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THE LIMITS AND MERITS OF INTERNATIONALISM. EXPERTS,
THE STATE AND THE INTERNATIONAL COMMUNITY IN
POLAND IN THE FIRST HALF OF THE TWENTIETH CENTURY

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Abstract

Employing the example of two Polish technical experts – the metallurgist Jan Czochralski and the architect-urbanist Szymon Syrkus, who both reached the peak of their careers in the Interwar period, the article sketches a particular space of expertise in the newly developing states of Central Europe after 1918 and in Poland in particular. For experts like Czochralski and Syrkus a new and pronounced state activity helped to bring about a space of opportunities but was also a source of severe restrictions and demands for loyalty. With the Second World War and then with the establishment of a socialist regime this space vanished and a particular kind of experts, relying heavily on the transnational structures still being in place in central Eastern Europe before the war almost ceased to exist.

Keywords

Central Eastern Europe, Experts, Transnational Space, Internationalism, Knowledge

The Limits and Merits of Internationalism. Experts, the State and the International Community in Poland in the First Half of the Twentieth Century *

“Not the ornaments of the peasant-journal of Łowicz¹ have contributed to Poland’s fame, but Copernicus, who also made Polish science international. Poland will only find a place in the world of the twentieth century through the competitiveness of the Polish intellect and Polish inventions, not through folklore or ethnographic art.”² Articulating this ambitious programme, the Polish architect Szymon Syrkus (1892–1964) published the first issue of the avant-garde journal “*Praesens*” in 1926. Some three years later, the Polish chemist and metallurgist Jan Czochralski (1885–1953) wrote in the journal “*Przegląd Techniczny*” (Technical Review) that he envisioned for Poland “an atmosphere soaked with a creativity out of which could grow the glorious edifice of domestic industry and a proud Polish technology acknowledged by the entire world.”³

Two technical experts from Poland of the same generation thus express their concern about Poland’s place in the world, almost at the same time. They probably wrote their pleas in the same urban space of Warsaw, both convinced that a prosperous and successful future for Poland depended on its internationally acknowledged potential for innovation.

This article argues that the striking similarity between these two exclamations is not incidental and that the problem they refer to is of relevance far beyond the two mentioned persons and their particular situations. Both quotations reflect a particular biographical experience as much as they refer to a specific situation in space and time – the newly emerged Polish nation state of 1918. Czochralski and Syrkus received their education at a time when Poland was still divided between Germany, Russia and Austria-Hungary. They launched their careers shortly before World War I, accelerating towards its end.

To tie in with the topic of the special issue, we will explore the different spaces in which these two technical experts acted: the non-Polish environment before 1918, their relationship with the newly emerged Polish nation state from 1918 onwards (including its changing and in some ways only emerging society and its political structures and institutions, which came into being after 1918), the international community of experts and scientists they belonged to and with whom they interacted, the universities they worked and taught at, the architectural workshops where the architect Syrkus drew his plans and the laboratories in which the scientist Czochralski made his inventions. Scrutinising the biographies of these two technical experts, including the successes, failures and ruptures in their biographies, allows for an assessment of the macro level of transnational relations while at the same time including the local micro level as a point of departure in the analysis.⁴

* Workshop: Transnational Spaces in History: European University Institute, Nov. 12, 2008

¹ A popular Polish vernacular-style.

² Syrkus, Szymon. “Preliminarz Architektury.” *Praesens* 1 (1926): 6–16, 6.

³ Czochralski, Jan. “Drogi i metody postępu technicznego.” *Przegląd Techniczny* 42 (1929): 947–949, 949.

⁴ Such an approach is still rarely to be found. As one of the rare examples, and also using the example of Poland with a focus on the literary avant-garde, see: Shore, Marci. *Caviar and ashes. A Warsaw generation's life and death in Marxism. 1918 – 1968*. New Haven: Yale University Press, 2006. Engstrom, Eric J.; Volker Hess, Volker and Ulrike Thoms. (ed.) *Figurationen des Experten. Ambivalenzen der wissenschaftlichen Expertise im ausgehenden 18. und frühen 19. Jahrhundert*. Frankfurt am Main: Lang, 2005. See also: Dahlmann, Dittmar (ed.). *Elitenwanderung und Wissenstransfer im 19. und 20. Jahrhundert*. Essen: Klartext, 2008. Szöllösi-Janze, Margit. “Lebens-Geschichte – Wissenschafts-Geschichte. Vom Nutzen der Biographie für Geschichtswissenschaft und Wissenschaftsgeschichte.” *Berichte zur Wissenschaftsgeschichte* 23 (2000): 17–35.

I. The Rise of the Expert and the Emergence of the Knowledge Society

The rise of experts of whatever type and specialisation was undoubtedly one of the seminal processes characteristic for the development of societies in modern European as well as non-European history – a process that involved a steep increase in the importance of knowledge and the scientification of ever more areas of life.⁵ The rise of the expert was, however, not merely a result of the ascent of the knowledge-based society commonly believed to have been a hallmark of the twentieth century.⁶ Rather, the constant rise of science and technology was strongly intertwined with new forms of enhanced state activity⁷ and also broader developments like the rapid development of modern media, new forms of societal self-organisation and not least of all new forms of international co-operation.⁸ The growing importance of experts cannot be understood without taking into consideration the increase of international contacts and exchange, which helped to bring about what could be called an international community of experts.⁹ However the long twentieth century also witnessed important developments that challenged, halted or even reversed the new position experts had come to occupy. Often for the very same reasons that had initially brought experts into powerful positions, they were exploited, controlled, forced or persecuted by representatives of the nation state or by certain parts of the societies in which they lived. It is therefore extremely important to examine closely the tensions between an emerging international scene of experts and the mainly national frameworks in which these experts acted, which includes also national expectations and national society at large. After all, expert knowledge was strongly connected to a process that has been convincingly described as territorialisation. This is even more important since at the same time, because of the very transnational character of their knowledge, experts always also challenged this process.¹⁰

By experts, we mean professionally qualified individuals who were recognized as such by their peers and – under certain circumstances – by a wider public. Thus, the status of the expert is not necessarily fixed – it is highly dependent on the currently dominant economic, social and political circumstances. It is not possible to draw a clear and distinct line between experts and scientists, since the boundaries between the respective groups overlap. The status of a scientist is more closely tied to formal membership within a fixed scientific community, either through a position at a university or a research institution or by definition of the community itself. Thus, while every scientist can be an expert as soon as his or her knowledge is requested for some public cause or brought to public attention on his or her own initiative (thus becoming a performative construction), not every expert must be a scientist. His or her status is always a result of cultural ascriptions and communicative negotiations. This means that in examining experts, the methodological possibilities of historical research enhanced by cultural considerations are particularly rewarding. Hence, concentrating on

⁵ Kohlrausch, Martin. “Technological Innovation and Transnational Networks. Europe between the Wars.” *Journal of Modern European History* 2 (2008): 181–195. See also Raphael, Lutz. “Die Verwissenschaftlichung des Sozialen als methodische und konzeptionelle Herausforderung für eine Sozialgeschichte des 20. Jahrhunderts.” *Geschichte und Gesellschaft*, 22, 165–193. ; Ash, Mitchell G. “Wissens- und Wissenschaftstransfer – Einführende Bemerkungen.” *Berichte zur Wissenschaftsgeschichte* 29 (2006): 181–189.

⁶ Vogel, Jakob. “Von der Wissenschafts- zur Wissensgeschichte. Für eine Historisierung der ‘Wissensgesellschaft’.” *Geschichte und Gesellschaft* 30 (2004): 639–660.

⁷ Scott, James C. *Seeing like a state. How certain schemes to improve the human condition have failed*. New Haven, Conn.: Yale Univ. Press, 1998.

⁸ Clavin, Patricia; Wessels, Jens-Wilhelm. “Transnationalism and the League of Nations. Understanding the Work of Its Economic and Financial Organisation.” *Contemporary European History* 14 (2005): 465–492.

⁹ Jessen, Ralph, and Jakob Vogel (ed.). *Wissenschaft und Nation in der europäischen Geschichte*. Frankfurt am Main: Campus, 2002.

¹⁰ Maier, Charles. “Consigning the Twentieth Century to History. Alternative Narratives for the Modern Era.” *American Historical Review* 105 (2000), 807–831.

experts and thus on people allows us to capture the cultural conditions of knowledge transfer – those aspects that have been expressed in the concept of “tacit knowledge”¹¹ – but even more so the political, social and cultural implications of professional exchange of knowledge.¹² In this sense, it is rather their capacity as experts than as scientists – which Syrkus, in the narrower sense, only was in the last years of his life – which interests us here.

This paper seeks to analyse some of the aspects at stake in the complex relationship between state and experts at a time when expertise was ever more politicised due to World War I and the subsequent rise of authoritarian regimes, a time in which expert knowledge also became an integral part of foreign policy and national security systems. Specifically, we will explore two fields of expertise which were both characterised by a very dynamic development in the twentieth century as well as proximity to the state. First, we will consider the technology of metallurgy, which originated in the fields of physical chemistry and material research, developed rapidly in the late nineteenth century and established itself in various institutions by the turn of the century, for example in the “Institute of Metals” in London in 1908 and the “Kaiser-Wilhelm-Institut für Metallforschung” in 1921.¹³ The development of technical sciences like metallurgy was closely connected to the rise of industry and increasingly also met the requirements of the military.¹⁴ The other field is architecture, in particular its modern strand, which developed after the turn of the century and evolved – never to be fully distinguished – into the new field of urbanism. From its very beginnings and increasingly so, the development toward urbanism was international in character, creating its own international organisations and various networks of exchange.¹⁵

The paper argues that the symbiotic relationship between experts and states can be studied particularly well using examples from Central Eastern Europe after 1918. This is the case for a number of reasons founded in the specific history of the region – first and foremost the dissolution of the Central and Eastern European empires – but also its economic structure. To start with, three points are noteworthy: first, a ‘forced internationalization’ ensued in the sense that experts who used to live under the rule of the Russian, German or Austrian Empires now turned into Polish or Czech citizens, while to varying degrees retaining their old bonds; second, those newly emerging states had to build their own elites and institutions and were thus highly dependent on expert knowledge, both at home and abroad¹⁶; third, an economic structure which, in comparison to other parts of the mainly Western world (but with noteworthy exceptions), was less diversified and developed amplified expectations of the state as the leading agent in the areas of economic and social reform.¹⁷ Poland, for example, had to

¹¹ Vgl. Heymann, Matthias, and Ulrich Wengenroth. “Die Bedeutung von ‘tacit knowledge’ bei der Gestaltung von Technik.” in *Die Modernisierung der Moderne*, ed. Ulrich Beck and Wolfgang Bonß. Frankfurt am Main: Suhrkamp 2001: 106–121.

¹² See: Fox, R. “Fashioning the Discipline: History of Science in the European Intellectual Tradition.” *Minerva* 44 (2006): 410–432.

¹³ Maier, Helmut. *Forschung als Waffe. Rüstungsforschung in der Kaiser-Wilhelm-Gesellschaft und das Kaiser-Wilhelm-Institut für Metallforschung 1900-1945/48*, I, Göttingen: Wallstein, 2007, 91.

¹⁴ Trischler, Helmuth; Weinberger, Hans. “Engineering Europe. Big Technologies and Military Systems.” *History and Technology* 21 (2005): 49–83; Krige, John; Barth, Kai-Henrik. “Science, Technology, and International Affairs.” *Osiris*, 21, H. 1, (2006): 1–21.

¹⁵ Sutcliffe, A. *Towards the Planned City. Germany, Britain, the United States and France 1780-1914*. Oxford: Basil Blackwell, 1981, 163–201; Albers, Gerd. *Zur Entwicklung der Stadtplanung in Europa. Begegnungen, Einflüsse, Verflechtungen*. Braunschweig: Vieweg, 1997.

¹⁶ This question has thus far not been adequately addressed. However, see the case study: Brzeziński, Andrzej Maciej. *Polska Komisja Międzynarodowej Współpracy Intelektualnej. 1924-1939*. Łódź: Wydawnictwo Uniwersytetu Łódzkiego, 2001

¹⁷ Berend, Iván T. *Decades of Crisis. Central and Eastern Europe before World War II*. Berkeley. Univ. of California Press, 2001; Aldcroft, Derek Howard. *Europe's third world. The European periphery in the interwar years*. Aldershot: Ashgate, 2006.

struggle with a notorious lack of capital during the interwar time. Therefore, central planning and state subsidies played a decisive role not only in the development of science, but also for technological inventions and their implementation in various branches of industry.¹⁸ Moreover, urban development, and housing in particular, were to a high degree dependent on state initiative.¹⁹ These processes were often accompanied by a strong rhetoric of the need to catch up, which incidentally is not to be found in Poland alone.²⁰

This constellation could be described as a particular space which entailed both chances and challenges experts would not have had or faced in the “established” states of Western Europe. They constituted the actors in the space of newly built nation states during a time of ever accelerating development after 1918 in the border regions of the declining empires only to cease with the outbreak of World War II and the subsequent new order of the socialist states established after 1945.²¹ The fact that this was both a temporally and geographically restricted development does not mean, however, that it was not relevant beyond the region and the time. We would rather argue that the examples presented here are significant for studying phenomena of general relevance for European (if not global) history in the twentieth century, for the history of transnational spaces of knowledge.²²

In opting for the significant example instead of the general survey, this article focuses on the case of Poland, which in many respects embodied most clearly the features described above. As a re-established state after 1918 Poland depended on expert knowledge more strongly than most states in the Western part of Europe at that time.²³ There, the years preceding the outbreak of World War I constituted a period of consolidation and expansion of the nation state on the one side, and a period in which science and expertise expanded into the international arena as never before on the other.²⁴ Confronted with the re-established Polish state the need for expert knowledge was particularly evident for the reorganisation of the economy and the sciences, the unification of the three different legal and other functional systems and the rebuilding of the infrastructure, including the re-establishment of Warsaw as a capital city with great symbolic significance. Warsaw would also become the major stage for the “Polish” careers of both Czochralski and Syrkus.

¹⁸ Landau, Zbigniew and Jerzy Tomaszewski, (ed.). *Zarys Historii Gospodarczej Polski 1918*. Warszawa, 1999 ; Piłatowicz, Józef. “Nauka – technika – produkcja w dwudziestoleciu międzywojennym.” *Zagadnienia naukoznawstwa* 2, 98, (1989): 241–260, 260. Also Nowak, Mariusz. “Rola specjalistów zagranicznych w morderniczej zakładow przemysłowych COP.” (2005) in {Piątkowski 2005 #94}.

¹⁹ Caumanns, Ute. “Mietskasernen und 'Gläserne Häuser': Soziales Wohnen in Warschau zwischen Philanthropie und Genossenschaft. 1900-1939.” in *Wohnen in der Großstadt. 1900 — 1939*, ed. Janatková, Alena; Kozińska-Witt, Hanna. XXX: 2006 ; *Wohnsituation und Modernisierung im europäischen Vergleich*. Stuttgart: Steiner (Forschungen zur Geschichte und Kultur des östlichen Mitteleuropa, 26), 205–224.

²⁰ Kochanowicz, Jacek. *Backwardness and Modernization: Poland and Eastern Europe in the 16th-20th Centuries*, Aldershot: Ashgate (Variorum), 2006.

²¹ Paulmann, Johannes. „Grenzüberschreitungen und Grenzräume. Überlegungen zur Geschichte transnationaler Beziehungen von der Mitte des 19. Jahrhunderts bis in die Zeitgeschichte.“ in: *Geschichte der internationalen Beziehungen. Erneuerung und Erweiterung einer historischen Disziplin*. Ed. Conze, Eckart; Lappenküper, Ulrich; Müller, Guido. Köln: Böhlau, 170–196.

²² Misa, Thomas J.; Schot, Johan. “Inventing Europe: Technology and the Hidden Integration of Europe.” *History and Technology*, 21 (2005): 1–20.

²³ Generally, the era of the Second Republic still seems to be a rather underresearched period in Polish history. But see : Żarnowski, Janusz. *Polska 1918-1939, praca - technika - społeczeństwo*. Warszawa: Książka i Wiedza, 1992; Piłatowicz, Józef. *Kadra inżynierska w II Rzeczypospolitej*. Siedlce : Wydawnictwa Uczelniane WSR-P, 1994.

²⁴ Crawford, Elisabeth T., and Shinn, Terry and Sorlin, Sverker (ed.). *Denationalizing science : the contexts of international scientific practice*. Dordrecht, Boston: Kluwer Academic Publishers, 1993, 13. See also Somsen, Geert J. A. “History of Universalism: Conceptions of the Internationality of Science from the Enlightenment to the Cold War.” *Minerva*, 46 (2008): 361–379.

II. Jan Czochralski – Successes and Failures of Metal Research across National Borders

Jan Czochralski was the person behind the so called Czochralski-method, a method of crystal growing used to obtain single crystals of semiconductors developed in 1916 more or less by accident. One evening, Czochralski left aside a crucible with molten tin and returned to writing his notes. At some moment, he wanted to dip his pen into the inkpot but accidentally hit in the crucible and withdrew it quickly. He then observed a thin thread of solidified metal hanging at the tip of the nib. Thus, the discovery that is based on pulling a crystal from the melt was made and published by Czochralski some two years later.²⁵ The crystals grown during the experiment as metallic wires were single crystals. About ninety-five percent of the world's current production of silicon single crystals, which constitute the raw material for microelectronics we find in mobile telephones or the chips on modern credit cards, is based on the process that Jan Czochralski discovered in 1916.²⁶

In spite of the relevance of the method he developed, the scientist and expert behind it is still largely unknown, mainly due to the fact that he lived his life not only within the frame of one single nation state, but felt at home at least in two territorial realms – Germany and Poland.²⁷ Thus, while the territorialisation processes mentioned above were put into practice in the form of the drawing of national borders during the interwar period like never before, people like Jan Czochralski and Szymon Syrkus challenged these processes since their expertise crossed borders, making them more and more permeable. In this way, these non-state actors are also challenging prevailing images of the interwar years, which often are centred on national antagonisms. But the picture is more complicated. This holds true for the case of Czochralski, since toward the second half of his life, the transnational, border-crossing aspect of his life, from which he not only himself greatly profited in his scientific work and as an expert and counselor for large companies such as Schneider-Creusot, the Czech Ekody or the Swedish Bofors, but also for the German and the Polish state, which had determined his success in the first place, turned out to be a real obstacle.²⁸

As a young man, Czochralski fled Kcynia, his rather small village of birth in the Prussian part of divided Poland, and moved to Berlin at the end of 1904. He first earned his living at various small places like a pharmacy and conducted studies at the Technical University Berlin-Charlottenburg, but it is not known if he ever graduated from that university. In 1908, he began to work in the metal laboratory of the Kabelwerke Oberspree of the firm AEG, where he got ahead fast, mainly due to the inventions and patents in metallurgy he developed together with Wichard von Moellendorff.²⁹ Czochralski and von Moellendorff conducted fundamental research on the consistence of technically important metals such as copper, bronze, tin, brass, aluminum and zinc, and worked on basic questions of crystallography.³⁰ AEG by that time constituted the largest centralised consortium of industrial companies in Europe and its laboratory was one of the large industrial research laboratories at that

²⁵ Jan Czochralski. „Ein neues Verfahren zur Messung der Kristallisationsgeschwindigkeit der Metalle“ *Zeitschrift für Physikalische Chemie* 92, 1918: 219-221.

²⁶ Evers, Jürgen; Klüfers, Peter; Staudigl, Peter; Stallhofer, Peter. „Czochralski's Creative Mistake: A Milestone on the Way to the Gigabit Era“. *Angewandte Chemie. International Edition*, Vol. 42, Issue 46: 5684 – 5698.

²⁷ Paweł Tomaszewski from the University of Wrocław has conducted a lot of research over the last years to return the life of Jan Czochralski from oblivion, in which it fell after 1945, and published the following short biography: *Jan Czochralski i jego metoda/ Jan Czochralski and his method*, Wrocław 2003. I am deeply indebted to him for sharing his knowledge with me.

²⁸ Steffen, Katrin. “Wissenschaftler in Bewegung. Der Materialforscher Jan Czochralski zwischen den Weltkriegen” *Journal of Modern European History* 2 (2008): 237-260.

²⁹ On the topic of the metal laboratory, see Evers, Jürgen; von Möllendorff, Ulrich; Marsch, Ulrich. “Wichard von Moellendorff (1881-1937). Materialprüfer, Metallforscher, Wirtschaftspolitiker” *Technikgeschichte* “71 (2004), Heft 2: 139-157, 139-142.

³⁰ von Moellendorff, Wichard; Czochralski, Jan. „Technologische Schlüsse aus der Kristallographie der Metalle“ *Zeitschrift des Vereins Deutscher Ingenieure* 57,(1913):931-935 and 1014-1020.

time unknown in Poland.³¹ Those laboratories played a crucial role in Germany for the rise of those industrial branches which depended on scientific knowledge especially from the fields of chemistry and electrochemistry.³²

The AEG laboratory that Czochralski took over as head in 1914 was a kind of a model for a techno-scientific laboratory: it became important not only for the emergence of metal research in the first place, but also stood for a close link between military, industry and technological science and a scientification of the industrial production – connections Czochralski himself always had promoted. Helmut Maier has termed this the “industrial type of metallurgy research with a close relationship to armament”.³³ While this laboratory life on the one hand clearly mirrors a conflict between practical and scientific work, on the other hand it constituted a space that was shaped by engineers like von Moellendorff and their technocratic visions of politics and economy, an environment, a specific innovative space which for Czochralski turned out to be quite supportive and which he was able to transfer to his next work place. In 1918, Czochralski moved to Frankfurt am Main, where he became head of the “industrial twin of the Kaiser-Wilhelm-Institute for Metallurgy”,³⁴ the metal-laboratories of the Metallbank und Metallurgische Gesellschaft AG, later Metallgesellschaft. He also took on several important and influential positions within the newly formed German Society for Metallurgy, a “war foundation during peaceful times”.³⁵ He arranged a starting balance of 50,000 Reichsmark from the Metallgesellschaft³⁶ and in his initial speech at the inaugural meeting of the society he called for close cooperation between science and industry, especially after the experience of World War I and the rather precarious situation concerning raw materials in Germany: “We must focus on the practical [...] and thwart foreign plans by means of forceful efforts. [...] We must master metal processing to a degree that makes us independent of foreign dictate and ensure that our manufacture yields the greatest possible profit. Only then can we confront foreign powers [...]”.³⁷

His words are to be understood as part of the strategy for autarky of raw materials and research for substitute materials that was launched during World War I, a strategy in the framework of which large-scale research projects were planned and implemented, namely in the laboratories of AEG, Metallbank and Metallurgische Gesellschaft AG.³⁸ Czochralski was part of this large-scale research project in the service of the nation, which was in turn part of a system in which scientists and

³¹ Hughes, Thomas P.. Walther Rathenau: „system builder“. in *Ein Mann vieler Eigenschaften. Walther Rathenau und die Kultur der Moderne*, ed. Tilmann Buddensieg, Thomas P. Hughes and Jürgen Kocka, Berlin: Wagenbach 1990: 9-31, 17; Piłatowicz. *Nauka – technika – produkcja*.

³² Reinhardt, Carsten, and Travis, Anthony S.. *Heinrich Caro and the Creation of Modern Chemical Industry*, Dordrecht: Kluwer Academic Publishers: 2000, 219-256 and Meyer-Thurrow, Georg. “The Industrialization of Invention: A Case Study From the German Chemical Industry” *Isis* 73 (1982): 363-381; for a pan-European perspective: Travis, Anthony S. et. al (ed). *Determinants in the Evolution of the European Chemical Industry, 1900-1939. New Technologies, Political Frameworks, Markets and Companies*, Dordrecht, Boston, London: Springer: 1998.

³³ Maier, *Forschung als Waffe*, 105-107.

³⁴ Maier, *Forschung als Waffe*, 170.

³⁵ Maier, *Forschung als Waffe*, 188.

³⁶ 75 Jahre (1919–1994). Deutsche Gesellschaft für Materialkunde e.V.. Die Geschichte der DGM im Spiegel der Zeitschrift für Metallkunde, Offenbach 1994, 4.

³⁷ “Wir müssen unser Augenmerk auf das Praktische richten, [...] und die Bestrebungen des Auslands durch wuchtige Arbeit durchkreuzen. [...] Wir müssen die Verarbeitung der Metalle so beherrschen, daß wir uns nichts vom Ausland vorzuschreiben lassen brauchen, und wir müssen die Fabrikation so einstellen, daß wir den größten Gewinn herausholen können. Erst dann können wir gegen das Ausland auftreten [...].” Inaugural meeting of the German Society for Metallurgy, 27 November 1919, in: *Zeitschrift für Metallkunde. Neue Folge der Internationalen Zeitschrift für Metallographie*, Band XI, Leipzig 1919, 201–216, 205–206.

³⁸ Forschergruppe zur Geschichte DFG 1920-1970, Bericht zur Abschlusskonferenz am 30/31. Januar 2008 in Berlin, Teil: Die DFG und die Forschungsförderung der metallischen Roh- und Werkstoffe, 161–169, 162.

engineers could gain enormous significance in light of the lack of raw materials after World War I.³⁹ In his vision of “mastering” metals, he accentuated his belief that a systematic use of technology and correspondingly the high estimation of engineers and scientist were essential for the development of society. Thus, the German Society for Metallurgy had to consider Czochralski a good German patriot and in 1926 he was elected head of the society. This was far from self-evident, since in 1924 Czochralski had mentioned in front of the society: “I am a Pole and I will not break with my fatherland, it is my duty to inform you of this.”⁴⁰ Evidently, at that time his technical expertise was still appraised pragmatically and not in nationalist terms – this changed afterwards and definitely with the National Socialist seizure of power in Germany: In 1924, Czochralski could thus publish the textbook “*Moderne Metallkunde in Theorie und Praxis*” (Modern Metallurgy in Theory and Practice) in the Julius Springer scientific publishing house with great success. In 1936 – by which time Czochralski already lived in Poland again – the publisher considered a reprint of the book and obtained opinions about the book from other experts in the field. The head of the Kaiser-Wilhelm-Institute for Metallurgy at that time, Werner Köster, wrote back not only that the book was out-of-date, but also that he did not consider it suitable that “the Pole Czochralski has to be the one to write a German book on metallurgy”.⁴¹ When he was working in Frankfurt this sort of nationalist thought did not yet undermine his effectiveness – on the contrary he wrote several papers and continued to develop patents. Among them was the highly successful patent on a metal alloy, the so called “*Bahnmetall*” or metal-B, patented in 1924, which did not contain the expensive and imported tin for railways that was bought by the Deutsche Reichsbahn. This metal alloy was subsequently bought by many countries all over the world and earned him not only a fair degree of fame, but also a fortune.

The end of the era of Czochralski in Germany came as a surprise to his contemporaries – he resigned from his job in Frankfurt on 1 July 1928 and from his position as head of the German Society for Metallurgy on 1 January 1929, and moved to Poland. The reasons for this step are still subject to speculation since there are few sources – one version as remembered by a Polish journalist, Stefan Bratkowski, whose father worked as a consul in Wrocław (then Breslau) during the Second Republic and was also an officer of the Polish secret service, indicates that Czochralski as an insider of many military secrets in Germany had at the same time worked for the Polish secret service and that the Germans were about to discover this – so the Poles had to get him out of Germany quickly.⁴² No documents substantiating this assumption have yet been uncovered in archives, so it must be left open if Czochralski really did cooperate with the Polish secret service – although it is plausible in some ways. In the most popular version of his return to Poland, the president of Poland, Ignacy Mościcki asked him to undertake this step since the Polish state wanted to make use of his expertise. With his remigration to Poland Czochralski followed a pattern set out by other Polish (and some non-Polish) scientists and experts since 1918, like Ludwik Hirszfild, who had invented the classification of blood groups and returned from Germany, like Gabriel Narutowicz from Switzerland, the hydro-technician short-time president of Poland, like the physicist Mieczysław Wolfke from Zurich and last but not least president Mościcki himself, who had worked as a scientist and chemist in Riga and Switzerland and, after moving back to Poland, was very engaged in the advancement of the chemical industry there.⁴³

³⁹ See also Gay Hartcup, *The War of Invention. Scientific Developments, 1914–1918*, London et al., 1988, vii.

⁴⁰ Cited from Aleksander Bocheński, *Wędrowniki po dziejach przemysłu polskiego*, Warszawa 1966, 159.

⁴¹ Archive of the publishing house Julius Springer in Heidelberg, Germany, correspondence of Czochralski.

⁴² See Tomaszewski, Paweł E., “Uczony, którego nie ma...”, *Fakty w INTERIA.pl*, <http://fakty.interia.pl/prasa/odkrywca/news/uczony-ktorego-nie-ma,1232590,4961>.

⁴³ Ścisłowski, Czesław (1935): *Prezydent Rzeczypospolitej Prof. Ignacy Mościcki jako badacz naukowy i wynalazca*, Płock 1935; Mościcki, Ignacy. *Prezydent RP- Autobiografia Wstęp, przypisy i wybór wywiadów i deklaracji publicznych Marian Marek Drozdowski*. Warszawa 1993.

A chair for metallurgy was created for Czochralski at the Warsaw Polytechnic and he assumed control over several research institutes in the field of metallurgy, chemistry and warfare. He was also head of the Military-Technical-Society, an organisation of Polish engineers founded with the purpose of acquainting them with questions of military technology in order to enhance national defence capabilities.⁴⁴ Czochralski as an expert was supposed to act as a mediator between science, economy and the army, an organiser of research and, last but not least, an innovator – all functions granting power to him to no small extent.⁴⁵ Also, he enjoyed significant financial benefits in Poland: when in 1939 the well-known German physicist Walther Gerlach, who knew Czochralski from the time when both of them lived in Frankfurt and who wrote that he and Czochralski were connected by the close bonds of a “heartfelt personal friendship”,⁴⁶ visited his institute and laboratories, he was quite enthusiastic about the equipment he found there, although he got to see only the civil part of it, not the military one: “What I saw at this institute belongs to the most beautiful things I ever saw up to this day and what we find in Germany only in the research laboratories of the industry. It contains every conceivable experiment arrangement and utility for pure metallurgy, for chemical metallurgy, physical metallurgy and metallic engineering [...] I would estimate this is about four times as large as Professor Debye’s new Kaiser-Wilhelm-Institute in Dahlem.”⁴⁷

However, his glorious career first in Germany and then the financial and prestigious privileges he enjoyed in Poland evoked not only enthusiasm among his fellow countrymen. He was envied for his fortune, he was subject to suspicions since he had never earned a proper PhD and considered a self-made man who had grabbed his chance in the newly built state. He was also suspect because of his international contacts and networks, especially to and within Germany. For a certain period of time he continued to work for the Metallgesellschaft also in Poland since he had signed an adviser contract with them for the period from 23 April 1928 until 30 September 1931.⁴⁸ He moreover received the proceeds from his patents – these aspects all nurtured resentment against him.

Eventually, his colleague Witold Broniewski from the Warsaw Polytechnic, also a professor in metallurgy, reproached him for his incomes from selling his patents and his co-operation with the armament industry, since this was purportedly not suitable behaviour for a proper scholar.⁴⁹ Broniewski relied mainly on nationalistically transformed arguments in his attempts to discredit the renowned expert in public: In an article published in the right-wing newspaper “ABC” in 1938, the rival intimated that Czochralski as a “German” would harm the Polish state and economy by selling worthless metal alloys to the Poles. Broniewski heavily questioned his loyalty to the Polish state.⁵⁰ Czochralski subsequently sued Broniewski and won the process.⁵¹ However, from then on Czochralski was unable to entirely dispell the accusation of being “German-friendly”.

⁴⁴ See Józef Piłatowicz, *Kształcenie inżynierów dla potrzeb wojska w Polsce okresu międzywojennego*, in: *Studia i Materiały do Historii Wojskowości* XXXIII (1990), 289–315, 309.

⁴⁵ On these functions of scientists, see Margret Szöllösi-Janze, *Der Wissenschaftler als Experte. Kooperationsverhältnisse von Staat, Militär, Wirtschaft und Wissenschaft, 1914-1933*, in: *Geschichte der Kaiser-Wilhelm-Gesellschaft im Nationalsozialismus. Bestandsaufnahme und Perspektiven der Forschung*, Bd. 1, hg. v. Doris Kaufmann, Göttingen 2000, 40–58.

⁴⁶ Archive of the Deutsches Museum München, bequest of Walther Gerlach, NL 080/653.

⁴⁷ Bayerisches Hauptstaatsarchiv München (BayHSta), MK 54508, Walther Gerlach: Bericht über meine Vortrags- und Studienreise nach Polen (Warschau und Posen) vom 6. Mai bis 12. Mai 1939.

⁴⁸ Hessisches Wirtschaftsarchiv Darmstadt, Akten der Metallgesellschaft, Juristisches Büro, note from Juli 3rd, 1941 concerning contracts with Czochralski.

⁴⁹ Broniewski in general was supposed to militate against the training of engineers at the polytechnic, at least colonel Tadeusz Felsztyn writes this in his memoris, see Piłatowicz, *Kształcenie inżynierów*, 302, Anm. 35.

⁵⁰ *Gazeta Polska* vom 15.10.1936: Z sali sądowej: Prof. Czochralski contra prof. Broniewski.

⁵¹ Siehe *Zeszyty Historyczne Politechniki Warszawskiej* 2 (1996): *Geneza i wydziału inżynierii materiałowej Politechniki Warszawskiej 1898-1970*, ed. Eugeniusz Tyrkiel.

At this point, we can observe that internationalisation came to a certain limit: Czochralski's role of the universal and rather apolitical scientist-expert who could adapt to different environments was no longer feasible. Reasons of competition also play an important role here: since the state expected a lot from his expertise especially concerning the science-industry-nexus, he was able to secure considerable state financing for his research institutes, which were somehow intended to substitute the large industrial laboratories until then not established in Poland. Above and beyond that, he functioned as a counsellor also in questions of armament and military, which seemed to be so essential for a state, which saw himself under constant threat by its neighbours Germany and Russia. The fact that his university research laboratory was very well equipped mainly with German instruments and machines in this context was eventually not only a source of innovation, but also of conflicts. There seems to be a general potential for such conflicts which emerges from transfer, exchange and the adoption of foreign ideas, models and goods.⁵² Moreover, without being able to go into the details of laboratory life here,⁵³ it seems that in the present case a technical and a cultural aspect closely interact with each other and depend on one another – when it comes to a transfer of technology or technical equipment, this does not necessarily mean that it works the same way as before in a different environment and under different circumstances – space matters since the cultural settings matter. Besides fruitful inspiration, also intercultural misunderstandings and problems might occur, as Arjun Appadurai has stressed in his analysis of the global technoscapes.⁵⁴ Various cultural and technical settings may have played a significant role for Czochralski's research in Poland that produced different outputs than before in Germany, enhancing previous findings rather than generating new ones.

During World War II, Czochralski's his international or German attachment finally turned out to be fatal: he was accused of collaboration with the German enemy since his laboratory, which the Germans allowed to be re-opened in 1940, produced items for the German Wehrmacht. That he had helped the Polish underground as well did not save him from being prosecuted. After 1945, a lawsuit was filed against him, and although in the end he was not accused of collaboration anymore,⁵⁵ he lost his chair at the Warsaw Polytechnic and fell into oblivion. So the transnational spaces from which he had profited and which had determined his successes, and above all, which he had activated in the first place, since such spaces are non-existent without activation, turned out to be limited by those processes described above.

III. Szymon Syrkus – Architecture and the Chances of Crisis

The example of Szymon Syrkus (1892–1964), “perhaps the foremost exponent of Functionalism anywhere in Eastern Europe,”⁵⁶ yet today largely forgotten, offers striking parallels to Czochralski's biography, but also sheds light on aspects so far not discussed. Syrkus had an unlikely career, which brought him to the inner ranks of the influential modern architecture organisation *Congrès Internationaux d'Architecture Moderne* (CIAM), eye to eye with Le Corbusier and Gropius. At the same time, his career was in many respects typical for Polish architects of his generation. Like most of

⁵² For the complex interaction between enmity and cultural transfer, between hostile defence on the one side and ready adoption on the other, see Vom Gegner lernen. Feindschaften und Kulturtransfers im Europa des 19. und 20. Jahrhunderts, Martin Aust and Daniel Schönplflug (ed), Frankfurt/ New York: Campus 2007, especially Paulmann, Johannes. Feindschaft und Verflechtung. Anmerkungen zu einem scheinbaren Paradox, 341-356, 343.

⁵³ See for example on that Karin Knorr Cetina, Das naturwissenschaftliche Labor als Ort der „Verdichtung“ von Gesellschaft, in: Zeitschrift für Soziologie 17 (1988), Heft 2, 85-101, 87, Bruno Latour, Science in Action. How to follow Scientists and Engineers through Society, Cambridge 1987; Simon Shaffer und Steven Shapin, Leviathan and the Air-Pump. Hobbes, Boyle and the Experimental Life, Princeton 1985.

⁵⁴ Appadurai, Arjun. Modernity at Large. Cultural Dimensions of Globalization, Minneapolis, London 1996.

⁵⁵ Archiwum Państwowe Łódź, Prokuratura Sądu Specjalnego Karnego w Łodzi, sygn. 597.

⁵⁶ Aman, Anders. *Architecture and Ideology in Eastern Europe during the Stalin Era*. Cambridge, Mass.: MIT Press, 1992, 173.

his colleagues, he was internationally educated – almost involuntarily due to the then non-existent Polish state. Syrkus studied between 1912 and 1917 at the Polytechnic Universities of Vienna, Graz and Riga, as well as the Academy of Fine Arts at Cracow and finally the newly established Warsaw Polytechnic, where he graduated in 1922.⁵⁷ Between 1922 and 1924, Syrkus stayed in Paris and Berlin with excursions to the German Bauhaus and de-Stijl-representatives in Holland. Only in 1924 did he return to Poland for good.

An international background – including the command of German, French and Russian – was one of Syrkus's characteristic features. More important for his career, though, was his focus on the social dimension of architecture. This was one of the hallmarks of Warsaw Polytechnic's architecture department. It was, above all, the essence of the modern architecture movement gaining ground in Europe from the mid-1920s onwards. Syrkus profited, as will be discussed here, from both the new international arena constituted by the modern movement and the rising impact of architects in general, which was particularly pronounced in Poland and specific in a number of noteworthy respects.⁵⁸

Those architects working in Poland after 1918 and born before 1890 had been educated at more than forty different architectural schools, most of them abroad.⁵⁹ While the age groups born before 1895, like Syrkus, had still studied at the polytechnics of the partition powers, the younger generation of Polish architects was predominantly educated at the Warsaw Polytechnic University.⁶⁰ Their training, however, was not necessarily less European. The faculty was almost by nature internationally oriented as it had received its training abroad. Consequently, the curriculum was hybrid, influenced by French, German and Russian traditions, and, because of the late foundation of the establishment, also practically oriented, integrating urban planning as one of the first departments in Europe.⁶¹

Architecture developed into a key discipline when after an initial phase of consolidation the new Polish state embarked on ambitious urban improvement projects. Architects were assigned new tasks particularly in the fields of hygiene, health and education all singled out by the government as being of central importance. This was most visible in what came to be known as urbanism, a much more scientific and holistic approach than classical architecture had been, conceiving architects not so much as artists, but rather as technicians and social engineers.⁶² Moreover, architects gained ground following World War I with increased demands on the state to deliver compensation for the suffering, not least of all in the form of improved housing, but also, particularly in Central Europe, as devastated areas had to be reconstructed.⁶³ Finally, new technological methods such as reinforced concrete and

⁵⁷ A biography or at least a more extensive treatment of Syrkus's life is still lacking. The best information in print can be obtained from: Chionne, Roberta. "Blok e Praesens. Dagli ideali del costruttivismo alla sperimentazione funzionale." In *Costruttivismo in Polonia*, ed. Silvia Parlagreco, 157–198. Torino: Bollati Boringhieri, 2005. The most extensive account on the work of the circle around Syrkus is his wife, Helena Syrkus's work: Syrkus, Helena. *Ku idei osiedla społecznego. 1925-1975*. Warszawa: Państwowe Wydawnictwo Naukowe, 1976.

⁵⁸ For an overview see: Klosiewarchiteicz, Lech. "Architektur und Stadtplanung in Polen. 1918– 1939." *Der Architekt* (1988): 49–56. Milobedzki, Adam (ed.). *Architecture and Avant-Garde in Poland 1918–1939*, Milano: CIPIA, 1996; Leśnikowski, Wojciech. "Functionalism in Polish Architecture." In *East European Modernism. Architecture in Czechoslovakia, Hungary & Poland between the Wars. 1919–1939*, ed. Wojciech Leśnikowski, 203–285. New York: Rizzoli, 1996. Nowakowska-Sito, Katarzyna (ed.). *Wyprawa w dwudziestolecie*. Warszawa: Muzeum Narodowe w Warszawie, 2008.

⁵⁹ Minorski, Jan. *Polska nowatorska myśl architektoniczna w latach 1918-1939*. Warszawa: PWN, 1970, 206.

⁶⁰ Minorski, Jan. *Polska nowatorska myśl*, 210–213; Politechnika: Zakład Architektury Polskiej (ed.). *Warszawska Szkoła Architektury, 1915–1965*. Warszawa: Państwowe Wydawnictwo Naukowe, 1967.

⁶¹ Klosiewicz, Lech. "Modernizm polski : seminarium w stulecie urodzin pokolenia modernistów polskich." *Kwartalnik Architektury i Urbanistyki* 45 (2000): 84–95.

⁶² Saint, Andrew. *Architect and engineer. A study in sibling rivalry*. New Haven, Conn.: Yale Univ. Press, 2008.

⁶³ It is estimated that due to war-damages in the years between 1914 and 1921 1,837 000 buildings were destroyed on the territory of the Second Polish Republic. Minorski, Jan. *Polska nowatorska myśl*, 11–15.

high-rise construction were important. This was true even more so for a – from today’s perspective – greatly exaggerated belief in the chances of mechanisation and industrialised building methods.⁶⁴

Thus, architects like Syrkus reacted to new demands and new opportunities, but also actively claimed to be in a position to solve new or newly defined problems and strove to reposition architecture as a new central and integral key-discipline. Tellingly, the number of registered professional architects in Poland rose almost tenfold in the first twenty years after World War I, while those trained in Warsaw soon played the most important role, notwithstanding their young age.⁶⁵ Apparently, the young graduates of the Warsaw Polytechnic were better than others at filling the huge gaps of expertise brought about by the retreat of the partition powers, and at seizing the chances of the broad emerging field of new activities. With their specific background, in particular their expertise in urbanism and social aspects of architecture, they managed to meet the demand for planning, social housing and visibly modern and international solutions even without acknowledged experience.

Syrkus initially engaged with the avant-garde group BLOK, which was influential in combining art and the world of modern technology.⁶⁶ In 1925, he organised an exhibition on international architecture that aroused public attention in Poland. Such activities, as well as a number of theoretical articles, helped him to attain a standing at a comparatively early age.⁶⁷ Syrkus synthesised his experience from travelling abroad and defined his position as a left-wing proponent of modern ideas in architecture. Standardisation and mass housing production methods became his favorite topics.⁶⁸ When BLOK was dissolved, Syrkus was critical for the establishment of “Praesens”, a more targeted group including mainly young architects from the “Warsaw-school”, which published the journal of the same name already mentioned. “Praesens” played a decisive role for Syrkus in a number of respects. Both practically and theoretically, it served as a testing ground for his professional ideas. The group organised exhibitions on topics critical for the discussion of modern architecture, but in its more practical approach it also helped Syrkus to fill his vision of collective work with life. From the late 1920s onwards, the group managed to win the most interesting commissions of social housing projects in Warsaw organised by the largest housing co-operative “WSM”. Together with his wife Helena Syrkus, he became the leading architect-expert on housing for the working class.⁶⁹ The WSM and some of its principal figures regarded housing as the foremost instrument of social reform and were willing and able to grant funds for experiments for socially integrated housing estates.⁷⁰

In the years to come, Syrkus quickly advanced to become one of the leading modern architects in Poland. What characterised him was his clever combination of his international network, modernist

⁶⁴ See, for example, the Syrkus couple’s programme to construct 100,000 flats a year using new prefabrication systems. Roguska, Jadwiga. “The New Housing Between Dogma and Reality.” In *Architecture and Avant-Garde in Poland 1918–1939*, ed. Adam Milobedzki, 60–72. Milano: CIPIA, 1996, 67. Urbanik, Jadwiga. Szymon Syrkus. CIAM Representative of Poland and Pioneer in Integrated Building Science in Modern Architecture. Climate and Building Physics in the Modern Movement. Preservation Technology Dossier 9, ed. Jos Tomlow, 53-60. Zittau: Hochschule Zittau/Görlitz 2006.

⁶⁵ From 169 in 1919 to 1042 in 1939. Minorski, Polska nowatorska myśl, 183.

⁶⁶ For a general account of the phenomenon see: Trommler, Frank. “The Avant-Garde and Technology”. *Science in Context* 8 (2005): 397–416.

⁶⁷ Stiller, Adolph (ed.). *Architektur in Polen*. Salzburg: Pustet, 2008, 40.

⁶⁸ Czaplinska-Archer, Teresa. “Polish Architecture. The Contribution of Helena and Szymon Syrkus.” *Architectural Association Quarterly* 13 (1987): 37–44, 39.

⁶⁹ Syrkus, Helena, and Szymon Syrkus. *O Architekturdze I Produkcji Mieszkań Robotniczych*. Warszawa, 1935. Mazur, Elżbieta. *Warszawska Spółdzielnia Mieszkaniovia 1921-1939. Materialne warunki bytu robotników i inteligencji*. Warszawa 1993.

⁷⁰ The WSM also provided the link to a reform-movement which went far beyond the sphere of architecture, a link which is also expressed in Syrkus’s projects for sanatoria. Tołwiński, Stanisław. *Wspomnienia, 1895-1939*. Warszawa: Państwowe Wydawnictwo Naukowe, 1970, 329-335.

know-how, extensive publicist activity and a clear-cut, radical cause.⁷¹ In an early article defining his mission, Syrkus had declared that “architecture changes the social pattern, as the social pattern changes architecture”. In accordance with his companions within the Praesens-group, Syrkus explained that “all forms of artistic creation should be subjected to the supreme social role of architecture”. His ambition, however, went further as expressed in the initial quotation on the role Polish science was to play internationally.⁷² In many respects, “Praesens” served as a sound board putting Syrkus’s name on the international agenda, and constituted an important precondition for the international attention Syrkus’s work attracted.⁷³

It is worthwhile to take a closer look at the interaction between the national and the international in Syrkus’s work. Immediately after the foundation of CIAM in 1928, Syrkus was asked as one of two Polish architects to join the circle of this self-declared elite of modern architects.⁷⁴ Within the course of only a few years, he rose to a decisive position within the organisation and came to head the influential committee on regional planning⁷⁵ – always connecting to the specific expertise he gained in the Polish post-war situation – and was one of three members proposed when CIAM planned to install a core group in order to improve the organisation’s effectiveness.⁷⁶ This is particularly remarkable as CIAM’s purpose was not to the smallest part to acknowledge hierarchies within the modern movement.⁷⁷

The official reason for Syrkus’s invitation to CIAM was his distinctly modern entry for the competition for the building of the League of Nations.⁷⁸ However, much more important for the role CIAM would play in the organisation in the years to come was the technical and social dimension of architecture Syrkus stressed so strongly in his work.⁷⁹ This discussion allowed Syrkus to use the special problems he was dealing with in the Polish context to enhance his international standing.⁸⁰ But social problems were also a persuasive theme to channel the international discussion back into the local practice.⁸¹ What comes to the fore here is CIAM as an organisation, which not only worked as an institution promoting the exchange of knowledge, but also conferring reputation and appreciation. Local problems could advance to internationally recognised case studies. International recognition, on

⁷¹ On the artistic relevance of Syrkus see the projects by Syrkus presented in: *Architektura i Budownictwo (AiB)* 5 (1929): 34–35 and *AiB* 10 (1934): 117–121. A list of the works realised by Syrkus can be found in: Politechnika, Warszawska Szkoła, 252–253.

⁷² Syrkus, Szymon. “Preliminarz Architektury” in *Praesens* 1 (1926): 6-16.

⁷³ Tołwiński, *Wspomnienia*, 326–327

⁷⁴ Giedion, Siegfried (12.06.1928): Aufnahme S. Syrkus in die CIAM. Giedion-papers. Institut für Geschichte und Theorie der Architektur ETH Zürich (gta) - ETH Zürich.

⁷⁵ Syrkus, Helena; Syrkus, Szymon (1935): Korrespondenz im Hinblick auf CIRPAC-Treffen in Amsterdam. Funktionelle Stadt, Regionalplanung. CIAM-papers 42 K, gta; Giedion, Siegfried (1936): Korrespondenz Giedion mit H. u. S. Syrkus wg. Vorbereitung La Sarraz, Regionalplanung, Propagandamaterial für USA. CIAM-papers 42 K, gta.

⁷⁶ Syrkus, Szymon (June 1937): Rozwizania zasadnicze w zastosowania do regionów i wsi., Syrkus papers 39 H, Muzeum Architektury w Wrocławiu (MAW).

⁷⁷ Mumford, Eric. *The CIAM discourse on urbanism, 1928–1960*. Cambridge, Mass.: MIT Press, 2000; Somer, Kees. *The Functional City. CIAM and the legacy of Van Eesteren*. Rotterdam: NAI Publishers, 2007.

⁷⁸ See illustration in *AiB* 3 (1927), 194.

⁷⁹ See, for example, Syrkus’s article on “Le Mur Exterior” in the proceedings of the 4th CIAM congress. *Chambre Technique de Grèce. Le IVe Congres International D'Architecture Moderne a Athenes 'La Ville Fonctionelle'*. In: *Annales Technique* 4 (1934): 44–46.

⁸⁰ For this purpose, Syrkus also managed to successfully include Polish experts on housing and co-operatives, themselves not architects, in the CIAM-organisation. Syrkus, Szymon (1929): Schreiben an Giedion und Moser in Vorbereitung auf Frankfurter Kongreß. CIAM-papers 42 K, gta. See also Syrkus, Szymon. „Het Nieuwe Bouwen in Polen“. In *De 8 en opbouw* 13 (1934): 105–111.

⁸¹ Syrkus, Szymon (13.9.1929): Berichte über Publikationen zur CIAM in Praesens, DOM und AiB. CIAM-papers 42 K, gta.

the other hand, could be channelled back into the local struggle for chances to implement one's concepts and ideas.⁸² For a short time, it was not even unlikely that the famous CIAM IV-congress, which eventually took place on a cruiser in the Mediterranean, was to be staged in Warsaw.⁸³

Though undoubtedly leftist, CIAM offered a politically open concept, characterised by a radical approach toward planning. This allowed for a fast and easy transfer of knowledge. Moreover, CIAM provided state-of-the-art knowledge in urban planning and social housing – two areas critical to the Polish situation. In directly connecting to the international discussion, the Polish planning-experts could realise – at least on paper – the “great leap into the future”.⁸⁴ Adding to this, international solutions were comparatively more prestigious in Poland than in the West. This was true both for the label “international” and for the label “modern” – although the two can never be fully distinguished. Syrkus's strategy involved presenting his new ideas against the backdrop of international examples, which he grasped better than most of his colleagues.⁸⁵ Polish contributors to CIAM could profit from both the proximity to internationally renowned experts and from the aspiration of the Polish state for international recognition through ostensibly modern solutions.⁸⁶

Syrkus sensed the opportunities offered on the international stage very clearly when he declared: “We – the members of CIAM – and friends are part of the great international working community and we represent the ideas of CIAM in Poland. We cannot and do not want to be seen as international representatives of the whole Polish body of architects.”⁸⁷

In the years to come, CIAM's agenda dictated to a large extent Syrkus's work programme, culminating in his plan for “Warszawa Funkcjonalna”, the Polish contribution to the discussion surrounding the functional city. Syrkus's plan was adopted as a model study by Le Corbusier and a number of internationally acclaimed architects. They pressured Warsaw's city council to implement the plan.⁸⁸ It is worth noting, however, that the study could only find attention due to new iconographic systems, which allowed for “communicating” a place like Warsaw – not visited in person by almost all other CIAM members – to the audience of international architects.⁸⁹

With the most dramatic housing situation in central Europe, huge growth rates, but a dysfunctional construction system and the need to develop a modern capital city, Warsaw provided exceptional

⁸² Kohlrausch, Martin. “Die CIAM und die Internationalisierung der Architektur. Das Beispiel Polen.” Themenportal Europäische Geschichte (2007), URL: <http://www.europa.clio-online.de/2007/Article=258>.

⁸³ Giedion, Sigfried (24. Januar 1933): Durchreise der CIAM-Mitglieder durch Warschau und Aufenthalt dort vor Kongress in Moskau. CIAM-papers 42 K, gta. See also the letter by Syrkus to Giedion of 10 April 1933, *ibid*.

⁸⁴ This assessment is also supported by the huge space CIAM covers in autobiographies of Polish architects and social reformers. See Syrkus, Helena. *Spoleczne Cele Urbanizacji. Człowiek i środowisko*. Warszawa: Państwowe Wydawnictwo Naukowe, 1984, 198–280; Tolwiński, *Wspomnienia*, 343–431.

⁸⁵ See, for example, the numerous international references in: Syrkus, Szymon, “Fabrykacja Osiedli” *AiB* 4 (1928), 277–298.

⁸⁶ See the examples presented by Mansbach, Steven A. *Modern art in Eastern Europe. From the Baltic to the Balkans, ca. 1890– 1939*. Cambridge: Cambridge Univ. Press, 1999; and Störkuhl, Beate, “Gdynia - Meeresmetropole der Zweiten Polnischen Republik.” In *Neue Staaten – neue Bilder. Visuelle Kultur im Dienst staatlicher Selbstdarstellung in Zentral- und Osteuropa seit 1918*, ed. Arnold Bartetzky and Thomas Fichtner, 33–46. Köln: Böhlau, 2005. Piotr Piotrowski even notes a nationalisation of modernism in Poland. Piotrowski, Piotr. “Modernity and Nationalism. Avant-Garde Art and the Polish Independence. 1912-1922.” In *Central European Avant-gardes. Exchange and transformation. 1910–1930*, ed. Timothy O. Benson, 312–326. Cambridge, Mass.: MIT Press, 2005.

⁸⁷ Syrkus, Szymon (22.06.1937). Syrkus über CIAM-Ost und die polnische CIAM-Gruppe, CIAM-papers 42 K, gta.

⁸⁸ Chmielewski, Jan, and Szymon Syrkus. *Warszawa funkcjonalna*. Warszawa, 1934; Malisz, Bolesław. “Functional Warsaw: a challenge from the past.” *Planning Perspectives* 2 (1987): 254–269.

⁸⁹ Vossoughian, Nader. “Mapping the Modern City: Otto Neurath, the International Congress of Modern Architecture (CIAM), and the Politics of Information Design” in *Design Issues* 22 (2006): 48–65.

challenges and chances in particular to the generation of young, modern architects.⁹⁰ For the authoritarian Sanacja regime established in 1926, the capital was one of the most prominent places to prove its legitimacy in solving pressing urban problems. The regime was prepared to provide vast resources, visible in huge planning bodies set up both on the city as well as on the regional level, to tackle these problems.⁹¹ While it was at the core of the idea of the functional city that it could be implemented in any place regardless of its specific conditions, the case of Warsaw and Syrkus's activity in CIAM demonstrates well how important and how complex the interplay between local, national and international factors was.⁹²

Using regional specifics, however, always entailed the danger of becoming trapped in one's region, of being reduced to it, of not having made achievements of universal relevance. By the second half of the 1930s, not only did the general political climate in Europe dramatically worsen, but the belief in the universality of the discourse on architecture and urbanism also vanished. When in 1938 the so-called CIAM-Ost was founded, this paid tribute to the special problems of the region in regional planning and housing – both areas in which Syrkus excelled before – and thus highlighted their significance, but the new organisation also meant loosening ties.⁹³

While the particular space of post-1918 central Europe so far has been described as a space of opportunities for a particular type of experts, one should not oversee its inherent limitations. Again focusing on the biography of Szymon Syrkus, this was certainly not the simple and one-dimensional success story of a gifted individual employing the specific chances offered in a specific political and geographical situation. Despite the striking career Syrkus made in CIAM, one should not overlook the obstacles he had to overcome and which, in part, were typical for the Polish setting during the interwar period. This was not restricted to seemingly trivial facts like the geographic distance to the centres of discussion, financial shortcomings or prohibitive visa-regimes, which were much more of a problem for him than for his Dutch or Swiss colleagues, for example.⁹⁴

At home, success was at best partial. Despite the apparent economic merits of their approach to residential design, the modernists were restricted to narrow areas to apply their theories, and by the mid-1930s they increasingly came under attack following the rise of cultural nationalism and the decline of the more technocratically oriented Sanacja regime.⁹⁵ A more folkloristic approach to architecture, popular from 1918 onwards in wide circles and also dominating parts of government-representation, increasingly gained ground in the 1930s and challenged Syrkus. This was due to the view that he was too closely connected with radical socio-economic and political movements. Hence, in a certain sense Syrkus and many of his colleagues failed precisely for the reasons which constituted their earlier success. Attempts to escape this situation through emigration to the USA already well before World War II failed, however. Despite all his success, Syrkus was far less in the limelight than

⁹⁰ Leśnikowska, Marta. *Architektura w Warszawie*. Warszawa: Arkada, 2005, 8–11.

⁹¹ Wynot, Edward D. *Warsaw between the World Wars. Profile of a Capital City in a Developing Land. 1918–1939*. Boulder: East European Monographs, 1983, 162–172.

⁹² Kuhn, Gerd. "Standardwohnung oder Individualwohnung. Zur Wohndiät und Choreografie des Wohnalltags in den 20er Jahren." in *Archplus* 158 (2001): 66–71; Beaugard, Robert A. "Writing Transnational Histories." in *Journal of Planning History* 4 (2005), 392–402.

⁹³ Giedion, Sigfried (12. Mai 1937). Nachfrage zur CIAM-Ost-Tagung in der Tschechoslowakei. CIAM-papers 42 K, gta. Misa, Thomas J. "Appropriating the International Style. Modernism in East and West." In *Urban machinery. Inside modern European cities*, ed. Mikael Hard, and Thomas J. Misa, 71–95. Cambridge, Mass: MIT Press, , 2008; Platzer, Monika. "Die CIAM und ihre Verbindungen nach Zentraleuropa." In *Mythos Großstadt. Architektur und Stadtbaukunst in Zentraleuropa. 1890–1937*, ed. Eve Blau, and Monika Platzer, 227–231. München: Prestel, 1999.

⁹⁴ See the many practical examples in: Syrkus, Helena; Syrkus, Szymon, Korrespondenz mit Steiger und Giedion wg. Vorbereitung La Sarraz 1936. CIAM-papers 42 K, gta.

⁹⁵ Plach, Eva. *The clash of moral nations. Cultural politics in Piłsudski's Poland, 1926–1935*. Athens, Ohio: Ohio University Press, 2006, 160–162.

Walter Gropius, for example, or the many other German architects who established themselves at American universities.⁹⁶

When the World War II broke out, the Syrkus couple formed the heart of an underground workshop working very productively on blueprints for the reconstruction of Warsaw until Szymon was imprisoned in Auschwitz in October 1942.⁹⁷ He survived the camp only because his Jewish background remained unknown to the Germans. Returning to Warsaw after the war, Syrkus strongly believed his moment to have come with urban tasks by far exceeding those of the pre-war period and a political regime in place which was much closer to his own inclinations than those before the war. However, in light of the regime's extremely rigid demands both regarding political loyalty as well as stylistic orthodoxy, Syrkus could only adapt for a brief period.⁹⁸ With the new regime's deliberate isolation also his international contacts ceased.⁹⁹ Sidelined regardless of ideological proximity to the new regime and a given willingness to conform to the new lore of socialist realism, Syrkus was eventually reduced to his university chair.¹⁰⁰

IV. The Spaces of Expertise. The (New) Mobility of Experts and its Limits in Central Eastern Europe

Given the complexity of the stories behind the two cases presented here, their discussion can only be cursory and only touch upon a couple of the problems at stake. However, if we try to generalise our findings, which are necessarily to some extent always specific to the analysed individuals, in addition to the general observations made in the introduction we can isolate at least four points that help to reconstruct transnational spaces in the first half of the twentieth century.

1. Experts relied on a complex relationship between national and international affiliations which they were well aware of and often intentionally employed.¹⁰¹ In a "new" state like Poland after 1918, eager to prove its legitimacy abroad, international references were often more attractive than in the "established" countries of Western Europe. This again translated into chances of gaining legitimacy from international contacts for experts like Czochralski and Syrkus. More so than in other states, the new successor states of the monarchic empires like Poland faced an immense pressure to meet the expectations of their citizens, who would always – or so it was assumed – compare the new entity with its predecessors. To a considerable extent, such expectations focused on what could be subsumed under fostering industrial modernity.¹⁰² As becomes apparent in the initial quotes, both for the experts in question and for state authorities, there existed an imagined European or even global context of

⁹⁶ Syrkus, Helena (17. Januar 1939), Brief an Gropius und Giedion wg. Planes der beiden Syrkus, in die USA zu gehen. CIAM-papers, 42 K, gta, On – eventually fruitless – attempts by Gropius and other CIAM-members to help the Syrkus-couple leave Poland see: Isaacs, Reginald R. Walter Gropius. Berlin: Gebr. Mann (2), 1984, 892.

⁹⁷ Syrkus, Szymon, prof. Szymon Syrkus listy z Oświęcimia dokumenty z okresu okupacji. MUW, III b 578/1-34 - 578/1-2, III b 599/1-18.

⁹⁸ Syrkus, Helena (12.05.1977). Klärungen zur Rolle der polnischen Gruppe in der CIAM. Steinmann-Papers, gta. See also: Gutschow, Niels, and Barbara Klain. Vernichtung und Utopie. Stadtplanung Warschau 1939 – 1945. Hamburg: Junius, 1994, 171–174. Syrkus, Helena; Syrkus, Szymon: "Planning and Housing in Warsaw. With particular reference to the Second Residential Group of the Neighbourhood Unit of the Warsaw Housing Co-operative, at Kolo (Warszawa)". In *Architect's Year Book* 3 (1949:55–64).

⁹⁹ For one of the last prominent international references to Syrkus's work see: Riesman, David. "Some Observations on Community Plans and Utopia". In *The Yale Law Journal* 57 (1947): 173–200.

¹⁰⁰ Aman, Architecture and Ideology, 173–175.

¹⁰¹ Geyer, Martin; Paulmann, Johannes (ed.) (2001): The mechanics of internationalism. Culture, society, and politics from the 1840s to the First World War. Oxford: Oxford Univ. Press; Eckert, Michael (2005): Strategic Internationalism and the Transfer of Technical Knowledge. In: *Technology & Culture*, 46, 104–131.

¹⁰² For the examples of Great Britain and Germany see Rieger, Bernhard (2005): Technology and the Culture of Modernity in Britain and Germany. 1890–1945. Cambridge: CUP (New Studies in European History).

comparison in which the new state had to prove its potential to live up to the demands of modernity. In this sense, international competition always also served to demonstrate national accomplishment.¹⁰³

2. For experts and scientists, state structures and institutions, state subsidies and also state control were and still are essential factors, since their fields of knowledge-production are often enterprises politically and financially contained within the boundaries of the nation state. At the same time, their achievements had to (and still have to) be measured against international standards. Thus, there is no simple dichotomy between a national and an international space – they are closely intertwined and overlap, since international space constitutes a space that is inert and only exists when activated by experts for knowledge-generating activities – like Czochralski and Syrkus did.¹⁰⁴

3. In this sense, the state played a role that is not easy to grasp for the experts in question. On the one hand, the state offered immense opportunities in particular in those fields critical for the development of modern nation states. The “competing modernism” of states provided experts with strong bargaining positions – particularly so in Poland. On the other hand, as the state was such a dominant factor, often substituting private enterprise or civil-society activities, experts faced particularly strong pressure in many respects. Only at first glance paradoxically, these experts were vital and instrumental in the very development of an ever more potent state which curtailed its experts and at the same time offered them influential positions. This dichotomy is strongly reflected in the biographies of the two experts examined here. At first glance, it is striking how virtuously Czochralski and Syrkus grasped the opportunities of a dramatically altered situation. Their backgrounds, international “by default”, helped them to make their names and careers at a very early stage and in a situation that lacked established expert structures. The rupture of 1918 was apparently far less of a cesura than an opening up of new opportunities. Still, the breaks and cesura inflicted by the political developments left a strong mark on both. Not surprisingly, this is certainly the case for World War II, but also for the establishment of the communist regime in Poland after 1945. The Cold War to a large extent inhibited the international contacts both protagonists relied upon so strongly before 1939. The intensified demands for loyalty exceeded those of the nation state of the 1920s and 30s and virtually destroyed the bargaining positions Czochralski and Syrkus had secured for themselves even under very difficult conditions. While Syrkus’s dream of finally being able to realize his grand designs were shattered very early on and he was reduced to a secondary position, for Czochralski there was no continuity at all after 1945. For him, the experience of failure coincided with the end of Poland as he had known it. In both cases the historical breaks are – not only negatively – inscribed into their biographies in a much stronger way than in the cases of the vast majority of their Western colleagues. In this sense, one could even argue that collective biographies of experts were more pronounced in the region we discussed.

4. Returning to the question of transnational spaces, it is safe to say that there were several spaces in which the experts in question acted, and where space(s) mattered for knowledge production.¹⁰⁵ One example on the local level is the laboratory which for Czochralski may very well have been the most important space in which he could conduct his research. However, the local space depended on other spaces: Czochralski worked differently in his laboratories in Germany and in Poland, depending on his colleagues, money, equipment, state subsidies and social life – in short the structures and dispositions to which he adapted.¹⁰⁶ Syrkus’s success both at home and abroad depended to a large extent on his understanding of the rules that governed these two spaces and on his clever combining of them.

¹⁰³ Somsen, *History of Universalism*, 366.

¹⁰⁴ *Denationalizing science*, 36.

¹⁰⁵ Livingstone, David (ed). *Science, space and hermeneutics*, Stuttgart: Steiner (Hettner-Lectures 5) 2002.

¹⁰⁶ On this phenomenon see Szöllösi-Janze, Margit (2005): *Science and Social Space: The Transformations in the Institutions of Wissenschaft from the Wilhelmine Empire to the Weimar Republic*. In: *Minerva*, 43, 339–360.

The particular space-time-constellation of the new Poland – the newly emerged state that needed them as experts – turned out to be of great importance for both of these experts. In Poland from 1918 onwards, they found the opportunity to experience the nation as one territory, a territory where “identity space” was tantamount with “decision space”,¹⁰⁷ a territory where technological progress and industrialisation could be experienced within the frame of sovereignty.¹⁰⁸

Being a successful expert in the newly emerged Poland within this framework of overlapping international and national space also implied, and here we are returning to the initial citations, filling a certain space. In this space, the topics that moved the nation since the partitioning of Polish lands, the topics of fruitless uprisings, of backwardness, self-defense and catching up, were overcome in favor of a discussion on technological progress and technocratic visions for Poland of the sort that Czochralski and Syrkus envisioned. They were thus able to mobilise public support for their programmes that supposedly no longer followed old paths and old ways of thinking. Within this construct, to which other experts and scientist in Poland adhered as well, not only was nature to be controlled by technology, but the so-called national character (presumably with a disposition to romantic and mystical thinking) also had to be overcome in the New Poland. This was the kind of performative space experts such as Czochralski and Syrkus could fill brilliantly on the path to modernity they envisioned for Poland.

¹⁰⁷ Maier, Charles. “Transformations of Territoriality 1600-2000”. *Transnationale Geschichte. Themen, Tendenzen und Theorien*, Budde, Gunilla; Conrad, Sebastian and Oliver Janz (ed.), Göttingen: Vandenhoeck & Ruprecht, 2006: 32-55, 35, 48.

¹⁰⁸ To what degree this constituted a particular experience of modernity in Poland would be another question worth discussing. Eisenstadt, Shmuel Noah (ed.) (2002): *Multiple modernities*. New Brunswick N.J: [u.a.] Transaction Publishers.

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