency, because Šorm had been building his extraordinarily strong position in the Academy from the very beginning of its existence. He furthermore supported the new trend in the field of science policy, in which the scientific and technical revolution played an important role.[329] Although both factors seem reasonable in explaining Šorm's success they do not, however, contradict the original idea that Šorm's election was a sign of a more professional tendency (against an ideological one) in the Academy. Building a strong administrative position or developing methods of more efficient leadership or science policy are not ideological, but rather professional and pragmatic strategies. They also correspond to what Šorm was criticised for: he was a highly qualified professional and a pragmatist who no doubt had a thirst for power. Moreover, thirst for power and prestige were part of the professional aspirations of all successful scientists and especially of those who were interested in participating in forming and practicing science policy. As Vladimir Shlapentokh has noted with regard to prestige, the intellectual community is "extremely homogenous". The other side of the coin is, as the reaction of Málek also suggests, that the interminable quest for prestige explains why envy is one of the strongest feelings of many intellectuals.[330]

Šorm's pragmatism and interest in the scientific and technical revolution in science policy cohered with ideas presented by many others in a context where solving economic problems was becoming more important. This also gradually transformed his earlier sceptical approach towards social sciences. In 1963, a conference of leading Czechoslovak economists took place. They were allowed to publish criticism of the economic system. A new resolution came out of the conference: scientists should provide the basis for the Party's economic policy. Even though the suggestion was radical, the Party eventually decided to permit economic discussions and allow for some limited experimentation.[331] The CSAS as the main forum of the most active reformers, including the famous economist Ota Šík, started to seek new solutions albeit merely structural and administrative ones. The economists and social scientists were the most active critics. As Vladimir Kusin has stated, the economists in Czechoslovakia were driven to efforts towards reform both by the objective pressure of unfolding events and the development of their own convictions that "a market model socialism" was better suited for their country. The situation was similar in other fields such as philosophy and history and a similar mood prevailed among cultural workers, because their field of work

329 Ibid 2010, 170.

330 Shlapentokh 1990, 34-35.

331 Hruby, Peter, Czechoslovakia between East and West: The Changing Role of Communist Intellectuals, 1948 and 1968. Univerité de Geneve Institut Universitaire de hautes etudes internationals. Western Australian Institute of Technology 1979, 188-189.

had been hampered by Stalinism. However, objective economic pressure at the beginning of the 1960s was more urgent than criticism emanating from the cultural sphere. In the words of Kusin, "*one could live even if philosophy was defective, but a defective economy threatened to bring about disaster*".[332]

Working in a state that was driven by modernisation aims and *the Scientific and Technological Revolution* was in many ways profitable for scientists. Science was one of the most important fundaments of socialism and as such was expected to transform nature and society. Science had the support of the state and it commanded respect and publicity on a scale incomparable with our times. The names of people representing the Academy of Sciences, as the most prestigious institution of science, were frequently present in newspapers. In the eyes of public prominent scientists enjoyed notably greater authority than Party delegates or statesmen.[333] For scientists professional prestige was necessary as a form of capital filling the role occupied by money in the capitalist countries. Shlapentokh has distinguished two forms of professional prestige: "official" and collegial prestige. The official prestige is the recognition by the state in form of medals, titles and material privileges. According to Shlapentokh, when forced to choose between the two forms of recognition, intellectuals most often prefer the recognition by the state. In case of the key persons of this study the official prestige was not insignificant because only through that channel were they able to receive such material conditions that enabled them to practice their profession.[334]

In 1964, an interdisciplinary team led by Radovan Richta was formed and instructed to comment on the Scientific and Technological Revolution. The latter term was used with growing frequency and urgency. The team's belief was that Scientific and Technological Revolution should be taken seriously. Richta's team saw the supreme and ultimate historic mission of the Party to be the "guiding force and the organiser of the Scientific and Technological Revolution in communism". Richta's book Civilization at the Crossroads[335] emphasised that the complicated reality of the modern world can only be controlled through science. According to Vladimir Kusin, the importance of Richta's work lay in the formulation of the idea that agitation and propaganda were not omnipotent. Richta's team further stated that science must get from society and its leaders what is due to it both in the form of material aid and spiritual freedom; science must not be overruled by the subjective will of a

332 Kusin 1971, 87.
333 Schwippel, Jiří, Otto Wichterle a Český svaz vědeckých pracovníků. In: Česká věda a pražské jaro, sborník z konference. Edited by Zilynská, Blanka & Svobodný, Petr. Karolinum, Praha 2001, 167.
334 Shlapentokh 1990, 34-36.
335 Published in English under the title: Richta, Radovan, Civilization at the Crossroads. Social and Human Implications of the Scientific and Technological Revolution. International Arts and Sciences Press, Prague 1969.

single man or several people. Kusin stated that in this argument, eventually adopted in the Party Congress in 1966, "the reformers who pleaded that problems of automation, electronics etc. must not be subordinated to the class struggle found their strength".[336]

In 1966 the Academy discussed the results of the 13th Party Congress of the Communist Party: it was stated that the question of Scientific and Technological Revolution was not only a theoretical question but had began to be a topical and a particularly acute task of practical politics. The speed and depth of breakthroughs in production, technical novelties, the change in character of overall working conditions, the diminishing of distances, the intensification of time, intervening in the living environment were listed as signs of „worldwide change". This change, which was about to begin, would require a more efficient development of science and technology. Czechoslovakia would have, as the Party Congress had shown, good premises for realising and accepting the requirements of the Scientific and Technological Revolution, eventually solving the current problems of "reaching and overtaking" the civilisation level of the capitalist countries while simultaneously advancing the historical struggle for communism.[337] According to Vladimir Kusin, many people deemed the concept ridiculous when confronted with the painful and primitive contradictions of the Czechoslovak economy. [338] For example at a meeting of the Ideological Commission of the Communist Party in December 1966, the director of the Czechoslovak Television, Jiří Pelikán, stated that even though the concept was present everywhere, in many fields life continued at the normal pace. He suggested that the concept should be concretely in order not to end up as a phrase without actual implementations.[339] Thus, the discussion about the concept in Czechoslovakia at that time was critical and not merely newspeak. In the above mentioned meeting of the Ideological Committee opinions on the issue were exchanged in a rather open manner.

At the 13th Party Congress in May 1966 a significant amount of scientific workers were elected to the central organ of the Party, which was considered from the point of view of the Academy leadership as a strong sign of growing trust in scientists. At the Party Congress special emphasis was put on certain fields of research that would be profitable for the Czechoslovak economy, such as physics, chemistry and biology; mathematics, theoretical disciplines of technical studies. The congress further highlighted that as long as applied

336 Kusin 1971, 92.
337 A AV ČR – Fond FŠ, Výsledky XIII. sjezdu KSČ a úkoly ČSAV.
338 Kusin 1971, 92.
339 NA – Fond KSČ – ÚV – KI (ideologická komise), svazek 7, a.j. 27/3.

research and technological development were concerned, it was necessary to use the results of world science much more effectively.[340]In 1967 a change in the discourse on science policy and planning took place. It was characterised by the concept of *integration* which had been attached to the *scientific technical revolution*. The aim of Czechoslovakia was now to participate in the integration process of world science. Significantly, the West had become the yardstick for the comparison of research standards at the international level. The overall goal of increasing contacts with the West was echoed in the Academy. The official explanation claimed that the fact that Czechoslovakia possessed the widest array of contacts in the West was beneficial for the whole socialist camp.[341] These statements were without doubt made for Soviet ears in order to justify Czechoslovakia's increasingly intensive cooperation with the West. The position of science in the impending Scientific and Technological Revolution was extensively discussed. The message of the Academy was that Czechoslovakia was a small country, which despite the best efforts of the Academy of Sciences lacked the resources to keep track of the developments of modern science. The current 'integration process of world science' was based on large research teams while the financial aspect was based on the needs of the superpowers bolstering their respective position in science. [342]

The Academy did not give up hope that smaller developed countries, especially the ones with 'developed cultural and intellectual and scientific traditions', could still preserve 'superiority or at least a place in the forefront of world science'. Thus, national interests vis-à-vis the superpower dominance started to gain importance. As a solution, the Academy came up with the prospects of specialising and prioritising disciplines that would best serve this aim. More important was the plan to start from the basics: a well-functioning system of scientific and technical information would be the first step to improve the current situation. Another step would be social mobility, including interaction between disciplines, the mobility of scientists nationally and internationally as well as between respective institutions. The importance of transferring not only people but scientific knowhow in general, was an important part of the process. [343]

The concept of the Scientific and Technological Revolution and the integration process of world science enabled the Academy to enter into a critical evaluation of the past. The Academy pointed out that Czechoslovak research

340 A AV ČR – Fond FŠ, Výsledky XIII. sjezdu KSČ a úkoly ČSAV.
341 A AV ČR – Fond Prezídium ČSAV, 25. prezídium (18.5.1967). Postavení vědy nastupující vědeckotechnické revoluci.
342 Ibid.
343 A AV ČR – Fond Prezídium ČSAV, 25. prezídium (18.5.1967). Postavení vědy v nastupující vědeckotechnické revoluci.

had not profited from the economic, social and cultural life of Czechoslovak society because the scientific framework had been built up in ignorance of the real needs of life. The restructuring of the Czechoslovak economy in the late 1940s and the 1950s had not worked as a stimulus for Research and Development (R&D) and, in turn, had led to a situation in which research was not an active part in the technological progress. The message of the Academy was clear: Czechoslovakia should concentrate on asserting itself as a developer of advanced intellectual products.[344]

Throughout the 1960s the process that can be called cultural internationalism became increasingly important in Czechoslovakia. At first the increase of contacts was argued as part of the Cold War competition and profitable for the entire socialist bloc. Later, closer to the actual Prague Spring the necessity of Western cooperation was already admitted to be profitable for Czechoslovakia in its efforts to maintain a proper position in the scientific and technological revolution and the integration of world science. The ideological rhetoric had given way to arguments, which were based on economic, scientific and pragmatic issues. Behind this development were critical voices, among them some natural scientists.

The Critical Innovator – Otto Wichterle

Although science and technology were the key words of the era, the Czechoslovak natural scientists, with some exceptions, were not directly committed to the largely political formation of the community of reformers. Vladimir Kusin has offered two reasons for this: firstly, by the end of the first half of the 1960s natural scientists had achieved sufficient freedom of research – although they were lacking materials and equipment – and secondly, the combined strength of social scholars and men of culture did not call for any conspicuous action by people not directly involved in politics. Kusin adds, however, that no one could count the scientific community among the supporters of the *status quo*.[345] Eventually, the economic problems together with the liberalised atmosphere made that also natural scientists joined the discussions. The „sovietised" science of the 1950s – and particularly the phenomenon of Lysenkoism – was now even rejected by its previous supporters.[346]

Otto Wichterle was one of the first natural scientists to publicly express his

344 Ibid.
345 Kusin 1971, 92-93.
346 Mišková & Barvíková & Šmidák 1998, 17. For example Ivan Málek called off his opinions published in the 1955.

critical opinion. Wichterle's account of the life in his institute offers one plausible explanation as to why the natural scientists entered the discussions later than the others, which partly supports Kusin's arguments. However, whereas Kusin spoke about adequate freedom and mentioned the lack of material conditions, Wichterle emphasised the material conditions.[347] Ironically, Wichterle's institute was one of the best-equipped and wealthiest institutes of the Academy and yet its director was the most critical among the natural scientists.

As Wichterle noted in his memoirs, at the time scientists of the IMC did not have much to complain about, more so, their future seemed rather bright. There was almost no political life in the institute; scientists were well off in „every way"; they received recognition both inside and outside the country; and thanks to various licence agreements the institute was able to equip itself with new valuable devices. Thus, the economic problems of the state did not directly affect the institute.[348] There were no emigrants from the IMC before the August invasion of 1968 – a fact that reveals much about the good working conditions and atmosphere in the institute, which is confirmed by contemporaries.[349] According to Wichterle, the euphoria that had reigned in the CSAS came to an end in 1967 when Ota Šík published his report on the miserable condition of Czechoslovak economy.[350] However, Wichterle's explanation stands in slight contradiction with the fact that the chemist himself was already openly worried about the stage of research practice since the mid-1950s, a long time before the year 1967. Throughout the 1960s he continuously expressed his opinion concerning actual problems in the field of science.

One of the reasons for Wichterle's desire for reforms were problems that were closely related to his own research work. The example of the beginning phase of the lens production reveals a great deal about the problems that scientists faced. Wichterle's work on the soft lens was complicated by many obstacles. The main problem was that Wichterle was working within the Academy of Sciences. The organisation was responsible for basic research, but the pursuit of applied research was against its rules.[351] However, Wichterle and his colleagues had managed to carry out some research outside the institution and in 1959 they had achieved good results for the practical use of the lens on patients in an eye clinic. Although mass production was still not possible, positive results indicated potential for the further development of a technique

347 Kusin 1971, 93.
348 Wichterle 1994, 142.
349 Ibid 1994, 142.
350 Ibid 1994, 142.
351 Slamecka 1963, 8-9.

for the production of soft contact lenses.[352] The problem was that the state experts did not believe in the lens' potential. In Czechoslovakia, heavy industry had been prioritised for a long time and the idea of producing small lenses probably did not fit well in this socialist policy. Without support from the state, Wichterle came close to abandoning the idea. [353]

However, Wichterle did not give up and in 1961 he decided to make another attempt - this time on his own kitchen table. For him, as he later explained, producing lenses had always been a hobby – as he put it, he was a chemist who spent more time on his 'hobbies' than on actual chemical research.[354] It is illustrative that the first practicable soft contact lens was produced on a device set consisting of a gramophone motor and parts from his son's 'Merkur' toy construction set. According to Wichterle's wife, her husband was constantly experimenting with the lens, putting it into his eye and again removing it: at times having "eyes red as a rabbit".[355] One of the major problems associated with the rigid contact lens had been the discomfort which it caused on hot days. The new lens was permeable and allowed for the escape of heat and carbon dioxide and the entry of fresh oxygen. Moreover, the soft lenses were considerably cheaper to produce than the rigid ones.[356]

Together with a Czech ophthalmologist Wichterle tested lenses on patients. Successful experiments led to a patent application in 1961. Wichterle continued producing lenses at home together with his wife. Linda Wichterlová continued with the production while her husband was at work. When news of the innovation filtered through, Wichterle and his colleagues were paid a visit by officials from the State Planning Commission and the Ministry of Foreign Trade. The visitors found it difficult to understand why Wichterle was not producing lenses at the new institute.[357] As they understood that the rules of the Academy of Sciences had hindered Wichterle to hitherto realise his research, the state officials allowed Wichterle to pursue applied research within the framework of the Academy of Sciences.

The state thus accepted the applied research on the lens. However, Wichterle was constantly concerned about funding: in order to maintain the world-class level of the institute, financing was required from outside the Academy of Sciences. Wichterle was not alone with his opinion as the state too was keen

352 Wichterle 1992, 111.
353Houdek, František and Tůma, Jan, Objevy a výnálezy tisíciletí. 111 milníků přírodovědy, techniky a mediciny. Nakladateství Lidové noviny, Praha 2002, 367; Wichterle 1992, 112.
354 A AV ČR – 19-I, Interview of Wichterle, 12 December, 1981. Interviewer Professor Neal J. Bailey, Ohio State University.
355 Interview with Linda Wichterlová by the author October 20, 2008 in Prague.
356 See for example McElheny, Victor, Research and Industry in Czechoslovakia. Science, vol. 153, 1966, 620-622.
357 Wichterle 1992, 114-116.

to increase the efficiency of the research. In fact, the scale of the support provided by the state came as a surprise to Wichterle. Representatives of the State Planning Commission had asked Wichterle how many workers he would need for the hydrogels research. Merely as an attempt to test the waters, he stated the inflated figure of forty. The commission responded by promising forty-two new scientific workers.[358] Considering the poor state of the Czechoslovak economy at the time, Wichterle's ability to gain state support for his project not only demonstrates his skills in dealing with the decision makers, but implies that the state must have placed high hopes in the development of this research field. It also reflects the changes in the economy: after 1956, as the Kremlin began promoting peaceful co-existence with the West, the armament production had been reduced. Therefore, the state could afford to invest more money in social projects and light industry.[359]

The scepticism of the earlier period had given way to generous support in a relatively short period of time. In 1963, the Central Committee listed the production of the lens as one of the successes of the Academy and stated that the new contact lenses were different from any other contact lenses hitherto produced in the world.[360] This process reflects a broader shift in the overall policy of the Czechoslovak state in the 1960s. Policy was now aimed at increasing the efficiency of research and improving the country's economic performance.

Wichterle was not working alone and in order to realise any part of production, he was dependent on the support and assistance of others. He was well aware of the importance of personal contacts inside and especially outside of his country and also outside of the field of basic research. As the Bulgarian sociologist Ivan Tchalakov has pointed out, innovators work with people, representatives of various social communities and institutions on whose reliable and loyal behaviour the "technical" aspect of the innovation depends. Thus, the innovator is often not a specialist in a considerable part of the "technical" aspects of the innovation, but solves the problem while finding and convincing the relevant representatives to cooperate.[361] Wichterle and his colleagues worked to maintain good ties with industry and foreign partners. Without such connections, the application of scientific ideas would have been impossible.[362]

358 Ibid 1992, 146-147.
359 Pernes 2009a, 517.
360 NA – Fond KSČ – ÚV- 02/1, svazek 37, a.j. 41/3.
361 Tchalakov, Ivan, Innovating Bulgaria – two cases in the life of a laboratory before and after 1989. Research Policy 30 (2001), 392.
362 McElheny 1966, 620.

By establishing those contacts and remaining active at many levels, it was easier for Wichterle to speak up concerning important issues. Even before the licence for his contact lens was sold in 1965, Wichterle used his invention as a tool for accelerating matters in his dealings with the state authorities. In January 1964 he warned in a report he wrote for the Academy that time was running out. Unless the lens was sold in the very near future Czechoslovakia would lose the race with the West to produce the first soft contact lens. According to him, this would be a great loss for the Institute of Macromolecular Chemistry in particular, because only a stable flow of currency would ensure the institute's future.[363] Wichterle was well aware of the weak points of the system and used them to exert pressure on the state.

In his writing[364] from 1965, Wichterle called the present time the „era of economic threat to the Republic" (doba hospodářského ohrožení republiky). He claimed that the optimism of the 1950s had been a manifestation of "self-delusion" (sebeklam) which had now led to deep depression. He urged the Academy of Sciences to adapt to these problems. In particular, Wichterle was worried about the „panicky" austerity policy of the CSAS, which could do more harm than good. He stated that, unlike their Western counterparts, the Czechoslovak economic decision makers did not understand that science as such – at least in the fields of natural and technical sciences – is a profitable form of trade. For Wichterle the problem lay in the Czechoslovak economy, which did not have to compete with the rest of the world did not therefore need science.

According to Wichterle, not only the state was to blame, since the Academy of Sciences could have learned to sell its products in a more efficient way. Wichterle was seeking a compromise. Although he did not speak for a broad commercialisation of science, which could have put its most important aims at risk, he questioned the meaning of science to the state, which was not sufficiently interested in competing with the Western world. As a solution, Wichterle suggested open-doors tactics and licence agreements in foreign scientific trade: *„should we wish to participate in the market as potential licence-buyers, we need to offer as well."* He promoted the creation of favourable conditions for scientific and technical cooperation, which would assist the deliberations on the issuing of licences. Significantly, Wichterle stated that the positive feedback from the first licence agreements proved that by breaking out the licence barriers, the Czechoslovaks could become

363 A AV ČR – Fond OW, Zpráva o činnosti akademika O.Wichterla za rok 1963.
364 A AV ČR – Fond OW, Úloha Akademie v době hospodářského ohrození republiky (Koncept pro akad. Šorma 23.11.1965).

attractive partners in the world.[365] The statement reflects Wichterle's personal experiences and the growing international interest in his patents. Thanks to his achievement, Wichterle had more authority than many others to state his opinions openly. For other scientific workers, similar critical statements would have led to their removal. Jiří Křest'an implies that Wichterle's name was critically mentioned by František Šorm in the meeting of the Presidium of the CSAS in 1964, where the case of philosopher Ivan Sviták was on agenda. Sviták was expelled in 1965.[366]

Since the licence of his patent had been meanwhile successfully sold to the West, Wichterle could take part in this discussion with a new élan. Wichterle saw the conflict between the high production capacity of science and low demand for the research results as the key problem in the development of science in his home country. As a solution he suggested cooperation with the capitalist countries and the creation of more favourable conditions for exploitation of scientific results and scientists. Wichterle stated in 1967 that the prevailing situation, characterised by the lack of interest in developing science and educating new scientists, was „completely abnormal" compared to other Eastern European countries. There the situation was quite the opposite: they had problems finding enough people to work in science. The cause of this „absurd" stage was that the Academy of Sciences and the universities had become the main, if not the only, haven of science. In Wichterle's opinion the state should have created bridges between science and foreign practices in new fields. He strongly supported the export of Czechoslovak science to countries where there would be enough demand for its results. He suggested the revision of the directives which regulated and limited the circulation of scientific workers abroad and stressed the meaning of long term or even permanent stays at foreign scientific institutions in important fields. The loss of the working force would be compensated, Wichterle went on, by licences and agreements concerning research.[367] The economic problems in Czechoslovakia had a strong impact on Wichterle, who wrote the CSAS a cautionary essay *The pessimistic alternative* (pesimistická alternativa) on the possible problems of the future in 1967.[368] The essay illustrates Wichterle's eagerness to open discussions – instead of contenting himself with the official prognosis, Wichterle wanted to underline that although the pessimistic alternative was not more probable than the optimistic one, it was nevertheless possible and should therefore be considered as an alternative.

365 Ibid.
366 Křest'an, Jiří, Opožděná reportáž o neopožděném kultu vyhnání Ivana Svitáka z akademie věd v roce 1964. Česká věda a pražské jaro, sborník z konference. Edited by Zilynská, Blanka & Svobodný, Petr. Karolinum, Praha 2001, 264.
367 A AV ČR – Fond OW, Ke kádrové politice v oboru vědy (1967).
368 A AV ČR – Fond OW, Studie o rozvoji makromolekulární chemie a technologie do roku 1980. 16.1.1967.

Wichterle's statements pointed to concrete problems, which the organisation model of science had created. Advocating more effective trade with the West and more intensive contacts with Western scientists can hardly be considered as apolitical aims.[369]

As the case of inventing the soft contact lens has shown, Wichterle was able to use his skills as bargaining tools to convince the decision makers to support his plans. Interestingly, Wichterle openly criticised existing practices of for example dealing with the sale of rights to patents already long before the soft lens had made its actual breakthrough. However, it was because he worked within the structures and the professional prestige he enjoyed that made such activity possible. He was neither an opponent of the policies, nor a fellow traveller of the political elite, but rather someone who remained in the gray zone, at times being closer to one of the extremes around that zone – either as someone with a lot of intellectual capital and thus, power, or alternately as someone taking risks which could have led to more serious consequences. A concrete example of taking such risks was voicing critique towards the Soviets.

Criticising the Big Brother – Cooperation with the Soviets

Wichterle's criticism touched even such delicate issues as the problems of the scientific cooperation with the Soviet Union already well before the actual Prague Spring. The issue was not something completely new for politicians: at least between the lines the problems of cooperation within the Soviet bloc were admitted in the official statements of the Central Committee. Although relations with the socialist countries, and particularly with the Soviet Union, were always formally prioritised, problems of intra-bloc cooperation accelerated the process of Czechoslovakia's re-orientation from being a most loyal ally of the Soviet Union towards Western cooperation. Although the Central Committee stressed the importance of contacts with the Soviet Union and other socialist states, it noted that the possibilities were not efficiently utilised. The sense of direction was inadequate and the cooperation too official.[370] But in the beginning of the 1960s, the rhetoric coloured by the Cold War division still dominated the discourse on science. Therefore, growing cooperation with the West was defined as part of the 'ideological struggle'

369 Nisonen-Trnka, Riikka, The Prague Spring of Science: Czechoslovak Natural Scientists Reconsidering the Iron Curtain. In: 1948 and 1968: Dramatic Milestones in Czech and Slovak History. Edited by Laura Cashman. Routledge, USA 2010,121.
370 NA – Fond KSČ – ÚV 02/1, svazek 107, a.j. 110/6.

or 'psychological war' initiated by the West. The Party focused attention on cooperation inside the Eastern bloc – it had become aware that personal contacts had great impact on the intensive development of cultural, artistic and scientific relations. The state was ready to remove formalities and the development of contacts was left more and more to the scientific community itself. The Central Committee wished to improve bilateral cooperation between the socialist Academies and to increase the exchange of information.[371]

In 1962, nine socialist countries organised a meeting in Warsaw, in which they negotiated over mutual cooperation and a common practice in international scientific forums and organisations. This meeting was an effort to improve the situation and move towards multilateral cooperation between the Academies of Sciences instead of the old model of bilateral cooperation. In Czechoslovakia, cooperation with the Soviet Union was considered as the most important within the bloc and it was at its best in the fields of mathematical and physical sciences. In the field of chemistry the most important socialist partner was the GDR. It is hardly surprising that throughout the 1960s these two countries maintained the position of Czechoslovakia's most important socialist scientific partners – barring Poland and Hungary, relations with the rest of the socialist countries were considered less useful and important.[372]

The socialist countries had serious difficulties in finding common prospects– even at a more general level. For example, the practice of the members of the Council for Mutual Economic Assistance (CMEA) to circulate research results free of charge was disadvantageous for Czechoslovakia, because it had to provide the less developed countries of the bloc with information it had developed without receiving compensation, which would have profited its own economy.[373] Both at the state level and in the discussions of the Academy of Sciences, references to the problems of cooperation within the CMEA countries became more common. Cooperation within the bloc was too formal and inefficient.[374]

At the level of individual scientists the problems of cooperation with the Soviets were particularly concrete. For example, in the travel reports of Wichterle's institute, the level of macromolecular research in other socialist countries was criticised. In the critique particular practical problems, such as complicated bureaucracy, were emphasised by the scientists while the low level of research

371 NA – Fond KSČ - ÚV 02/1, svazek 37, 41, a.j. 3.
372 Brádlerová, Daniela; Kmochová, Nataša, Nástin zahraničních styků ČSAV 1962-1970. In: Česká věda a pražské jaro, sborník z konference. Edited by Blanka Zilynská & Petr Svobodný. Karolinum, Praha 2001, 108.
373 Kaplan 2002, 188-189.
374 NA – Fond KSČ – ÚV 02/1, svazek 107, 110, a.j. 6; Fond KSČ – ÚV 02/1, svazek 62, a.j. 65/11.

was also noted.[375] Accordingly, Wichterle considered collaboration with the Soviets complicated. It seems that despite the efforts to deepen and improve networks and contacts with the Soviet Union, there were several factors that worked against these plans. Wichterle for example complained that correspondence with the Soviets did not work well – letters often remained unanswered. Most of the Soviet scientists did not talk openly with their foreign colleagues. As an exception Wichterle mentioned the Nobel Prize laureate Nikolai Semjonov, with whom he could discuss not merely chemistry but also problems in mutual cooperation. Together with him Wichterle even initiated and planned a protocol for establishing a Czechoslovak-Soviet commission for cooperation in the field of macromolecular chemistry – however, their efforts did not bear fruit as the Soviet bureaucracy did not allow it.[376] These differences and varying expectations in the culture of communication and cooperation illustrate how dependent on local traditions and cultures the practices of "soviet-type" institutions in the socialist countries were. In the Soviet Union scientists were more uncertain about the limits of what was acceptable and what was not and probably more afraid of the possible consequences of their actions.

The means to address the problems of insufficient cooperation were limited. The Soviet Union was the model country and Czechoslovakia its loyal ally. Thus, in 1964, during a visit of the Soviet Academy of Sciences' delegation to the CSAS, everything was prepared in order to praise the Czechoslovak-Soviet cooperation. Wichterle saw the visit as an opportunity. Unlike his peers in other institutes, Wichterle had prepared a small exhibition in which he openly demonstrated to the organisation's President, Mstislav Keldysh, the weak spots of Soviet-Czechoslovak scientific cooperation herein clearly addressing the Soviet side as responsible for most of the problems. As part of the presentation, Wichterle and his colleagues presented a number of publications that they had sent to the Soviets, as had been mutually agreed upon. In order to make his point clear, Wichterle showed the one single work that the Czechoslovaks had received from the Soviets. Attached to it, perhaps accidentally, was a text showing that the Soviet sender had been applying for permission to send the work by mail, with a number of stamps and signatures of different authorities to approve it. For Wichterle the stamps were proof of how the Soviet bureaucracy greatly complicated cooperation between the two countries.[377] Wichterle felt that the Soviet delegation took note of the issues

375 A AV ČR – Fond ÚMCH, Cestovní zprávy 1963-1965. For example a travel report of a trip to Romania in October 1964 written in a very critical tone.

376 Wichterle 1992, 71.

377 Ibid 1992, 71. John Connelly discusses the same problem by showing how Soviet scientists required an invitation letter from the socialist countries – the whole process took a lot of time and often complicated or even prevented the actual travelling. Connelly 2000b, 153.

and the Academy President Keldysh even promised to pass on the critique. In his memoirs Wichterle wrote that despite his promise, Keldysh could not pass on Wichterle's critical letter to the Soviet decision makers. This was however not the case. In December 1968 it was used as a pretext not to invite Wichterle to come and give a seminar in the Soviet Union. According to a Soviet source, the letter had been „circulated" in early1968.[378] But according to Wichterle, the letter was kept from the public until 1990, when it was published in a Russian journal, *Nauka i zhizn,* as a part of an article in which Wichterle was dubbed the „Czech Sakharov".[379]

Wichterle seemed to believe that pointing out problems to the Soviets could have led to concrete improvements in the mutual cooperation between scientists from both countries. Because he must have been well aware of bureaucratic and other obstacles, which stood in the way of such cooperation, it seems that Wichterle had a lot of faith in the potential of direct ways of influencing. His actions could have and in fact were interpreted as a provocation by the Soviets. Wichterle must have been aware of this risk, but he wanted to rock the boat nevertheless.

From Isolation to Internationalisation

The increase of Western contacts in the mid-1960s was at first rather a by-product of the overall improvement of international scientific cooperation. The conditions enabling this increase were linked to the loosening up of the country. Above all, searching for ways to improve the economy initiated changes in ideological work and political practices of the Communist Party. These included allowing a minimum of non-socialist reforms in order to solve economic problems. The relatively liberal mood of these years echoed the Khrushchev thaw. As Tony Judt has written, despite the changed tone in Moscow following Brezhnev's coup, the artistic renaissance in Czechoslovakia continued to unfold.[380] The Czechoslovak participation in the international scientific community was considered to be important. International organisations were especially significant for the state because they enabled attendance at scientific conferences, gave access to different materials and

378 RGANI (Russian State Archive of Contemporary History) Fond 5, opis' 61, delo 59, list 8.

379 Wichterle 1994, 63-64. Interestingly, Wichterle's criticism of Soviet practices in academia led to this certainly exaggerated comparison with the most famous Soviet scientific dissident. Above all, this should be seen in the context of the time – the article was published right after the collapse of communism which inspired a sometimes extreme reassessment of historical realities.

380 Pernes, Jiří, Communist Czechoslovakia on a Journey from Consolidation of Totalitarianism Towards a Liberalization of the Regime (1959-1967). In: A History of the Czech Lands. Edited by Pánek, Jaroslav; Tůma, Oldřich. Charles University in Prague, Prague 2009, 532; Judt, Tony, Postwar. A History of Europe Since 145. Penguin Books, USA 2005, 437-438.

information. Furthermore, international scientific activity was considered politically and economically important since on the one hand it served as a channel for the Czechoslovaks to promote their own scientific achievements while on the other hand the organisation of conferences in Czechoslovakia was a lucrative business for the state. In 1963 the Academy's members held 43 top positions in various international scientific organisations.[381] Looser formalities and a stronger role for individual scientists served to facilitate contacts with academic institutions in the West. In one of its report in 1963, the Central Committee stated that personal contacts of scientists had been in many cases very profitable and even led to direct exchanges of research results, thereby gaining methodological experience and improving scientific and professional qualifications.[382]

Academic travel was perhaps the most efficient way of pursuing international scientific activity. Study visits abroad served to gain information on the level of research and provide the opportunity to compare conditions in the target country to those at home. Travelling to the West was not a self-evident privilege even for the most qualified scientists but still a form of activity that was often linked to the political loyalty of an individual. Contacts with Western scientists had to be limited and controlled through different kinds of methods. All the institutes of the CSAS were obliged to conform to these rules and quotas of international cooperation.[383]

Thus, academic travel fulfilled the function of a carrot in the state's carrot-and-stick policy vis-à-vis individual scientists. Travelling was attractive not merely for professional reasons or for providing opportunities to see the Western world, but also for more ordinary and pragmatic reasons such as an opportunity to purchase Western goods. Permissions to travel could be revoked at the last minute for political reasons. Therefore, the practice of maintaining uncertainty concerning travel possibilities served to reward a person's political loyalty or conversely to punish him or her for inappropriate behaviour. From the state perspective the practice of controlling travel and travellers was also a way to prevent unwanted side-effects, in particular the brain drain to the West. However, what impugned the usefulness of this practice was that Czechoslovakia was not indifferent to what kind of

381 NA – Fond KSČ – ÚV- 02/1, svazek 15, a.j. 17/8.

382Ibid; A MZV – TO – tajné 1960-64 USA 4a: Zpráva o situaci na úseku výchovy a vědy v USA za 1. pololetí 1960 Washington. Report of the Embassy of Czechoslovakia in Washington 29.5.1960

383 Only 10% of the employees of an institute per year were allowed to travel. However, it is possible that through political channels these rules were sometimes bypassed. Everyone travelling abroad was obliged to compile a detailed report on his/her trip after returning home. Those reports were mostly detailed accounts of schedules, programmes, lists of participants and institutions that had been visited. They often contained of different kind of remarks on scientific, societal and political conditions of the target country. A scientist was also to sign a statement that confirmed that he/she was familiar with the law of state privacy.

picture the Western scientific community and thus the whole Western world would create of the country. Czechoslovakia was increasingly aware of its dependence not only on the Soviet Union but also on Western cooperation. The scientists were aware of this predicament and sometimes took advantage of it.

Because of their wish to promote Czechoslovak science abroad and increase cooperation with the West, state officials did not openly want to admit to their Western partners that there were political reasons behind travel restrictions. Instead, different kind of excuses and stories were invented. For example, the world-renown information scientist Antonín Svoboda[384] (1907—1980) from the Department of Theory of Information and Automatisation of the Academy of Sciences was not permitted to attend the IFIP (International Federation for Information Processing)[385] congress in Munich in March 1962. This became clear from a classified travel account written by another scientist from the same department.[386] The author of the report complained that he had been forced to lie to the organisers and the participants of the conference that Svoboda had been prevented to come there due to illness. The excuse had not pleased the conference organisers and participants from the West. In the opening speech of the congress the organisers stated their regret regarding the absence of the Czech specialist. Obviously, they did not believe the reasoning of the Czechoslovak representative. For the author of the report the situation seemed to have been embarrassing. In his travel account he made the following complaint leaving a clear message:

> *"I think it would have been profitable to send Docent Svoboda to the above mentioned meeting with the Czechoslovak delegation. I think that Svoboda would not have been interested in losing the right to participate in international professional life for the second time. In my opinion, the absence of Docent Svoboda harms Czech prestige more than some of his possibly not completely well-judged statements." (...) "Doc. Svoboda is*

384 In 1951 he began work on Czechoslovakia's first (electromechanical) digital computer, the SAPO. It was first of its kind in the whole East Europe. Due to political reasons he emigrated to the USA in 1964. See: Klír, Jiří, Informatika a první české počítače. In: Co daly naše země Evropě a lidstvu (III. část). Evropský literární klub. Praha 2000, 302-313.

385 The International Federation for Information Processing (IFIP) is an umbrella organization for national societies working in the field of information technology. It is a non-governmental, non-profit organization. Its members include over 48 national societies and academies of science. IFIP was established in 1960 under the auspices of UNESCO, under the name International Federation of Information Processing Societies (IFIPS); the name was changed in 1961.

386 A AV ČR – Fond ZO, NSR cestovní zprávy, 1961-1962, k. 163. Zpráva o služební cestě do NSR na zasedání výboru mezinárdní organiyace IFIP v Mníchově. Jiří Krýže. The report was delivered to a number of different parties, not only inside the Academy but in other institutes related to the topic such as to the head of the cybernetic commission.

very well known abroad as an expert and he has personal acquaintances. Everywhere people ask about him and pass their regards to him." [387]

The individual scientists recognised the weak spots of the decision makers. They therefore purposely used examples that made the decision makers reconsider what kind of image Czechoslovakia was bestowing upon itself internationally. The same author who complained about Svoboda's absence further mentioned another Czech scientist in a negative light claiming that the person had been criticised by Western colleagues for not fulfilling his duties. The conclusion of the author was that with such obviously ignorant behaviour the colleague would harm the good reputation of Czechoslovakia in the IFIP. In order to strengthen his argumentation he cited the opinion of the chair of the conference who had recommended that those countries which have inactive participants should replace them with more active ones. At that time Czechoslovakia was still seeking its place in the international scientific community and different kinds of international organisations were considered increasingly important. The country's representatives were not always prepared or skilled enough to make a good impression in front of foreign scientists. Czechoslovakia had been cut off from the international scientific community for years and now the scientists again had to learn the "rules" of how to behave in those communities. Those who focused primarily on the professional aspect of cooperation hoped to change the situation: the case of Svoboda describes the complexity of the situation in an excellent manner. Instead of sending top scientific authorities like him to international forums, Czechoslovakia was still sending people without sufficient professional qualities to represent its science abroad. However, as the report shows, the problem no longer stayed unaddressed. [388]

Besides political reasons there were other obstacles to travelling. Economic difficulties played an important role in the policy of travel restrictions.[389] The country constantly struggled with the fact that scientific cooperation with the West was expensive. Trips to the West were mostly organised and paid by scientists themselves – a factor that increased Czechoslovakia's dependence on the Western side. In order to travel one required an invitation from the target country and the trips were mostly financed by the inviting Party or by the rewards the scientists received for lecturing. In his memoirs Otto Wichterle told that he never used state money for travelling to the West but instead

387 A AV ČR – Fond ZO, NSR A-K 1961-1962, k.166, travel report of Jiří Krýže from a trip to Munich at the meeting of international organisation IFIP on March 1962. The author of the report stresses that the absence of A. Svoboda from a number of international meetings of the field has a disfavourable effect.

388 Ibid.

389 The author of the report further mentioned financial problems that had complicated the participation of some potential Czechoslovak scientists in the meeting. Significantly, the limitation of travel was not merely a politically driven issue.

always brought hard currency with him back home. He soon learned that "for the good reputation of Czechoslovakia" it was useful to take some dollars with him to the West, which he illegally stored in the meantime in a drawer. It was a way to avoid such unpleasant situations as having to borrow money or ask for honorary payments immediately after arrival to the West.[390] Perhaps the issue at stake was not only the "reputation of the home country", but also feelings of inferiority created by such situations. Interestingly, instead of choosing to demonstrate the flaws of socialist society in the West, Wichterle in fact broke the law in order to cover up the disadvantages.

Besides participation in academic events abroad, domestic conferences or inviting foreign academics to the country were an important aspect of international cooperation. In 1962, 31 international conferences were organised in Czechoslovakia – at those conferences participation from capitalist countries had been more significant than that from socialist states. The Central Committee considered the growing interest of foreign scientists to come to Czechoslovakia as a clear sign of the increasing attractiveness of Czechoslovak science. The Central Committee paid a lot of attention to matters of prestige: the number of Nobel laureates who had taken part in conferences in Czechoslovakia was for example a fact worth mentioning. Travels to the West were not the only way to cooperate. Many foreigners visited Czechoslovakia and as soon as it became easier invited their Czechoslovak hosts in return. Not only the Czechoslovaks but foreign scientists as well were hopeful for easements in border traffic. For some, Czechoslovakia was not a faraway country somewhere in the East, but a country with a central location and interesting scientific partners. For example a German professor who was invited to lecture at Šorm's institute in 1963, compared Czechoslovakia to Austria. He was moreover happy to have the opportunity to lecture in German instead of English – an important aspect supporting cooperation between Czechoslovakia and West Germany. The wartime period had not destroyed all hallmarks of traditional cooperation. The visitor voiced the hope that direct contact between the institutes would be possible one day.[391] The hopes of the professor were not unrealistic. Contacts with the West steadily increased.

In 1964 a new landmark in foreign scientific relations had been reached: the 'result' of academic cooperation with the West proved to be the best in the post-war period.[392] In the Academy, the growth of foreign exchanges was dramatic. Contacts with the capitalist states, in particular in the field

390 Wichterle 1992, 66.
391 A AV ČR – Fond ÚOCHAB. Letters from Professor Dr. Braunitzer (from the Max-Planck-Institut für Biochemie in Munich) to F. Šorm 4.7.1963, 12.9.1963 and 13.11.1963.
392 NA – Fond KSČ – ÚV – 02/1, svazek 15, a.j. 110/6.

of the natural sciences, clearly had increased with cooperation doubling in comparison to the previous year. The number of exchanges in 1964 when compared to a year before is as follows:[393]

Capitalist countries 1963:	Outgoing: 527	Incoming: 243
Socialist countries 1963:	Outgoing: 1512	Incoming: 700
Capitalist countries 1964:	Outgoing: 1087	Incoming: 458
Socialist countries 1964:	Outgoing: 2231	Incoming: 1045

In the same year Czechoslovakia began negotiations with many important Western scientific institutions. Furthermore, the country hosted the Pugwash conference in Karlovy Vary**.** [394] The Pugwash Conferences on Science and World Affairs were based on the document known as the Einstein-Russell manifesto that had been signed by Bertrand Russell, Albert Einstein, Józef Rotblat and six other prominent scientists in July 1955. The first Pugwash meeting was held in Nova Scotia, in a fishing village in Canada in the mid-1950s. The Pugwash conferences were created to make scientists actors for peace. In this manner, the Pugwash conferences represented a scientific organisation or community which clearly had political aims. It was established to develop the ideas of the World Federation of Scientific Workers, which had failed to work as a forum for scientists from both blocs.[395]

The participation of scientists in the Pugwash movement was justified by the fact that science had played a crucial role in developing the atomic bomb and other weapons.[396] A key figure in the Pugwash Movement, Cyrus Eaton, stressed peaceful co-existence with the Soviet Union. The conferences became more known in Europe, especially in Eastern Europe and in the Soviet Union, than in the USA.[397] The authors of the Einstein-Russell manifesto were concerned about the pessimistic state of mind of scientists. They declared that:

> *"We shall try to say no single word which should appeal to one group rather than to another. All, equally, are in peril, and if the peril is understood, there is hope that they may collectively avert it." (...) "in the tragic situation which confronts humanity, we feel that scientists should assemble in conference to appraise the perils that have arisen as a result of the development of weapons of mass destruction."*

393 Brádlerová and Kmochová 2001, 109.
394 A MZV – TO – Obyčejné 1960-64, USA (2).
395 Petitjean 2008, 268.
396 Walton, Susan, "Remember Your Humanity and Forget the Rest": Pugwash: Keeping Channels of Peace Open for Twenty-Five Years. BioScience, Vol. 30, No. 12 (December 1980), 857-8.
397 Schwartz, Leonard E, Perspective on Pugwash. In: International Affairs. Vol. 43, No. 3 (Jul. 1967), 506-508.

The manifesto was not signed by any scientists from the East, which was seen in the West as proof that it was not possible to connect the idea of scientific internationalism and science in socialist countries. The idea of international science had been based on the free movement of ideas and people – something that socialist countries could not allow. Therefore, as the German historian Jens Niederhut has pointed out, the idea of the international scientific community also became a tool for convincing scientists in the East on the pre-eminence of the democratic and liberal ideas. Thus, in a way, the scientific community served the purposes of the Cold War. However, even those who criticised the Soviet system and its practices of science, were often willing to cooperate with individual scientists, partly because they believed that would be the way to influence the scientists and eventually, the whole system. In the 1960s the idea of apolitical scientific cooperation between East and West became more and more common. As Niederhut has stated, by pursuing this, besides the common scientific goals the scientists were also thinking of the tensions of global politics. [398]

Some countries, including Czechoslovakia, established their own "Pugwashes".[399] Czechoslovakia took part in the activities of the organisation since its third conference in 1958.[400] At the Pugwash Conference in Karlovy Vary the participants disapproved of all obstacles to international exchanges of scientists.[401] At the conference 86 scientists from 19 countries were present; among them the most prominent Soviet scientists as well as the American Henry Kissinger, who was known as a specialist on nuclear weapons and foreign policy.[402] Both František Šorm and Ivan Málek were active participants of the Pugwash movement in Czechoslovakia and in 1962 as Czechoslovakia established its own Pugwash Committee Šorm was elected its chairman.[403] This can be seen as proof of the importance of the movement in Czechoslovakia.[404]

Czechoslovakia's new approach and activity in the Western scientific arena did not stay unnoticed in the West. As stated in a book on Czechoslovak science published in the West in 1963, the new policy of the Czechoslovak state was described as follows:

398 Niederhut 2007, 162-163.
399 Schwartz 1967, 506-508.
400 Franc 2010, 148.
401 Niederhut 2007, 215.
402 Zachovalová, Lieko, Prahan ääni. Edita, Helsinki 1998, 219-220.
403 A MZV – TO – Obyčejné 1960-64 USA (2).
404 In 1995 the Polish-born physicist Józef Rotblat and the Pugwash movement received the Nobel Peace Prize for their efforts towards nuclear disarmament.

> *"The former rejection en bloc of Western science results was replaced by avid following of all available sources of Western scientific information: the avowed objective is "to catch up and surpass" the most progressive of Western scientific developments."*[405]

In this, Czechoslovakia was following the policy of the Soviet Union. At the 22nd Party Congress of the CPSU Khrushchev had proclaimed the idea to catch up and overtake the West. In 1964, Viktor K. Mc Elheny, European correspondent of *Science*, published an article on *Biological Research in Czechoslovakia*. The opening notion of his article was indeed the fact that scientists in Czechoslovakia have been "eagerly expanding their contacts with colleagues in the West."[406] This policy was in the author's opinion linked to a friendly attitude toward science in the government of Antonín Novotný – of course a precondition for improving communications with Western scientists. The author explained that the Communist regime had improved conditions for research in Czechoslovakia. As a major explanatory fact for strong governmental support for science the author saw the position of two "active communists" Ivan Málek[407] and František Šorm. However, as the author further noticed, the ambitious projects of new institutes and the great growth of staff had caused economic and other problems.

In 1965, Czechoslovakia had the most extensive network and relations concerning scientific cooperation with the West of all the communist countries. Following the ideologically correct rhetoric, this was presented as a propagandist victory for the whole socialist bloc.[408] The Central Committee acknowledged that the economic benefit the state had gained in 1964 proved that the aim to increase cultural relations through commercial channels, in particular by supporting Western cooperation, was successful. The Central Committee openly stated that developments in the fields of science, education and culture were crucial for the national economy. The improvement of the economy would, however, require 'perfect knowledge regarding Western technology'.[409] Direct contacts with institutes in the West were considered to be important though politically problematic: the Central Committee emphasised the importance of the right to choose suitable candidates for foreign study visits. This was a problem because due to the invitation-based system the inviting Western institutions were choosing the people they

405 Slamecka 1963, 39.
406 McElheny, Victor, Biological Research in Czechoslovakia. Report from Europe. In: Science, August 21, 1964, 799.
407 The Ivan Málek (1909-1994) was a famous Czechoslovak biologist, the Director and the founder of the Institute of Microbiology of the Academy of Sciences. He was the vice-chair of the Academy in 1960-1965.
408 NA – Fond KSČ – ÚV – 02/1, svazek 107, 110, a.j. 6.
409 NA – Fond KSČ – ÚV – 02/1, svazek 113, 116, a.j. 16.

preferred, which did not always meet the expectations of the Party.[410] The transfer of knowledge from the capitalist countries had not been organised as well as it should have been. The plan for the future primarily stressed the need to promote socialist ideology and that the relations with the West should be linked to the acceleration of the socialist Cultural Revolution. The newspeak aside, the Central Committee stated that all the information and experience that was gained through Western cooperation should be utilised for the growth of the national economy, science, technique and culture. Thus, it was regarded as necessary to develop cultural relations so that the state would profit from them economically.[411] The economic aspect was indeed one of the main problems, which at the same time accelerated but also complicated the international cooperation of the Czechoslovak Academy. As these discussions illustrate, problems related to Western cooperation, such as the brain drain, remained a constant concern. Despite the caution, the political line from the mid-1960s onwards was that cooperation should increase – in the prevailing political situation the advantages of cooperation outweighed the concerns.[412] At the individual level the easement of travel restrictions in the mid-1960s was a welcomed development. For individual scientists though, this change often appeared somewhat sudden.[413]

According to a CSAS report from the year 1967, the stabilisation and regulation of cooperation had been one of Czechoslovakia's goals and this had been carried out successfully and in harmony with the requirements of Czechoslovak science and foreign policy.[414] The number of Czechoslovak scientists sent to capitalist countries increased significantly: 20 % in comparison with the previous year; while 24% more scientists from the capitalist countries came to Czechoslovakia. As a result of the alleviation in visa requirements, the number of foreign scholars who attended conferences in Czechoslovakia had also increased.[415] As stated in the memorandum of the Presidium of the Academy, the experience from 1966 proved to the state that cooperation had become more "qualitative" – the official explanation was that the choice of fields and persons for cooperation had been undertaken with

410 Ibid.
411 NA – Fond KSČ – ÚV – 02/1, svazek 33, a. j. 36/6.
412 A AV ČR – Fond Prezídium ČSAV, 21. prezídium (23.2. 1967). Zpráva o průběhu a výsledcích vědeckých styků ČSAV se zahraničním za rok 1966.
413 Such was the case of Rudolf Zahradník who was going to participate in a congress in Budapest in 1963. He wanted to take his wife with him but she was not issued a passport. However, only a year later she could travel together with her husband to Oxford and France.
414 A AV ČR – Fond Prezídium ČSAV, 21. prezídium (23.2. 1967).
415 NA – Fond KSČ - ÚV 02/1, 15, 17, item 8, pp. 11.

more care. This was veiled by newspeak – the growth was so significant that it was hardly possible that the limitation of contacts had become more rigid.[416]

In 1967, the Presidium of the CSAS stated that in individual cases, scientific reasons could have more weight in decisions concerning Western cooperation than those relating to foreign policy.[417] This was the first time the already existing practice was pronounced publicly. The Academy was pleased with the primarily positive development, but pointed out that the current situation was only the beginning of a long process. Resources given to international cooperation had not been used in a completely satisfactory way and the institutes had not yet taken enough initiative.[418] Following the state policy to normalise relations with some capitalist states, the Czechoslovak Academy of Sciences established relations with a number of important scientific institutions in the West, including the National Academy of Sciences in the USA, the National Research Council of Canada and the British Royal Society. Even though cooperation was not allowed to collide with foreign policy principles, the authority of science was now gaining more importance. [419]

The Western cooperation of Wichterle's institute followed overall developments marked by scientific and political changes.[420] Wichterle was active in international scientific organisations, particularly the IUPAC – he was a member of the Bureau and the Executive Committee over a period of almost 15 years. Wichterle was also a member of the German Academy of Sciences (1967) and a Centennial Foreign Fellow at the American Chemical Society (1976). Wichterle's participation in the international organisations of science was considered important by the Academy organs.[421] The Institute had the opportunity to introduce its research to foreign colleagues and establish valuable contacts when it hosted a large international IUPAC symposium on macromolecular chemistry at the end of August 1965. The conference's practice was modern for its time. The numbers of participants from Communist countries and from non-Communist countries were about equal; about 130 came from the Soviet Union[422]. Through the success of the conference the institute gained acknowledgement in the West. The IMC looked for partners

416 A AV ČR – Fond Prezídium ČSAV, 36. prezídium (20.2. 1968), Zpráva o průběhu a výsledcích vědeckých styků ČSAV se zahraničím za rok 1966.
417 Brádlerová & Kmochová 2001, 112.
418 A AV ČR – Fond Prezídium ČSAV, 21. prezídium (23.2.1967). Zpráva a průbehu a výsledcích vědeckých styků ČSAV se zahr. za rok 1966.
419 Brádlerová & Kmochová 2001, 112.
420 AV ČR – Fond ÚMCH ČSAV, zprávy. Zahraniční styky ÚMCH v letech 1962-1972. In 1962 only 3 people from the IMC travelled to the West. In 1964 the number had increased to 17 and in 1969 to 84. In the era of normalisation the number quickly decreased, in 1970 24 people travelled and in 1971 only 14.
421 A AV ČR – Fond Vědecké kolegium chemie ČSAV, kartón 21, inv. 202, 203. Zahraniční styky. Souhrnné zhodnocení zahr. styků ústavů vědeckího kolegia chemie a chemické techniky ČSAV za rok 1967.
422 McElheny 1966, 622.

in those institutes in the West that corresponded with the research carried out in Czechoslovakia. Similar interests were more important than the prestige of the university. The way Jindřich Kopeček has characterised the university of Utah, one of the most important partners of the IMC, is illuminating: „*The university was better known than Ivy League universities because the research on polymers and the artificial heart was complementary to what we were doing in Prague*".[423]

This chapter illustrated how rapidly the participation in international scientific communities grew and how important those communities became for individual scientists. Wichterle's active role in IUPAC as well as his other international academic involvements show how the Western scientific organisations had become important professional yardsticks of quality. But in the case of Wichterle's institute, it was not that the Czechoslovak scientists would have been content with the mere fact that they had some form of international cooperation. Their own international reputation gave them the possibility to keep up high standards regarding their partners. These Czechoslovak scientists had proven to be attractive partners in Western scientific communities. Professional qualities overcame political obstacles in regional preferences, as will be illustrated in the following chapter.

The Attractive Enemies

Paradoxically, the greatest Cold War enemies West Germany and the USA were at the same time the most attractive countries of science in the West. Czechoslovakia was carefully following what was new in the field of research in the USA. The Cold War competition made the situation exciting. On the one hand the USA was the country from where the socialist countries were to get scientific knowledge and technology, on the other hand, the hopes were high that the Soviet Union would win the race and thus, the ideologically suspicious dependence on the USA would eventually come to an end. The USA had not remained insignificant to the achievements of science and technology in the Soviet Union either. According to Alexei Kojevnikov, already in the early 1950s warnings had been issued in the USA about how advanced "Russia" had become through a programme of mass education. This issue caused mass attention after the launch of Sputnik in October 1957. Kojevnikov has explained how American politicians and the public entered the debate about how the USA had managed to lose its scientific and

423 A student and later colleague of Wichterle and Lím Jindřich Kopeček left for the USA and the University of Utah in the 1980s. See: Sample, Susan, Crossing Boundaries in the Science and Life of Jindrich Kopecek. Available at: http://uuhsc.utah.edu/pubaffairs/hsr/fall2001/kopecek.html, accessed September 14, 2007.

technological supremacy. Consequently, an increase in government funding followed these discussions. Additional financing took place through civilian channels such as the National Science Foundation and NASA, the newly established, "Soviet-inspired government agency".[424]

After Sputnik, further significant achievements of Soviet science and technology such as the first spacecraft of the „Luna" programme which was launched in the direction of the moon in 1959, were warmly welcomed in Czechoslovakia. According to the Czechoslovak officials the launch had shown to the Americans that in a number of sectors of science and technology the Soviet Union had reached parity with the USA and in some sectors the socialist superpower was even able to proclaim itself the leader.[425]

On the other hand, although the successes of the Soviet Union were praised, in the late 1950s and early 1960s Czechoslovakia was increasingly worried about its own performance and scientific reputation at the international level. The state officials indirectly admitted that the country's scientific attractiveness in the West was not as high as it should be. The officials were hopeful that in the future the situation would change and Czechoslovakia would become a truly interesting partner for international scientific cooperation. It is noteworthy that already in 1960 the Czechoslovak officials acknowledged the importance of individuals in promoting a more positive picture of Czechoslovak science in the USA. The Ministry of Foreign Affairs mentioned the name of Otto Wichterle as the first among a few others[426] whose visits to the West they believed to have had a positive impact on the picture on Czechoslovak science in scientific circles of the USA.[427] The representative of the Ministry grounded their opinion on the information received from Wichterle's first trip to the USA, which had taken place recently. It had been organised by the Czech-born chemist Herbert Morawetz, whom Wichterle had met at the Israeli conference in 1956. Morawetz was working as a professor in the Polytechnic Institute of New York University in Brooklyn. The relationship of the two men shows the importance of the "countrymen" networks, which were not insignificant internationally. Morawetz organised a whole tour of lectures for Wichterle, who travelled through the USA for one month while spreading his knowledge on polymerization on carpolactam. Wichterle in turn gained valuable ideas and experiences as how to design his new institute.

424 Kojevnikov 2008, 132-133. The offices abandoned the categorisation of science into pure and applied research, just as the Soviets had done thirty years earlier. NASA is the National Aeronautics and Space Administration.
425 A MZV – TO – tajné 1960-64 USA 4a: Zpráva o situaci na úseku výchovy a vědy v USA za 1. pololetí 1960 Washington. Report of the Embassy of Czechoslovakia in Washington 29.5.1960.
426 Ševčík & Figer & Škovránek.
427 A MZV – TO – tajné 1960-64 USA 4a: Zpráva o situaci na úseku výchovy a vědy v USA za 1. pololetí 1960 Washington. Report of the Embassy of Czechoslovakia in Washington 29.5.1960.

He later described the trip as the most beautiful of all his trips to the USA: "*the USA was then flourishing and not yet burdened by the adventure in Vietnam*".[428] Czechoslovakia believed that the US interest in cultural and scientific cooperation with Czechoslovakia would be lasting. As a report from the Czechoslovak Embassy in Washington in 1960 stated, the temporary impression that the U-2 incident would harm this development had been already „completely" dismissed. On May 1 1960 an American U-2 spy plane was shot down over the Soviet Union. This happened only two weeks before the scheduled opening of an East-West summit in Paris.[429]

There were strong economic reasons for increasing cooperation with the USA, the main Cold War enemy. Since the beginning of the 1960s Czechoslovakia had been consciously trying to resume economic relations with the USA, which had been seriously harmed in the early 1950s, when Czechoslovakia had lost its most-favoured-nation trade status with the USA, as a result of which exports to the USA had almost ceased altogether. The gap between East and West was growing steadily. According to the historian Igor Lukes, the change in the relations with the USA was strongly supported by the foreign minister Václav David, who compared the situation with that of neighbouring countries such as Poland, noted for having 'long ago abandoned the harsh attitude that once characterised the Soviet bloc's relations with Washington'. The liberalisation of trade went so far that in 1967 the Czechoslovak Embassy even took out an advertisement in *The New York Times* calling for stronger East-West ties and announcing that Czechoslovakia was '*taking all steps required to eliminate, finally, the remainders of the obstacles put in the way of (East-West) trade at the time of the Cold War'*.[430]

The Politburo of the Communist Party justified contacts by citing the Scientific and Technological Revolution. It admitted that the efficient growth of the national economy needed more intensive scientific cooperation which also included capitalist states. The Party approved of the promotion of Czechoslovak science abroad and the ensuing economic advantages. Yet, from the Party perspective the phenomenon remained a dilemma. Moreover, the contentment of the Academy of Sciences had its limitations: at least in the official rhetoric the ideological problems linked to cooperation had to be highlighted. Concrete evidence of the benefit of cooperation to the Czechoslovak economy and Czechoslovak science had to be present.[431]

428 Wichterle 1992, 67; Morawetz 2006, 103.
429 A MZV – TO – tajné 1960-64 USA 4a: Zpráva o situaci na úseku výchovy a vědy v USA za 1. pololetí 1960 Washington. Report of the Embassy of Czechoslovakia in Washington 29.5.1960.
430 Lukes 2001, 88-89.
431 NA – Fond KSČ – ÚV - 02/1, svazek 15, 17, a.j. 8, s. 11.

The Czechoslovak Communist Party saw the motives of the USA as suspicious and primarily egoistic – the Czechoslovaks believed on the one hand that the USA wanted to speed up its own scientific development and on the other hand, that cooperation had an ideological mission. The Czechoslovaks considered the encouragement of the "more unstable" scientists to emigrate as one of the "most efficient but silent" elements of US foreign policy.[432] The Central Committee had correct information about the importance of exchanges in US foreign policy. Since 1945 the USA had practiced a policy of supporting trips of Western Europeans to the USA. [433] According to the Central Committee estimation by using this „typical" practice the USA had bought 39, 000 scholars from Western Europe in the years 1952-1963. By doing this, the Americans had allegedly saved 2, 5 billion dollars to strengthen their own scientific elite. [434] According to Niederhut, from the US perspective the politics behind these aims had been to strengthen transatlantic networks and the pro-Western attitude among the Western elite. This practice, which the State Department considered to be highly effective, became a model for the exchanges with the socialist countries.[435] The goal of the US policy had been formed in 1956 and can be summarised as follows: "a desire for greater individual freedom, well-being and security within the Soviet Union". The USA was thus interested in "opening up" a society which "had largely been closed to us". In the context of other socialist countries in East Europe, a new goal was added to this – namely the effort to break the cultural hegemony practiced by the Soviet Union in the region.[436] Alexei Kojevnikov has shown that the USA also had much more pragmatic reasons for its policy. According to Kojevnikov, the practice was a reaction to Soviet successes in education and science. The Sputnik crises and the fear that the USA could lose its supremacy in science and technology raised the question to increase not only funding for science, but also for scientific manpower. Accordingly, importing qualified manpower from overseas proved to be the best solution politically and ideologically.[437]

Scientific exchanges in form of study trips were seen through an ideological lens, serving the propagandistic measures of the USA. Due to the lack of finances, Czechoslovakia was far too dependent on host countries, which naturally increased the threat of emigration. [438] In Eastern Europe the US-

432 NA – Fond KSČ – ÚV- 02/1, svazek 27, 29, a.j. 8.
433 Niederhut 2007, 259.
434 NA – Fond KSČ – ÚV- 02/1, svazek 27, a.j. 29/8. Vysiláni stipendistů do USA, Předkládá: V. David, 28. března 1967. Kommuniké, s. 2-3.
435 Niederhut 2007, 259.
436 Ibid 2007, 260-261.
437 Kojevnikov 2008, 133.
438 NA – Fond KSČ – ÚV- 02/1, svazek 27, a.j. 29/8. Vysiláni stipendistů do USA, Předkládá: V. David, 28. března 1967. Kommuniké, s. 2-3.

led scientific cooperation was in the hands of foundations of which the most important in the region was the Ford Foundation. The Ford Foundation and the Rockefeller Foundation had first started exchanges with Poland in 1957. The Ford Foundation started exchanges with Romania in 1960, with Hungary in 1962, and with Bulgaria and Czechoslovakia in 1963. The speciality of the Ford Foundation programme was the fact that it was tailored to specific fields. For example the mediating of Anglo-Saxon theories and practices in the field of economy was a significant part of the programme.[439] Due to financial problems, Czechoslovakia was interested in utilising such American foundations as the Ford Foundation for sending Czechoslovak scientists to the USA. The country was looking for skilful scientists through the American Representation in Prague. The Central Committee considered this as a highly problematic way of selecting appropriate candidates – the practice would ignore the power and control of the Party in selection processes and give enormous autonomy to a Cold War enemy. The Central Committee hoped that the Czechs themselves could decide whom to send abroad.[440]

Eventually, however, sending out scientists through the financially and professionally advantageous channels became an alternative too attractive to refuse. In 1966 the USA provided Czechoslovakia with 163 long-term scholarships and 52 scholarships up to three-months. Among the socialist countries Czechoslovakia was in the third position after Yugoslavia and Poland. Most of the scholarships were in the field of medicine and related fields, such as pharmacology, microbiology and physiology. Their share of the exchanges was 43%, whereas the share of chemistry was only 11% and electro-technology only 7%. From the Czechoslovaks' point of view this was problematic because these were the main two fields which were considered crucial in helping to build "the way for the Scientific and Technological Revolution". The Czechoslovaks were moreover worried that the Americans would utilise medicine – in which Czechoslovakia was still at the world level. Czechoslovakia was thus afraid that as long as medicine would have such a significant share of exchanges, the country would be a provider of know-how to the USA. The Americans did not only draw the Czechoslovak scientists to their country; but as a matter of fact, they formed the second largest group of Western scientists in Czechoslovakia.[441] The Czechoslovaks believed that the Americans were following research results of prominent Czechoslovak scholars with whom they would try to get into contact during conferences organised in Czechoslovakia.

439 Niederhut 2007, 259-260.
440 NA – Fond KSČ – ÚV- 02/1, svazek 107, a.j. 110/6. Zprava o kulturnich, skolkych a vedeckych stycich resortu statni spravy a CSAV se zahranicnim za rok 1964.
441 A AV ČR – Fond Prezídium ČSAV, 21. prezídium (23.2.1967). Zpráva o průběhu a výsledcích vědeckých styků ČSAV se zahraničním za rok 1966.

In the first half of the 1960s, despite the obvious attractiveness of the USA, several countries in Western Europe were still considered as the principal Western scientific partners. In 1963, the Communist Party analysed its contacts with the West and stated that Czechoslovakia had the richest relations within the capitalist bloc with Italy. Those consisted mostly of cultural relations and scholarly contacts especially in the fields of history and archaeology. In most of the areas of natural sciences the relations were best with Great Britain. The Central Committee further stated a wish to deepen relations with Scandinavia, particularly with Finland. It was characteristic for the official documents of the state institutions that Scandinavia and Austria were often listed separately from the general category of „developed capitalist countries". The efforts to increase contacts with „neutral states" such as Finland and Austria fit with the politics of the Cold War.[442]

The scientific relations with West Germany concentrated mostly on technical fields.[443] For individual scientists in many fields of natural sciences West Germany appeared as an attractive partner. The traditionally intensive relations had deteriorated because of the war and then the Cold War. Communication was constantly troubled especially by such issues as the Sudeten German question and the Munich agreement. Because of these tensions, the travel accounts of Czechoslovak scientists to West Germany contained of lot of critical remarks and observations about the country. The Czechoslovaks often reported on the ways the Germans saw Czechoslovakia.

According to a travel report of a Czechoslovak chemist from 1962, the Germans had admitted that they did not have a lot of knowledge concerning the living standards in Czechoslovakia. However, the Germans were generally aware that scientists were highly valued in the Soviet Union as well as in Czechoslovakia. The chemists further told that although most of the Germans had so far been focusing on the USA, many are already learning Russian and complaining about the lack of Soviet journals in their libraries. Many had, according to the author of the report, expressed a true interest in travelling to Czechoslovakia and having a look at local science, similarly stressing that a trip to Czechoslovakia would be difficult to realise practically. The author furthermore noted that despite the official bad opinion about Czechoslovakia in West Germany, he had been welcomed in a friendly manner. By organising various leisure activities for the Czech visitor, the Germans had shown their interest to give the visitor a positive picture about their country.[444] This was

442 NA - Fond KSČ – ÚV – 02/1, svazek 15, a.j. 17/8.
443 NA – Fond KSČ – ÚV – 02/1, svazek 15, a.j. 17/8.
444 A AV ČR – Fond ZO, NSR, cestovní zprávy, 1961-1962, k. 163. Zpráva ze studijního pobytu v NSR, 10.-23.10.1962, František Hrabák.

true: it was indeed a part of West German policy to make inhabitants of the "Eastern Bloc" conscious of the gap in consumer products and living standards.[445]

Sometimes the accounts attested Western stereotypes about the East and thus reflected the Cold War division of the world. One of the Czech scholars stated that most of the people in West Germany look on a socialist state through the glasses of the GDR – "which is in the Cold War against West Germany". The author, who perhaps saw it as his mission to correct the views of the Westerners, claimed that it had been difficult to speak with people who fled from the GDR to West Germany. The picture had already been embellished and it was difficult to change. To anything the Czechs would say about conditions back home, the answer was a generalising note: "in the Eastern zone it is like that…" As the examples show the generalisations were strong on the both sides of the Iron Curtain. Generalisations were made on the both sides of the Iron Curtain: in the West people often expected that all the visitors from East were communists, lumping together the system and the individuals living in it. Once, at a dinner with the famous scientist R.S. Mulliken[446] the daughter of a prominent chemist who was sitting next to the Czechoslovak chemist Rudolf Zahradník told him: "*Doctor Zahradník, I am most delighted that for the first time in my life I am sitting next to a communist*" Zahradník asked the daughter how she had reached that conclusion. The reply was plain and simple: "*You are from Prague after all*." The non-communist Zahradník was uncomfortable with the view and gave the young lady a lecture: "*That is true but you should be aware that in the whole empire to which Prague belongs, only a small minority belongs to the communists and I have always belonged and belong to that majority of non-communists" (...)* To make his point clear he added: *"The only thing that is red on me is my pullover*."[447]

Not only the Cold War propaganda that emphasised the superiority of one's own system vis-à-vis the system of the other side, but also the complicated relations between Czechoslovakia and West Germany caused by the war and its aftermath were reflected in travel accounts. People who visited West Germany paid a lot of attention to the political atmosphere and to the attitude of the people towards Czechoslovakia. Especially in the encounters with the Sudeten Germans the feeling of inferiority versus superiority came up as the Germans compared their new life in West Germany to the hypothetical life they would have had in socialist Czechoslovakia had they not been deported after the war. Scientists were not ignorant of material comfort. A

445 Péteri 2006, 3: Péteri quotes an article by Gregory Castillo in the same book.
446 R.S. Mulliken (1896—1987) was awarded with Nobel Prize in Chemistry in 1966.
447 Zahradník 2008, 180.

Czechoslovak scientist had talked with a Sudeten German deportee who had told the Czech that he was actually pleased that they had been deported, because in Czechoslovakia they would not have such a good life as in West Germany: „a house with a garden and a car". He further noted that even though in West Germany everything was not exactly ideal, the people there had the advantage that they may swear (nadávat) at the state without any consequences. The German further touched the Cold War struggle between the two Superpowers. Perhaps with the aim to find a common enemy, he had stated that he thinks that the Americans are just like the Russians, they also want to rule the world – he used the attack on Cuba as an example. When the Czech had tried to correct his opinion on the Soviet Union, the German had added smoothly that he had heard positive experiences from there and that although it is not yet as good there as in West Germany, he was convinced that it would not take a long time before life in the Soviet Union would be even better.[448]

Yet the travel reports of natural scientists contained less information on political issues than those of humanists or social scientists. A Czech chemist from Wichterle's institute, who visited West Germany in 1962, stated that almost all of those with whom he had talked during the visit had defined themselves as apolitical.[449] More than ideological and political observation, the natural scientists were concerned with research directions or the level of equipment of the institutes they visited – scientists made remarks on these comparing more than two institutes both abroad and at home.[450] In this vein, their observations and especially their critique touched even more on the weak points of the domestic system addressing the painful reality of lagging behind the West. Sometimes the reports of natural scientists and in particular technicians were detailed and lengthy descriptions with photographs of machines, equipments and technology that the visitors had been able to observe abroad. These observations were compared to conditions in Czechoslovakia and sometimes they worked as grounds for suggestions of how things could be improved back home.[451] For example the co-inventor of Polyhema, Drahoslav Lím, wrote about certain practices in Switzerland that required close cooperation with American organisations. He considered

448 A AV ČR – Fond ZO, NSR 1961-1962, Report from West Germany (3.8.1961, Ústav teoretických základů chemické techniky, V. Kolář).
449 A AV ČR – Fond ZO, NSR, cestovní zprávy, 1961-1962, k. 163. Zpráva ze studijního pobytu v NSR, 10.-23.10.1962, František Hrabák.
450 Ibid; A AV ČR – Fond ZO, NSR, cestovní zprávy 1966, Antonín Holý, Zprava o stipendijním pobytu v NSR 1.3.-15.6.1966.
451 A AV ČR – Fond ZO NSR 1961-1962, Report from West Germany (3.8.1961, Ústav teoretických základů chemické techniky, V. Kolář).

that if Czechoslovakia would adopt similar practices it would profit the state economically and scientifically.[452]

A significant territorial change in contacts with capitalist countries took place in 1966 as West Germany noticeably replaced Austria.[453] The number one Cold War enemy of Czechoslovakia now obtained the first position in the cultural and scientific relations. The changes in West Germany's policies vis-à-vis Czechoslovakia and other socialist countries were carefully followed and analysed. In the mid-1960s there were strong interest groups in West Germany that wished to make trade with some socialist countries more efficient.[454]

The Czechoslovak state also openly admitted the importance of West Germany as a scientific partner. Contacts with it had increased so much that cooperation with other countries had decreased at its expense. However, the official argumentation still reflected mistrust towards West Germany. Therefore, the country's leading position is evidence of how significant economic reasons were. According to the Academy of Sciences, several factors had engendered the situation, including the poor financial situation of the Academy. Accordingly, Czechoslovak science was said to be 'exploited' by West Germany, which offensively and purposely attracted Czechoslovak scientists with money and research possibilities. In this vein, long-term scholarships of the DAAD (*Deutscher Akademischer Austausch Dienst*) and *Humbold Stiftung* (HS) were, according to the CSAS, motivated not only by scientific, but also by the political interests of West Germany, which was willing to normalise scientific, cultural and trade relations with Czechoslovakia.[455]

Critical remarks on the issue of West German foundations in official documents were one thing, but for individual Czechoslovak scientists and students those scholarships were a very positive phenomenon. In 1966, the Czechoslovaks formed 10% of all holders of scholarships of the Alexander von Humboldt Stiftung. The Humboldt Stiftung offered two types of stipends at that time, research stipends and docent stipends. The Stiftung was financed mainly by the Ministry of Foreign Affairs (65%), Volkswagen and Stiftverband für die deutsche Wissenschaft. Every year the HS also organised a three week trip for the stipend holders to Germany with the goal to familiarise them with German industry and cultural sights. This kind of practice was viewed as impressive: according to an enamoured Czech scientist, the Humboldt Stiftung did not even

452 A AV ČR – Fond ZO, NSR, Drahoslav Lím, zpráva o studijní cestě do NSR a Švýcarska 20.-30.10.1965.
453 In 1965 Austria had held the number one position.
454 NA – Fond KSČ – ÚV – 02/1, svazek 106, a.j. 108/k inf. 2.
455 A AV ČR – Fond Prezídium ČSAV, 21. prezídium (23.2.1967). Zpráva o průběhu a výsledcích vědeckých styků ČSAV se zahraničním za rok 1966.

forget such a small detail as a birthday wish. He recommended sending other scientists to a German research institute in the framework of the Humboldt Stiftung, because that would work in favour of professional growth of such scientific workers and their language skills, and would further increase the reputation of Czechoslovak science abroad.[456] It would be interesting to know to what extent the German foundation chose these practices deliberately in order to achieve their goals of attracting talented Eastern European scholars and scientists to participate in their programmes and what the policy behind this was. Whatever the truth, the practice seemed to work very well.

In 1967, the exchange program with the West German DAAD was mentioned as a successful example of foreign cooperation. However, disproportion between the number and conditions of sending Czechoslovak scientists to capitalist states, in particularly to West Germany and the USA, seemed to concern the Academy. Economic factors played a role here too. The unfavourable currency situation in Czechoslovakia was, according to the CSAS, deliberately utilised in those countries by inviting Czechoslovak scientists for study visits. The inviting countries offered the Czechoslovak scientists finances and working conditions that were considered immensely attractive but disturbing from the state perspective. Thus, the CSAS should be more careful when deciding whom to send abroad. Those decisions should be harmonised with the concepts of Czechoslovak foreign politics. The example illustrates well the dilemma that was linked with foreign cooperation. Thus, despite the cautiousness the prospect was that cooperation would increase and widen.[457]

At the individual level, the fact that Western hosting institutions paid for the trips of Eastern visitors was attractive. For example, Rudolf Zahradník "felt dazed" when a professor from Würzburg University offered him the opportunity to lecture at the local institute, and as a "Beihilfe" offered the Czech colleague 2,000 German Marks, an apartment to his disposal and all the travel costs covered.[458] The gap in living standards was something that academic travellers noticed when they first entered the West. Rudolf Zahradník has illustrated the crossing of the border of Czechoslovakia to the West as humiliating:

> *"West Germany was an elegant, excellently working country. A country as tidy as Switzerland; and that applies to streets and all possible institutes and households. People were very well dressed and the women*

456 Japan was in the first position 18,7% of all stipends, Yugoslavia the second (11,1%) and Czechoslovakia was the third. After that there were countries like the USA, Greece, India. ZO NSR 1966, Mrha, Jiri, Bonn 2.1.-22.12.1966.
457 A AV ČR – Fond Prezídium ČSAV, 21. prezídium (23.2.1967).
458 Zahradník 2008, 132, 141.

carefully combed. The supermarkets were full, often filled with stuff that was cheap to the locals and even for many foreigners. All that together supported cultivated and amicable relations between people; people were tactful and smiled a lot. It was hard to be confronted with the conditions there and at home". [459]

As Zahradník has described it, for him going to the other side of the Iron Curtain meant arriving in the "civilised West".[460] Zahradník furthermore praised the material surroundings in the German academia:

"charming atmosphere as in most of the older German institutes. There were rows of photographs of chemical heroes decorating the corridors, which illustrated parts of not only German history. In the next room there was a bathroom and on the other side of the corridor there was a first-class chemical library; it was of course very pleasant to have the opportunity to have a look at something there for example in the middle of the night."[461]

The perceptions of Czech scientists reflect the Cold War realities and the impact of the Cold War on the pictures created on both sides of the Iron Curtain. The perceptions and remarks furthermore illustrate the ways in which individuals acted in the international scientific community. During the period of relative isolation, the image of the West had been in many ways attractive. Thus, the isolation actually had the opposite impact than what the Communists would have hoped for.

The level of "civilisation" (Zahradník used the word with a slightly ironic tone) was not the only attraction for an individual scientist when they travelled to the West. There were also a number of other reasons. The Czechoslovak chemists did not seem to have had the feeling that they were invited to the West merely as academic tourists or curiosities from the communist countries. Professional reasons played an important part. The Czechoslovaks were not at all levels on the receiving end. Zahradník for example was excited about the idea of having been invited to West Germany to teach quantum chemistry forty years after the subject had been developed there. Significantly, the theoretical level of quantum chemistry was at the time not at its best in West Germany and the teaching in particular was rather poor. The situation in East Germany and Czechoslovakia was better, which made Czech scientists attractive visitors.[462] Contacts often led to further connections and to a more efficient integration of scientists into the scientific community. For example, during his visit in

459 Ibid 2008, 183.
460 Zahradník, Rudolf, Interview by the author April 18, 2005 in Prague.
461 Zahradník 2008, 149.
462 Zahradník 2008, 147.

Würzburg in 1965, Zahradník was invited by Professor Klaus Hafner to give a lecture in Darmstadt. In this case a Western contact led to an East German one. Accordingly, in his book on scientific relations between East and West Germany, Jens Niederhut has mentioned that chemistry was the field of science where cooperation of the two scientific communities – East and West Germany – worked at its best.[463]

In the mid-1960s, the former enemies of Czechoslovakia, the USA and West Germany became the most attractive and important scientific partners of Czechoslovakia. This reflects the changing political realities and the increased importance of pragmatic factors in Czechoslovakia's science policy. These changed policies and approaches created the framework which enabled promoting the licence of the soft contact lens in the West.

The Soft Lens through the Iron Curtain

The policy that allowed more cooperation with the West enabled at the institutional and individual levels increased activities, including more efficient ways of exchanging knowledge and transferring technology. A concrete example of cooperation with the USA was the selling of the licence for the soft contact lens to the USA in 1965. Wichterle's travels in the first half of the 1960s were often related to the marketing of the soft contact lens. In Europe, the soft contact lens made its first important debut in France in 1964. At this stage the lens was perceived more as a curiosity than as a real alternative to the hard lens. According to Wichterle, his policy was to be open about the research to all those who expressed an interest, because he believed that broad publicity would be the best promoter for research. The patent on the lens would be sufficient to secure the innovation so there was therefore no need to make a secret of it.[464]

Building networks was a precondition for proceeding with the commercialisation of the innovation. During the IUPAC congress in London in 1963 Wichterle visited Professor Harold Ridley, a well-known specialist on contact lenses. At first Ridley was sceptical, but as soon as Wichterle was given the opportunity to present the invention and to demonstrate the lens that he was wearing himself (Ridley did not believe at first that Wichterle was wearing anything on his eye), the professor's interest increased. Wichterle was then invited to give a lecture at the Royal Medical Society, where he

463 Niederhut 2007, 166.
464 On the case of the transfer of the lens see: Nisonen-Trnka, Riikka, Soft Contacts through the Iron Curtain. In: Reassessing Cold War Europe. Edited by Autio-Sarasmo, Sari and Miklossy, Katalin. Routledge UK 2011, 150.

met George Nissel, probably the best-known specialist in the production of hard contact lenses. The meeting was successful and it gave Wichterle new ideas for the lens production. Following his inspiring discussion with Nissen, Wichterle came up with a new patent.[465]

The changes in science policies and the opening up towards the West were preconditions for the trade of the soft contact lens. The Americans had their own motives for seeking out business opportunities in Eastern Europe. Interestingly, American businessman and journalist John Kiser wrote in the late 1980s that it was in America's own interests to take more advantage of Soviet technology.[466] In his account of cooperative agreements in science and technology between the USA and the Soviet Union, Yale Richmond argues that while the US motivation was primarily political, this was also a matter of solving practical problems in US science and technology.[467] The Americans began to show real interest in Wichterle's innovation in 1964. Several American businessmen and eye-specialists visited Prague during the spring of 1964.[468]

The optometrist Allan A. Isen, a representative of Frontier Contact Lenses, Inc., visited the Institute of Macromolecular Chemistry in February. He had learned about the lenses from a fellow countryman, who had brought a sample of them to the USA. Wichterle and his colleague Hnídek asked Isen about the conditions for production and distribution of lenses in the USA. What Isen told them must have sounded very promising to the Czechoslovaks. Isen had been impressed by the Czech lenses. Enthusiastically he explained to his hosts that the lenses he had tested earlier had never fitted as perfectly as the Czech ones, which he had been able to wear for 'two days without a break'. In the negotiations Isen highlighted the fact that his production in the USA was several years ahead of Europe due to the participation of technicians (not only ophthalmologists, as in Europe), who had a better understanding of the production. He told the Czechoslovaks that the contact lens market in the USA was currently determined by the high price, not the demand. However, he estimated that if the new soft lenses succeeded in reducing prices, then this could mean a quadruple growth in sales. Isen also reassured his hosts by denying reports that preparations for producing the soft lens were already underway in the USA. According to Isen, these rumours had only been a way of exerting pressure on the Czechoslovaks to sign an agreement. Isen also showed interest in technical cooperation with the Czechs. He raised an

465 Wichterle 1992, 151-152.
466 Kiser 1989, 5.
467 Richmond 2003, 69.
468 Wichterle 1992, 152.

attractive proposal to provide them with some valuable instruments. In their dealings with Isen, the Czechoslovaks were careful not to reveal the details of the technique they were using and did not correct him when he betrayed a mistaken understanding of how the production worked.[469] Isen was planning to return to Prague in the following summer but left open the question of whether the Czechoslovaks would produce all the lenses for the US market themselves, or whether the production would take place in the USA.

The first company to come forward with a concrete proposal for trading the lens, however, was the National Patent Development Corporation (NPDC). This was a smaller American firm, owned by lawyers Jerome Feldman and Martin Pollak. The firm focused on screening and buying patents on various devices, technologies, and materials, before licensing them to other companies or trying to market the products itself. Back in 1961, the firm had contacted the Soviet leadership with a view to purchasing the rights to Soviet inventions. The Soviets were interested in the offer and invited the firm for a visit. The NDPC subsequently conferred with some 250 Soviet scientists and technicians and won rights to market fourteen Soviet innovations in the USA. An agreement was signed with Amtorg, the Soviet trade wing that was located in the USA. Feldman learned about Wichterle's innovation in the USA, from Bob Hope's ophthalmologist, whom he met at a cocktail party in Los Angeles. Feldman then sent a telex to his partner Pollak who was in Moscow at the time, and who decided to make a detour to Prague.[470]

In Czechoslovakia, Pollak first contacted Polytechna, the institution charged with selling rights to patents. Foreign trade in Czechoslovakia was conducted by state agencies under the jurisdiction of the Ministry of Foreign Trade. At first the Polytechna staff had no idea of Wichterle's existence. After calling around different institutes they finally found him and a meeting was arranged with the Americans. The Czech chemist's dramatic presentation of his discovery must surely have impressed the Americans: after taking the lens from his eye, Wichterle threw it onto a dirty floor; stepped on it with his shoe; and sucked it in his mouth, before replacing the same lens in his eye. The meeting resulted in a concrete offer on a licence agreement. Later the same year a delegation from a French company visited Prague with a competitive offer, but according to Wichterle they failed to formulate their concept as clearly as the Americans had done.[471]

By purchasing the spinning technology and the rights to make and market

469 A AV ČR – Fond OW, Zápis o jednání s Allanem A. Isenem Frontier Contact Lenses, Inc. dne 22. a 24.2.1964.
470 Kiser 1989, 80-81.
471 Wichterle 1992, 155; AV ČR – Fond OW.

PolyHema, the NPDC had found its first important product. The contract was concluded in March 1965. Pollak and Feldman found an investor in Robert Morrison, a businessman from Pennsylvania. The initial US launch of the soft lens was difficult. Characteristically, the early reception was mostly positive and spawned a lot of interest, yet the soft lens was considered more a curiosity than a real potential alternative for the old hard lenses.[472] In the West, contact lenses were still produced from hard plastic. According to John Kiser, even after testing a sample lens on his own eye, one of the leading specialists in ophthalmology continued to insist: 'It can't work! Read my book!'[473] Pollak and Feldman had wrongly assumed that the producers of hard lenses would be interested in soft lenses as a possible improvement for their own technology.[474] At first, Pollak and Feldman could not find a buyer for the technology. They eventually contacted Bausch & Lomb of Rochester, New York, a major firm in the optical business and a solid company looking for new business opportunities.[475] In 1966 the NPDC sublicenced to Bausch & Lomb the rights to gels and to the manufacturing.

The agreement gave Bausch & Lomb an exclusive licence to the new lens material and Wichterle's spinning and manufacturing technology. The manufacturing involved two methods: a centrifugal spin-casting of the lenses, and a lathe-cutting technique. The production lines were built in the Institute of Macromolecular Chemistry, and then sent by plane to the USA, where they were installed by Czech specialists.[476] In return, the NPDC received a licensing fee, plus half of all Bausch & Lomb's domestic lens profits.[477] The transfer of the soft contact lens technology to the US prompted an intense interest in hydrophilic materials, such that hydrogel studies were transformed into a whole new field.[478] The advance of the new invention proved to be rapid. The soft lenses were soon prescribed more often than hard lenses, mainly because they were comfortable to wear. In 1966 *Science* noted that the method of using hydrophilic polymers for contact lenses was a 'notable early entry into East-West technological trade'.[479] Ironically, an invention produced in a socialist country had become a pawn of the capitalist market economy.

472 Ibid 1992, 153.
473 Kiser 1989, 83.
474 Kiser 1989, 83.
475 Kiser 1989, 84.
476 Wichterle 1992, 159.
477 Information on GP Strategies Corporation, formerly National Patent Development Corporation. Available at: http://www.answers.com/topic/gp-strategies-corporation?cat=biz-fin, accessed 26 June 2007.
478 Kopeček, Jindřich, Obituary Otto Wichterle (1913-98). Available at: http://www.nature.com/nature/journal/v395/n6700/full/395332a0.html, accessed May 13, 2008.
479 McElhany 1966, 621-622.

The Academy of Sciences was pleased with the trade: by the end of 1966 the NPDC had paid the Academy of Sciences a considerable sum of money, including the annual royalties. The licence agreements with the USA led to a fast improvement in a further development of the contact lens. According to the report of the Presidium of the CSAS this development was firm proof that the right path had been chosen; the case of the soft contact lens indicated the right method for dealing with licences, as well as showing how obstacles could be overcome.[480]

Wichterle's institute also profited from the lens. During his travels Wichterle had collected ideas of how to construct his own institute. John Kiser describes Wichterle's practical problems with Czechoslovak construction workers as follows:

> *"Despite the high priority given to the construction of the building, Wichterle still had to contend with the everyday work habits of the Czech laborers. Eager to get all the external work finished before winter set in, Wichterle chided, cajoled, and ultimately bribed his construction gang with a case of liquor. Telling the laborers that in the Baťa days it was expected that a crew would complete one floor per week, Wichterle dangled twenty-four bottles of rum before their thirsty eyes, as reward for completion. The floor was finished in twenty-four hours."*

According to Kiser Wichterle was paying "bonuses" out of his own pocket, but yet got into a conflict with the Party for using "unorthodox methods".[481]

The author of the article 'Research and Industry in Czechoslovakia', published in *Science* in 1966, was evidently impressed by the Institute: 'It is full of expensive modern equipment, a good deal of it American.' While this western observer spoke highly of the Institute, he also presented it in many ways as an untypical example of an Eastern European research institution. The author saw the Institute as a marker of changing trends in Eastern Europe and of the 'growing awareness in Communist countries of the need for practical steps to encourage basic research that will stimulate industry'.[482] The author of the article stated the Institute's growth had been made possible due to state support and licence fees from the US amounting to over a million dollars.[483] The atmosphere in the Institute in the mid-1960s was inspiring for scientists. One of the scientific workers described it as a beautiful era, many young people around in the institute, full of hope: "*we worked from morning until*

480 A AV ČR – Prezídium ČSAV, 6. prezídium (17.3.1966). Zpráva o stavu výroby a exportu kontaktních čoček za rok 1965.
481 Kiser 1989, 77-78.
482 McElhany 1966, 620-621
483 Ibid 1966, 621-622.

the night, but we also celebrated the successes – we were all dancing then in the laboratory. Since then I have never experienced anything alike".[484]

Cooperation with the American businessmen had made Wichterle's innovation to become a product of such economic importance which would have not been possible without the Western interest. However, Wichterle's perceptions of the USA were not merely positive. Due to his achievements Wichterle had no reason to feel inferior vis-a-vis Western colleagues. The two worlds that met differed but it was not only a result of the different systems but also a clash of professional identities. This is evident in Wichterle's accounts from his visits to the USA where he mostly met American businessmen representing different backgrounds and values than the Czechs. Wichterle, a man with a classical education, a passionate visitor of Prague theatres and concerts, did not speak the same language as the American businessmen. Before an agreement on the cooperation between the company that bought the licence to Wichterle's lens and an investor Robert Morrison was made, Wichterle and his colleague had the opportunity to visit him. They observed that the American had 'mobilised everything' at his enterprise in such a way as to impress his guests from 'a less developed state'. The visitors were shown technical 'toys', which Wichterle assumed were there for the purpose of impressing the visitors from the East. Although the technical level and the organisation of the enterprise were seemingly high, the Czechs were not impressed by the production, which offered nothing new. Compared to the French production units which Wichterle had already seen, Morrison lagged far behind. Wichterle also took a strong personal dislike to Morrison, whom he found arrogant and snobbish. A meeting was held in Morrison's ostentatiously lavish residence and Morrison 'childishly boasted about his wealth and success as a self-made-man'.[485] Despite all the flaws, Morrison's money made him an attractive partner at the time.[486]

In the USA, Wichterle and his wife were taken to places that were not too stimulating for them. Illustratively, as comes up from many sources, Wichterle and his wife paid attention to the shallowness of the local style of living. Wichterle for example criticised the way people would live by strict unwritten rules:

484 Makromolekulární chemik Jindřich Kopeček. Léky zasílané doporučeně. In: Čeští vědci v exilu. Edited by Pacner, Karel; Houdek, František; Koubská, Libuše. Univerzita Karlova v Praze Karolinum 2007, 161. Quotation by Pavla Kopečeková.

485 A AV ČR – Fond ÚMCH ČSAV, zprávy, Akademik O. Wichterle M. Dreifus, zpráva o cestě do USA. 29.10-12.11.1964.

486 Wichterle 1992, 157.

> *"Women have to buy a new dress every two weeks. In the old days, only a parvenu did this. Women of class had only one good outfit, but this was perfect and it was worn for all important occasions".*[487]

In his opinion the housing in American suburbs would symbolise standardised thought:

> *"There is less diversity of thought in America than Russia, even if it is self-imposed in America. In Russia, after people get comfortable with you and take you into their homes, everyone in the family has an independent opinion. I didn't have one good political discussion in America."* [488]

They were often amused by the materialism of the hosts. The wives of the businessmen took care of Linda Wichterlová and showed her different kind of technical equipments. She was also taken to an art exhibition from where one of the wealthy American hosts "bought four paintings and hung them on his wall". All this made the wife of the Czech chemist feel uneasy.[489]

The sale of the soft contact lens licence to the USA was a process where the Americans took most of the initiative, but without Wichterle's and his colleagues' active groundwork they would not have known about the innovation. Wichterle was included in the actual trade negotiations, which shows that he was given the credit for the innovation and making the innovation thus personalised to his name. This kind of active role is not something one would expect under state socialism. The events must be understood against the background of the liberalisation which was now clearly taking place in Czechoslovak society.

Wind of Change at the Academy of Sciences

The actual Prague Spring began in January 1968 as Alexander Dubček replaced Antonín Novotný as the First Secretary of the Communist Party of Czechoslovakia. The reform process that followed this caused unparalleled enthusiasm and euphoria that encouraged people to undertake actions unthinkable in other situations. In the field of the natural sciences practical obstacles, perhaps stronger than ideology and politics as such, led to outcries for reforms. Some of the reformists exploited the possibilities suddenly offered by the Prague Spring to concretely participate in reforming science. Research workers of the CSAS were active participants in the criticism of the country's economic and scientific stagnation under Antonín Novotný. Moreover,

487 Kiser 1989, 95.
488 Ibid 1989, 95.
489 Interview with Linda Wichterlová by the author October 20, 2008 in Prague.

František Šorm and some other academicians, including Ivan Málek, Ota Šík and Josef Macek, who had positions in political organs of the Party could directly influence its decision-making processes concerning science. Through this channel the Academy made demands for the democratisation of science.[490]

What makes the example of František Šorm particularly interesting are his different roles. Borrowing the notions of Slava Gerovitch and Vladimir Shlapentokh Šorm can be described in the context of the late 1960s both as a de-ideologiser[491] or a technocrat[492]. For him, communism did not mean the blind adoption of Soviet theories. He adapted to the changing requirements of the times and was able to distinguish them from ideology. Nevertheless, he did cultivate contacts with the leadership and wanted to reach the higher echelons of power. For a technocrat, the most necessary ingredient for the progress of society was science. For him this meant above all prioritising the natural sciences. It is important to note that before the mid-1960s Šorm was rather reluctant in his attitude towards the social sciences.[493]

During the events of the Prague Spring, František Šorm had four concrete roles. First, he was the President of the Academy; secondly, the director of the Institute for the Institute for Organic Chemistry and Biochemistry; thirdly, a member of the Central Committee and lastly, a representative in the National Assembly (The Parliament, Národní shromáždění). As a member of the Central Committee, Šorm participated in the preparation of the Action Programme (Akční program) of the CPCz in February and March 1968, in which he was entrusted with the section of science. The Party built the programme on the assumption that power had to be redistributed throughout the system. The idea of the programme was to renew civil freedom. The Party's leading role in society was reformulated: it would no longer demand to be the sole director but would strive to earn its prominent position.[494] In the process of preparing the Action Programme, Šorm suggested that the names of those involved in the planning of the programme should be published. He had been informed about opinions claiming that the Action Programme was prepared by a small closed group of intelligentsia, particularly writers. Šorm also commented on the formulation of the Action Programme. He recommended replacing the formulation of "democratic socialism" by "the developed order of socialism

490 Mišková, Barvíková, Šmidák, Miroslav 1998, 18.
491 Gerovitch 2001, 259.
492 Shlapentokh 1990, 153-54.
493 Franc 2010, 224.
494 Williams 1997, 15. The document see: Vondrová, Jitka; Navrátil, Jaromír; Moravec, Jan, Komunistická strana Československa. Pokus o reformu. Prameny k dějinám Československé krize v letech 1967-1970. 9/1. Ústav pro soudobé dějiny AV ČR. Praha 1999, 320.

grounded on the scientific basis with full democratic rights of citizens".[495] The Czech historian Jiří Jindra sees this as an indication that Šorm was worried about socialism in Czechoslovakia. It is, however, possible to see the suggestion also as a sign of wariness and a worried statement about the reactions of the fraternal states concerning the democratisation.

At a Party meeting in March 1968, Šorm emphasised the role of Academy of Sciences in the preparation of the Action Programme. According to him the Academy had intensively participated in the preparation of the programme. In his words, there was no doubt that the Academy as a whole would stand behind the Programme and take part in its realisation. Šorm answered questions as to why the CSAS had not announced the progressive politics earlier by explaining that the leadership of the Academy of Sciences had not seen the Academy as an organisation that should have publicly proclaimed the line of the Party. In his opinion the fact that Dubček's first visit after he had been elected was to the CSAS constituted significant proof of the Academy's location on the political map.[496] Šorm further commented on the attitude of other socialist states towards the Prague Spring by saying that it would be necessary to explain to them patiently that the process in Czechoslovakia was a logical consequence of the special circumstances in the country. Thus, it was not possible to stop the process or go back in time, and it was the right of every country to solve its own problems in a way that best served its aims. He saw this as the basis for good cooperation between the socialist countries.[497]

During the Prague Spring critique of the CSAS rapidly increased. It was obvious that the President of the institution was the main target of the critique. Šorm analysed his performance and activities in different roles. He explained his own motivations in the past by saying that as the head of the Academy he had had to lead it with a method of direct chairmanship. In that role he had made both rightful and less rightful decisions, for which he would accept responsibility. Šorm admitted that he had not managed the position as a representative of the National Assembly well, but had tried to manage all the other duties soundly. He claimed that the driving force behind his actions had not been a thirst for power but his only hope and ambition was to boost Czechoslovak science to the world level and to make it internationally competitive. Emotions were at stake as he further stated that when a person who firmly believes that he has accomplished his duties righteously but is suddenly confronted with a lack of confidence on his behalf, he often reacts

495 "Aby byla na vědeckém základě vypracována pokroková soustava socialismu s plnými demokratickými právy občanů".
496 A AV ČR – Fond FŠ, Podklad k vystoupení předsedy ČSAV akademika F. Šorma na aktivu komunistů z ústavů ČSAV, pořádném MěV KSČ v Praze dne 26.3.1968.
497Jindra 2001, 138.

by resigning. Šorm stated that such a solution would be comfortable for him as a scientist: he would enjoy his research work and would like to spend a longer period abroad – something that he always wanted but never had the opportunity to do, because he always rushed back home. As the main reasons for not resigning he stated that he had never meant ill, and secondly, that he was a supporter of the process which was going on. To be confused with those who were against the reforms would be a personal tragedy. The timing for resignation was not right. [498] He was constructing an image of himself as a person with a strong mission in the name of Czechoslovak science who had the ability to sacrifice himself for this noble goal instead of opting for more personal desires. Šorm's self-justification must be seen in the context of ongoing personal rivalries inside the Academy of Sciences.

Šorm defended his role as the President of the Academy also by highlighting that in the natural and technical sciences the CSAS had managed to create a relatively wide space for free research. He stated that the fact that some scientists had at some point trusted the dogmatic opinions of people like Lysenko was rather due to inexperience, naiveté and opportunism. He added that in many cases even those people had soon abandoned those ideas. Stating this he was referring especially to Ivan Málek. Between the lines he was able to point out the weaknesses of his main rival. In his opinion the rehabilitation of Mendel's genetics and accepting the theory of resonance in the whole socialist camp was a result of the attitude of Czechoslovak scientists against scientific dogmatism. The Academy had moreover managed to decrease the impact of administrative measures to the minimum. Another sign of positive development in the past was the fact that many formerly repressed scientists – his list of names included Wichterle –were now in good positions.[499] On the other hand Šorm admitted that the social sciences would need radical reforms which he would support. Šorm underlined the past antagonism between the theoretical knowledge of socialism and the practical needs – in his opinion dogmatism had weakened the understanding of the communists. The same dogmatism had also stagnated the social sciences, which had had lost their autonomy and become a political tool.[500]

Additionally, the problems of international cooperation in science became a subject of critique: Šorm claimed that the restrictions issued by the state were an example of the worst kind of pressure on the Academy. The emigration of scientists had led to a special regulation of cooperation with scientific

498 Ibid 2001, 142
499 A AV ČR – Fond FŠ, Podklad k vystoupení předsedy ČSAV akademika F. Šorma na aktivu komunistů z ústavů ČSAV, pořádném MěV KSČ v Praze dne 26.3.1968.
500 Jindra 2001, 138.

institutes in the USA and West Germany. Šorm had asked to cancel this restrictive arrangement in 1966 and 1967. He also claimed that it had been possible to sidestep the arrangement: in fact dozens of scholars had travelled to the USA in the past couple of years. The historian Jiří Jindra has claimed that these scholars mostly came from Šorm's institute – meaning that Šorm had a lot of influence on the decisions of who was able to travel.[501]

In March 1968, Šorm listed measures recommended by the Academy to change the regulations of science policies. These measures are an indication of the expectations of scientists, which were often contradictory to the Party's policies. Firstly, the regulation of scientific relations of the CSAS with scientific institutions in the USA and the West Germany was to be cancelled; abolishing the limitation concerning the filling of working places in the social sciences; cancelling the rule which had stipulated that a vacancy of someone who had illegally left the country should be taken away. Among the measures was a preparation of new simpler rules for foreign scientific relations.[502] In the spring of 1968 the principle was accepted that cooperation with foreign scientific institutions should be first and foremost a matter of science and not of foreign policy.[503]

In the General Assembly of the Academy in April 1968, the members formulated their viewpoint on the Party meetings which had taken place earlier that year.[504] One of the reforms of the Prague Spring was the Action Programme which was to be prepared in line with the concepts formulated in the Action Programme of the CPCZ.[505] It endowed scientists themselves with the highest authority concerning science and stressed the democratic principles of governing science. It stated that political and economic pressures should be removed. Perhaps the most radical point in the Action Programme was the freedom and autonomy of research. It would have made the Academy of Sciences an autonomous state-financed institution while the ultimate plan was to establish two independent academies, respectively in the Czech lands and Slovakia. One of the goals of the Programme was to support and increase international scientific cooperation. It stated that cooperation should be based primarily on real scientific needs.[506] According to it: „*the integration of the world of science has moved so far forward that it is not possible to hamper the development of many sectors with regional and other borders*."[507]

501 Ibid 2001, 138.
502 A AV ČR – Fond FŠ, Podklad k vystoupení předsedy ČSAV akademika F. Šorma na aktivu komunistů z ústavů ČSAV, pořádném MěV KSČ v Praze dne 26.3.1968.
503 Mišková & Barvíková & Šmidák 1998, 20, 31.
504 Ibid 1998, 19.
505 Ibid 1998, 20, 31.
506 Ibid 1998, 23-25.
507 Ibid 1998, 79, 83. See the document Action Programme of the Czechoslovak Academy of Sciences.

This enthusiasm was also expressed in a literary form. In the spring 1968, František Šorm together with Antonín Šnejdárek[508] prepared a thesis titled *Cooperation of European States in Science* (Spolupráce Evropských států ve vědě).[509] Because the text was designed for the Pugwash conference, it addressed the danger of a military conflict that would destroy the values "created by our ancestors". The authors stated that Europe had all the potential to develop in peaceful manner and that science could be used for the success of the human race or against it. Unlike in the 1950s, the text did not even mention that the capitalist countries would be misusing science for political purposes. In fact, the whole categorisation between capitalist and socialist had lost its meaning while Europe as an entity has been put to the fore. In the document, the authors admitted that in Europe one side cannot live without another. In the opinion of the authors, European countries had a special responsibility concerning important issues, because in Europe the two world systems were so close to each other and could not interact without trying to solve issues concerning their future. Competition as a concept had not been abandoned, but in the thesis the authors stated that in Europe peaceful coexistence and the deepening of existing cooperation formed the grounds for competition.

The thesis stated that in order to improve scientific cooperation between East and West it would be necessary to understand how differently scientific institutions were organised in the East and in the West. In the West basic research was carried out at universities in a less coordinated way than in the East: scientists in Western countries had very intense personal contacts enabling quick exchange of experiences and maintaining knowledge and experimental experiences at the world level. The document stated that cooperation between East and West in the field of applied research was limited to selling and buying patents and licences. Only in the last few years have there occurred agreements on solving complicated technological programs. The document stated that contacts between European countries representing different economic systems mainly consisted of personal contacts established and maintained through academic travelling. Although in the last few years these contacts had notably increased – exchanges unfortunately still mostly meant the one-way movement of scientists from the Eastern bloc to the West. The authors suggested that the reasons for this situation should be investigated but their guess was that political, economic and technical reasons all played their part. Further, the thesis served to point out problems of scientific cooperation within the Eastern Bloc. According to it, strict plans which sometimes did not correspond with the real interests and needs of scientists had led to a "certain

508 Director, Czech Institute of International Affairs.
509 In Šorm's personal files there are two almost identical texts both in Czech and in English designed for the same purpose, the Pugwash meeting in Mariánské Lázně in May 1968.

formality" of relations. Whereas in theory there existed a unique possibility for cooperation, coordination and integration of applied research activity within the CMEA, in reality this possibility was only little exploited.[510]

Although the thesis has to be seen in the context of the Pugwash movement, it is an interesting source on how Europe – and not the Soviet Union –had come to the fore. As Milan Kundera has stated, the Prague Spring was a passionate defence of the European cultural tradition.[511] In the thesis Europe was described as a cultural area: the cradle of contemporary civilisation and culture, its nations which had created "*the most valuable artistic works, the basis for the natural sciences and modern thinking*". Following the logic of historical materialism, the document brought up the industrial revolution and subsequently described how mankind had arrived at the threshold of the Scientific and Technological Revolution. The Prague Spring probably made the concept timelier than ever. The same year Radovan Richta and his research group published their book on the Scientific and Technological Revolution. [512] The thesis furthermore analysed the situation and structure of research on both sides of the Iron Curtain. The dichotomy between socialist and capitalist science was no longer present as the Czechoslovak scientists stated that:

> *"Science has an international character. Scientific findings depend on the contribution of scientists all over the world, scientific advancement is the result of collective exchanges and the integration of the work of the whole scientific front. Science as such is objective and lifeless."*[513]

People in the Czechoslovak Academy of Sciences were among the most active proponents of reforms. However, within the Academy there were varying opinions concerning the implementation of reformist plans. Abolishing travel restrictions was one of the priorities of the Prague Spring reforms in science, which clearly indicates how important free travel was for scientists. As the head of the institution, Šorm was criticised for not being sufficiently reform-minded and especially for his earlier underestimation of the meaning of the social sciences. He defended himself forcefully and declared that he belonged to the side of reformers. The Prague Spring appealed to people who would have normally rather stayed aloof from political statements. The euphoria affected Šorm and touched Otto Wichterle even more.

510 A AV ČR – Fond FŠ, Úvodní poznámky k nástinu thesí "Spolupráce Evropských států ve vědě".
511 Rupinik, Jacques, 1968: The year of two springs. Available at: www.Eurozine.com, accessed September 21, 2010.
512 See Richta 1969, 23.
513 A AV ČR – Fond FŠ, Úvodní poznámky k nástinu thesí "Spolupráce Evropských států ve vědě".

From the Lab to Politics: Wichterle as a Reformer

At the height of the Prague Spring Wichterle was a busy man. He did not merely take care of his research work and other professional duties but eventually became involved in political activities. He wished to do everything „immediately and thoroughly“ (hned a důkladně). According to Linda Wichterlová, this was his approach to life: leave nothing to chance, take action, and take care that everything would go well until the very end. Wichterle took advantage of the new kind of freedom. Even outside of the Academy meetings, Otto Wichterle fully grasped the opportunity for free discussion. He seemingly enjoyed socialising with different kinds of people whom he found intellectually inspiring. As Linda Wichterlová has illustrated, at receptions Otto Wichterle hardly finished the glass that had been given to him when he arrived because he was so busy mingling with people. But it was not without any purpose. As his wife has put it, he took maximum advantage of these events by getting to know more people and establishing new contacts “in order to promote his ideas”. The Prague Spring certainly offered the opportunity to get to know new and interesting people out of the box. Wichterle for example got to know people from KAN, the Club of Active Non-partisans (Klůb angažovaných nestraníků). Professional and activist networks were not the only way Otto Wichterle got acquaintances. His sister, Hana Wichterlová (1903-1990) was a sculptor who introduced her brother to artists, philosophers and art historians.[514] It is no wonder that his broad networks established in part during the Prague Spring later roused suspicion among the Secret Police after the invasion.

At first Wichterle’s interest focused mainly on the CSAS and his own field of research. Perhaps because Wichterle had been expressing his critical views on the practices of the Academy for years, he could now see some things in a more objective light than some of the most enthusiastic supporters of reforms. The Academy assembly in April 1968[515] was the first time that a meeting went ahead without summarising texts that had been prepared earlier. It was the occasion where Šorm among others was expected to react to heavy criticism coming from the audience. According to Wichterle, the opponents of the Presidium barked up the wrong tree. The CSAS had been only following the rules which were set by the Party. Wichterle saw many of the opponents as opportunists who actually wanted to save their own skins and thus tried to nullify their own contribution to the practices of the Academy. Wichterle used the opportunity to state the opinion of a non-Party member (many of

514 A AV ČR – A letter written by Linda Wichterlová on the question of friendships of her husband (22.7.2000).
515 The 34th General Assembly of the Academy April 17 and 18th.

the critics were communists) and called the activity of reformers "*politics à la Svejk"* (švejkovská politika). He further noted that it was *"typical for our nation, we have a great tradition in that"*.[516]

He made clear that the suggestions for autonomy of the Academy were irrelevant because as long as the Academy was part of the political system it would be subordinated to the Party. As an example to illustrate his point he brought up the case of the philosopher Ivan Sviták who had been denounced from the Academy in 1964:

> *„If the Communist Party for example decides that Sviták should be denounced, the Presidium will have to denounce him and exclude him from the Party. If the Communist Party decides that Sviták should be again taken into the Academy, the Presidium will have to fulfil that regulation, even if it would not want to." [517]*

In reaction to Wichterle's speech, Šorm announced the willingness of the Presidium to change the rules which would make the CSAS an independent institution. At the same meeting, however, Wichterle admitted that discussion had become freer, which could possibly lead towards reforms.[518]

Wichterle was also the chairman of the planning committee of the Union of Scientific Workers *(Český svaz vědeckých pracovníků, USW)*. Groups of scientists who were worried of their „political handicap" compared to other intellectuals wished to establish this independent organisation. The organisation was supposed to imbue the results of science into politics. They felt that the Academy of Sciences was not capable of this function because it was too dependent on the Party. The plan to establish the organisation of scientific workers was clearly an attempt to abolish obstacles to the free circulation of information. Wichterle's election to this political post clearly implied a growing influence of science and scientists in society. During the Prague Spring Wichterle was also a member of the Society for Human Rights (Společnost pro lidská práva).[519]

With hindsight the most fateful of Wichterle's activities during the Prague Spring was his participation in the so-called "Two Thousand Words" (*Dva tisíce slov)*, which was one of the most important manifestos of the Prague Spring. It was written by prominent Czechoslovak opinion makers, led by writer and journalist Ludvík Vaculík. Wichterle participated in the planning of

516 Wichterle 1992, 165-166.
517 Wichterle 1992, 166. On Sviták see: Křest'an 2001, 264.
518 Wichterle 1994, 143-147.
519 Schwippel 2001, 171.

the manifesto as a member of small hardcore group including the physicians Otakar Poupa, Jan Brod, and Bohumil Sekla and the biologist-poet Miroslav Holub. They were unanimous about the fact that scientists and scholars should express their opinion openly.[520] The manifesto was linked to the aim of institutionalising the Union of Scientific Workers and to the fact that František Kriegel, the chairman of Central Committee of the National Front, had asked the scientists for a proclamation (povolání), in which they would express their view on the „new policy". However, the group decided to act much more independently and critically express how they as non-communists viewed the way the Communists had been leading the country. Unsure of their ability to formulate their thoughts in a proper way, Wichterle suggested that they should ask the writer and journalist Ludvík Vaculík, at the time an editor of Literární listy and a member of the Communist Party, for assistance. The scientists met with Vaculík on 6 June at the terrace of the Parkhotel in Prague. He promised: *„I'll write! But only the truth, and it should be brief. And maximum 2,000 words!"*. Before publishing, the scientists commented on the text but apparently did not suggest any major corrections. Interestingly enough, Vaculík came to be known as the only official author of the document. He himself has described how the scientists accepted the text – although showing some scepticism (trochu s kroucením hlavy) when he at some point in the text abandoned politics and began to express himself more poetically.

The manifesto was ready by 11 June, after which Vaculík and the scientists began collecting signatures. The manifesto was signed by dozens of influential people belonging to the cultural and scientific elite and published in local newspapers on 27 June in approximately 1, 300, 000 printed copies.[521] It is important to note that at the time of the document's publication, neither the editors of the newspapers nor the authors themselves saw the Two Thousand Words as something extraordinary. As the Czech historian Jakub Končelík has put it, the meaning of the manifesto was an effort to awake the public, to constitute and strengthen civil society. The manifesto was a product of the Prague Spring, a critical but hopeful statement which was composed without fear for censorship that had been abolished recently. The document pointed out that the democratisation process had entered a crucial stage which demanded an effort by the people to secure their rights. Končelík ascribes a lot of weight to the skilful formulation by Vaculík, who managed to reach the public through his words as well as the idea of limiting the words to an exact number of Two Thousand Words. Therefore, it was rather the form and the

520 Schwippel 2001, 170. Poupa, Otakar, Neveselé kapitoly o vědě a moci VI. Příliš krátké jaro a Dva tisíce slov. Vesmír 77, říjen 1998. Available at: http://www.cts.cuni.cz/vesmir, accessed March 3, 2007.

521 Končelík, Jakub, Dva tisíce slov. Zrod a důsledky nečekaně vlivného provolání. Soudobé Dějiny 03-04/2008, 491, 493. Also: NA – Fond KSČ – ÚV-02/4, a.j/bod 63/5. Informace o šetření vzniku prohlášení 2000 slov, jeho autorů a organizatorů.

timing of the manifesto than its content that made it so influential. The Two Thousand Words was published on the eve of the district conferences of the Communist Party – where the delegates for the Party Congress were to be elected.[522]

The publishing of the Two Thousand Words symbolised how the Communist Party no longer had a decisive hold over the Czechoslovak media. The Party had opposed the manifesto but as censorship had been abolished it could not do anything. Moreover, the manifesto was one of the factors that polarised the division of the Party into reformist and conservative camps. At the meeting of five Warsaw Pact countries' leaders in Warsaw on 15 July, the manifesto was mentioned as one of the key factors that proved the country was heading towards counter-revolution. According to Leonid Brezhnev, the situation in Czechoslovakia and its 'liberated' media was no longer an issue of „freedom of information, but freedom for political terror".[523] In the eyes of many, the manifesto was a call for „action from below", which demonstrated the weakness of Party control.[524] Despite this, thousands of people signed the manifesto after its publishing.

In July 1968 Wichterle was chosen as a member of the forthcoming Czech National Council (*Česká národní rada*)[525]. In his own words, this political position was not something he would have sought. He supposed the decision to choose him as one of the candidates was motivated by the fact that he had been present in media speaking on issues concerning science and also by his position in the preparation committee of the Union of Scientific Workers. In Wichterle's words, it was necessary for the National Council to find people who were trusted at various societal levels.[526]

He was afraid that it would limit his independence and therefore he refused even nominal payment from the government[527]. Wichterle defined himself primarily as a scientist, who acted as a spokesman for science even in the political arena. For him, politics represented a way to rationalise society in

522 Two Thousand Words Manifesto, Dva tisíce slov. Available at: http://www.ceskapolitika.cz/Provolani/2000Slov.html, accessed November 3, 2009. Two Thousand Words in English, European History digital history reader. Available at: http://www.dhr.history.vt.edu/modules/eu/mod05_1968/evidence_detail_13.html, accessed November 2, 2009; Končelík 2008, 494-495.
523 Končelík 2008, 515-516.
524 Golan, Galia, Reform Rule in Czechoslovakia. The Dubček Era 1968-1969. Cambridge University Press, UK 1973, 127.
525 The Czech National Council was the consequence of the ongoing federalisation. It was created in June 1968 as for "the time-being" the highest organ of the state power in the republic (the parliament of the republic). The equivalent on the Slovak side was the Slovak National Council (Slovenská národná rada). The federalisation took its force concretely in October 1968. See: Lehečka, Miroslav, Tšekki samettivallanumouksen jälkeen. In: Itäinen Keski-Eurooppa vuonna 2004. Edited by Nyyssönen, Heino. Kikimora publications, Saarijärvi 2004, 84.
526 Wichterle 1992, 169-170.
527 Kiser 1989, 98.

which science had to operate. Wichterle emphasised the role of science and its priority over politics. According to him scientists should take care that they would not end up being the victims of changing political trends and act to correct the decisions made by the politicians. In particular, Wichterle had the new legislation of the CSAS at heart, which would increase democracy inside the CSAS allowing a growing number of scholars to express their opinion on the matters concerning the CSAS.[528] Interestingly enough, Wichterle has often been labelled as apolitical.[529] Jindřich Schwippel, who among others uses this label in relation to Wichterle, has described his thinking as leftist (levicovost). In his conference presentation, Schwippel quoted Wichterle's former colleague who stated that Wichterle was a liberal of a left-wing orientation. Further he characterised the chemist by concepts of 'liberality' (osvícenost) and 'self-evident democratism' (samozřejmá demokratičnost).[530] This example shows how blurred the 'apolitical' concept has become in concrete use. Sometimes the label of apolitical was probably just a tool (for natural scientists) to mask their clearly political agendas. But as the August invasion in 1968 showed, there was very little going on in Czechoslovak society that could be described as apolitical. That was definitely the opinion of the Soviets when they decided to invade the country.

What did the Prague Spring mean to Wichterle, and where was he heading to? To this question his statement in a radio interview in April of 1968[531] offers one answer. According to him many people in Czechoslovakia had a voice, but only a few had power. The real issue for Wichterle was whether the ones with power would be liberal enough to respect those who had a voice. Wichterle's scepticism proved right as less than a month after the publication of the Two Thousand Words Czechoslovakia was invaded by five Warsaw Pact countries.

During the actual Prague Spring Otto Wichterle became a reformer. He became active in various organisations or in the groups which initiated future organisations. These can be seen as efforts to create embryonic forms of civil society. Wichterle's activism took place within the framework of what had become acceptable. The most radical step was the participation in The Two Thousand Words manifesto. It seems that Wichterle believed to a certain extent that society had changed and could remain so. There is relatively little evidence that he would have feared a negative reaction from the Soviets. However, that is what happened and it took Wichterle by surprise.

528 Wichterle 1994, 150-152.
529 Schwippel 2001, 169. Also Wichterle's son has said that his father was apolitical. In: Documentary film: Wichterle (2005) by Tomáš Kudrna.
530 Schwippel 2001, 169.
531 A AV ČR – Fond OW, Československý rozhlas, Praha, vysílání 23.4.1968.

PART III: “The Spring is over and will never return” 532

Occupied Academy

The academics began their campaign as the leadership of the Academy went to the building of the Institute of Organic Chemistry and Biochemistry, the institute headed by František Šorm. They stayed there for a couple of days, organising contacts with the different working places and members of the Academy and also with the press. They sent joint protests out to the world and filed a number of individual protests. As Kieran Williams has written, instead of sending the Czechs and Slovaks cowering under their beds, the invasion provoked a week-long campaign of massive non-violent resistance. For Milan Kundera it was *“the most beautiful week that we have ever lived through*.”[533]

Šorm’s letter[534] to Mstislav Keldysh, the President of the Soviet Academy of Sciences, has been claimed to have consituted the most „dominant“ of protests by Czechoslovak scientists. According to the authors of the history of the Czechoslovak Academy of Sciences, the two men were friends.[535] Šorm’s letter reflects a deep disappointment: a loyal friend and a role model had done something unexpected causing a feeling of shock and disbelief. Šorm the communist was wounded by the fact that the „brothers“ had not respected mutual and trustful relations but by using military powers had instead forced the Czechoslovaks to lose their belief in the common cause. He furthermore questioned whether the Soviet colleagues were actually aware of the course of events – in a rather direct way the letter pointed out that information that the Soviets gained on the events in Czechoslovakia was based on lies. The author of the letter highlighted science in the context of occupation in a way that gives a strong impression that he saw it as something that (at least) should have been left aside from political struggles and the use of force:

> *„The building of the Czechoslovak Academy of Sciences, in which also you were a guest of honour, was without reason occupied by the representatives of the Soviet army and the present members and workers*

532 A quotation from the 2000 Words manifesto. See: The Prague Spring 68. Edited by Navrátil, Jaroslav. CEU Press. USA 1998, 181.
533 Williams 1997, 42. (Citation of Kundera “Český úděl”, Listy, 19 December 1968).
534 Quoted in the first page of this study.
535 Mísková, Barvíková, Šmidák 1998, 22-23.

of the Academy were thrown out with the help of machine-guns. Also our universities are occupied".[536]

Protesting against the occupation was not the monopoly of the Academy leadership. The institutes of the Academy were encouraged to follow the example. Thus, the corridors of the institutes soon turned into workshops producing flyers and posters that were supposed to serve as a voice against the invasion. The CSAS also criticised the Communist Party for deciding upon the renewal of scientific relations with the USSR without consulting the Academy. As the main organisation responsible for those relations this decision put the Academy in a very uneasy position: it was supposed to encourage cooperation with the wrongdoer. The communist members of the Academy, among them František Šorm, declared that they stood behind the post-January politics of the state and they also protested against the new measures limiting Western contacts. František Šorm tried to persuade the directorate of the CSAS to further promote reforms from the Prague Spring period.[537]

Those days, František Šorm had a lot to do. A few weeks after the invasion there was the Pugwash conference in Nice. The other participants of the conference were expecting to hear the latest news from Czechoslovakia directly from the Czechoslovak participants, Šorm and Ivan Málek – the course of history had suddenly made the life-long enemies share a similar fate. The two Czechs did not show up, however, and as Carl Djerassi has described in his memoirs, instead the Soviet participants stonewalled the issue.[538] In fact, as becomes clear from another source, Ivan Málek had given letters containing details of the events in Czechoslovakia to one of his co-workers who was about to travel to Sussex. Málek had asked her to give the letters to the representatives of the Pugwash movement.[539]

After the conference Carl Djerassi flew to Prague, where Šorm had invited him to give a lecture. He flew to Prague with the first Swiss plane flying there after the August events and it was almost empty.

"Later, as the empty Swiss Air plane roared along the Prague runway, I saw the tents and equipment of bivouacking Russian soldiers on each side—so close, in fact, that I thought we would mow them down. A whole group of Czech chemists, led by Šorm, was there to greet me. A sense

536 Ibid 1998.
537Otáhal, Milan, Nosková, Alena and Bolomský, Karel, Svědectví o duchovním útlaku 1969-1970. Normalizace v kultuře, umění, vědě, školství a masových sdělovácích prostředcích. Ústav pro soudobé dějiny AV ČR, Prague 1993, 48.
538 Djerassi 1992, 193.
539 Štrbánová & Spížek 2002, 231.

> *of bravado and even elation emanated from the younger man, some of whom had been post-doctoral fellows in my laboratory. They still did not believe that the Russians would stay and a Stalinist regime take over. They imagined a slightly more conservative version of Dubček would head their government. Like the Chinese students in Tiananmen Square in 1989, the young Czechs were still too euphoric to believe that an autocratic juggernaut might actually crush them".* [540]

Accordingly, Djerassi witnessed the enthusiasm of the Czechs in their campaign against the invasion. The Czechs "pointed proudly" to the graffiti and slogans on the streets of Prague. Djerassi noted that Stalin's picture was no longer in Šorm's office, according to him it had disappeared in 1962 at the time of some international conference.[541]

According to Djerassi, Šorm was moved by the expressions of support that he brought and hopeful that Western pressure would lead to a compromise. When Djerassi met Šorm again, less than a year later in Sofia at the centenary celebration of the Bulgarian Academy of Sciences, the hopes had disappeared:

> *"Šorm was deeply depressed (...) Šorm, still the President of the Czechoslovak Academy and thus the official representative of his country, was marching next to me. 'Watch', he whispered, 'when I lay out wreath. They'll kiss me on both cheeks, but when I return home, I'll be a non-person'".*[542]

The August invasion was global news: the developments were followed with great concern in the West. Thus, even for scientists communication with Western authorities was a way of seeking visibility for their cause which could lead to possible positive results. There are several examples of how notoriety protected scientists in critical situations and circumstances.[543] One form of trying to influence things was through correspondence. Official correspondence was not a personal matter of scientists. Scientists were well aware that letters were controlled by officials and in this respect the content of letters can be seen as a tool to protest and express one's view to the local authorities as well. Writing letters was also a way of transferring information about political and scientific situation of Czechoslovakia to foreign colleagues. Both Šorm and Wichterle gained sympathy from their Western colleagues in

540 Djerassi 1992, 193.
541 Ibid 1992, 193.
542 Ibid 1992, 193.
543 Augustine 2007, 6.

numerous letters. In one of them a Danish scientist who had recently visited Prague thanked Šorm for his discussions:

> *"which gave us a possibility of understanding the events of the last months". He went on: "The impression we have had here in Denmark, that a terrible mistake had been made, due to false information, which was reinforced from all what we saw and heard during our stay in Czechoslovakia."*[544]

In October 1968 Harvard Professor John T. Edsall wrote to Šorm and congratulated the CSAS on the 50th anniversary of the establishment of the Czechoslovak Republic in 1918. This formulation, addressing to the anniversary of the Czechoslovak Republic of 1918, was most probably chosen intentionally and the letter continued by stating the concern of „all of us in this country". Professor Edsall told Šorm that he had read in the September issue of *Nature* the letter which Šorm had sent to President Keldysh of the Soviet Academy of Sciences. He went on:

> *"It is difficult for us in this country to know how we can best foster the future progress of science and scientists in Czechoslovakia and continue and strengthen scientific cooperation between our two countries, but I know that all my scientific colleagues feel, as I do, the importance of this".*

Šorm's reply to the letter was short – he assured Edsall that he highly appreciated cooperation between American and Czechoslovak scientists. Still as President of the Academy he was able to state that: "I shall always do my best to deepen and extend this cooperation." In some replies he stated that the work at the institutes of the Academy was continuing more or less normally and that he did not think there would be any danger for the scientific workers to be curbed in their research activity.[545] Most of the letters of sympathy stated the wish that current events would not harm the exchange of scientific information and personnel.[546]

Soon after the invasion Otto Wichterle realised that his political activities during the Prague Spring, and especially signing the Two Thousand Words, would probably lead to serious consequences.[547] The seriousness of his involvement in the manifesto is well illustrated by the story of the editor-in-chief of Mladá fronta, Miroslav Jelínek, at the time of the invasion. In the first hours of the occupation he had only two major worries – to secure the printing

544 A AV ČR – Fond FŠ, Korespondence. Letter from Stig Veibel. 6.12.1968.
545 A AV ČR – Fond FŠ, Korespondence. Letter from Edsall 22.10.1968. Šorm's reply 12.11.1968. Letter to Katsuhira Iida, Kanazawa University, Japan. 13.11.1968.
546 A AV ČR – Fond FŠ, Korespondence.
547 Wichterle 1992, 177.

of the declaration of the Central Committee against the occupation, and to destroy the signatures of the Two Thousand Words manifesto, because he was worried about the security of the authors. There were rumours about possible consequences but nobody could foresee how severe the measures would be that might be implemented against "wrongdoers". In fact, the manifesto was soon to serve as an efficient instrument in the purges of the Communist Party and other institutions, such as the Academy.[548]

The people in Wichterle's institute tried to convince him to leave the country. He and his wife happened to have plane tickets to a macromolecular conference in Toronto. But the departure from Prague airport was not possible due to the occupation. Therefore Wichterle hitchhiked to the Austrian border in a car with an Italian number plate. The situation at the Austrian border became tense when a customs officer controlled Wichterle's passport, then disappeared for a while only to come back with a group of other officers. Wichterle got scared. However, instead of inquiring about his motives for travelling, the officers asked him for a signature.[549] Such was the atmosphere right after the occupation: nothing was yet settled, many things continued as before, but people were afraid of the future.

On his way to Toronto his adherence to the international scientific community helped Wichterle. In Vienna, he contacted the secretariat of the IUPAC in Zurich, which was organising tickets for IUPAC functionaries to the Canadian symposium. They sent Wichterle flight tickets so that he could fly to Zurich. The general secretary of the IUPAC and a Swiss high police officer picked him up at the airport, because Wichterle did not have a Swiss visa. According to Wichterle, the Swiss authorities were uncertain how the situation in Czechoslovakia would develop and were preparing for "the worst alternative, genocide". Accordingly, the Swiss authorities promised that they could hide Wichterle from the "Soviet terrorists" and in the worst case pronounce him dead using an excuse of a car crash or a climbing accident. [550] Wichterle refused as he was not planning to emigrate and obviously did not see things in such a dramatic light.

A couple of days later Wichterle's wife Linda arrived in Zurich. Together they flew to New York. The network of scientists played a role: Wichterle received support and his foreign colleagues took care of his lodging throughout the trip. In New York he was welcomed by Herbert Morawetz. According to Wichterle, at the Polytechnic Institute of New York, where Morawetz

548 Končelík 2008, 522.
549 Wichterle 1992, 178.
550 Ibid 1992, 178.

worked, Wichterle was offered a professor's post. He did not yet react to the offer. From New York Wichterle went first to spend a couple of days at Morawetz's holiday retreat on the Island of Belle Isle and from there to the symposium in Canada.[551] Many of Wichterle's colleagues from the Institute of Macromolecular Chemistry were at the same symposium. According to one of them, Jindřich Kopeček, they all believed that in the field of science the situation in Czechoslovakia would not get much worse and that they all would be able to continue working.[552]

At the congress, Wichterle was able to publicly express his opinion on the occupation in front of an international audience. As the chair of the macromolecular division of the IUPAC he gave the opening speech in the closing session. In his speech he evaluated the importance of the IUPAC for international relations. He stated that whereas the great nations such as the Americans or the Soviets would easily manage without outside contacts, the small nations could not. He further stated that he was able to prove this because he himself came from a small country, which despite its size "surprisingly enough decided to survive". People in the audience stood up and applauded. Only the Soviet delegation did not know how to react "in order not to get punished at home" as Wichterle put it. In the end the academic Valentin Kargin stood up and his example encouraged the other Soviets to do so as well, and as soon as Kargin began applauding, the rest of the Soviet delegation followed suit. [553]

The Western partners of the Czechoslovak scientists did not always automatically offer unselfish support. After Wichterle had went back home from the Canadian conference, Herbert Morawetz got an idea to contact the partners of the NPDC, whom he had had the opportunity to meet while Wichterle was in the USA. He thought that in light of the critical situation in Czechoslovakia it would be a good idea to establish a deposit account which could serve as an insurance fund in case Wichterle would have to escape the Soviets. The vice President of the NPDC had, according to Morawetz, told him that to realise such a plan they would need permission from Wichterle. According to Morawetz he obtained the latter's permission but in response the vice President had merely laughed at Morawetz and refused to do anything.[554]

551 In the memoirs of Morawetz the course of these events is chronologically somewhat different. According to Morawetz Wichterle came to Belle Island after the congress. There are also some other minor differences in the descriptions of the two men. Morawetz 2008, 200-201.
552 Makromolekulární chemik Jindřich Kopeček 2007, 161.
553 Wichterle 1992, 179, 180.
554 Ibid 1992, 202.

Occasionally, the strategies of Western scientists to support the Czechoslovak cause did not achieve their goal. In the West it was difficult to understand how certain policies affected individuals. Right after the invasion Wichterle tried to make it clear that he disputed the usefulness of boycott campaigns against countries limiting the freedom of their scientists.[555] He was afraid that the well-intentioned Western boycotts would hamper scientific work. In 1969, a group of Nobel Prize laureates launched a solidarity campaign in *Nature* encouraging scientists not to attend conferences organised in countries that forbade their own scientists to travel. The group used Otto Wichterle's case to exemplify the policy of the Czechoslovak state towards its scientists. Wichterle was critical towards such a course which, according to him, would only turn against the scientists under a travel ban and in fact constitute a victory for the decision makers whose aim was to complicate the work of scientists. Wichterle referred to a symposium which had been organised back in 1957 when meeting Western scientists in Czechoslovakia had proven important for the chemical community in the country.[556] Wichterle's approach here is significant: Wichterle, unlike the Western scientists, saw that even in times of rigid control the Communist regime was not a monolith in which individuals were not able to find their ways and space. He was aware that the variety of means to exchange scientific knowledge and know-how was the way to survive periods of increased political control and limited international cooperation.

The invasion took the scientists by surprise. They began protesting against the measures of the occupiers through academic channels. They contacted their Soviet colleagues in order to get the message through to the upper levels of the political elite; and they also appealed to their Western partners. Czechoslovakia was trapped in the middle of the Cold War rift. The scientists were accused for trying to adopt and implement Western capitalist practices in their own system. Interestingly, in the middle of the crisis international scientific organisations such as IUPAC proved to be distinctively *Western* communities by standing against the invasion and helping people like Wichterle when they travelled abroad.

To Flee or not to Flee

Unlike many other Czechoslovaks who were abroad at the time of the invasion or thereafter, Wichterle soon returned home from Canada. A large emigration

555 Wichterle 1992, 197.
556 A AV ČR – Fond OW, Nature/When to Boycott. Letter to Herbert Morawetz 28.1.1970; OW Nature: Wichterle's response to Nature was published in Nature Vol. 225, February 21, 1970.

wave of more than 100, 000 people followed the August invasion.[557] This phenomenon left its mark on the whole of Czechoslovak society. The proportion of scientists in the group of Czechoslovak emigrants was significant. Their emigration was a serious problem for the state and today historians may only speculate about the overall impact of the brain drain of Czechoslovak science. Emigration was one of the ways to spread scientific information from East to West and emigrants were concrete representatives from the other side of the Iron Curtain in their new countries. Even though emigrants had disassociated themselves from the totalitarian regime, they were familiar with the way it functioned.

In Czechoslovakia, the relation between the state and emigrants had been traditionally difficult. The large emigration wave of 1948 had led to a permanent conflict. Hardly any communication between them existed. Emigration was deemed equal to treason and contacts with emigrants were considered as highly suspicious. During their visits abroad scientists were obliged to report on their possible encounters with their exiled countrymen. As the Czech-born anthropologist Ladislav Holý has analysed, emigration was constructed as a moral problem in a society based on a collective ideology.[558]

The factors *pushing* and *pulling* scientists to emigrate or alternatively to reject the option of emigration, were numerous. During the active period of travels to the West at the end of the 1960s, many Czechs and Slovaks seized the opportunity to travel. At the time of the invasion, many scientists were located in the West.[559] There they received news about the situation in their home country from local media. Facing great uncertainty of what the future would bring they often tried to prolong their stays abroad. For some of them this was possible until the summer of 1970 when the CSAS decided not to prolong any of the study stays.

Significantly, from all the disciplines of the Academy of Sciences chemists formed the largest group of emigrants, amounting to almost one third of all emigrated scholars and scientists.[560]

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557 Nisonen, Riikka, Emigraatio ja maanpakolaisuus, Idäntutkimus, Vol. 3, 20032003, 67-78; Between 1968 and 1987 over 130 000 people emigrated according to the reports of the Communist Police. Jeřábek, Vojtěch, Československí uprchlíci ve studené válce. Stilus, Brno 2005, 19.

558Holý, Ladislav, Malý český člověk a skvělý český národ. Národní identita a postkomunistická transformace společnosti. Sociologické nakladatelství, Praha 2001, 65.

559 As the invasion took place 80 000 Czechs and Slovaks were either in the Western countries or in Yugoslavia. After they found out about the invasion, almost half of them prolonged their stay and a significant part of that group decided to seek political asylum. Jeřábek 2005, 18.

560 Kostlán 2011, 86.

The Czech historian Jiří Jindra has named reasons, other than political ones, that pulled chemists to emigrate, such as the high standards of Western laboratories which occasionally offered scientists better working conditions. In countries like the USA and West Germany, the level of science and technology was attractively high and the freedom of information was much greater than in Czechoslovakia. Also, wages in the West were considerably higher than in Czechoslovakia. Moreover, Czechoslovak chemists had the advantage that their education was accredited at foreign universities and unlike physicians they could immediately start working.[561] In his analyses Jindra does not pay any attention to possible political reasons: freedom of speech, attractiveness of capitalist society; consumer goods, Western popular culture.

The reasons for emigration were numerous and the Party was confused about the phenomenon. There were more than 60, 000 citizens of Czechoslovakia beyond its borders whose situation was unclear. There was no organ which could take care of the issue. The Party was seemingly worried about the consequences of the brain drain.[562] In 1970, the Central Committee analysed emigration and suggested regulation of the departure of Czechoslovak citizens to capitalist states (and Yugoslavia). The Central Committee report contains a detailed evaluation of illegal emigration[563]. Although the decision makers did not explicitly articulate how the brain drain would deteriorate its scientific development, they expressed their concern between the lines. Most of the emigrants were of a productive age. Among them had been a number of scientists, scholars, technicians and doctors. In many cases, as the Central Committee report stated, the emigrants had been skilled workers capable to advance the national economy, and some of them possessed state secrets. [564] The concern was well-grounded. For example from the Academy none of the academic chemists fled to the West but five of the 14 corresponding chemist members emigrated. As Jiří Jindra has noted, these people were prominent scientists, part of the academic elite, who had gained their esteem through their work as scientists and not through political accomplishments.[565]As the report stated further, the most common way to emigrate had been not to return from private or business trips. Many people had emigrated to the West through the passageway of Yugoslavia or Bulgaria. Ironically the Central Committee highlighted the attractiveness of the West as the most important factor leading

561 Jindra, Jiří, Tschechische Chemiker im Exil 1948 bis 1989. In: Wissenschaft im Exil. Die Tschechoslowakei also Kreuzweg 1918-1989. Edited by Kostlán, Antonín and Velková, Alice. Výzkumné centrum pro dějiny vědy, Praha 2004, 377.
562 NA – Fond KSČ - ÚV 02/1, svazek 121, a.j. 195/14.
563 According to the report between 1948-1951 25 354 people had illegally fled the country; and between 1952-1963 only 3032 people. Between 1964-1967 7 413 people had emigrated. See: NA –KSČ - ÚV 02/1, svazek 121, a.j. 195/14.
564 Ibid.
565 Jindra 2002, 377.

to emigration: economic and professional reasons and more generally "better opportunities" were among the most important reasons to emigrate. The Party admitted that the flaws of the domestic economic system made emigration to appear as an attractive solution. [566]

Opposition to socialism was mentioned among the reasons to leave Czechoslovakia. The already existing networks were considered to be significant in the act of emigration. Before the occupation the representatives of the intelligentsia in particular had established contacts which now helped them to find their place abroad. The Party believed that earlier Czechoslovak emigrants had paved the way for the large emigration wave after 1968. The Central Committee furthermore noted that some of the emigrants believed that providing information about their home country would advance their position in the countries of destination and had therefore taken with them secret documents and patents. [567] As a result of this situation the Party wanted the Ministry of the Interior and other organs to begin working on the issue. Part of the process was to clarify the policy connected to business trips: a common practice was that the Czechoslovak citizens travelled to the West so that the inviting party covered their costs. This practice (so called bezdevizová cesta) had to be re-regulated. Another plan was to stop the visa exemption for Yugoslavia. The report stated that the Academy of Sciences had accepted the regulation of scientific contacts with capitalist countries, developing countries and Yugoslavia. [568]

The fact that some scientists stayed in the West longer than had been planned caused problems for the leadership of the Academy. Any scientist at a foreign institution at the time of the invasion or thereafter had become a potential emigrant. As President of the Academy, Šorm was limited by measures to deal with emigration. He tried to appeal to the conscience of those scientists who wanted to prolong their stays by trying to make them promise that they would return.[569] Occasionally he even asked for written confirmation that the person in question would eventually come home.[570]

Some of the scientists who were abroad had assured Šorm they would return but began considering their alternatives. Šorm replied to one of his colleagues

566 NA –Fond KSČ - ÚV 02/1, svazek 121, a.j. 195/14.
567 Ibid.
568 Ibid.
569 A AV ČR – Fond FŠ, Korespondence. Letter to Miroslav Bobek who had asked for a prolongation. 20.4.1970. Letter to Jan Fajkoš 14.7.1970. Šorm asked Fajkoš to keep his promise and return home – prolonging was not possible anymore at that time.
570 A AV ČR – Fond FŠ, Korespondence, Šorm's letter to one of his colleagues at the Purdue University in Indiana, April 1970.

(a candidate member of the Academy of Sciences) who had not yet returned:

> *"I am sorry to write you that I do not agree with that attitude. It is surely possible to imagine that I or any scientist of the institute could choose economically much more profitable employment abroad and sometimes a greater guarantee of personal safety. I think however, that it is now important for our country that the intellectual elite would stay at home to help solve the difficult situation, which might seem worse from outside than it really is. As a member of the Academy you have taken upon yourself certain moral responsibilities; now you have to choose between them and personal benefits. We know that deciding is not easy, but if the Czech nation would not have its past "romantics", faithful to it in all circumstances, it probably would have ceased to exist a long time ago. Personally I think that would have been a shame."*[571]

Šorm's tone appeals to emotions and is moralistic. It corresponds well with Ladislav Holý's explanation. The emigrants were expected to remain fully loyal to their nation. As Holý states, the Czechs do not conceptualise national identity as a cultural construction but something they gain when they are born. The term commonly used in relation with emigrants was to renounce one's birth (odrodit se). Accordingly, for the emigrants it became difficult to explain after 1989 why many of them did not return to their country of origin permanently. As the Czech writer Josef Škvorecký stated:

> *„They asked me whether we will return. It was always a slightly embarrassing question, because it is difficult to explain people who lived there all the time that one feels home somewhere else, even without committing the sin of renouncing one's birth. We really did not renounce our birth, but simply – lived in Canada."*[572]

Although Šorm's statements on emigration cannot be treated as purely personal opinions, it is important to note that he took a stand as the defender of the "Czech nation" against outside aggressors. By doing so, he made his position clear. At the same time, as head of the Academy he was obliged to deal with emigration. In that role Šorm had real concerns regarding emigration, which shows in his letter to the Ministry of Justice (without date). He signified his discontent with the issue of emigration. By using a concrete case of a scientist who had fled to the West from his institute in 1964, he exemplified the phenomenon of transferring knowledge to the West by illegal means. In September 1968, Šorm wrote to the director of a Western firm and informed him that a Czech scientist emigrant who had been a member of

571 A AV ČR – Fond FŠ, Korespondence, A letter to Professor Josef Plíva. Also Jindra 2002, 375-376.
572 Holý 2001, 66-67.

Šorm's research group on insect hormones should not be allowed to work on that subject for a year or two, but should instead be given other tasks.[573]

Wichterle did not seriously consider emigration.[574] For him it seemed to have been a matter of principle. Wichterle knew that if he would have chosen to stay in the USA he would have become very rich – but he was not inspired by money. By the standards of his home country he was well off. Despite the normalisation measures, the government never tampered with his financial rewards stemming from the licences.[575]

More than forty people from Wichterle's institute fled to the West – most of them soon after the occupation.[576] In comparison it is important to note that before the August events no one had done that – a fact that had made Wichterle proud. One of those who decided to leave his country after the invasion was the co-inventor of the polyHEMA, Wichterle's colleague Drahoslav Lím, who did not return from a business trip to the USA.[577] As one of the most important scientists in the field of macromolecular chemistry, the emigration of Lím without doubt puzzled the state. In 1970-74 Lím worked at the University of Stanford in Palo Alto, California, where he was invited by Paul J. Flory, the later Nobel Laureate. When he returned to Czechoslovakia in 1974, he was not allowed to work in his field. After Lím returned to Czechoslovakia his relationship to Wichterle was not good. They disagreed on issues related to research. The disagreements apparently left Lím with a strong feeling of injustice. After being unemployed for six years, Lím was permitted to leave to the USA in 1979. There, he worked on materials for artificial kidneys and continued research on polymers.[578] Another colleague closely involved in the lens business, Maximilián Dreifus, also left the country. In the later trials concerning the rights on the patents of the soft lens, Dreifus denounced his former colleague and acted as a witness for an American firm with the goal to nullify Wichterle's patent.[579]

Emigration was one of the survival strategies of the Prague Spring reformers and particularly common among scholars and scientists. Wichterle was one of those who could have left and had he done so he would have profited materially, but he decided to stay. As many others, he decided to continue life in his home country – uncertain of what was ahead.

573 A AV ČR – Fond FŠ, Korespondence, Dopis ministru spravedlnosti (koncept); A AV ČR – Fond FŠ, Correspondence, Letter to Professor Plattner 18.9.1968.
574 Wichterle 1992, 67,180.
575 Kiser 1989, 99.
576 Jindra 2002, 377.
577 A AV ČR – Fond ÚMCH ČSAV, zprávy. Zahraniční styky ÚMCH v letech 1962-1972.
578 A telephone conversation wih Lím's wife Jana Limová September 2007.
579 See chapter Patents Under Attack.

Back to "Normal" at the Academy of Sciences

The situation in the Academy stayed relatively calm during the first year following the invasion. During the first months of the occupation only a few things changed. According to Wichterle the most crucial change was the relation to the Soviets. The occupation even influenced relations with former friends. In his memoirs Wichterle has claimed that the Czechs (he uses the expression "we") had an interest in maintaining the relations despite the circumstances, but that the Soviets distanced themselves from the Czechs. Wichterle interpreted their behaviour on the one hand as a result of propaganda and on the other hand as a result of fear for consequences of being too close in contact with the occupied.[580]

The Action programme of the Academy of Sciences of April 1968 was approved two months after the invasion in October 1968 but this did not influence the „lucidity and principles" of the Action Programme.[581] The planning of the new legislation of the Academy began in practice in December 1968 and in May 1969 the blueprint that had been accepted by the CSAS was passed on to the state organs. However, the first sentence of the new law already implied its impossibility. The draft of this proposed law mentioned *free* scientific research (*svobodné vědecké badání*) as important for socialist society. The other parts of the proposal were more concrete and many believed that those parts could be justified. The Central Committee led by Gustav Husák, however, ended the legislation plans in September 1969. In the autumn of 1969, more than a year after the invasion, the Academy of Sciences returned to „normality".[582]

In April 1969, Alexander Dubček was replaced by Gustav Husák. Soon after that all important Party organs and other state institutions underwent political purges. Normalisation was a process of adaptation to a situation caused by the military occupation. The aim was a gradual abolishment of all reforms and a return to the methods of governing the state and society according to Soviet model.[583] Normalisation followed two basic premises and meant different things for different people: on the one hand the new leadership tried to form a model of a "pseudo-consumer society" (pseudokonzumní společnost)[584] highlighting such things as social equality and confidence with the aim to keep people satisfied and make them stay out of the public sphere. One the

580 Wichterle 1992, 184-185.
581 Mísková & Barvíková & Šmidák 1998, 25-27.
582 Ibid 1998, 27.
583 Manák, Jiří, Proces tzv. normalizace a horní vrstva byrokracie v Československu v roce 1970. In: Bolševismus, komunismus a radikální socialismus v Československu. Kárník, Zdeněk and Kopeček, Michal. Svazek V. Ústav pro soudobé dějiny AV ČR, Doktořán, Praha 2005, 241.
584 Východ. Vznik, vývoj a rozpad sovětského bloku 1944-1989. 2000, 576.

other hand those who were not playing according to rules were to be removed from their professional positions. [585]

As in the whole of society and its institutions, normalisation measures and purges were put into effect in the Czechoslovak Academy of Sciences.[586] The first sign of change was a split of the Academy into those who agreed with normalisation policies and those who were still against them. At the same time there were signs in society that the Academy should be normalised as well. For example in the Czech National assembly Otto Wichterle interpellated the Minister of Interior Josef Grösser who had verbally assaulted some prominent scientists and reformers of the Prague Spring, Jaroslav Hájek, Ota Šík and Václav Černý.[587] As a sign of changed policies, the interpellation did not lead to a demission of the Minister. Moreover, one the first serious interferences of the Party in the issues of the Academy were measures against the publication of documents "*Sedm pražských dnů. 21.-27. srpen 1968*" (later known as the Czech Black Book) from the days of the occupation that had been collected by historians from the Historical Institute. [588]

According to Alena Míšková, as long as Šorm remained at the head of the Academy, he tried to maintain the democratic orientation of the organisation.[589] But the pressure from outside quickly grew: the representatives of the Soviet Embassy met with Šorm and required that the Academy should withdraw its published opinion which claimed that the Warsaw Pact measures in Czechoslovakia were labelled as occupation and aggression. Moreover, the Soviets asked for a public apology. They implicitly put forward the prospect of possible future problems in the field of scientific cooperation and the development of Czechoslovak science in case their advice would not be heeded.[590] Thus, in reaction to the Soviet threats the members of the Academy decided at the October meeting of 1969 upon the removal of Šorm, who had refused to withdraw his statement against the invasion.[591] By doing so, Šorm had positioned himself against the policy of normalisation. According to the new policy such an attitude was to be punished either by forceful dismissal or a request to leave voluntarily.[592] As the Czech historian Jiří Petráš has stated, the approach and attitude towards the intervention was the essential aspect in

585 Ibid 2000, 576.
586 Míšková & Barvíková & Šmidák 1998, 32-33.
587 Schwippel 2001, 172. (See the copy of the original document)
588 Míšková, Alena, Proces tzv. normalizace v Československé akademii věd (1969-1974). In: Věda v Československu v období normalizace 1970-1975. Práce dějin vědy, svazek 4, Výzkumní centrum pro dějiny vědy. Praha 2002, 150-152; Oates-Indruchová, Libora, The Limits of Thought? In: 1948 and 1968 – Dramatic Milestones in Czech and Slovak History. Edited by Laura Cashman. Europe-Asia Studies Series Routledge, UK 2010, 127.
589 Míšková 2002, 150-152.
590 Ibid 2002,154.
591 Otáhal, & Nosková & Bolomský 1993, 48.
592 Manák 2005, 241.

the purges among the Party members: if the person accepted the intervention, he/she was allowed to stay, if not, he/she was dismissed. Among those who accepted the occupation were many who did it out of practical reasons in order to carry on as a full member of society, regardless of his or her "real" opinion or attitude before the occupation. Another important question was the attitude towards the Two Thousand Words manifesto. This practice led to a division of the former political elite into a privileged group and "the others".[593] Paulina Bren has quoted a person belonging to the group of reformers, a former advisor to Party First Secretary Novotný, who in 1971 wrote about his generation after the invasion: "We make up a touching spectrum—from the governing salons of Prague Castle to employees of the city sewage system, intermitted residents of prison cells or otherwise involuntary emigrants."[594]

Šorm had correctly predicted his own destiny: the top-manager of Czechoslovak science ended up as a *persona non grata* of the normalised regime. A long-time Party member and a communist, Šorm was painfully aware that the position he had taken to oppose the occupation would lead to his removal from the centre of the scientific community of Czechoslovakia. According to a Secret Police report from November 1969, Šorm had stated that although he was aware that his stance would probably lead to his dismissal, he would never change his view on the occupation.[595] He also stated that he was aware of the consequences of his actions.[596] However, it seems that what followed, hit him harder than he was able to take.

Ironically, some practices of his own era as the President of the Academy were used against him. Šorm had for example been involved in constructing the mechanism that was now used to displace him. During his presidency, there had been a practice of punishing unproductive scientists. According to that practice 300 crowns per month were added to the salary after which the contract for employment was changed from a "permanent" to "temporary". The small amount of money did not compensate for the inconvenience caused by short-term contracts in a system where such contracts were, as a rule,

593 Petráš, Jiří, Období normalizace z pohledu politických elit. In: Vanek, Miroslav (ed.), Mocní? A bezmocní? Politické elity a disent v období tzv. normalizace. Interpretační studie životopisných interview. ÚSD AV ČR, Praha, Prostor 2006, 193-194.

594 Bren 2010, 92.

595 The normalisers did not accept the use of the term occupation in relation to the Warsaw Pact military intervention to Czechoslovakia in August 1968. In the StB reports for example the events are described as crisis in 1968-1969.

596 ABS – František Šorm, č. 6999919 MV. In another report from September 1969 in which a colleague from Šorm's institute had provided information to the StB on Šorm's opinion concerning the August events, Šorm was claimed to have stated that the colleague in question had been right as she had claimed that the Warsaw Pact operation of 1968 was no occupation but a necessity. The report does not seem, however, to have any significance since Šorm never officially withdrew from his concrete opinion about the invasion. See: ABS – František Šorm č. 699919 MV.

permanent. Now Šorm was given the same kind of contract which, however, was only renewed as long as he reached the age of retirement.[597]

Šorm shared the fate of thousands of Czechoslovaks. It has been estimated that about 750, 000 people were the direct target of purges and when family members are included, the amount increases to as high as two million, which is remarkable in a country with 15 million inhabitants. As the Czech historian Oldřich Tůma has stated, even after the purges in the upper Party hierarchy, the thought that the conditions in the country would return to the pre-1968 model was „totally absurd". Tůma has noted that although it seemed possible that the new regime could persecute its people, it was unlikely that after the purges the Communist Party would find enough people who would be capable and willing to replace those expelled.[598] However, the unexpected happened and thousands of people who lost their positions were replaced – Tůma sees this as one of the most important questions of contemporary Czech historiography, to seek answers to the question as why this was possible and why the situation changed so quickly. He offers some explanations: the pressure was very efficient, consisting not only of purges but also of arrests and trials of people who had belonged to opposition movements. In the purges within the Party itself almost one third of its members were removed. The purges in the fields of science and culture were particularly severe. The Party nurtured the opinion that a significant part of the intelligentsia that was involved in the field of education had had a key role in the events of the Prague Spring. The amount of removed scientists and scholars was two-and-a-half times as big as was their proportion in the Party. As Tůma stated, „*Czech science and culture were punished for the third time within thirty years –not as bloodily as during the Nazi occupation and the 1950s – yet more thoroughly*."[599]

After the removal of Šorm the purges at the Academy spread further. The organisation elected a new President – Jaroslav Kožešník – who has been later described as a Party loyalist. He faithfully transmitted to the General Assembly of Members the government's demand for the „normalisation" of science and scientists. All directors of the CSAS institutes were dismissed by June 1970 and, as Stanley B. Winters states, replaced by "opportunists and Party hacks" whose credibility was known to the Party.[600] The policy was often rather ruthless and was supposed to increase the personal credibility of the normalisers in the eyes of the Central Committee. Thus, an appropriate

597 Holý, Antonín, Profesor František Šorm - 90. výročí narození. In: Akademický buletin. Available at: http://abicko.avcr.cz/bulletin_txt_show_clanek.php?Cislo=04/2003&Poradi=11, accessed October 21, 2008.
598 Tůma, Oldřich, Společenské a politické souvislosti termínu normalizace. In: Věda v Československu v období normalizace 1970-1975. Práce dějin vědy, svazek 4, Výzkumní centrum pro dějiny vědy. Praha 2002, 19-21.
599 Tůma 2002, 22-23.
600 Winters 1994, 286-287.

rhetoric was one of the ways to strenghten their position. According to Stanley Winters, the new director of the Institute of Nuclear Physics is quoted as having said: "*I would have thrown out even Einstein if his political views were not quite in order!"* [601] Something comparable actually happened as one of the greatest names of Czechoslovak science, the biologist Ivan Málek, was removed as director of the Microbiological Institute. According to Wichterle, the man was literally thrown out on the street and subsequently followed by his library.[602]

After the purges, the Presidium of the Academy became a mere „puppet organ". In December 1969, the Central Committee of the Communist Party recommended that four members of the Presidium should be removed: František Šorm, Ivan Málek, Josef Vachtl and Miroslav Katětov.[603] Šorm was still able to retain his membership of the Presidium, but this did not last long. The new "normalised" leadership of the Academy cut off the professionally-oriented practices inside the Academy that had dominated the institution especially in the latter part of the 1960s. [604] The purges were not the only way to demonstrate to the scientists that times had changed. For example, contracts for employment were made temporary in order to exert pressure on scientists – only in the 1980s did long-term contracts again become a standard.[605]

For Czechoslovak science in general, the practice of purges and dismissals was a serious defeat. It meant the dissolution of complete fields of research and whole institutes.[606] Not only the Academy but also the universities, libraries, archives and publishing houses were purged. Importantly, as Stanley Winters has shown, evidence of the government's effort to punish an institution that had embraced the reforms was clearly visible in the budget allotted to the Academy. Whereas in 1968 it had received over one billion crowns, in 1969 it fell to 830 million and in 1970 to 110 million crowns.[607] According to Oldrich Tůma the process of normalisation was in practice brought to an end in 1971 or 1972 but as a mental process it took years until it had reached its end. As Tůma puts it, the whole development after 1969 seemed so "illogical" that people thought that it would rather be something provisional. [608]

More than a year after the invasion, the Academy of Sciences became "normalised". Most reforms and reform plans of the Prague Spring, such

601 Ibid 1994, 286-287.
602 Wichterle 1992, 207.
603 Míšková 2002, 156, 157.
604 Míšková & Barvíková & Šmidák 1998, 72.
605 Winters 1994, 286-287.
606 Východ. Vznik, vývoj a rozpad sovětského bloku 1944-1989, 2000, 576.
607 Winters 1994, 289.
608 Tůma 2002, 18-19.

as the Action Programme were cancelled. Finally the CSAS was purged of those who had been active proponents of reforms during the Prague Spring and refused to step back from their earlier opinions. The attitude against the occupation was the most crucial divide in the purges. After the purges the CSAS leadership was not more than a politically loyal organ to the new normalised leadership of Czechoslovakia. This had dramatic consequences for Czechoslovak science. It hampered or destroyed the careers of the most talented scientists in the country, including the case study persons of this study.

Wichterle meets the „Czechoslovak Party of Opportunists“

After Šorm's dismissal in 1969, the state decided that the signatories of the Two Thousand Words who would not withdraw their signatures would lose their leading positions within the Academy of Sciences.[609] One of them was Otto Wichterle, whom the Central Committee named as one of the key persons involved in designing the manifesto. The Central Committee discussed the case of the manifesto on 13 October 1969 and issued a resolution. The secretariat of the Central Committee further analysed the Two Thousand Words and its influence on the district meetings of the Communist Party back in 1968 in its report "*Information on investigation of the creation of the Two Thousand Words manifesto, its authors and organisers*".[610] According to the Central Committee, after the Communist Party Presidium had not agreed with the Two Thousand Words, the newspapers – Literární listy, Mladá fronta, Zemědělské noviny and Práce – had published it. From seventy signers twenty two had been Party members and half of them artists and scientists, including fifteen medical doctors. According to the secretariat the manifesto had caused confusion during the district meetings of the Party and led to "psychosis". The Central Committee reported that according to the information given by the main author of the manifesto, Ludvík Vaculík, all signatures of the manifesto had been given to the editorial board of Literární listy, but after the occupation Vaculík had burned the signatures and other documents related to the Two Thousand Words.[611]

From the point of view of the Soviet Union the Two Thousand Words had worked as a major provocation – and Wichterle manage to annoy the Soviets

609 Míšková & Barvíková & Šmidák 1998, 63.
610 NA – Fond KSČ ÚV – 02/4, svazek 38, a.j. 63/5. Informace o šetření vzniku prohlášení 2000 slov, jeho autorů a organizátorů.
611 Ibid.

even more. In January 1969 he approached the Russian M.I. Rochlin with a letter in which he explained that the Czechs would not make the first move to improve relations; the initiative would need to rest completely on the Soviet side. For writing this letter the representatives of the Soviet Academy of Sciences apparently recommended isolating Wichterle from public life.[612] The participation in the Two Thousand Words as well as his other activities during the Prague Spring led to the removal of Wichterle from his political post in December 1969.[613] Wichterle did not back-pedal on his principles though. He openly stated that he had always had reservations regarding the Communist Party, particularly due to the discriminatory policy relying on class-origin. He refused to repeal his signature from the Two Thousand Words. He also repudiated the claims that the manifesto would have led to the formation of a counter-revolutionary group in Czechoslovakia.[614] As a signatory of the manifesto Wichterle became a highly suspicious person providing the Secret Police with a credible reason to invigilate him.[615]

In the professional sphere the normalisation measures lasted longer. In January 1971 Wichterle still thought that the situation at the Institute of Macromolecular Chemistry was excellent.[616] However, in line with the normalisation principles, Wichterle was removed from the position of director. But the whole process took longer than expected as Wichterle's colleagues in the institute expressed their solidarity with him thereby delaying the process of appointing a new director. At first the only one who applied for the vacancy was Wichterle himself. It took until 1972 before a new director was appointed.[617] Finally Otto Wichterle was replaced by Karel Friml, a loyal Party member who was not respected as a scientist by most of his colleagues.[618] Another Party member, Jaroslav Kálal, became the deputy director of the institute, responsible for scientific affairs. Accordingly, the new bosses of the IMC tried to control everything through Party channels.[619] As a result of these processes Wichterle lost his position as the Director of the Institute of Macromolecular Chemistry, his vice-chairmanship in the scientific collegia of chemistry (vědecké kolegium chemie a chemické techniky) and a number of confidential positions in national scientific organisations.[620] When

612 Wichterle 1994, 161. Wichterle wrote this letter after he had been invited to a seminar in the Soviet Union in December 1968. RGANI (Russian State Archive of Contemporary History) Fond 5, opis' 61, delo 59, list 8; Wichterle 1992, 183.
613 Wichterle 1994, 162-167.
614 A AV ČR – Fond OW, bod 11. záznamu o výsledku pracovně politického hodnocení. 22.10.1970.
615 ABS – OB-380 ČB.
616 A AV ČR – Fond OW, Wichterle's Letter to Herbert Morawetz.
617 Kiser 1989, 99.
618 Communication with Jindřich Kopeček per e-mail 1.8.2007
619 Ibid.
620 Míšková, Barvíková, Šmidák 1998, 44. Osobní fond OW. Notice of termination 28.12.1969 from the Institute and other notices from various posts.

the “normalisation” measures were at their zenith Wichterle was accused among others of a bourgeois background.[621] This argument was commonly used at the time in relation to opposition to communism. In July 1968, the Polish Party leader Władysław Gomulka had stated that counter-revolution stemmed from the heritage of “*the past in the human spirit, from the heritage of capitalism, the thoughts, the mentality of capitalists. After all, remnants of the propertied classes remain.”* His opinion was confirmed by the Slovak Party leader Vasiľ Biľak who noted that:

> *“exploiters have children, and grandchildren, and they propagate old bourgeois values despite the socialising efforts of the state. Hostile ideas thus remain in circulation, continue to influence certain groups, and continue to pose a threat.”*[622]

Wichterle was allowed to continue working at the Institute of Macromolecular Chemistry but without any official function and without collaboration with colleagues. His busiest years ended. The historical change provided him with unexpected possibilities to accomplish things in his private life: reading books not related to chemistry and enjoy family vacations. The politically engaged world-class chemist became a “half pensioner”.[623] Although Wichterle had more time for experimental work in the laboratory, he had lost all functions and responsibilities and was no longer allowed to travel. As it was not his choice he protested. When a visitor to the Institute of Macromolecular Chemistry asked Wichterle how he was, his answer was: “*Better than ever, but I do not agree with that*.”[624]

By utilising national and international networks as well as his prominent position Wichterle tried to influence the decision makers within the power structures. In 1971, the new leadership of the institute was planning to remove Wichterle by pensioning him off. To prevent this, Wichterle exploited his international networks. In his letter to Pollak and Feldman in NPDC he commented on his supposedly imminent retirement.

> *“It is not the first time that a temporary political constellation tries to interfere my work. The Nazis did it in a very drastic way in 1939 and I have survived quite successfully. The forced interruption of my academic career they have imposed on me helped me to find new and most interesting areas of technical activity. I am optimistic to calculate with*

621 Wichterle 1992, 194-95.
622 Williams 1997, 57. Bilak belonged to the conservative wing in the KSČ, he supported the Soviet invasion.
623 A AV ČR – Fond OW, Wichterle’s Letter to Herbert Morawetz, Polytechnic Institute of Brooklyn, 22.2.1971.
624 Wichterle 1992, 197.

some success even after my expulsion from the Institute I have found and developed."[625]

Wichterle was offered a generous consulting contract in NPDC:

"We expect you to be willing to travel, at our expense, to consult where and when we may deem it necessary (...) In return we propose a base-consulting fee of 2,000.00 dollars annually; reimbursement of all travel expenses and office expenses..." [626]

In May 1972 Pollak sent a letter to Polytechna proposing to offer a contract to Wichterle for his services as a consultant. The NPDC appraised Wichterle's reputation and expertise. His enthusiasm and creativity had been a prime asset to the firm.[627] In June, Wichterle contacted Polytechna to discuss the offer. He suggested it should be taken seriously by justifying it first and foremost by the lack of possibilities at the institute. He also stated that the royalty of 25.000 dollars that had been offered in the contract was one of the highest in the category of university professors in the USA – it would not harm the prestige of Czechoslovak scientific workers.[628] It is not surprising that the director of the Institute did not agree with the consultation plans. To prevent the consultancy, which would have made Wichterle the best earning scientific worker in Czechoslovakia, the director instead prolonged Wichterle's contract of employment. Thus, by utilising international networks and his prominence Wichterle was at least able to assure himself of a working place. However, Wichterle's research work was in many ways complicated, and it lacked the support of the state.[629]

Wichterle was also aware that the world was watching Czechoslovakia. When the possibilities to influence his situation inside his home country were taken away, he was still hoping that his international contacts could improve the situation. This is reflected in the correspondence with his Western colleagues. Letters included remarks on the situation in Czechoslovakia and in particular the travel ban. To Herbert Morawetz in New York Wichterle remarked ironically that he was glad that it was possible to travel without a passport to Moravia and even to Slovakia, and it "*is quite possible that these excellent conditions of free movement will still be maintained for a while*".[630]

In his home country Wichterle was used as a negative example. He became a target of vilification in newspaper articles that concentrated mainly on the

625 A AV ČR – Fond OW, A letter to NPDC 23.12.1971.
626 A AV ČR – Fond OW, Fred A. Kincl. 17.3.1972.
627 A AV ČR – Fond OW, Martin M. Pollack's letter to Polytechna (dr. Volný) 10.5.1972.
628 A AV ČR – Fond OW, Wichterle's letter to Polytechna (dr. Volný) 6.6.1972.
629 A AV ČR – Fond OW, vyjadření k vlastní práci. Akademik O. Wichterle. 3.5. 1972.
630 A AV ČR – Fond OW, Wichterle's letter to Herbert Morawetz, Polytechnic Institute of Brooklyn, 22.2.1971.

counter-revolutionary character of the *Two Thousand Words*. The discussion with its pro and contra arguments extended to awareness abroad in the pages of the *New Scientist*.[631]As a victim of the political purges Wichterle identified himself with Socrates, for being accused as absurdly as the famous philosopher. The original Greek version of accusation against Socrates – of denying the gods recognised by the state, of introducing strange divinities in their place and of corrupting the young – hung on Wichterle's office wall during the normalisation period.[632] Although Wichterle did not share Socrates' fate until the bitter end, the August invasion marked a historical watershed which affected both his life and career but also changed his world view. As Wichterle saw it, the Communist Party stopped being what it had previously represented in the 1970s, and transformed into the „Czechoslovak Party of Opportunists“ (Československá strana oportunistická). The invasion had also ended his sympathies for the Soviet Union, the country he had earlier liked and been a „fan of“.[633] Long before the normalisation, the "optimistically sardonic" Wichterle, in conversation with Morawetz, had recalled a "typical" dialogue he would have with the decision makers when paying a visit to a ministry:

> *"Professor, how are you doing?"*
> *"I am fine. I am training myself to sleep on the bare floor".*
> *"Why would you do that?"*
> *"I am doing it so I shall be prepared when you lock me up"*
> *"But professor, we are not so blood-thirsty!"*
> *"Sure, you are not. But you won't last and those who will come after you, will be!"*[634]

In retrospect Wichterle analysed his situation by explaining that the new bosses in the institute – to whom he referred as envious people – wanted him to cease existing professionally and were determined to prevent him from achieving any success that would require public recognition. Wichterle's opponents probably believed that as long as he would not get any assistance for his research work, he would not be able to improvise as much as back in the early 1960s. Now, as lenses were produced on a large scale in the USA and elsewhere, such "primitive" methods as using his son's construction set would hardly be sufficient. However, in his own words, Wichterle was well prepared for this kind of intrigues. The constant intimidation and efforts in the Institute to get rid of him led Wichterle to prepare and ensure as good working conditions as possible at his family house. Wichterle eventually managed to

631 A AV ČR – Fond OW, Wichterle's Letter to New Science2.11.1970.
632 A AV ČR – Fond OW, záležitosti ČSAV, kartón 9.
633A AV ČR – 020-R. Interview with Wichterle. Československý rozhlas 13 February 1990.
634 Morawetz 2006, 103.

gather and acquire equipment for his workshop from different places.[635] It was a core survival strategy under socialism to get things done by using networks of acquaintances.

As the middle level analysis of this chapter has shown, the replacement of professional personnel led to a complex situation. The efforts of many individuals to maintain high professional standards were eventually vitiated and professionalism was replaced by political loyalty towards the occupiers. In order to maintain some access to research work, Wichterle utilised his international contacts. Here the new personnel of the Academy of Sciences showed their true colour: feelings of envy gained precedence to the potential the profit the whole country could have gained by letting Wichterle work as a consultant for an American company.

Normalised scientific Cooperation with the Outside World

The normalisation process became the guiding principle in the reorganisation of foreign scientific relations. This was a reflection of the overall principle of the Communist Party. As Tůma has noted, since it proved impossible to keep Czechoslovak society in complete isolation from the West, contacts would be allowed, but only to a certain extent and under strict control.[636] At the level of rhetoric, it was like returning back in time. The Presidium of the Academy stated in November 1969 that contacts with socialist countries should be prioritised.[637] But the invasion had led to a deterioration of relations with the socialist countries. The stage of cultural, educational and scientific contacts between Czechoslovakia and the Soviet Union was critical. Accordingly, the Central Committee suggested the "normalisation" of those relations. The Central Committee put the blame on the Ministry of Culture, Education and the Academy, which were accused for providing quiet acceptance to the "right-wing forces", which in the August days encouraged direct boycotts against the Soviets. By doing so, the Central committee attacked the local actors whereas the Soviets were given the role of a generous partner who was willing to cooperate. The report also called for further normalisation measures by stating that the anti-Soviet attitude was still alive at certain levels: for

635 Wichterle emphasised in his memoirs that from the institute he only took with him a subtle amount of cuttings made of plexiglass and PVC worth around 100 crowns.
636 Tůma, Oldřich, The Second Consolidation of the Communist Regime and the Descent into Collapse (1972-1989), In: A History of the Czech Lands. Edited by Pánek, Jaroslav; Tůma, Oldřich. Charles University in Prague 2009, 570.
637 Mišková & Barvíková & Šmidák 1998, 69.

example the Association of Czechoslovak Writers had gone as far as to state that Czechoslovakia was a sovereign but occupied country.[638]

The normalisation did not only change practices of international cooperation, but also marked a reformulation of concepts. The discourse on the integration of world science and European cooperation disappeared. The concept of integration was now replaced by another form of integration, the integration process of science in socialist society. To a great extent this was newspeak: the CMEA Programme had become an important part of the division of work and had to be mentioned in all relevant documents. This phenomenon was linked in particular to scientific cooperation in the framework of the CMEA and to joint international scientific projects such as cooperation in the framework of DUBNA and Interkosmos. During the normalisation foreign contacts were bound to the tasks of the State programme for basic research but also to the Comprehensive Programme of the CMEA, which was adopted in 1971.[639]

Czechoslovakia now considered Western scientific contacts of individual scientists as problematic.[640] In general, trips to the West were to be limited to those bringing concrete advantages to the country. Thus, the whole approach to the reasoning on the importance of scientific contacts had changed and followed the logic of a planned economy: the result had to be known before the process had even started. The Czechoslovak government decided in October 1969 that the Academy would be obliged to follow new definitions of policy. The Academy made a blueprint concerning the practicalities of Western scientific contacts. According to the new statute, trips to capitalist countries were to be limited to one trip per person per year. A director of a respective institute was to decide upon suitable candidates and travels. If further travels would be necessary, higher organs would enter the decision-making process – another sign of the state's distrust of individuals. The number of scientists in capitalist countries was not allowed to be more than ten percent of the total number of scientists in institutes at the given moment. According to the blueprint, the institutes were submitted to sanctions if they did not comply with these rules and their directors were fully responsible for taking care of their observance.[641]

638 NA – Fond KSČ ÚV- 02/1, svazek 95, item 158/3.
639 A AV ČR – Fond Prezídium ČSAV, 55. prezídium. 28.11.1973. (28.11.1973).
640 Mišková & Barvíková & Šmidák 1998,72.
641 A AV ČR – Fond Prezídium ČSAV, 60. prezídium (28.11.1969); NA – Fond KSČ – ÚV- 02/1, svazek 118, arch. jednotka 192/2. Návrh zahr. politické linie ve stycích s Německou spolkovou republikou. 21.1.1970. A long term trip was the one that lasted more than 60 days and it was allowed to last not more than 2 years. A scientist who spent more than a half a year in a capitalist country had to wait for another 7 years until he/she was allowed to repeat a study stay in the West. For directors and academicians long term study stays would be allowed only exceptionally. This rule did not, however, apply to the expert positions in international scientific organisations such as OSN, UNESCO and FAO.

In particular the activity of individuals and their travels caused suspicion. In this vein, the situation during the Prague Spring was described in the following way:

> *'Under the impact of the international situation the Czechoslovak representation in the main organs of international scientific organisations rose, but to the functions were elected a group of people who were politically intolerable, with personal ambitions and acquaintances'.*[642]

The state viewed spontaneity (živelnost) as the one of the main problems related to Western cooperation. Spontaneity as a remnant of Prague Spring practices was something that had to be changed and strictly limited. The concept referred among others to the too salient role of individuals. The Academy highlighted that the aim of cooperation with capitalist countries was to gain the newest results of research from the "most developed" capitalist countries – this was possible, however, only after assuring that the territorial orientation and political aspects would be in accordance with the foreign policy of Czechoslovakia. This idea – the reduction of political threat – was interestingly linked to the prioritisation of contacts in the field of natural and technical sciences. Ideological jargon appeared again in the materials of the Academy: the contacts were told to advance "peaceful coexistence".[643] The state did not want to present itself in front of its people or the outside world as revolutionary, but as a "normal" state. Unlike in the 1950s, it could, however, no longer keep itself consistently isolated from the West. Quite the contrary, contacts with the West were a valuable asset which the state could offer those who remained loyal. International contacts were thus important tools for manipulation.[644] The shift in policies had a very strong impact at the individual level – it determined the choice of people who were allowed to travel and therefore were able to improve their professional know-how. Political "maturity" was now listed before professional qualities in choices of appropriate candidates for study trips.[645]

During the Prague Spring, František Šorm had stated that in case he would have to relinquish the position of President of the Academy he would gladly do research and travel more. The opposite happened as the normalisation brought the travelling to the West of those scientists who denounced the invasion to an end. Šorm was often invited to international academic events abroad but had to refuse. Since not able to travel, letters came to constitute one of the few ways to communicate with foreign colleagues. After Šorm's dismissal the tone of letters he received changed and they became more personal: "*Your name comes up in the newspapers, always in a disturbing*

642Mišková & Barvíková & Šmidák 1998, 72.
643 A AV ČR – Fond Prezídium ČSAV, 60. zasedání presidia Československé akademie věd dne 28.11.1969.
644 Tůma 2002, 24.
645 A AV ČR – Fond Prezídium ČSAV, 60. zasedání presidia Československé akademie věd dne 28.11.1969.

and depressing context".[646] Most probably Šorm's opportunities to meet his foreign colleagues in his home country after his dismissal were very limited. In order to meet a person from the West he had to apply for permission. In 1970 he was given the opportunity to meet Carl Djerassi at the Ruzyně airport. The institute motivated the meeting by stating that it would benefit the institute. The StB followed the meeting of the chemists. The relations were described as intensive and friendly but although Djerassi showed some text to Šorm no written information was actually exchanged during it.[647]

Wichterle's travel ban began with an inconvenient occasion in 1969 during his conference trip to Australia. There he was interviewed for a local newspaper. When the journalist asked him about the invasion, Wichterle told him it would be better to ask the Soviets. This comment eventually led to a fight between Wichterle and his Russian colleague.[648] A fight between two world-class chemists was politically charged, presenting opposite opinions and different historical experiences. In his memoirs Wichterle suggests that the event led to a report on Wichterle from the Soviet Academy of Sciences, and shortly hereafter he was even prohibited to travel to other East European countries.[649] Due to this travel ban, Wichterle had to refuse attendance at a number of international conferences. In the summer of 1971 Professor F. Lynen from the Gesellschaft Deutscher Chemiker had invited Wichterle to be the chair of the organisational committee of the IUPAC Congress in Hamburg in 1973. Wichterle was obliged to decline the invitation. In relation to this, he even brought up the topic of Ostpolitik in his reply to a West German colleague:

> *„You surely realise that in this country under the present political conditions we can hardly make promises of any participation in international congresses. Unfortunately I have no reason to believe that me, a persona non grata, will be allowed to travel anywhere in the future. Considering your present Ostpolitik, you will probably also have to think whether you should invite colleagues, who have certain differences of opinion with your beloved regimes".*[650]

In 1972, as the measures of normalisation were evaluated, the travel statistics

646 A AV ČR – Fond FŠ, Korespondence. Letter Dr. Wolstenholme from the Ciba Foundation in London was dated in January 1970.
647 ABS – František Šorm, č. 699919.
648 Wichterle 1992, 67-68.
649 Ibid 1992, 67-68.
650 A AV ČSAV – Fond OW, Normalizace 1970-82, zakázáná účast. Wichterle's letter to Professor F. Lynen, Director des Max-Planck-Instituts fuer Zellchemie, München. "Sie warden aber sicher begreifen, dass wir in diesem Lande unter den gegenwärtigen politischen Verhältnissen unsere Teilnahme an ausländischen Kongressen kaum versperchen können. Leider habe ich keinen Grund zu denken, dass ich als persona non grata in der Zukunft überhaupt irgendwohin reisen werde. Sie werden auch wahrschenlich überlegen müssen, ob Sie mit Hinsicht auf Ihre gegenwärtige Ostpolitik Kollegen einladen sollten, die gewisse Meinungsverschiedenheiten mit den mit Ihnen befreundeten Regimen haben."

showed a drastic decline in foreign exchanges. Right after the invasion travelling to the occupying Warsaw Pact countries ended for a while – a factor that also affected the statistics. In 1967 the number of incoming and outgoing scholars had been 14,221, in 1970 it fell to 8,121 and in 1971 to 7,321. The decline continued and reached its peak in 1973 (2,397).[651] The Presidium of the Academy was, however, not satisfied with the compliance with the practices. It highlighted that in the future there would have to be concrete proof of how every activity would concretely fit in to the tasks of the State programme for basic research (Statní program základního výzkumu). Above all, from 1972 onwards it was required that all scientists who would be chosen to travel to either capitalist countries or to developing countries take part in special political training.[652]

In 1973 the tone of the analyses changed somewhat. Instead of reorganising and criticising, future perspectives and even positive sides of foreign scientific contacts were presented. The Academy compiled a document entitled "*a suggestion: instructions for preparation and implementation of scientific contacts of the Academy of Sciences with foreign countries*". There it stated that foreign scientific contacts were one of the important tools of Czechoslovak foreign policy and a valuable asset for the development of political, scientific, economic and cultural contacts and cooperation. It concluded that trips abroad and visits of foreign scientists in Czechoslovakia were an important way to get acquainted with each other, exchanging experiences and gaining information essential to the development of all areas and life of socialist society while also constituting a useful tool to promote it abroad.[653]

Contacts with the West were explained and motivated through a discourse of necessity, very much in the same way as before the Prague Spring. The most important aspect in scientific contacts with the West was to gain important scientific results that were not yet available in socialist countries. Necessity could not, however, surpass political cautiousness. Therefore, the state prohibited contacts with scientific institutions and organisations that employed post-1968 Czechoslovak emigrants. Otherwise the participation in international scientific organisations was expected to strengthen the position of Czech science and socialist science in general in those organisations and serve as a useful tool to promote socialist science in the international arena.[654]

651 A AV ČSAV – Fond Prezídium ČSAV, Počet pracovníků vyslaných pracovišti ČSAV do zahraničí a počet osob přijatých pracovišti ČSAV ze zahraničí 34. prezídium (7.6.1972).
652 A AV ČSAV – Fond Prezídium ČSAV, 34. prezídium (7.6. 1972). Zásady pro přípravu plánu vědeckých styků ČSAV se zahraničím na rok 1973.
653 A AV ČSAV – Fond Prezídium ČSAV, 55. prezídium (28.11.1973).
654 A AV ČSAV – Fond Prezídium ČSAV, 55. prezídium (28.11.1973).

At the level of rhetoric the official discussions concerning international cooperation were seemingly returning back to the 1950s. However, this time there was no idealism as in the 1950s, but the decisions were based on purely pragmatic considerations related directly to the need to please the Soviets. It was clear of course, that unlike in the 1950s, in the 1970s any kind of illusions of autarky were not realistic, but on the contrary rather harmful. The same kind of absurd practices touched the lives of the case study persons in the form of their persecution by the Secret Police.

The “Operation Kardinál” - The Secret Police monitoring Šorm

All limitations to his professional life aside, Šorm’s life in the 1970s was seriously aggravated by personal problems. These problems were in one way or another linked to the policies directed towards Šorm’s person. His wife, Zora, was seriously ill and her situation deteriorated in the course of years. Most probably she did not receive all the possible medical assistance to improve her condition. With her husband she had been removed from the Party after 1968. The situation made it for example impossible to use foreign medical services as would have been the case prior to the normalisation. Zora Šormová’s illness worried her husband and left him with the main responsibility over the household. Perhaps the greatest distress for Šorm was the destiny of his son Milan, who despite all his efforts and excellently passed entrance exams had not been admitted to study at the Prague Academy of Fine Arts (Akademie výtvarných umění). The reasons behind this were political, caused by the measures targeted against the father. It was difficult for the father to see how the artistically gifted son was not able to study the field he would have wanted. Instead he worked in the Institute of Chemical Process Fundamentals (Ústav teoretických základů chemické techniky), where he was apparently persecuted.655 These two factors form an important contextual background for Šorm’s life in the 1970s. Among others, they were used by the Secret Police as tools to exert pressure on him.

The StB reports concerning Šorm reveal the official reasons behind his dismissal. Besides the usual repetitive jargon alluding to his “mistakes” during the crisis, Šorm’s role in establishing intensive and close connections with Western scientific community came to the fore. The logic was clear: after the occupation the remnants of the ideas – among which the orientation towards

655 ABS – František Šorm č. 699919. In October 1974 Šorm discussed this with the the new director of the ÚTZCHT and told him that he is happy for his appointment as the new director because that will make things easier for his son. On other occasions Šorm also alluded to the persecution of his son in the ÚTZCHT.

the West – which had prevailed in the 1960s had to be eradicated. Those who had been targeted by the normalised regime were commonly labelled as right-wing activists or opportunists. In 1972, a StB informant reported on Šorm being suspected of helping Czechoslovak emigrants. The informant was a person who had worked in Šorm's institute for the past few years. According to his narrative Šorm had enabled the emigration of Czechoslovak scientists. To prove this he recalled Šorm's approach towards the issue of emigration back in 1969 when Šorm was still the director. The informant claimed that Šorm had allowed three people from the institute to prolong their visits abroad and openly stated that while all of them were of Jewish origin, they would serve as an example of how anti-Semitism would be gaining more ground in Czechoslovakia after the occupation. As a quantitative argument the informant added that more people emigrated from Šorm's institute than from elsewhere and almost all of them were Zionist Jews.[656] As Paulina Bren writes, anti-Semitism has made its reappearance in the rhetoric. "Zionist conspiracies" played a part in the official narrative, although in more mitigated fashion as in the 1950s. Anti-Semitism and anti-Westernism were often linked in these debates.[657]

The informant, who seemingly held something personal against Šorm, further noted that under Šorm's tenure the Academy had used huge amounts of money for study visits to the West – the tone and position of the agent towards his object comes clear as he added: "this did not bring anything to Czechoslovakia". In the same context, he stated that Šorm received a salary of 30,000 crowns per month. The informant wanted to demonstrate that despite the normalisation measures, nothing had in fact happened to Šorm. He was still in a high position in the Institute for Organic Chemistry and Biochemistry, heading one of its departments where he even possessed a spacious office. The informant further claimed that many people in the institute were Šorm's backers. He named a few, among them Stanislav Formánek who during the August days had "personally guarded the institute building so that the Soviets could not enter it". In the opinion of the informant the normalisation of the institute had not been sufficient. Neither had it been sufficient in other institutes. As an example he used Ivan Málek – "another Zionist" and the same kind of "capitalistic shark" as Šorm. This, the agent openly admitted was based on his bad experiences with Málek.[658] Apparently these accusations

656 ABS – František Šorm č. 6999919. A concrete example was Bořivoj Keil, a colleague who, as the informant explained, had ambitions with regard to Šorm's position. Because Šorm knew about these ambitions, he had sent Keil to UNESCO for two years. After Keil returned, Šorm gave him back his position although, as the story went, he had meanwhile ensured that Keil had lost his Party membership. After the August events, Keil was allowed to return to Paris, from where he never returned.
657 Bren 2010, 69.
658ABS – František Šorm, č. 6999919.

led to further StB activity. In 1973 Šorm and his colleagues were invigilated and their activities again evaluated.

In 1974, the StB launched an operation “Kardinál” to monitor Šorm’s activities and his alleged contacts with “right-wing elements”. The StB came up with Zdeněk Mlynář[659] as Šorm’s possible contact person in rightist circles. The official reason for the operation was “suspicion of unfriendly activities against Czechoslovakia”.[660] One possible explanation for the operation and an answer as to in what way Mlynář’s name was connected to Šorm may have been linked to the activity of the biologist Ivan Málek in the spring of 1974. As Martin Franc has shown in his research on Málek, Šorm’s long-standing rival who had also lost his academic position, decided to publicly announce his disagreement with the then contemporary political line in particular in the field of science. He was planning a critical statement to be signed by a group of prominent scientists from the Academy of Sciences. He first sent the draft of the statement to three men, including Šorm and Zdeněk Mlynář. The third one was Jiří Hájek, the former Minister of Education (1965–1968) and Minister of Foreign Affairs (April-September 1968). Hájek and Mlynář were willing to participate, but Šorm refused. According to Franc, Málek was dissapointed with Šorm’s refusal, since due to his (former) key role in science policy Málek had considered the latter’s participation as particularly important.[661]

The StB moreover explained that back in the era of Šorm’s presidency he had not been able to see the primacy of Soviet science. His letter to Keldysh served to prove his non-loyal stance vis-à-vis the Soviets. The letter thus had a long-term harmful impact. The operation “Kardinál” consisted of following Šorm’s everyday life. The agents reported Šorm visiting grocery stores and his working place; going for a walk with the dog, driving his green Chrysler and taking the tram or bus.[662] The fact that Šorm was driving a Western car was worth mentioning. However, the StB did not find any significant contacts with right-wing elements. In November 1974 the StB noted that Šorm is not politically active and does not participate in political discussions at the institute. He had contacts with some institutions but they seemed to be purely professional. The StB officer concluded in his analysis by portraying Šorm

659 Zdeněk Mlynář (1930-1997). A Czech scholar and reformist politician who had been expelled from the Party after the occupation. He was active in the Charter 77 movement. The StB reported that Šorm and Mlynář met in November 1974. Šorm never tried to keep this information back. Accroding to him they had talked about issues concerning Šorm’s research. ABS – František Šorm, č. 6999919.

660 Podezření z nepřátelské činnosti proti ČSSR. In 1974, František Šorm’s name was also brought up in the same context of “rightist exponenents” in the materials of the Central Committee. See: Míšková, Alena, Proces tzv. normalizace v Československé akademii věd (1969-1974), 166.

661 Franc 2010, 288-289.

662 ABS – František Šorm SL/MV, Kardinál.

as the kind of "person who tries to serve any regime". The StB decided to get more information on Šorm by talking with his co-workers and neighbours.[663]

In 1974 Šorm found out that his contract at the institute would be no longer be prolonged and that he would be retired in April 1975. This was a political decision with the aim to complicate his situation. In 1975 dismissal from employment became easier in Czechoslovakia as the Labour Code was amended in 1975.[664] Šorm discussed the issue with his colleague Formánek who shared his fate and in fact expected to be retired even earlier. Formánek shared information with Šorm concerning the Academy President Jaroslav Kožešník. Formánek had heard that Kožešník would continue in his position. Šorm was surprised and added that if "they" (the decision makers) would examine Kožešník's past, they would find much to wonder about. Both agreed that the new leadership needed him and nobody cared about his past. According to the StB report, Šorm had concluded this by stating that the leadership "does not care how and what somebody did but how he serves". Kožešník was an opportunist who had been waiting long for his time to come. This was not the first time as he had tried to get rid of Šorm. Šorm's indications to Kožešník's past may in part refer to the latter's opportunist behaviour towards Šorm in the late 1950s. Then Kožešník, the "blue-eyed boy" of the first President of the CSAS Nejedlý, had regularly informed his boss about what was going on in the institution. Apparently Kožešník had constantly backbitten Šorm. This was in contrast to his supportive attitude towards Šorm's election as President after Nejedlý's death in 1962. Kožešník's contradictory attitude towards Šorm had even irritated Ivan Málek, Šorm's greatest rival.[665]

Thus, the fact that Kožešník would stay at the head of the Academy was no positive news for Šorm. However, he still seemed to cherish some hope that his contract would be prolonged and he would not have to retire. In January 1975, Šorm discussed the issue of contracts with Wichterle. He had found out that Wichterle's contract was to be prolonged and was curious to know how Wichterle had argued the necessity of the prolongation. According to Wichterle, no arguments had been needed. Šorm ended the discussion by noting that he himself was probably seen as a greater sinner (hříšník). The StB found it interesting and contradictory that in his discussion with Wichterle, Šorm had mentioned that he feared he had already lost contact with actual scientific research.[666]

663 ABS –František Šorm, č. 6999919.
664 Janouch 1976, 6-12.
665 Franc 2010, 130.
666 ABS – František Šorm, č. 6999919. StB reports on Šorm's discussion with Wichterle in January 1975.

As some of Šorm's closest foreign colleagues found out about his approaching retirement, they invited him to lecture abroad. Two invitations from France and England in 1974 became the subject of discussion between him and the authorities. As it was a common practice of the state to allow pensioners to travel, Šorm probably believed that his retirement could at least lead to something positive in this sense. Aware that he would have to react to the invitations within a reasonable time, Šorm tried to approach the Minister of Interior, Jaromír Obzina, whom he seemed to respect. He understood from Obzina that there would be no obstacles to his travels.[667] But at the same time the StB had received contradictory information on Obzina's opinion. This sprung from another source, namely from the General Secretary of the Academy, Karel Friml. According to Friml, Obzina had denied that he would have ever told Šorm that he could travel.[668] Šorm had been given false hope. He had namely heard that his travels could profit the state because they could prove that things in Czechoslovakia were normal. According to what he had heard, even Friml would stay on his side in the matter. But as Šorm could only guess what was going on "behind the scenes" and who would in the end decide about his travels, he was puzzled what to reply to the foreign colleagues. The situation was seemingly embarrassing for him, who as "a member of twelve academies had to answer as an idiot (blbec)" to the invitations.[669]

Thus, in order to avoid the unpleasant role of having to reject the invitations, Šorm contacted and spoke with several people in influential positions. In December 1974 the StB reported that he had talked with Vladimír Kubánek.[670] Šorm explained to him that the process of deciding on the permission to travel had already taken 2-3 months and the foreign colleagues were waiting for his answer. According to the StB reports, Šorm met Kubánek twice to discuss the issue. The second time Kubánek told Šorm that he had brought the issue up in the Central Committee but the "comrades" had been unsure how to deal with it and decided to contact the President of the Academy, Kožešník. This did not cheer Šorm up – on the contrary, he believed that Kožešník was exactly the one who stood in his way. However, because the trips were to take place after his retirement, Šorm believed that the issue would soon be referred to the Ministry of Interior instead of the Academy. After that it would be sufficient to have Obzina's support. Šorm was still very hopeful that he would eventually travel.[671] These efforts demonstrate how complicated it

667 ABS – František Šorm, č. 6999919. November 4th 1974. Also in many other occasions Šorm told that Obzina had implied that he was not opposing possible travels.
668 ABS – František Šorm, č. 6999919. March 10th, 1975. A discussion with Friml.
669 ABS – František Šorm, č. 6999919. the StB reports Šorm's discussion with an anonymous man about his possibilities to travel. October 1974.
670 A member of the Central Committee who had a high position in the Party's section of education and science. See Wichterle, 248.
671 ABS – František Šorm, č. 6999919.

was in a centrally administrated system to find out who and which organ had the authority regarding certain issues and how significant a role interpersonal relations played in it.

Shortly after his retirement, the StB evaluated Šorm. The report stated that following his retirement Šorm had been given a contract as a scientific advisor in the Institute for Organic Chemistry and Biochemistry. The StB accredited him for influencing the process in which the institute had successfully sold some of its scientific achievements to Western firms. His personal contacts with Western scientists though had been limited to mere birthday wishes.[672] However, the evaluation claimed that Šorm's influence in the Academy was still remarkable. But the claim that one of his colleagues still called him "comrade President" was rather flimsy evidence. Nevertheless, the conclusion was that Šorm was not politically active and in contrast behaved warily.[673]

In October 1975, the StB decided to extend the monitoring of Šorm to the level of personal discussions. The aim was to test Šorm's willingness to admit his past mistakes and his incorrect attitude during the "time of crisis in 1968-1969" and to learn about his opinions on the present administration of Czechoslovakia. The StB had concrete goals. They wanted Šorm to write a statement to the Central Committee, in which he would admit his mistakes. The report moreover explained that the StB wanted to know about Šorm's contacts with the representatives of the Right and concretely to find out who had exerted pressure on him in August 1968 and thus made him condemn the intervention.[674]

In the discussion that took place in the building of the StB in October 1975, Šorm elaborated on his mentally challenging situation with his sick wife and his son unable to study. He also had the feeling that promises given to him when he lost his position as the President of the Academy had not been fulfilled. Therefore he was no longer able to work scientifically. Šorm was open about his contacts to suspicious people, which is not surprising as he did not seem to have any. Šorm further stated that he supported the present administration, although he had his reservations about some individuals. Although there is not

672 For Šorm personally, many of the foreign colleagues were more than professional contacts, what becomes clear in some of the birthday wishes. In 1973, after his 60th birthday he thanked Djerassi and his wife for their congratulation which had consisted of Norma Djerassi's poems. "I like the poems, they are really good—I had no idea that your wife had such a talent for art, I only knew about your daughter's interest in drawing and painting. The latter was something that Šorm shared with Djerassi, and the proud but troubled father went on telling about his own offspring: "Our Milan has passed the examination to the Academy of Arts with great success (section sculpture) but for reasons well known to you he has not been admitted to study at the Academy." OF, correspondence.

673 ABS – František Šorm, č. 6999919.

674 ABS – František Šorm, č. 6999919. October 6th 1975. The report claims that before the intervention, Šorm had opposed Dubček. In reality, however, he had publicly stated his (in the role of the president of the Academy) support for Dubček's regime at latest in April 1968 in the Genereal Assembly of the Academy.

much about his explanations on his “past mistakes” in the report, he stated, however, that the publication of the letter to Keldysh in foreign newspapers had been a shame. He agreed with the suggestion to write a declaration to the Central Committee. He told the StB officials that he wanted to advance socialism in Czechoslovakia. His own reasoning for the announcement was that he would thus give the Central Committee the opportunity to reassess his person. He had done so much for Czechoslovak science that in his opinion it “should be kept away from his person”. What he probably meant was that his contribution to Czechoslovak science should have been enough to prevent any kind of political persecution. The StB officials concluded their report on the discussion by stating that Šorm seemed to have accepted his fate with a certain resignation. He also seemed to be fully aware of the mistakes he had committed.[675]

Soon after the discussion had taken place, one of the StB handlers visited Šorm at his home. In the meantime, Šorm had written a draft of the above mentioned declaration to the Central Committee. The first version was not sufficient according to the StB handler, who criticised it as too general and not addressing any concrete problems. Šorm was encouraged to mention the problem of right-wing activities and emigration. Šorm hesitated as he felt he was not familiar with the topics. In his discussion with the StB handler, he brought up the topic he knew the best, science. He complained to the Secret Police that it was a shame that he had not been able to continue research on issues related to cancer. Neither had he been allowed to discuss his research with colleagues, not even with those in the Soviet Union. Another complication was that he did not have access to relevant foreign literature. This professional isolation frustrated Šorm and left him with a feeling of injustice. He highlighted how he had always worked for the development of Czechoslovak science, and even after 1968 tried to do everything he could for the country, for example by working on new medicines.[676] It seems that Šorm understood the declaration more as a way to make the Central Committee aware of certain grievances than to practice any concrete self-criticism. However, Šorm obeyed the StB and wrote another version of the text to which he had added the expected concrete problems. In his letter, Šorm assured the Central Committee of his loyalty to communism.[677]

In December 1976, the StB reported that contact with Šorm should continue and that the StB should try to influence him to aid in advancing the Party’s

675 ABS – František Šorm, č. 6999919. October 7th 1975 a discussion with Šorm in the Ministry of Interior.
676 ABS – František Šorm, č. 6999919. The first version of Šorm’s letter to the Central Committee of the Communist Party, October 22, 1975.
677ABS – František Šorm, č. 6999919.

aims. Interestingly, the StB report moreover noted that the StB should also try to use Šorm to acquire knowledge which could be good for science.[678] As a result of his talks with the StB officers, Šorm also agreed to list some people inside the Academy, who would be willing to support the current political situation. He mentioned for example the historian Josef Macek. He explained that Macek can write and had never stopped working. By this he probably alluded to Macek's assumed hopes to publish again after a long break. The historian had been forbidden to travel and publish after the occupation.[679] Šorm was right about Macek's desire to publish but what he did not know was that the StB had begun to convince Macek to write an official declaration of support for the current political situation in 1975, just like he himself had done. Unlike Šorm, Macek had refused the suggestion to declare anything publicly. Apparently Macek had information that others had done so, but it had not helped them in any way.[680] Later, in 1981 Macek changed his mind and signed an official contract of cooperation with the StB. According to Bohumil Jiroušek, he could thereafter travel and publish.[681]

Among the other people Šorm mentioned was Otto Wichterle. His reasoning as why Wichterle would potentially want to show his support for the current political situation was that although Wichterle did not represent the same political position (is not a communist), he "wants to stay here and do no harm". Šorm moreover stated that Wichterle had some patents that had not been yet published but which the state would need.[682] The declaration did not help Šorm in his personal career but solved one of his greatest worries, namely the issue regarding his son. According to the StB report from March 1976 the Rector of the Academy of Arts was aware of the positive opinion of the Minister of Interior Obzina concerning Milan Šorm, but he did not agree. The StB decided to contact the Minister again. Obviously this helped as the son could finally start studying in 1976.[683] How should the "cooperation" between Šorm and the StB be characterised? Why was Šorm actually reporting on his colleagues and did his discussions with the StB handlers harm them? In the light of the evidence it seems that Šorm was almost desperately trying to defend his dignity and professional quality. The tone in his statements was that of a man who had still not recovered from the shock of his life – being demoted from the position of the most influential science manager to a person who had to convince the StB handlers of his priorities. At that time he still seemed to believe that it might be a useful strategy to take the advice of the

678ABS – František Šorm, č. 6999919. December 2nd 1975.
679ABS – František Šorm, č. 6999919. StB discussion with Šorm January 19th, 1976.
680 Jiroušek 2004, 104.
681 Ibid 2004, 110.
682 ABS – František Šorm, č. 6999919. January 1st 1976.
683 ABS – František Šorm, č. 6999919.

StB and prove his support to the regime. By pointing out to the names of others he was actually doing what he was used to doing in the past: trying to use his authority to positively influence the professional perspectives of other people as well. But Šorm no longer had the authority.

The StB files form one of the few sources through which it is possible to follow the life of Šorm after he became a target of the normalisation measures. They create a sad picture of Šorm's phases after he had been removed from his academic positions. The former President of the Academy of Sciences now became a victim of the normalisation campaign – accused of committing many sins during his era of presidency. Typically for the time, Western contacts were one of the most serious reasons to accuse a person for being disloyal to his home country and socialist ideology.

Šorm versus Sakharov

As the Czech historian Bohumil Jiroušek has shown, Šorm was not the only one who was persuaded to write a declaration to the Central Committee in 1975 and the practice was extended to many scientists who had been active during the Prague Spring. What was the main motive of the StB and the Central Committee for such activity in that particular year? As Olřich Tůma has stated, in the mid-1970s people stopped "waiting for a better world" and only after the regime had assured that its control reached all layers of society did people begin to find new ways of protesting.[684] The year 1975 in particular marked an increase in various statements and open letters.[685] The contextual background for these developments was the signing of the Helsinki Final Act in 1975 and the ongoing CSCE process. In August 1975, the text of the Helsinki Final Act was published in Soviet newspapers. Later in December, Andrei Sakharov was awarded with the Nobel Peace Prize. He was not allowed to collect the Prize personally and was represented in Oslo by his wife Yelena Bonner. In Sakharov's speech the dissident scientist criticised the concrete results of the Helsinki Final Act heavily and wanted to share his award with all "prisoners of conscience and all political prisoners".[686] This context in part offers a plausible explanation to as why the StB became so active in monitoring those scientists who had judged the intervention in 1968 in a negative way. Perhaps the StB was afraid that there could be more "Sakharovs" in Czechoslovakia.

684 Tůma 2002, 18-19.
685 Järvinen, Jouni, Normalization and Charter 77 – Violence, Commitment and Resistance in Czechoslovakia. Kikimora Publications, Finland 2009 2010, 124.
686 Lourie, Richard, Sakharov – A Biography. Brandeis University Press. USA 2002, 274.

The StB had paid particular attention to one thing Šorm had said back in November 1974 and returned to it in 1976. Šorm had namely been reported to have stated that along with some Soviet scientists, he was the only member of the American National Academy.[687] Thus, in case he would not get the permission to travel, this fact could be used in a similar way as in Sakharov's case – to influence Western opinions. However, Šorm had assured that he would never do anything like that.

In January 1976, only a month after Sakrarov had been awarded the Nobel Prize, a StB officer suggested that Šorm could be used as an example "against Sakharov". The StB had been recently informed about the plans that Šorm would be awarded the Roussel Prize in 1976.[688] These incidents gave Šorm's own sentence about Sakharov new meaning. The idea of the StB officer was that awarding an international prize would be a good occasion for Šorm to denounce the Soviet dissident. The StB thought highly of Šorm's importance in international scientific circles. It was assumed that if Šorm would agree it would have an impact because of his previous successes. The StB officer further suggested that Šorm should be provided with materials concerning Sakharov's case so that he would be well informed. After all this the plan would be discussed both with Šorm and with the "Soviet friends".[689]

Before agreeing to anything Šorm wanted to make sure whether his son would really be accepted to the Academy of Fine Arts. When this was confirmed, he agreed. The emotional blackmail by the StB bore fruit. The StB officer made the suggestion purposely right after Šorm had found out that his son would be able to study and had pushed the right button. However, Šorm had his own suggestion on how the public statement against Sakharov should look like. He suggested that he and a whole Czech delegation should be sent to the Soviet Union, where an open discussion between him and Sakharov would be organised. The discussion would be then published. According to Šorm, such a method would be influential because instead of a one-sided written document there would be two scientists discussing. Šorm further guaranteed that if he would get the Roussel Prize, he would not use it against Czechoslovakia.[690] The StB seemed content with Šorm's plan. Thus, ironically, the former manager of science and previous member of the Central Committee had retained some authority even in the eyes of the StB officers.

687 From the socialist countries.
688 The Roussel Prize was created in 1969 by J.C. Roussel, chairman of the French pharmaceutical Company. It was intended to stimulate further research in the area of steroids in therapeutic medicine. The Prize was given every 2 years to a chemist or a biochemist whose work has been chosen as the best by an international Committee of outstanding scientists in the field. Cellular and Molecular Life Sciences. Volume 30, Number 2 1974, 216.
689 ABS – František Šorm č. 6999919. January 9th 1976.
690 ABS – František Šorm č. 6999919. January 19th 1976.

The plan for the campaign against Sakharov was discussed again two months later, in late March. Šorm told the StB officer that a trip to the Soviet Union would be very difficult to realise due to his wife's illness. However, he suggested two possible dates for the trip.[691] In the meantime Sakharov's dissident activities continued and in May 1976 a group called "The Public Group to Assist the Implementation of the Helsinki Accords in the USSR" was established at a press conference in Sakharov's house.[692] Despite this, the plan to use Šorm against him was never executed. Whether the only obstacle was Šorm's wife's bad health remains unknown. The StB reports do not reveal whether the issue was ever discussed with the Soviets nor what their opinion of it was. In the StB materials, the whole plan is presented as an idea of a single StB officer. Šorm, who was known in the Soviet Union as the author of the protest letter to Keldysh, would have probably lacked the credibility to campaign against Sakharov. Šorm was in many ways cornered. His motivations to act stemmed from desperation and not from any passion. This would have not been enough to make him appear an enthusiastic and credible opponent of dissident activity.

In 1977, a StB handler visited Šorm. The issue of Sakharov was no longer on the agenda. The Moscow Helsinki Watch group and the increasing dissident activity had led to the establishing of the Czechoslovak group of Charter 77. The StB wanted to discuss this with Šorm. Šorm "spontaneously" stated that he did not support the Charter and that nobody had even asked him for a signature. The StB tried to encourage him to write a personal statement against it, but he refused. He used his lack of knowledge on the issue and the fact that the leadership of the Academy of Sciences had no interest in him as an excuse. His opinion was that such a statement would be interpreted in the Academy as an attempt to influence the institute directors and return to the Academy. Obviously, by that time, Šorm had given up or decided to content himself with what he had achieved for his son. In 1978, the StB reported on Šorm only once and that was in the context of an invitation from the Institute of Chemistry of the Bulgarian Academy of Sciences. Šorm had been invited to a symposium, "because he has had a great influence on Bulgarian chemistry". Šorm was not allowed to travel. The reasoning followed the old pattern: his mistakes and activities in 1968-1969.[693]

In 1979, the StB tried to visit Šorm but found out that he was seriously ill and recovering from a heart attack. The report stated that Šorm had lately been

691 ABS – František Šorm č. 6999919.
692Savranskaya, Svetlana, Unintended Consequences. Soviet Interests, Expectations and Reactions to the Helsinki Final Act. In: Helsinki 1975 and the Transformation of Europe. Edited by Oliver Bange and Gottfried Niedhart. Berghahn Books. USA 2008, 183.
693 ABS – František Šorm č. 6999919.

doing badly both physically and mentally, and was showing signs of apathy and disinterest towards his surroundings. Accordingly, the StB lost its interest in the man. The operation "Kardinál" was ended in April 1980 because:

> *"due to his bad health and old age he is no longer interesting. He barely leaves his apartment. Because no evidence was found concerning his hostile activity towards the state, the case can be closed and stored in the archive of the Ministry of Interior."*[694]

Half a year later, in November 1980, Šorm died and the case was therefore indeed closed.

Šorm had devoted his life to science and had remained faithful to the communist ideology. Despite this, he was forced to stray from both. The man who used to be the most influential person in the field of science ended up as a rank-and-file scientific worker in the institute he had previously headed. Antonín Holý had claimed that this fate, not being given the opportunity to give anything to society after 1968, without doubt played a role in his death in 1980.[695] As the StB files further reveal, personal problems significantly increased his burden and it seems that more than anything, the fate of his son made him willing to agree to the requests of the Secret Police. The attitude of the StB towards Šorm changed over the course of the years. The man who was at first accused for not respecting Soviet science and hampering Czechoslovak science through his actions, was in the end given credit for his professional advice.

Šorm's difficult life situation was abused by the Secret Police in its efforts to gain information from the former President of the CSAS and try to harness him for the campaign against the dissident movement. Not only Šorm's person, but also his son got involved in the strategy of the StB. There was no mercy for the old man. The StB kept on following and using Šorm until his death in 1980.

Operation "Contact" following Wichterle

It is hardly surprising that Otto Wichterle was one of the scientists monitored by the Secret Police in the mid-1970s. In 1974 Wichterle was characterised by the StB as a skillful and handy person, "an end of 19th century type of

694 ABS – František Šorm č. 6999919.

695 Holý, Antonín, Prof. Ing. František Šorm, DrSc. akad. Available at: http://jergym.hiedu.cz/~canovm/objevite/objev5/sorm.htm, accessed April 5, 2007.

scientist". The StB was following a man who was skilful in his professional activities, but also talented in establishing and maintaining networks, and whose earlier political activity made the whole issue all the more complicated. Wichterle kept contact with many people just as in the late 1960s and did not even try to hide it, and therefore was assumed to still think in the same way.[696] The monitoring was claimed to have an operative importance as Wichterle was internationally acknowledged in the field of macromolecular chemistry and in earlier times used to travel frequently to the West. Thus, the StB was highly interested in his contacts both inside and outside the country. They were invigilated in the framework of operation "Contact" (styk). [697]

The StB agent "Wágner" presented Wichterle much in the same way as in the 1950s as a wealthy person with a middle-class lifestyle. He had recently moved to a new house which was built with the money from his "own hard currency bank account". [698] Wichterle's lifestyle and hobbies gained attention and he was followed even during his summer holidays. The agent "Jaromír" uncovered that Wichterle spent his summer vacation in Stražisko in his villa. There he spent his free time mainly by playing tennis. In the past he had tried to influence the life of the community politically. As an example of this alleged political influence the agent stated that after 1968 Wichterle had actively participated in the opening of the community swimming pool and "was the first one to jump in the water". The StB report stated that many people from Prostějov and Prague visit him but a visit from West Germany was also reported.[699]

Wichterle's background and contacts made him a natural suspect of involvement in dissident activity that emerged after the signing of the Helsinki Final Act. For the Czechoslovak political decision makers the Charter 77 was a difficult issue to deal with. With regard to international public opinion, it was not feasible to apply the toughest possible measures against the Charter activists. By doing so the regime would have punished people who were calling for the regime to observe the commitments it had recently made at the Helsinki conference. Thus, as Tůma has noted, the regime opted for an alternative strategy: ostracising the signatories, intimidating potential sympathisers and hindering further oppositional activities.[700]

According to the StB Wichterle had taken part in a funeral of a "former right-wing element" in 1976, where a quiet protest demonstration had also taken

696 ABS – Otto Wichterle č. 694353 . An estimation on the operation „Styk" in June 1974.
697 ABS – Otto Wichterle č. 694353. An estimation on the operation „Styk" in June 1974.
698 ABS – Otto Wichterle č. 694353.
699 ABS – Otto Wichterle č. 694353. 26.5.1977.
700 Tůma 2009, 578.

place. In 1977, the StB had found out that Wichterle had "attempted to sign the Charter 77". When asked about this, Wichterle told the StB that he had been visited by Jan Patočka, one of the founders and main spokesmen of the Charter 77. Wichterle told Patočka that he will never sign the Charter. In the context of the Charter 77, the StB referred to his activity surrounding the Two Thousand Words manifesto thereby trying to make the two appear comparable. Wichterle acted as if he was surprised. According to him, it was the first time since 1972 that anyone had even reminded him of the manifesto. He noted that in his opinion the content of the manifesto had not been as dangerous as it was made to appear in public. Thus, he tried to draw a clear distinction between the past and present forms of activity.

As Jouni Järvinen has stated, violence directed towards the Charter 77 activists and other dissidents revealed that the regime could not be confident of the loyalty of the people.[701] The threat was much greater in the case of those who had been supporting reforms in the 1960s. The arrests and sentences of the dissidents led to the aim to isolate Charter 77 from its potential supporters, such as Wichterle appeared to be from the perspective of the StB. In October 1979 Václav Havel was sentenced to prison for five years. Against this background it is no wonder that the StB again returned to the theme of the Charter 77 with Wichterle at the end of the same month. According to the StB report, Wichterle reacted by stating that the sentences of the dissidents are a logical consequence: the dissidents got what they had been asking for. He had known Václav Havel since 1968. In Wichterle's opinion Havel knew exactly what he was doing, he had consciously chosen his stance and attitude which had in part made him popular and attracted more people to join his cause.[702] This reflects Wichterle's stance. For him the Charter 77 probably represented a pointless risk which would have led to his exclusion from the "structure" and therefore from professional life – furthermore, the Two Thousand Words had concretely demonstrated to what serious consequences any public statements could lead. In the context of the Charter 77 Wichterle distanced himself so notably at least at the level of rhetoric that his position cannot be described even as someone in the "gray zone", silently supporting dissidents. Taking into account the new perspectives in his professional life, it was a pragmatic approach. Oldřich Tůma has explained the stabilisation in Husák's period by mainly referring to the past experience, namely the August intervention. According to him, it was not suprising that people eventually gave up on engaging in public affairs. The Soviet Union and its army had demonstrated their enormous power; many of the local decision-makers had proven to be ready to surrender and compromise; and the West appeared as indifferent by

701 Järvinen 2010, 187-188.
702 ABS – Otto Wichterle č. 694353.

not allowing one unfortunate accident – the August invasion – stop the Détente. As Tůma has put it, the gradual de-politicisation, resignation, scepticism and focus on private life were not entirely incomprehensible reactions.[703]

Whereas Wichterle had chosen to stay aloof from political activity and focus on his work, the StB constantly reminded him of his past "identity" as a reformer. The StB was curious to learn about his opinion concerning the political developments at the turn of the 1970s and 1980s in the context of his travels. In 1980, the situation in Poland made the Czechoslovak authorities more alert. He was asked about the situation in this neighbouring country. Wichterle explained that when the situation in Poland developed he was at his holiday villa and therefore was not well informed. He openly admitted, however, that he had followed the events by listening to the Voice of America. The Polish events reminded him of the Prague Spring. In his opinion the course of events was following the same pattern and the same direction as in Prague in August 1968. In the background he saw the bad economic state of Poland as responsible for the crisis and therefore criticised the country's economic policy. The StB warned him that he should not use the example of Poland for wrong purposes.[704]

The interest of the StB in Wichterle's opinion concerning the events in Poland should be seen in the context of the Czechoslovak official policy towards the issue. Czechoslovakia took a harsh line towards the Polish crisis and, as Tůma has suggested, in fact came close to repaying the Poles for their "fraternal assistance" of August 1968. In December 1980 two reinforced Czechoslovak divisions were deployed to the Polish border.[705] Economic problems, which Wichterle mentioned, did not, at the time, touch Czechoslovak society in the same way as its neighbouring countries. Although no economic reforms were introduced in Czechoslovakia apart from some cosmetic changes, the Communist Party was able to maintain a certain acceptable living standard. The working-class in particular enjoyed a uniquely privileged social status in Eastern Europe. The policy was, as Prime Minister Lubomir Štrougal had put it bluntly: "let's hope the workers don't get pissed off." Compared to the other Soviet bloc countries Czechoslovakia was not badly off, but it did lag more and more behind the West.[706]

Not surprisingly Wichterle was also followed by the StB which regularly tried to get information from him and reported on his political opinions related to opponent activities such as the Charter 77. All this seemed to irritate Wichterle

703 Tůma 2009, 572.
704 ABS – Otto Wichterle č. 694353.
705 Tůma 2009, 575.
706 Ibid 2009, 572-573.

and signs how he tried to belittle his involvement in political activities during the Prague Spring or clearly tried to distance himself from any dissident groups should be seen in this light. It is no wonder that Wichterle was worried about this kind of persecution. He thought that the policy of the state was slowly leading towards significant economic losses.

Patents under Attack

By the beginning of the 1970s the lens production in the United States had become very attractive. A number of competitors of NPDC and Bausch and Lomb were copying the technology regardless of Wichterle's patents. In order to defend the patent and their interest, the American partners of the Academy of Sciences took the case to court. Some of the competitors moreover tried to nullify Wichterle's patents. In 1975 Martin Pollak from the NPDC asked Wichterle to be a witness in one of the trials. Wichterle was still under a travel ban and almost did not receive any information about the case proceedings neither from the Americans nor from his chiefs in the Academy.[707]

Although the Czechoslovak state seemed to acknowledge that significant economic interests were at stake, the behaviour of officials involved in the issue was contradictory. At one point in 1975 Wichterle was told he would be allowed to travel to the United States and the representative of the patent centre of the Academy of Sciences (patentové středisko CSAS) Dr. Pirvenec underlined the importance of Wichterle's personal presence in the legal proceedings. He stated that it would be essential for the reputation of Czechoslovak science, because the licences of Wichterle's patents made up the greatest part of the country's licence fees. Wichterle started to prepare for the trials but then the permission to travel was suddenly withdrawn. The head of the institute of Macromolecular Chemistry asked Wichterle to fake illness or state fear of flying that would hinder him to travel. Wichterle refused to lie. Wichterle consulted a lawyer, who explained that the case was essentially political. Therefore, he had to find a lawyer who had solid credibility at the highest political level. He found Jaroslav Růžička, the head of the Bar Association. The same person had among others been one of the defence counsels of the general secretary of the Communist Party of Czechoslovakia Rudolf Slánský during the notorious Stalinist show trial in 1952. Růžička advised Wichterle not to fake any illness because the Americans could easily prove that the excuse was false. If Czechoslovakia would be caught providing

707 Wichterle 1992, 223.

false testimony, it would be economically harmful because the country would lose its credibility in American courts.[708]

Wichterle suggested that his superiors reveal the Americans the real reason, which they did not do. It was a well-known fact that the Czechoslovaks were not free to travel, and Wichterle's case was proof of this policy. He constantly had to send negative answers invitations to international symposia.[709] Wichterle never received any explanation for the cancellation of the permission to travel from his superiors in the Academy. He considered the following as the most plausible explanation: Only one week before Wichterle's trip was supposed to take place, Gustav Husák (1913-1991) was elected President of Czechoslovakia – not unanimously as was officially stated but in fact against the will of most of the "Brezhnevian" representatives. Their claim that Husák would allow people under Soviet "home arrest" to travel had perhaps provoked Husák to prohibit Wichterle's trip. To forbid Wichterle to travel may have helped Husák prevent conflict with the Soviets after entering office.[710]

However, the American firms did not stop litigations. In the autumn of 1975 Wichterle was again told that his participation as a witness would be essential. In fact, it was so essential that the Academy and the American partners agreed on organising the first hearing in Prague in the hotel Intercontinental in September 1975. The Academy covered the costs of the numerous American lawyers and professional experts. At the hearing it became obvious that the trials would take years and require the continuous appearance of Wichterle as a key witness. The Czechoslovak officials realised that organising a hearing in Prague instead of sending Wichterle to the USA was very costly. Avoiding such expenses was thus probably the reason why Wichterle's travel ban was ended.[711]

In August 1976, Wichterle was allowed to travel for the first time following his travel ban – this time to attend a trial in Chicago. The case was a complaint against the firm Automated Optics, which had been trying to violate the Wichterle's patents for a long time. Although the hearing was a success, for some reason the Academy of Sciences did not believe they could win. The constant legal proceedings in the United States had made the Czechoslovak representatives unsure. Wichterle saw his superior's ignorance over any technical details of the dispute and a willingness to get rid of all the responsibilities of the Academy over the issue as constituting the reason for

708 Ibid 1992, 224-227.
709 Ibid 1992, 224-227.
710 Wichterle 1992, 224-229; Wichterle tells about this also to a StB agent in 1975. ABS – Otto Wichterle č. 694353 MV.
711 Wichterle 1992, 231.

this insecurity. The result was that in May 1977 the Academy of Sciences sold the patents of both the gels and the processing to the NPDC. It furthermore drew up a buyout contract with the NPDC meaning that Czechoslovakia would give up any proprietary claims.[712] The money the state gained from selling the patents corresponded approximately with the annual earnings (app. 3 million dollars) that the licences had brought to the state.[713] According to Wichterle, the American partners had sensed the uncertainty of the Czechoslovaks and seized the opportunity to get the patents. It is not surprising though that Wichterle, as the foremost Czechoslovak expert, was not consulted.[714]

The only obligation left to the Academy after selling the rights to the Americans was that they promised that Wichterle could perform as a witness in further trials. It was an excellent deal for the Americans – they still had the expertise of the inventor but did not have to pay the Academy.[715] Thus, from 1977 onwards Wichterle was used as a court witness in disputes between American firms.[716] Wichterle did not agree with the contract the Academy had made behind his back and took the case to the court. In 1981 Wichterle won the case against his employer.[717]

The American partners eventually turned against each other. In 1977 the Wall Street Journal reported on the end of a legal battle between Bausch & Lomb and NPDC over the rights to make and sell the best-known soft contact lenses. According to the news report, Bausch & Lomb paid NPDC 14 million dollars to settle the litigation as well as for the non-exclusive licence to sell the lenses in the USA and other countries where it formerly had exclusive rights.[718] The licences of the lens did not pull only former American partners into mutual legal battles – the former colleagues from Czechoslovakia also showed varying interest. In the summer of 1980 Wichterle participated in a trial in Los Angeles. The lawyer of the opposing side, Continuous Curve Contact Lens Corp. (a part of Revlon, a larger cosmetics company) tried to demonstrate that in the year 1961, when the patent application was filed in the USA, the concrete production of lenses was not yet successful. However, Wichterle stuck to his guns by stating that the first functional – although still imperfect – lens was produced in Czechoslovakia already in 1956. The witness of the opposing side, Maximilián Dreifus, who at the time of the

712 A AV ČR – Fond OW, Rozsudek. Judgement of the District Court of Prague 1: October 23, 1981. Wichterle 1992, 234; Kiser 1989, 85-86.
713 Wichterle 1992, 160-161. A AV ČR – Fond OW, Osobni fond, Dosavadní styl výzkumu měkkých kontaktních čoček u nás a v zahraničí. 1976.
714 Wichterle 1992, 232-234.
715 Ibid 1992, 234.
716 Ibid 1992, 232-234.
717 A AV ČR – Fond OW, Rozsudek. Judgement of the District Court of Prague 1: October 23, 1981.
718 A AV ČR – Fond OW. Wall Street Journal 10.1.1977. Bausch & Lomb, National Patent End Legal Battle.

development of the first lenses had been actively involved in the work but fled to Switzerland in 1969, tried to claim that the first lens had not been usable at the time. In order to proceed successfully Wichterle recommended Mirek Černý, another colleague who had been involved in the process back in the 1950s[719], as a witness. The Czechoslovaks managed to do what Dreifus and the company thought improbable; they found hard evidence concerning the initial production stage of the lens. The case was closed and the court order confirmed the validity of Wichterle's patents. Dreifus' testimony was strongly impugned by the court:

"While the court recognises Dr. Dreifus as a highly skilled and competent ophthalmologist in the practice of his profession, he became, however, the most thoroughly discredited witness this court has ever seen. Since his testimony was critical to a number of issues in the case, the effect of his being discredited was substantial and pervasive."[720] When the case was closed Wichterle wrote his earlier co-worker a letter, where he advised Dreifus to be careful when travelling abroad, especially in the USA, where perjury could lead to several years of imprisonment.[721]

The normalisation policy of preventing Wichterle to participate in the scientific community inside and outside the country and follow what was going on with the licences of his innovation led to an absurd situation. People who were not sufficiently informed about the processes in the USA jumped to conclusions, which eventually meant that Czechoslovakia lost the right to the patent and thus lost out financially.

Lenses for Suslov - The Soviet interest in Wichterle's technology

The story of how Wichterle managed to market his new innovation once again shows how the "regime" consisted of various interest groups with contradictory goals and ambitions. Wichterle's ideas and efforts on how to develop a new kind of machine for producing soft lenses were beyond any formal control mechanism from the state. By the mid-1970s he had proceeded far in actually developing a new kind of technology for such production.

Before Wichterle's new technology was ready and nobody knew he was working on it, the Soviets had already expressed their interest in the soft

719 Wichterle 1992, 235-244.
720 A AV ČR – Fond OW. Conclusion - United States District Judge Laughlin E. Waters 3.2.1982.
721 A AV ČR – Fond OW, Letter to Maximilian Dreifus, 23.4.1982.

contact lens production. According to Wichterle, the field of contact eye optics was new for the Soviets. In 1976, a Soviet delegation consisting mainly of experts from the Soviet Health Ministry visited Czechoslovakia. The delegation, led by A.A. Kivajev, received important documents concerning the lens production from the Czechoslovak Association for Enterprises of Medical Products *Spofa*.[722] In the StB report from 1978 Wichterle described the visit in detail. He claimed that while the production was being presented to the Soviets the lens machine (čočkostroj) broke down and the Soviets had promised to bring spare parts.[723] In another report for the Ministry of Health, Wichterle criticised his countrymen. In his words, the disability of the leading workers of the factory Ergon, where the "bosses are just as incompetent as our foreign trade", had actually led to the total collapse of production. According to Wichterle, a machine that had originally produced 200 lenses in an hour did not even produce as many in a quarter of a year. As he stated, this was the reason which had inspired him to develop new technology. In Wichterle's opinion the Soviets did not have sufficient information because when they had visited Czechoslovakia they had not been presented with his newest achievement, but instead had been shown the production line in Spofa–Ergon, where Wichterle and his colleagues had installed the same production line as in the USA back in 1964.[724] Wichterle was moreover insulted by the fact that the Czechoslovak factory Ergon had not used him as an advisor and that he was kept at a distance from the Soviet experts who the Czechoslovaks had invited to save "what could no longer been saved".[725]

Wichterle was not used as an adviser but the efforts of the leaders of the IMC to prevent him meeting with the Soviets were not successful. One of them made up a story and told Wichterle that the Soviets could not meet with him. However, the Soviets had brought him presents, and when they found out that a visit with Wichterle was not going to take place, they gave the presents to one of Wichterle's co-workers. The co-worker then gave the presents to Wichterle, who again sent them back to the Soviets with a message that he would not "accept anything from people who do not wish to meet him". Later that day, the Soviets contacted him and paid him a visit. When Wichterle referred to what he had heard from his boss about the Soviet disinterest to meet with him, Kivajev reacted: "It is a pure lie!".[726]

722 ABS – Otto Wichterle č. 694353.
723 ABS -- Otto Wichterle č. 694353.
724 A AV ČR – Fond OW. Zpráva pro s. ministra zdravotnictví ČSR o nové technologii gelových čoček. November 15, 1977.
725 Ibid.
726ABS – Otto Wichterle č. 694353. According to Wichterle's memoirs a Russian colleague ended up being interrogated in Moscow for having spent time in a private apartment with someone who had been punished for signing the 2000 words. Wichterle 1992, 211.

As the Soviets went back home, they quickly prepared two machines according to the models they had received from Spofa. They brought them to the Ergon production unit. According to the StB's discussion with Wichterle, the Czechoslovaks were not able to make the machines work. In Wichterle's opinion, all these problems made the Soviets to believe that Spofa was no longer capable of securing the production. They therefore turned their attention to other countries, the USA and West Germany and after a while decided on a West German company, Titmus-Eurokom. In the report for the Health Ministry Wichterle was more critical towards the Soviets than in his discussions with the StB. According to him, the Soviets –"who as we know prefer conservative technology and smoothed simple paths in various technical fields" – were planning to buy "old fashioned" technology from the West German company Titmus–Eurokon.[727]

At that moment, however, Wichterle was ready with developing the new technology, the "second generation lens machine". The Soviets found out about it just as they were preparing an official contract with the German company.[728] The Soviets then contacted the Czechoslovak Ministry of Health, which decided to consult Wichterle. Paradoxically, information about Wichterle's new technology reached the Czechoslovak authorities later than the Soviet ones. The minister and his deputy took Wichterle's suggestions seriously and understood the advantages that the new technology could offer. They began planning the building of a new production line in the Okula factory in the South-West Bohemian town of Nýrsko. Wichterle liked the idea and was pleased to notice that the people in the Ministry of Health understood the reasons why he was against establishing the new production line in Ergon, which had not been hitherto successful. Together, Wichterle and the representatives of the Ministry of Health decided that the Ministry would agree with the Academy of Sciences and it would enable Wichterle's participation in the project of Okula. They even promised Wichterle that he would be provided with co-workers – who, in order not to upset the communist decision makers, would officially be employees of the factory. Significantly, as Wichterle later wrote about these events in his memoirs he spoke about "we" and with that referred to himself and people in the Ministry of Health. Accordingly, as he stated, it was clear to "us" that the quickest way to realise the new production unit in Nýrsko was to fabricate all required machines under his supervision in the workshops of the Institute. [729]

727 A AV ČR – Fond OW. Zpráva pro s. ministra zdravotnictví ČSR o nové technologii gelových čoček. November 15, 1977.
728 ABS – Otto Wichterle č. 694353.
729 Wichterle 1992, 214-215.

In order to make economically profitable decisions the representatives of the Ministry of Health were ready to find ways to bend the "rules". Perhaps the interest from the Soviet Union was enough to justify their actions – if the Soviets saw Wichterle's technology as attractive, the people in the Ministry of Health had the best possible argument to be interested in it as well. However, due to him being a persona non grata, Wichterle's role and involvement had to be blotted out from all official documents and drawings. In other words, his expertise was utilised but he did not get appropriate compensation or recognition that an innovator would have normally received. A representative of the Spofa signed an agreement with IMC, which in the words of Wichterle was "against the moral and legal rules" according to which Spofa would get all the possible revenue from licences. In return for all the financial advantages the representative of Spofa only had to promise the Academy to give Wichterle a place to work after he would be retired. According to Wichterle the only motivation of the head of the Institute to agree with such an unbalanced deal was to prevent the possibility that the Americans could employ him as a consultant.[730] As soon as the agreement was made, Wichterle was able to work for the realisation of his ideas and with the assistance of his new co-workers he managed to build the new machine. As a result of these successes the Institute and the Okula factory decided to build a complete production line both for domestic use as well as possible interest groups from abroad.[731]

Importantly, the StB monitoring was linked to the "securing of the lens production". The surge in dissident activity took place at the same time as Wichterle was developing the new technology and negotiation over his patents with foreign partners. Accordingly, as a StB report stated, due to the activation of right-wing and anti-socialist activities in Czechoslovakia certain measures were to be enacted including the monitoring of the development of the lens production[732] through agents and operative control in Nýrsko where the lenses were produced. Another such measure was that before trips to capitalist countries preventive conversations were held with those involved in the production process. The aim of the StB was to prevent possible hostile activities of the object against the state during his visits. Another discussion followed after the travels with the aim to "influence the person and obstruct his activation and abuse of his position".[733]

The StB report from 1978 mentioned that Wichterle had been used as an

730 Spofa was an association of enterprises for production of medical products.
731 Wichterle 1992, 216.
732 In the report this was called "securing the lens production".
733 ABS – Otto Wichterle č. 694353.

expert of the Ministry of Health in the negotiations in Moscow in 1978. Based on this the Soviets had expressed their interest in buying a licence for the new technology and withdrew from the preliminary agreement with the West German firm Titmus.[734] In Moscow Wichterle and the Czechoslovak delegation visited the Ministry of Medical Industry. According to Wichterle, the Soviets immediately brought up the promise made by the Czechoslovak Minister of Health about the information the Soviets should receive for free. As Wichterle inquired what they would get in return, the Soviets mentioned a technique that they had bought with a big amount of money from West Germany. Wichterle was able to prove that the named technology was actually based on his patents, and that of course the Czechoslovaks did not need it. After realising that the Soviets had nothing concrete to offer to them, the Czechoslovaks stated that the only possible way of cooperation could be a licence contact – the Soviets could not but agree.[735] After the Moscow trip the Czechoslovaks waited for the Soviets to return to the negotiations. Because they did not hear anything from them, Wichterle called Kivajev's apartment in Moscow – only to find out that the Soviets had been expecting to receive an official invitation from Czechoslovakia, something that their diplomatic protocol required.[736]

In 1980 a Soviet delegation visited Prague in order to negotiate a plan concerning joint research in the field of the contact lens. In the Soviet Union the research on the lens was to take place in a large laboratory with a number of scientific workers. The materialisation of this plan, however, failed: part of the plan was that both parties would exchange results and information by telephone every Monday – according to Wichterle he was the only one to provide the other side with information; the Russians did not give anything back. The Okula factory then refused to pay for these expensive phone calls and the practice quickly stopped. Despite this Wichterle continued fulfilling the plan with the Soviets and eventually sent them a long report on his research as had been agreed – the Soviets did not react in any way. As Wichterle stated in his memoirs, he was happy that the ineffective cooperation ended in such a silent way. [737] But the Soviets were not the only ones who caused problems. In summer of 1980 as the Czechoslovaks went to Moscow for further negotiations, Wichterle was not allowed to travel with the delegation nor were there any other technical experts in the delegation. Kivajev was not pleased, since the Soviets had in the meantime organised a large delegation consisting of technical experts and they has supposedly been promised to get equivalent

734 ABS – Otto Wichterle. č. 694353.
735 Wichterle 1992, 218.
736 ABS – Otto Wichterle č. 694353.
737 Wichterle 1992, 221.

partners from Czechoslovakia. Not sending experts was a decision made by Spofa, whose representative motivated it as caused by exhausted travel resources. Wichterle's opinion was that the Soviets would receive a negative picture of the Czechoslovaks, which would probably influence the licence negotiations. A member of the Czechoslovak delegation told Wichterle after returning from Moscow that the Soviets had even stated that because "Otto Karlovich did not come, there will not be a licence."[738]

Finally, a concrete licence agreement was reached in 1981 in Moscow. The negotiations with the Soviets differed from those with the Americans: the Soviets wanted guarantees concerning every detail and bargained over licence fees initially offering only a "ridiculously" small amount of money. In the end the Czechoslovaks managed to get a sum (1,8 million roubles) that was approximately ten times less than what the Americans had paid.[739] This can probably be seen as a sign that the Czechoslovaks were more or less forced to sell the licence to the Soviets for political reasons. On the Czechoslovak side the negotiations were led by Spofa although all the documents and drawings had been made by Wichterle. The Soviets did not hurry with anything: after the machines had been transported to Moscow they remained there in unopened packages for many years and it took some more years before technicians from Nýrsko installed them. For the Czech Spofa the postponement did not cause any problems, on the contrary – due to that they were able to export contact lenses to the Soviet Union.[740]

When the StB later inquired with Wichterle on the reason for the Soviet interest, he offered two reasons. According to the first explanation, the Soviets had found out that every NATO soldier would be equipped with a pair of soft lenses which would protect them from poisoned gas. The second reason sounded even less plausible – the daughter of Mikhail Suslov needed lenses for her hobby, ballet. Later, Wichterle found out that the NATO story was based on a rumour. But Suslov still played his part. However, in 1980, the Soviet interest in the lens technology was no longer explained by the daughter's hobby but linked to the story that the Soviet ophthalmologist Kivajev managed to cure Suslov's loss of vision by combining the lens with eye-classes. [741]

738 ABS – Otto Wichterle č. 694353.
739 Wichterle 1992, 221.
740 Ibid 1992, 220-222.
741 Later Wichterle found out that the lens did not protect from poisoned gas and the whole story was based on a rumour. Suslov was however still part of the reason: in 1980, the Soviet intrest in the lens technology was no longer explained by the daughter's hobby but linked to the story that the Soviet ophthalmologist Kivajev managed to cure Suslov's loss of vision by combining the lens with eye-classes.

Importantly, the soft lens had now gained common interest from both superpowers. The Americans were not indifferent to the new technology either. According to Wichterle, the Americans could have principally received all information for free because according to the licence agreement they had been given the right to be informed about all improvements concerning the technology. However, they admitted that these new developments of technology were crucial. They were not mere improvements but represented something qualitatively new. The Americans therefore agreed to a new licence agreement which was drawn up in the same year as with the Soviets, in 1981. Because it was agreed that to build a new production line in the USA Wichterle's original drawings would be used – and not those from Nýrsko – it was possible to remove the involvement of Spofa. The new production line was transported to the USA to the American Hydron factory in Woodbury in Long Island, where the Director was Martin Pollak from the NPDC. The installation was completed by a Czechoslovak engineer Jiří Vodnanský – whose efficiency impressed the Americans. Soon the Americans ordered another production line. As the Institute of Macromolecular Chemistry was still not interested, within the Academy of Sciences the Institute of Chemical Process Fundamentals (Ústav teoretických základů chemické techniky) took part in the realisation of this second production line in the USA.[742]

Vodnanský, who had been appraised in the USA, got into trouble in Czechoslovakia. The Nýrsko factory threatened to expel him because the people in the factory considered that a working place in Prague would no longer be needed. Lacking possibilities to continue working in Czechoslovakia, the engineer decided to emigrate. The Ministry of the Interior found out about this plan and arrested Vodnanský and his wife. Wichterle found out that they could probably get a sentence of three to four years, and he would thus lose his co-worker. He decided therefore to contact the Minister, whom he knew from the time of being vice-President of the Chemical collegium (the Minister had been the Central Committee observer in the collegium). Wichterle managed to convince the Minister about the importance of the technology and the married couple was absolved – the Ministry of Interior even decided to recommend the Academy to accept Vodnanský as an official co-worker of Wichterle.[743]

The Soviet Union became interested in the soft contact lens in the 1970s. The negotiations differed from those with the Americans. The capitalist practices of the American businessmen were different from the communist negotiations methods. The partners in the Soviet Union behaved in arrogant way, reflecting the dynamics of the Soviet Union and Czechoslovakia in

742 Wichterle 1992, 218-219.
743 Ibid 1992, 219-220.

general. Interestingly, Wichterle's bosses tried to prevent his participation in the negotiations with the Soviets, who, however, appreciated his expertise.

The Useful Non-person: Wichterle in the 1980s

As a result of the normalisation Czechoslovakia had become one of the most loyal allies of the Soviet Union. The Communist Party was far more conservative than in most of the other socialist countries and its Secret Police worked effectively. The August 1968 occupation worked as an "artificial dam" preventing all kinds of efforts to reform Czechoslovak society. At the end of the 1980s, the Prague Spring and the August invasion were no longer taboos in Poland or Hungary, while even in the Soviet Union the era of Brezhnev was criticised. Yet Czechoslovakia stayed its course, but simultaneously serious economic problems were indisputably apparent.[744]

The political context did not support the improvement of Wichterle's situation, which nevertheless clearly seemed to have taken place in the turn of the 1970s and 1980s. Once again Wichterle's successes in developing new technology and profiting the state economically helped him. One of the greatest concessions from the professional viewpoint was the fact that he could again operate in the international scientific community. Since his trip to the USA, Wichterle was able to travel to the West occasionally, and the travel ban was completely revoked as soon as he retired in 1979. Wichterle's participation in the scientific community in the West was a clear sign to his foreign colleagues that he still "existed".[745] The policy of travel bans had affected the careers of scientists. When a scientist did not have a chance to speak for himself and his work, there was only little chance to avoid a possible misuse of authority. In 1977, the same year as Wichterle's travel ban was revoked, he went to a congress on soft contact lenses in Barcelona. There, according to Wichterle, his competitor, Dreifus – who could not foresee that Wichterle would be allowed to travel again – had tried to present himself as the inventor of the lens. The presence of Wichterle and the fact that many of the participants of the conference had followed the development of the lens from the beginning, led to a situation where Wichterle was given the honour for the invention in front of the whole audience.[746] As the incident illustrates, the travel bans prevented scientists to enjoy professional prestige. This kind of setbacks may have had a serious impact on the professional self-esteem and identity of scientists. Prestige was moreover necessary because it facilitated professional

744 Východ. Vznik, vývoj a rozpad sovětského bloku 1944-1989, 2000, 588-591.
745 Wichterle 1992, 246-247.
746 Ibid 1992, 246-247.

activity in the material sense. Wichterle needed international recognition because it enabled him to continue working in his home country. As Vladimir Shlapentokh has written, even in the Soviet Union a distinctive feature of the 1970s and 1980s was the emergence of the West as the ultimate judge of the quality of intellectual work.[747]

In Wichterle's opinion the Barcelona congress changed his situation in the international scientific community: people in professional circles found out that Wichterle was there and even allowed to travel again. In Czechoslovakia the reaction to the new situation was not approved by all – as Wichterle began to receive invitations to international events, some of his superiors did not approve. Apparently the most evident case of an effort to hamper his chances was connected to an academic prize awarded to him in Japan. Thus, it was another symbol of international recognition for Wichterle. The fact that a person who was no longer part of the scientific elite was held in such reverence abroad probably made Wichterle's new bosses feel envious. Wichterle was not aware of the prize because he had not been given the invitation. The Czechoslovak Embassy in Japan played a role in preventing the award's acceptance and information about it getting to Wichterle. The truth was revealed when Wichterle took part in another congress that same year and was asked about the award.[748]

According to Wichterle, such "absurdities" in the academia ended at the beginning of the 1980s. In his opinion those who used this kind of practices either got tired of them because they did not lead to desired goals or became as tired or disinterested as the whole "regime".[749] Moreover, the policy of putting political credibility before scientific qualities began to cause problems. For example the director of the Institute for Macromolecular chemistry lacked the professional skills sufficient for his position in such an obvious way that it apparently began to trouble even the Central Committee.[750]

Accordingly, in 1980, Wichterle's institute got a new director, Vladimír Kubánek, a former student of Wichterle, who – unlike his predecessor – understood the importance of macromolecular research. In his memoirs Wichterle emphasised the impact of personal relationships on the gradual improvement of his situation. Because of the director who was a long-time member of the Central Committee, Wichterle was even consulted by the Central Committee on some issues related to the research on the lens. The

747 Shlapentokh 1990, 35-37.
748 Wichterle 1992, 245-247.
749 Ibid 1992, 247.
750 Ibid 1992, 248.

example of the new director of the IMC demonstrates what kind of impact the appointment of a person to a certain position could have and how often personal reasons and antipathies were hidden behind the mask of politics and ideology. Officially, Wichterle was still in the margins, but unofficially the new director allowed him to work with other chemists. Wichterle thought highly of Kubánek's decent behaviour. Although Kubánek was not able to rehabilitate Wichterle, he did what he could so Wichterle would feel well at work. For example he gave Wichterle a new computer to his disposal, which greatly helped the research work.[751] Of course, giving an expensive computer to a person who was supposed to be isolated from significant professional circles was not merely a friendly act, but also indicates that the unexploited expertise of Wichterle was a problem for the power elite. The recognition Wichterle received in the West probably influenced his situation in Czechoslovakia. For example in 1982, the *Economist* defined the case of the soft contact lens as the "most celebrated East-to-West transfer of technology".[752]

In the mid-1980s some things in Czechoslovak society began to change. The international situation, which was in flux, had a great impact on these developments. Especially the changes in Poland and the Soviet Union played an important role in arousing hope that change could be possible in Czechoslovakia as well. Any real reforms by the Communist Party seemed to be out of question. An attempt of some Party leaders, especially Prime Minister Štrougal in 1987 to launch a new course of reform did not succeed and cost him his ministerial seat and his position in the Party Presidium.[753] From the point of view of Wichterle, there were some signs at the highest echelons of power, such as the interest of the Central Committee to consult him, to reconsider Wichterle's potential. According to Wichterle, some people who had not kept contact with him because of his situation in the 1970s eventually re-established those contacts. One of those was Josef Lenárt, who had been Prime Minister of Czechoslovakia in 1963-1968 and who had maintained his position in the political elite ever since. During the war the two men had worked in the Bat'a laboratories and took part in Wichterle's lectures on organic chemistry. During the Prague Spring they had both been representatives of the National Assembly. After almost twenty years of silence, at the end of 1987, Lenárt visited Wichterle in the IMC. Lenárt consulted Wichterle on an issue with relevance to science policy. After that Wichterle was invited to talk about the issue among Party officials. There Lenárt concretely and symbolically showed his respect for Wichterle and his

751 Ibid 1992, 247-250.
752 The Economist, 15 May 1982, 'Picking Ivan's Brains'.
753 Tůma 2009, 580.

achievements. In Wichterle's words, this was, however, a unique example of the interest of Party members in Wichterle's person.[754]

However, from 1987 onwards the spectrum of independent initiatives and organisations widened. Another politician, Evžen Erban, invited Wichterle to a "group of wise" – an opposition group that would function within the limits of law – which he aimed to gather around him in 1987. According to Wichterle, Erban was particularly interested to receive information on Tomáš Bat'a, the owner of the Bat'a shoe company (founded in Czechoslovakia but located in Canada). Erban organised a seminar at which the presenters, Wichterle among them, tried to find a connection between perestroika efforts and the system which Bat'a had created. In the end, Erban's efforts to create his own „opposition grouping" did not succeed.[755]

In public, Wichterle remained a *persona non grata* until the late 1980s. This shows how the 1970s and 1980s were characterised by a double-faced practice and approach of the state with regard to Wichterle. It reflects the overall political situation in the country, namely the continuing controversy between pragmatism and ideology, which appeared also inside the Communist Party.[756] With Wichterle this controversy came forward on the one hand in the increasing utilising of his expertise "behind the scenes" but keeping him away from the public on the other. Although it was forbidden to mention Wichterle's name in the media, there were certain interests connected with bringing up his person in a discussion. However, in 1983 censorship prevented plans to make documentary films about him even though as Wichterle explained, in the film he had been given a false name and "for a greater interest they made me a sexual maniac, which I in reality never was". The situation changed in 1986 when another effort to make a documentary on Wichterle was made – this time the film as such could have gone through the process of censorship but the there was too much criticism of the film. In 1988 a television programme about Otto Wichterle was made. But, even then, because Otto Wichterle mentioned his family entrepreneurs and praised the system of Bať a factories among other unacceptable things, the film did not make it through the censorship process. The programme was aired on television in 1990.[757]

The StB maintained its interest in Wichterle. In particular the revoking of the travel ban caught the attention of the Secret Police. The aim was to get information on his contacts with the "right-wing elements", to hear his

754 Wichterle 1992, 250-251.
755 Lenárt's visit in the Institute in 1987. Wichterle 1992, 251-254.
756 Východ. Vznik, vývoj a rozpad sovětského bloku 1944-1989, 2000, 589.
757 Wichterle 1992, 254.

opinions about the economic and political situation and to gain information on his foreign contacts.[758] It is not surprising that Wichterle's activities raised the interest of the StB in 1988. That year street demonstrations became a common expression of the growing level of public discontent.[759] Wichterle's other activities were also still followed by the state security. In March 1988 he was arrested after a meeting that was alleged to have taken place concerning the former President of Czechoslovakia, Tomáš Garrigue Masaryk. Wichterle himself explained that he had visited his acquaintance, Anna Masaryková (the grandaughter of first Czechoslovak President T. G. Masaryk), with whom Wichterle and his wife met regularly in the Czech Society for Chamber Music (Česká spolek pro komorní hudbu). After the meeting Wichterle was incarcerated in such a harsh manner that it led to a medical condition. He described the Secret Police interrogation as rather "grotesque" since the interrogators did not give him any reason for his arrest and he could therefore not defend himself. As Wichterle was released, he tried in vain to follow the news in order to find out the motive for the incident.[760] After the arrest Wichterle reported about it in detail and the President of the Academy of Sciences complained to the Ministry of Interior. The director of the StB apologised to the Academy – yet not to Wichterle himself: "For the top of the power I was still a complete zero".[761] The incident was part of a wider activisation of society. The first major demonstration took place on 21st August 1988, on the 20th anniversary of the August invasion of 1968. It was followed by other demonstrations in the same year.[762]

In the 1980s Wichterle's situation slowly began to improve in line with the overall societal developments. The normalisation was over; there was no need for such practices as in the 1970s. He could travel again and his name began gradually appearing in different contexts. The changes were, however, slow and slender – therefore the more radical events in 1989 came as a great surprise for people like Wichterle.

The Velvet Revolution

After such ambiguous experiences during the late 1980s, it is not surprising that the events of 1989 took Wichterle by surprise. In 1989 Wichterle was allowed to attend public meetings. However, neither Wichterle nor people around him considered these events as a sign of significant political change. On the

758 ABS – OB-380 ČB. OB r.č. 38447.
759 Tůma 2009, 582.
760 A AV ČR – Fond OW, Zápis o zadržení, 8.3.1988.
761 Wichterle 1992, 251.
762 Tůma 2009, 582.

contrary, he believed that by small concessions the state was strengthening its hegemony. This thinking was not unfounded, as it had been the policy of the state to provide its people with certain – economic and cultural – benefits in order to keep them satisfied. For example in the sphere of culture throughout the normalisation a lot of artists, musicians or actors had been allowed to present relatively freely. The precondition for this was of course their loyalty towards the state.[763] Moreover, Wichterle was no longer a young man – it was possible to interpret the gradual steps of increased freedom as related to the fact that at his age he would have not made a new career anywhere else.

The demonstrations since August 1988 had not convinced Wichterle to see that things could change for good. The Communist Party was still poised against changes similar to those happening in the neighbouring countries and the communists openly stated that they will not let the socialist republic collapse. However, Czechoslovakia was not able to ignore the outside pressures and the catastrophic state of its economy and in the autumn of 1989 things began to change. In October, Wichterle's colleague from New York, Herbert Morawetz, visited in Prague. According to him, Wichterle had been pessimistic about the future "believing that the local government would rather kill thousands than give up power."[764] His sympathies towards the Communist Party had been eliminated by the invasion and the subsequent two decades. Czechoslovakia still refused change comparable to that in its neighbouring countries. The opinion of many foreign political observers was that the regime of Jakeš would keep its authority.[765]

But Czechoslovakia was not immune to the developments beyond its borders. The radicalisation of the poplar mood was influenced by events in the neighbouring countries, especially in East Germany. The downfall of the East German Communist Party was very concretely demonstrated in Czechoslovakia through the exodus of tens of thousands of East Germans, who in several waves sought asylum at the West German Embassy in Prague. This was followed by the TV coverage of the fall of Berlin Wall on 10th November. Hence, a certain form of glasnost had reached Czechoslovakia.[766] In the same month as these events took place Wichterle travelled to the USA where he had been invited to participate in a press conference on the book written by the American businessman John Kiser "The Communist Entrepreneurs" for

763 Východ. Vznik, vývoj a rozpad sovětského bloku 1944-1989, 2000, 575.
764 Morawetz 2008, 141.
765 Východ. Vznik, vývoj a rozpad sovětského bloku 1944-1989, 2000, 722.
766 Tůma 2009, 583.

which Kiser had interviewed Wichterle among others.[767] In the USA, people were eager to learn about Wichterle's thoughts on political developments in his home country. After a long break, Wichterle was given the role of a commentator – the chemist made very sceptical remarks: "*Our Communist Party is entirely led by a fascist fraction and only war could tackle this fascism but that is of course something nobody wants*." [768] Unlike in the early 1980s, Wichterle was ready to take a risk and speak in such a provocative manner.

In a few days it became evident that Wichterle, as many others, had miscalculated the political situation in Czechoslovakia which changed more rapidly than anywhere else. As he returned to Prague, the streets were crowded with demonstrators. On 26 November more than half a million people gathered at the Letná park to demonstrate against the regime, followed by a general strike on the 27th. The next day the Communist Party together with the Civic Forum agreed that the government would be changed on December 3rd.[769]

On 27 November a few members of the Academy Sciences – Wichterle included – met in a colleague's apartment. They created a group of "consultants", which called for an extraordinary assembly of the Academy of Sciences. The members of the group agreed that although they considered it necessary to paralyse the impact of the board of members which consisted of mostly Communists, any change should be done within the limits of law.[770] They could not expect that the law would change rapidly. It was necessary to quickly prepare a general assembly, which would have the right to change regulations, which would eventually lead to the weakening of the communist representation. This was realised.[771]

The next Assembly in June 1990 was supposed to choose a new Presidium for the Academy. Before the Assembly a secret unofficial election took place. In it Wichterle received the second place and received only half the votes

767 Kiser 1989, 7-9. The book was published just before the revolutions in Eastern Europe and therefore offers an unusual perspective on the topic – only a few months later the perspective of the book would have changed as a result of the collapse of communism in Eastern Europe. In his book Kiser tries to convince and explain why the Americans should look at the Eastern European innovations and innovators more closely. Kiser had studied case histories of the US acquisition of patents and trade secrets from the Soviet bloc and came to a conclusion that there was plenty of useful knowledge in Eastern Europe. As such examples he listed for example the introduction of surgical stapling guns, technology for casting aluminium, welding technology that all originated in the Soviet Union – and the soft contact lens industry. In the background was Kiser's proposal "The Potential for Commercial Technology Transfer from the Soviet Union to the United States" presented in 1975 to the Department of State's Office of External Research. This was after the Jackson-Vanik amendment which was made in order to pressure the Soviet Union to allow the emigration of Jews. According to many in the USA, détente was favouring Soviet interests. In this situation Kiser proposed that the USA should take greater advantage of Soviet technology: "is not the best defence a good offence?"

768 Wichterle 1992, 256-257.

769 Východ. Vznik, vývoj a rozpad sovětského bloku 1944-1989, 2000, 723-724.

770 Wichterle 1992, 257.

771 Ibid 1992, 257.

of the more successful candidate. However, when the Assembly took place, Wichterle found out to his own surprise that he was listed as the only candidate for the presidency – without his approval. The procedure reminded him of "Stalinist elections". He was asked not to protest in public and not to withdraw from the election because it would lead to a "chaotic situation". Only a small minority voted against him and even most of the Communist members of the Academy gave their votes to Wichterle. He was elected unanimously as the President of the Czechoslovak Academy of Sciences. The President of the republic, Václav Havel, nominated him for the position officially in the autumn of 1990.[772]

In his memoirs, Wichterle explained that it took him a long time to understand why he had been elected. One of the factors for his election, as he himself saw it, was that the election of candidates for the higher positions of the Academy was limited by the fact that all the potential people had collaborated with the system. Wichterle, unlike some others, had the advantage that his work had been belittled by the Communists. As Wichterle put it: "an uninformed observer might have seen me as a striking dissident".

At that time Wichterle believed that the new democratic government would be more supportive of science than the "Bolsheviks" had been.[773] There was a lot of societal enthusiasm rooted in historical and cultural traditions. According to Martin Myant, Czechoslovakia's relative isolation was consistent with a larger dose of naïve optimism that the transition could be simple and rapid. Czechoslovakia had been the most industrialised part of the old Austro-Hungarian empire and belonged among the advanced countries of Europe during the interwar period. The belief persisted that it still was an advanced country.[774]

According to Wichterle, the position of the President of the Academy was formal and the work easy. As a former reformer of the Prague Spring, Wichterle represented values that now became accepted. However, he himself and many others did not identify with the direction which the new post-communist government took. Soon after his election, there appeared efforts to radically reform or even dissolve the Academy of Sciences. The motivation for this was that the Academy was a relic of communist rule, an imitation of the Soviet Academy. Wichterle had to tell the critics that the first Academy was designed

772 Ibid 1992, 258-9.
773 Ibid 1992, 260.
774Myant, Martin, The Rise and Fall of Czech Capitalism. Economic Development in the Czech Republic since 1989. Edward Elgar Publishing, UK 2003, 13-14.

by Jan Evangelista Purkyně a long time before the establishment of the Soviet academy.[775]

Wichterle stated ironically that any foresighted members of the Academy who could see "the approaching catastrophes", stayed in the background.[776] According to Stanley Winters, after 1989 the CSAS became a burden and a target of reductions in public funding. The government believed that subsidising the Academy would hamper society's transition to a free enterprise system. Because of its internal weaknesses, the CSAS was vulnerable to these problems. The problems were especially evident in the international context. [777] In 1990-1991 the Academy continued to function but was weakened by the reduction of its budget by over fifty percent. According to Winters, despite the burden, the Academy pressed ahead in its effort towards self-reform and a "number of elder, relatively uncompromised and independent-minded academicians cooperated with younger colleagues to shape the transition from an authoritarian past."[778] Among the most important and positive developments was the changed attitude and practice towards Western scientific cooperation.

In 1990, Wichterle stated that democratisation would take time.[779] Wichterle was satisfied with the changes of 1989 and especially with the fact that the events had been so peaceful. However, Wichterle's world view, formed in the course of historical events of the 20th century – experiences from the Nazi prison and the hardships under the Communist regime – probably made it difficult to take an enthusiastic and euphoric attitude vis-à-vis any liberalisation. Unlike many believed and expected during the euphoria following the Velvet Revolution, science did not become one of the primary issues of the new Czechoslovakia and the Czech Republic.[780]

The year 1989 marked an important caesura not only in terms of economic and ideological system, but in overall thinking and approach to history. The black and white Cold War thinking was replaced by the rather oversimplified thinking of the post-1989 period that followed the alleged victory of the West. This had a great impact on how people who had been active in the communist period were viewed. The temptation to compartmentalise people and see their

775 Wichterle 1992, 260-261. In 1861-63, Jan Evangelista Purkyně published a volume called Akademia as a series in Ziva magazine and also as an independent publication. The whole volume is permeated by the concept of the Academy as an autonomous and free institution for scientific research. http://www.czech.cz/en/economy-business-science/science/the-history-of-czech-science-and-institutes?i= (accessed September 2009)
776 Wichterle 1992, 259.
777 Winters 1994, 294.
778 Ibid 1994, 297.
779 A AV ČR – (020-R), Interview of Otto Wichterele, Československý rozhlas 13 February 1990.
780 The proportion of GDP accounted for by the costs of science and research declined from 4.08% in 1989 to 1.07% in 1996, that is 21st place in the table of 26 OECD countries. (186) Later, there was a slight increase to 1.23 % but this did nothing to change the international placing.

actions merely in relation to the Communist Party has been strong. In the Czech Republic contemporary historiography has had a therapeutic function in the process of transformation. This function has not left the topic of science and scientists aside and has been particularly strong in relation to individual activity. Illustratively, the epitaph of the statue of the first Academy President Zdeněk Nejedlý states: „He has augmented and harmed Czech culture and brought fame and disgrace to his native town, which values his good deeds and disdains his bad ones".[781] This thinking has influenced the writing on the case study persons of this research as well. Otto Wichterle has been represented in some writings almost as a dissident figure: documentaries and articles present him in a positive light. He is well-known and beloved. Illustratively, in 2005 he was ranked twenty-third in the popular vote for the greatest Czech ever, ahead of such figures as Franz Kafka, Martina Navrátilová or Milan Kundera.[782]

At the same time many others, those who had often been loyal members of the Communist Party, have been left in the margins of any writings perhaps not directly criticising or condemning them, but in a way that emanates a feeling of uneasiness to deal with the complexity of the topic. Only a few have brought up this problem in relation to scientists in particular.[783] In his article on František Šorm, the Czech chemist Michael Volný explained why in his opinion Šorm would deserve the recognition as perhaps the best scientist of the past century, but has been, as he claims, put into the category where all his achievements are belittled by the fact that he was a loyal Communist. In Volný's words „*our (Czech) society simply does not want to accept that someone could be a world-capacity, a proper human-being and at the same time a convinced Communist*".[784]

781 Winters 1994, 299.
782 Největší Čech. Available at: http://www.ceskatelevize.cz/specialy/nejvetsicech/ accessed January 22, 2011.
783 Volný, Michael, Akademik František Šorm zemřel právě před 27 lety aneb proč je naše Baťa o minulosti konstantně ve slepé uličce. Available at: http://www.blisty.cz/2007/11/16/art37352.html, accessed February 3, 2008.
784 Ibid.

Conclusion

The case studies of Otto Wichterle and František Šorm reflect the weak points of the socialist system. The cases exemplify strategies of individual scientists to manoeuvre in the context of the state socialist regime and the Cold War. Wichterle overlived a series of historical changes from the Nazi occupation to the year 1989 ending up as the President of the Czechoslovak Academy of Sciences after the collapse of communism. František Šorm did not live to witness the historical change of 1989, but died more or less as a non-person in a system to which he had committed his life.

At the foreground of the study have been the strategic choices of the individuals: their participation in the international scientific community; exploiting their contacts and networks; and using their political convictions as survival strategies. At the state level the study has underlined the concrete benefit of the scientific research to the state. Especially the economic benefit was a chink in the armour of the communist decision makers: science *per se* was not the priority of the state, but concrete profits were. Acknowledging the importance of this was something that scientists were able to exploit in their negotiation strategies.

The paradox is that the same factors that made the two men important for the state at one point also made them suspicious at another. Among these factors were their professional qualities and international recognition. The Czechoslovak invasion in August 1968 had dramatic consequences for Czechoslovak society for years to come. It forced the case study scientists to give up their highly ambitious professional careers. The invasion and its aftermath were an example of how politics forcefully interfered in the realm of science and influenced the life of individual scientists. On other occasions, however, the state provided the scientists in turn with more freedom for their work and expression. Alongside their professional work, balancing between these realities was a major task for scientists. Despite the repressive features of the state's policies scientists did not remain passive subjects or mere observers of state policy. In fact, different kinds of strategies scientists used in varying historical situations challenge some of the simplifications in earlier historical interpretations. The Communist Party had to negotiate with individuals – even with the ones without political affiliation – because it needed them. Without the potential of these individuals the state would have not been able to maintain and strengthen its hegemony.

Below the results of the research will be presented at first from the perspective of the larger context: the international level, the state level and also the organisational middle level; then from the point of view of the individual case studies.

Czechoslovak Science and the World

According to John Kiser, during the Cold War there was a widely held notion in the West suggesting that communism caused brain death. The thinking from the late Cold War period reflects not merely the concrete and existing economic problems of the socialist states but also an exaggerated backward and uniform picture of the "Eastern Bloc" in the West strengthened by the division of the world. Even in the historiography this and the result of the Cold War led to the presentation of the socialist countries as places where reason had been replaced by ideology. This kind of image was in fact so strong that as late as 2005 the historian Nils Roll-Hansen wanted to correct this view and explicitly stated that: "*even under tyrannical regimes, reason is a feature of human nature*".[785]

In contrast to this kind of thinking, this study has shown that in many ways communism advanced the natural sciences: in Czechoslovakia the level of many fields of research was high and there were a number of skilful scientists who competed at the world level. Despite its flaws the socialist system did produce some significant innovations which did not merely stay in the laboratories. The natural sciences were a field of life that was extremely important for socialism. Science was a topical issue that was broadly discussed in public and many scientists were well known figures in society. Socialist society was based on the idea that ideology required science through which it was possible to change and recreate society and nature.[786] Therefore by investigating the natural sciences, and not the social sciences or the humanities, it has been possible to examine the use and role of the natural sciences for the manifold purposes of the state. Whereas the social sciences and the humanities were to a large extent given the role of strengthening the hegemony of socialism and promoting its cause at international forums in the case of the natural sciences this kind of ideological mission played only a minor role.

The grounds for the developments in the natural sciences in the 1960s were built from the early 1950s onwards as the Academy of Sciences was established. The reconstruction of Czechoslovak science was not merely a

785 Augustine 2007, xii. Roll-Hansen 2005, 14.
786 Schwippel 2001, 167.

result of the communist takeover but had its roots in the dissatisfaction with how science and research had been organised in pre-war Czechoslovakia. The fact that the communists took power and were the most successful group to structure science according to the Soviet model did not mean that science in Czechoslovakia would have been a mere ideological or political tool or object. The attempts at ideologisation and sovietisation saw their limits in Czechoslovakia partly due to country-specific factors and the activity of individuals. Another factor limiting the success of sovietisation was the apparently lesser Soviet involvement in higher education compared to other areas of societal life.

Within the Academy of Sciences relatively favourable conditions for the natural sciences were created. The two institutes directed by the case study scientists, the IMC and the IOCB, were among the most advanced and internationally recognised inside the organisation.

Science was a pet child of the communists and it thus enjoyed significant privileges and support. The activity of the individuals though has been the important element at all levels. The research has shown that the main aim of the case study scientists was to advance the importance of science in society. This was the aspiration behind most of their public activities. The means they used to advocate their cause were different due to their different paths in life: backgrounds, choices, convictions and characters – but also other more accidental factors, which determine the destinies of people played a significant role: chance and timing. The individual scientists recognised the dependence of their research on world science and had to engage in constant negotiations with the state that tried to limit this necessity because of its own political and ideological dependencies in particular on the Soviet Union. Communist or non-communist scientist, advocating international cooperation was above all a pragmatic choice. The Czechoslovak Academy of Sciences and its institutions furthermore provided the most important physical environment and local scientific community for the scientists and their work.

Despite the advantages the development of the natural sciences was hindered by the lack of international cooperation. The official policy of the state restricted contacts with the West. This policy was the subject of one of the greatest disagreements between the state and individual scientists. Science and socialism belonged together, but science was dependent on the international dimension. The unwillingness of the Soviet Union to support the idea of international cooperation in science served as the example for the other socialist states, although due to their respective size, traditions and

other factors, the autarkic policy fared much worse for those countries. The international dimension was heavily determined by Western scientists and scientific institutions and organisations and therefore posed a dilemma for the decision makers. At the middle level, within the Academy of Sciences, the policies of the Communist Party had to be echoed although there the ideologically and politically charged aims of the Party were often in conflict with other more professional aims. As the study has shown, individuals with sufficient authority, scientific capacity and access to the Party structures could, however, use their bargaining powers to influence science policy. At the level of the natural and technical sciences the Party was dependent on the expertise of scientists and had to consult them on issues that were relevant among others for solving larger economic questions.

Towards the last half of the 1950s, a gradual reopening of contacts with foreign scientists took place. At the state and organisational level international contacts were needed for several reasons: first of all achieving results and the overall development of science required an exchange of information. Scientific achievements were crucial for the economy and society at large. Through licence agreements it was possible to get hard currency and buy equipment that furthered research work. The state was well aware of the high level of Western science and technology as well as the economic pre-eminence of the West. Concrete scientific achievements were a way to strengthen the hegemony of the state in the eyes of citizens and an asset in the competition with the West.

Although the intra-bloc relations were idealised and formally prioritised, even the state gradually acknowledged the necessity to cooperate with Western universities and scientific organisations. It seems that problems in the intra-bloc cooperation worked as a catalyst for further Western cooperation. Western cooperation was officially motivated with ideological and patriotic reasons such as promoting Czechoslovak and socialist science at international fora – thus, providing and not merely taking. The West, on the other hand, was eager for scientific cooperation for similar reasons. These reasons were partly connected to the Cold War-related ideological missions such as using exchanges as a way to persuade individuals in the East of the superiority of the Western model, but were also related to more professionally oriented motives: as the study has illustrated, to look for respectable partners in fields that were well advanced in the socialist countries or to transfer technology to or from the East.

At the turn of the 1950s and 1960s, the Czechoslovak state had to admit that the role of individual scientists was necessary to establish and maintain scientific contacts with the West and participate in international scientific organisations. Scientific organisations such as IUPAC and Pugwash gave scientists a forum to meet foreign colleagues and exchange scientific – but also political and personal – information. Through participation in these scientific communities scientists gained Western recognition, which eventually became the most important form of prestige even in the socialist bloc. Participating in scientific communities in the West to a certain extent helped scientists in their local milieux. In order to maintain its international reputation Czechoslovakia had to acknowledge the meaning of those organisations.

For an industrialised country like Czechoslovakia, the problems of the economy at the beginning of the 1960s were a strong impulse to reform. The small country was under pressure to pursue its own economic activities and innovativeness in order to keep track of the economic competition. Much more than big countries with large resources, it was particularly dependent on international cooperation. Those fields of the natural sciences which had the potential for scientific innovation and commercial implementation were important because they could provide economic profit.

In Czechoslovakia, the desire to succeed in the worldwide "revolution" of science took more radical forms in the late 1960s than elsewhere in Eastern Europe. Concepts like the Scientific and Technological Revolution and the *integration of world science* began to appear in the official rhetoric on scientific issues in particular from the mid-1960s onwards. It seems that Czechoslovakia grasped the opportunity offered by the notion of the Scientific and Technological Revolution. Because the Soviet Union was the first to launch the concept, the Czechoslovaks had justification to use it. It gave them the necessary permission for concrete activity such as increasing cooperation with the West while it also fit well with the reforms of the Prague Spring.

Natural scientists served as instruments and catalysers of change in the attempts of the Czechoslovak state to modernise and integrate internationally. Scientists were needed for fulfilling manifold goals of the state. Czechoslovak scientists were trying to stretch the limits of state socialism to better correspond with their scientific aims. The state naturally provided the framework that bound individual activity. Even though the state needed science and its results, the decision makers were constantly afraid of losing control over the exchanges and contacts. Cooperation with the opposing system was a Cold War issue and a threat, due to ideological and political factors as well as the fear of a

brain drain. Contacts required providing individuals with a lot of liberties which endangered the functioning of the control mechanism, an essential part of the communist system. On the other hand, by using this control mechanism the state used its position of power against the scientists.

One form of demonstrating this power was the policy concerning foreign travels. In the mid-1960s academic travelling became easier and it was even regarded as favourable for developing science and thus, the economy. Most of the travels took place within the Eastern Bloc but in many fields of science it became increasingly important to learn results of research in Western centres of research, especially those in West Germany and the USA. The increasing and improving of international cooperation was one of the most important reforms within the Academy of Sciences during the Prague Spring. This proves that international cooperation was among the priorities of Czechoslovak natural scientists. When the opportunity was given, scientists published in international journals, participated in conferences, organised them, and were involved in international scientific organisations. Study trips were an effective way to exchange knowledge. Visits enabled gaining experiences from the other side of the Iron Curtain, learning about different cultures and improving language skills. Perceptions of individuals were not only important on a personal level but without doubt useful and interesting for the state. Keeping in mind that most normal citizens were not allowed to travel for most of the era of socialism, individual scientists had an important role in transferring certain images of the West to their own country.

Cooperation between East and West did not entirely end even in the most severe period of Stalinism. Natural sciences have been used as an example of the phenomenon that penetrated the Iron Curtain between the East and West. Unlike the fields with military-significance in this study the focus has been on forms of cooperation without direct relation to Cold War competition on armaments production. These forms of scientific cooperation therefore rather supported further and more efficient contacts and connected two societal systems. In this context the example of the soft lens is illustrative: its realisation required cooperation between East and West and the willingness of the people on both sides to exchange ideas with each other and learn from the "other".

The latter half of the 1960s was in many ways an exceptional period in the history of Czechoslovakia. However, it is exactly this exceptionality that makes it a significant and useful time period for investigating the ambitions of actors at different levels. In a way, the statements and reforms of the late

1960s reveal the intentions and agendas of scientists that were to a great extent free from political or ideological pressure. These issues did not come out of nowhere but they reflect thinking from the earlier periods. There were fields in which active and skilful individuals were able to promote their ideas and where international contacts and a more effective application of scientific results into practice took place, research could develop and reach an internationally recognised level. In comparison with social scientists or scholars in the humanities, natural scientists were better able to prove the importance of their work to the state. The natural sciences were furthermore closely linked to the economic demands of the time – and scientists had good international networks. In the field of chemistry a great advantage was that the President of the Academy, František Šorm, was a chemist.

By the end of 1960s, Czechoslovakia had gone further in its aspiration to improve Western cooperation than other countries of the socialist bloc and crossed the line of what was permitted. From the Soviet point of view close contacts with the West, outcries for reforms which extended to demands of providing the Academy with full autonomy and removing ideological obstacles from scientific issues and contacts were all alarming signals emanating from the developments in the country. The liberalisation process of Czechoslovak society created conditions for technology transfers such as the soft contact lens. As the research has showed, the transfer of the soft lens required both government support and an opening up towards the West. Without these conditions the transfer of the lens would have not been realised, but on the other hand, Otto Wichterle was someone who rose to these challenges.

After the occupation of 1968, in the 1970s and 1980s, economic necessities were no longer determined by the same factors: after the Soviet-led military invasion and the following normalisation Czechoslovakia had to prove its loyalty to the Soviet Union. The normalisation marked a radical replacement of the political but also scientific elite of the country. Among others, the leadership of the Academy of Sciences was replaced. Most of the country's prominent scientific elite was removed and those who came in their place commonly possessed limited scientific qualifications which were compensated by political ambitions.

This raises the question whether the normalisation meant a return to the practices and atmosphere of the 1950s? Despite similarities, in light of this study, the answer is no. Even the most loyal Party hacks could not completely ignore the outside world. Although the Scientific and Technological Revolution had disappeared from the dictionary of the whole bloc, the actual

integration of scientific research continued and economically Czechoslovakia was increasingly dependent on the outside world. The state desired the impossible: ideologically and politically controlled contacts that would at the same time fulfil ambitious scientific aims. At the rhetorical level a certain return to the 1950s and the 1960s took place: the West reappeared as the devil with whom it was necessary to deal but only to the extent that it would not threaten the political coherence of the normalised regime.

At the level of the natural sciences, it was "possible to be passionate about work and ignore the rest". Some had the feeling that doing research was a way to maintain freedom. Ideology did not return to the natural sciences as had been the case in the Stalinist period. Therefore working may have been considered as a way to remain aloof from politics and ideology, by doing something rewarding and "apolitical".[787]

The continuity of certain values was not successfully cut off by the "normalisation", but at least "behind the scenes" throughout the 1970s and the 1980s this continuity remained. A good example of the double-faced practice of the state in relation to science and scientists was its approach to Wichterle's new technology on the soft contact lens. Wichterle was kept away from the public but at the same time used for important technological developments and their implementation. Characteristically for the time, there were different interest groups advocating their own goals and often purely egoistic missions. In the eyes of Western observers these realities made the new scientific elite look unconvincing and unprofessional. Paradoxically, even the Secret Police took advantage of this behind the scenes and utilised the scientific expertise of dismissed scientists.

The Manager of Czech Science: František Šorm

After the communist takeover the Party membership opened many doors for František Šorm: the most important was the Academy presidency – a position in which he practically operated as the top manager of Czech science. The fact that Šorm was a prominent biochemist with a good international reputation worked in favour of the professional orientation of the Academy and without doubt increased the credibility of the Czechoslovak Academy of Sciences abroad. Šorm was a pragmatist who well recognised the importance of international exchanges of science and actively participated in the international scientific community.

787 Susan Sample, Crossing Boundaries in the Science and Life of Jindrich Kopecek. http://uuhsc.utah.edu/pubaffairs/hsr/fall2001/kopecek.html;

In order to promote his cause, he cultivated contacts with the leadership. This he was able to do, at least to a certain degree, through his Party positions in the Central Committee and its Ideological Commission. As several examples have illustrated, Šorm used these connections not only to influence science policies, but he also used his position for the benefit of many other individuals, including Wichterle, and acted as a mediator between scientists and politicians. Many people in the Czech Republic still consider Šorm as a „contradictory" person.[788]

Šorm's contradictory character probably referred to his Party membership, authoritarian style of management and the simultaneous humane approach towards many of those who had ended up as victims of political purges. Yet, it seems that there is surprisingly little contradiction involved in his actions: for Šorm communism was a rational choice. His activities were rather characterised by strong ambitions, pragmatism and certain cautiousness vis-à-vis political realities. He was a person who had competitors and enemies. One of them was Ivan Málek, whose career in the Academy in many ways mirrored Šorm's. Interestingly, while many accounts concerning Šorm published after 1989 have underlined his communism rather negatively, Málek and probably many others at the time saw Šorm as lacking some qualities of a true communist. Our perceptions on other people's actions are influenced by many factors and sometimes analysed without sufficient understanding of the historical context. It is important to note that collegial rivalry was never present in the relationship between Šorm and Wichterle. They did not compete in the same league: Wichterle as a non-communist did not have access to the elite of the scientific management.

Equally rational as his affiliation to communism was Šorm's decision at the height of the Prague Spring to eventually choose the side of the reformers. The reforms were clearly aimed to benefit conditions for scientific work. At first Šorm's line was rather cautious, which was interpreted by some people as a sign of unwillingness towards reform. His reactions to this critique reflect his determination to work for the best of science and his conviction that he was the right person to do that. It was only a few years earlier that he had been elected the President of the Academy of Sciences and despite having many rivals, he was at the time the most influential man among the scientific elite in Czechoslovakia. Certainly such factors as prestige, ambition and hunger for power played their role in his insistence to remain in position. Šorm wanted to run the show.

788 Holý, Antonín, Prof. Ing. František Šorm, DrSc. akad. Available at: http://jergym.hiedu.cz/~canovm/objevite/objev5/sorm.htm, accessed April 5, 2007.

For Šorm the August invasion symbolised a serious shock and disappointment – more so because he was a communist and had always cultivated good relations with the Soviets. Šorm did not accept the occupation and tried to use his position to express his opinion about it to the Soviets. At this moment, his cautiousness had disappeared and had been replaced by a certain patriotic approach. Patriotism was characteristic for both Šorm and Wichterle and was apparent in their statements against the intervention and their opinions on emigration.

It seems that Šorm did not have any illusions concerning the consequences of such a stance: he knew he would lose his position. Once dismissed, Šorm became a non-person. The former President of the most important organisation of science and a member of the Central Committee was able to work as a rank-and-file scientist in his old institute. He was never again allowed to travel, his contacts with the foreign scientific community were practically cut off and he had no proper way of maintaining his professional position and skills at a high level. The motives of the normalised regime were to a great extent based on personal aspects: punishing individual scientists by complicating their work or even making it practically impossible. In the case of Šorm this practice was well illustrated by how his earlier rival Jaroslav Kožešník took the advantage of his new powerful position and probably did what he could to prevent Šorm from regaining any influence.

This short-sighted policy was naturally very harmful for Czechoslovak science. The disappearance of important Czechoslovak scientists from the international arena served only to strengthen the picture of the country as a mere puppet of the Soviet Union. Šorm‘s access to research work was ultimately ended as he was forced to retire. After that he held hopes that he could have finally be allowed to travel, as in case of many pensioners. It was one of his life’s great paradoxes that he ended up as an object of similar practices that had been used during his era as President, although they had then been used mostly in a much more professional way. The possible option of travelling was used against him as a tool to keep him in a state of uncertainty. This kind of practice combined with his personal problems became an insuperable burden. The Secret Police found out about his weak points and used them to manipulate him to articulate his support for contemporary policies. Šorm ended up in an awkward situation. In order to secure his son a place to study, the desperate man agreed with some of the suggestions and declared his support for the people who were persecuting him. During the process of “discussions” with Šorm the Secret Police realised that Šorm’s scientific advice could still be useful. Out of desperation Šorm considered to

even speak out against Sakharov and thus certainly choosing a very different kind of survival strategy than the Russian physicist.

Perhaps Šorm's too close attachment to the official structures and institutions was one factor that made him end up in such a desperate situation. Throughout his career he had voted for the institutional base as the point of departure for his professional pursuits. When those structures came crumbling down on him, he seemed to lack an alternative solution. Certainly when compared to Wichterle, this seems to ring true.

Necessity is the Mother of Invention: Otto Wichterle

Wichterle's life experiences and his character prepared him to take life as it came. He remained at the same time sceptical but optimistic, and it seems that no historical changes or clashes with the authorities could bring him down. Wichterle's background was a factor that clearly had an impact on his life during socialism – but unlike most others with a similar background, he was able to succeed. He began his active academic career in Czechoslovakia under communism. At the same time his background made him a target of observation by the Secret Police.

Wichterle was a non-Party member who was allowed to work in an important position in the state where the Party controlled everything. This was a paradox that led to a number of conflicts. The Party needed the man whom it could not trust. The length of the tether given to Wichterle reflects the historical phases of Czechoslovakia. Yet he was by no means a passive object of the history of the country. Instead, he seized opportunities and used different kinds of strategies. As he put it: *"A measure of a man is how he deals with those unexpected confrontations with reality called chance."*[789] For many scientists, to remain in the laboratory and fulfil their personal ambitions and expectations from above would have been enough. For Wichterle, because of his background and also other factors contenting himself with a passive role would have not led to such scientific achievements as he was able to realise. For good or bad, he had learned that expressing one's opinions could move things.

According to his wife, Wichterle was stubborn and did not feel much fear. He was passionate with his "hobbies". Linda Wichterlová has called his husband a "peaceful fighter" (bojovník mírový), who would not use a gun but rather a pen and his words. Wichterle was well aware of his most powerful weapon,

789 Kiser 1989, 71.

his intellectual capital. Since the 1950s Wichterle expressed his critical opinions related to scientific issues first at the University and then within the Academy of Sciences. In a way this was a continuation of his activities in the student politics in the 1930s. He was both a critic and a reformer: he offered solution models for practical situations. In the 1960s, he strongly promoted the adoption of certain Western practices of scientific endeavour, such as the efficient trading of patents. His inventions and patents had worked as justifiers of his arguments. It is likely that Wichterle's active travelling and participation in the international scientific community gave him ideas how to develop local practices. Thus, the participation in the international community did not mean only identifying with the community but also transferring and implementing its practices in the local scientific community.

Thus, a non-Party member of "bourgeoisie" background had been allowed to participate in reforming society. This had become possible because the state needed him. His skills as a scientist, engineer and innovator were of course preconditions for his critical views. The case of the contact lens has in this study illustrated forms of his scientific activities. The 'economic pragmatism' of the 1960s provided a good ground for the transfer – hard currency was needed and research and development needed increased efficiency. The licence fees from the contact lens eventually formed the most significant part of the licence incomes of the Czechoslovak state. Or, as Linda Wichterlová put it: Wichterle offered his know-how and the children in Czechoslovakia had "mandarins on the Christmas table".[790]

The Wichterle's agency was not limited to the role of the inventor. Without his networks and understanding of the economic potential of the lens together with his determination to promote his case the transfer of the soft lens would have been highly unlikely. He was in constant and intensive contact with many of his colleagues. Later, when the contact lens was invented and produced, the people who were involved in that process regularly visited Wichterle's home. According to Linda Wichterlová, some of them were there on a daily basis.[791] He was actively bargaining with the state and he knew how to access the power centres. Wichterle was very active in utilising foreign contacts in the form of conferences and "advertisement" trips abroad.

Wichterle also personally participated in the negotiations over the patent with the Americans. The Academy of Sciences and people who supported Wichterle there were necessary for the success of the lens. All three levels of society were dependent on each other. Moreover, the successful transfer of

790 Interview with Linda Wichterlová by the author 20.10.2008, Prague.
791 A AV ČR – A letter written by Linda Wichterlová on the question of Wichterle's friendships (22.7.2000).

the lens was very dependent on the activity of American businessmen. After the period of the relative Cold War isolation, the interest of the Americans in Eastern technology was growing. The innovation produced in a socialist country was transformed into a capitalist product. It is highly likely that the success of the lens required qualities that were more distinctively part of Western culture, such as fashion and consumerism. Accordingly, the late analyses of the Economist stated that the market of the lens was based on vanity.[792] The inventor never wore contact lenses himself -- always wearing eye-glasses instead.

Wichterle's public statements during the Prague Spring were a continuation of his approach from earlier periods. Unlike in the case of many communist reformers, his views had not been radically transformed in the course of time, but remained more of less the same before the invasion of 1968. What was characteristic for Wichterle's approach throughout the communist period was that he respected the laws of the state which determined the framework within which organisations and individuals were to act.

The changes in society were rapid and sudden: the fact that Wichterle became politically active was not completely planned. There are certain signs that he had his doubts concerning the results of such activism. He was probably concerned about his scientific career when he had to invest so much time in politics. The fact that he for example refused to accept a salary as a member of the National Assembly shows that he saw his role as a political decision maker as temporary. On the other hand, Wichterle was not forced to become active politically. His role during the Prague Spring provided him with civic prestige, "recognition of an intellectuals political boldness" as it has been defined by Shlapentokh.[793] In terms of prestige, the Prague Spring was an ideal framework for Wichterle. He was recognised both as a scientist and as a courageous individual.

As a consequence of the August invasion of 1968 and the following "normalisation" Wichterle was abruptly stopped in his aspirations for change. The co-initiator of the Two Thousand Words manifesto lost all his academic positions, was deprived of the opportunity to work with a team and forbidden to travel. The story of inventor illustrates the complicated though inseparable relation between pragmatism and ideology and the struggle between political and practical (economic) aims. The improvisation that Czechoslovakia had to practice in the Cold War game in the 1960s, turned into weakness in the 1970s.

792 The Economist, Otto Wichterle – Obituary. September 5, 1998, 83.
793 Shlapentokh 1990, 38.

The policy that appeared as pragmatism from the Czechoslovak perspective, met its limits when it conflicted with Soviet interests.

After the invasion the mistrust of the Czechoslovak decision makers towards Wichterle caused the loss of a significant flow of currency to the state. Because of the travel ban Wichterle had to refuse a number of international conferences and meetings. This had long-term consequences as Wichterle was not able to follow what was going on with the licences in the USA. The story of the lens culminated in 1977 when the Academy of Sciences, being afraid of the legal expenses, sold all patent rights to the Americans behind Wichterle's back. The rules of the capitalist game were not familiar to the Czechoslovak officials, who moreover tried to prove their loyalty to the Soviets. The trials show that on the American side Wichterle was seen as great expert. Nevertheless, he was also an excellent tool for the Americans who could use him as a witness to gain even more money. Later, Wichterle was not too keen on talking about the soft contact lens because the invention "belonged to the past". Perhaps this was not only a statement about the failed politics of the state in the period of normalisation but also a sign of his modesty.[794]

Perhaps Wichterle's outsider position made it easier for him to survive and move on. Wichterle's personal strategy to overcome crises had a great influence on his life. He did not give up easily and was without doubt an adaptable personality: he tried to see the advantages in crises. Accordingly, at the time of normalisation he did not get depressed although he lost his position as the director of the institute: instead, he took advantage of having more time for his work and family. But unlike Šorm, Wichterle had the advantage that he was able to do something useful outside the laboratory and his institute. Despite the normalisation measures he developed new technology which attracted the attention of the both superpowers. Thus, the limited operational environment did not hinder him to keep trying. In this respect, the example of Wichterle serves as an example of how necessity can at times become the "mother of invention". On the other hand, it is necessary to note that as a natural scientist Wichterle had many advantages compared to most people who were confronted with normalisation measures. Scientists mostly did not end up as window cleaners, because they were too useful. The StB reports from the 1970s show that the Secret Police was particularly interested in Wichterle's Western contacts as well as his connections to the local economic elite.

794 A AV ČR – (020-R), Interview of Otto Wichterele, Československý rozhlas 13 February 1990.

However, the case of Wichterle is a case of an exceptional person in many ways. It has not been the purpose of this study to try to generalise practices through his example. The exception rather proves the rule. The difficulties encountered by Wichterle show that pressure from the state on scientists was powerful. If only a person with his talents was possible to successfully bargain with the state, then obviously there was not a lot of space for individual manoeuvring. Most of those who wished to do their research work in peace, had to choose to stay aloof from any critical discussions, or, as they saw it, stay apolitical.

Although in a limited form, Wichterle kept on working and thus, stayed inside "the structure". This position places Wichterle into what Jiřina Šiklová has called gray zone.[795] Wichterle knew that to remain within society was the only way to practice research. As Šiklová felicitously puts it, the dissidents may have had the moral superiority, but they also had to realise that they were living outside "the structure", out of touch with scientific institutions. By choosing the dissident stance they lost out on up-to-date expertise in their original professions. This is also the key to understand Wichterle's position in the context of opposition: in order to do what was meaningful for him and what he saw as necessary for any development – namely scientific research – he had to choose to stay inside "the structure". But to achieve this, he had to use his bargaining skills and outside pressure – his international contacts. Without them he might have ended up as a dissident. By using his bargaining powers, learning the "rules of the game" and other strategies, Wichterle gradually gained more freedom despite being deprived of his academic posts. At the same time, he continued fighting against the flaws of society. John W Kiser III described Wichterle's role in the following way:

> *„Their international success has no doubt helped them. But they are also modest men who have learned to stretch the limits of the system with political skill. Wichterle did get his stripes torn off in 1969, but the consequences to his career were negligible. Afterwards, he never baited the system publicly or sought to embarrass it. Independent-minded, yes. Foolishly antagonist, no."*[796]

The issue of political versus apolitical has been viewed as one of the survival strategies in this study. Paradoxically, the Wichterle's "apolitical position", in contrast to Šorm, probably helped him in the period after the occupation. Political purges were primarily targeted at Party members with the aim to re-establish and maintain the ideological purity of the Party. Those who had always remained outside the Party, did not have to prove their loyalty in

795 Šiklová 1990.
796 Kiser 1989, 117.

the same way as its members. In this respect, Wichterle's non-communist position gave him more room for manoeuvre than he would have had if he would have been a Party member. It is clear that the non-communist or apolitical Wichterle was in many ways active in influencing what were political processes. In all its complexity, the issue of political and apolitical in the context of natural sciences in socialist states calls for further research. It is necessary to understand the difference between such labels in the rhetoric of contemporary and post-1989 discourse. Another broad issue that will be left for future examination are the Western expectations regarding Czechoslovak science and the motives to cooperate with the country. How did Westerners view scientific cooperation with the Czechs and profit from cooperation and contacts; how have those contacts been the possible ground for establishing scientific cooperation after 1989.

To certain extent Wichterle's rehabilitation in 1989 symbolises the restoration of the 1960s' ideas and people. Wichterle was able to adhere to his ideals even in the era of the normalisation without being completely forgotten or severely punished. Unlike Šorm, Wichterle utilised the institutional base rather instrumentally to pursue his scientific goals; never failing to have an alternative plan if those structures would collapse. It is possible to find some parallel between the 1960s and the post-1989 period. At both times the reforms in society raised the hope of scientists that future investments in science would bring about significant changes. Despite the promises and plans though, the hopes were not fulfilled as effectively as the scientist opinion-leaders hoped for. As the study has demonstrated, the activity of František Šorm and Otto Wichterle was to a great extent inspired by their common interest and desire: to advance Czechoslovak science and make it internationally competitive. Even in their exceptionality both men were products of their time and surroundings, and the strategies that they chose have to be understood in that very same historical context. The Czechoslovak state was eager to profit from these scientists but did not understand that in order to succeed in the long run, important innovations and scientific results do not result from planning, pressure and limitation but require space for individuals and their team work.

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