Taking Better Care of the Fields:

Knowledge Politics of Sugar Beet, Soil, and Agriculture after Socialism in Western Poland

by

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I dedicate this work to my parents, Won-sik Kim and Young-ok Ryu, who supported me with love and patience. This work is also for my late father-in-law Yong-ho Cho, who believed in our choices, and my mother-in-law Young-hee Kim. I also thank Sumi for her caring patience and Hajin for letting me use his own room when I needed space to work. There will be a time when I can return the favor.

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Preface

So it is only out of symbols that a new symbol can grow. Omne sumbolum de sumbolo. A symbol, once in being, spreads among the peoples. In use and in experience, its meaning grows…

- Charles S. Peirce (1893), "The Art of Reasoning"

I have spent most of my life in Korea. I went to college there, and served in the military for two years after my sophomore year. When I returned to finish my undergraduate degree, there was a popular song among students and workers active in the labor movement. It was a time when there was still a sense of solidarity between the leftist student movement and the workers' movement, and it turned out that this very song was a Polish song. It was titled "Ballad of Janek Wiśniewski" (*Ballada o Janku Wiśniewskim*), an epic about a young worker who was shot during a street battle between striking workers and the police in Gdańsk in 1970, and was later featured in the well-known movie Man of Iron (*Człowiek z Zelaza*), directed by Andrzej Wajda.

In Korea, people are quite aware of the history between Poland, Russia, and Germany, because there was a tearful story in the Korean middle school reading textbook. It told the story of language education in Congress Poland under Russian occupation, featuring Maria Curie-Skłodowska, who had to speak and read Russian in front of Russian examiners, because she was the most proficient pupil. I am still not sure how this story from a socialist country found its way into Korea, but of course there was a pedagogic lesson to absorb, about the critical role of the mother tongue and its

importance to the national spirit, no matter what nation and which period of time in history. This post-colonial education was overloaded with national pride in Korea after coming out of Japanese colonization, and forms a parallel with the sense of pride that people in Poland maintain about the nation's history.

The reason that this Polish song had such an impact on me was because I remember some scenes of Gdańsk on TV from my childhood. I was living in Vienna at the time, and I had the opportunity to watch news on TV with General Jaruzelski and Lech Wałęsa on one report and the mass killings of civilians by the military junta in Gwangju, South Korea on another. Within these images of violence, the second world and the third world were presented in a similar tone and voice in the so-called first world. Supported by the Soviet Union and the United States, both governments created an atmosphere where violence was justified from either side, as a way of governing as well as resisting. Anti-communist nationalism, along with foreboding post-cold-war conservative right-wing nationalism, provided a counterweight sustaining national pride within neocolonial situations in both countries. The role of the church during these times in both countries was another thing in common. I was born and raised Roman Catholic in Vienna and in Seoul, where being Catholic meant something different than in the U.S. or Poland, with socially and politically active and engaging Cardinals Franz König and Stephan Soo-hwan Kim. In the context of South Korea in the 1980s, being Catholic meant for me to be progressive in political and social matters, and against the military dictatorship. The Catholic Church in Korea was instrumental in rediscovering the truth about the brutally oppressed Gwangju Uprising by holding photograph exhibits, which led to an earnest investigation, rehabilitation, and ultimately to a rewriting of history

textbooks. Given the circumstances, it was not a surprise that I became interested in liberation theology and Marxist dependency theory.

This Cold War experience of mine from different places shaped my perspective on post-socialism and the post-Cold-War changes in Europe and East Asia. It is from this viewpoint that I try to integrate post-socialist studies, mainly focused on Russia and east European countries, and studies in post-colonial economic development, the perpetuation of global inequality, and the global north-south divide. Working in Europe and writing about Europe poses challenges because many theoretical constructs based on European historical experiences drag along a sense of exception, particularity, or even abnormality in non-European settings. The unquestioned normalcy lies with this unspecified so-called "Western Europe," where, ironically for Poland, Russia and Germany are deviations from standard models of industrialization and democratization. After the Cold War, many scholars in Poland have claimed that Poland has returned to this so-called Western Europe. However, from my viewpoint, this is not a question about Poland being truly western or not. This discourse gathers and channels attention towards Western Europe as a standard to follow, and by doing so to reproduce a worldview based on occidentalism. The European Union, in this perspective, is a structure that reproduces occidentalism by welcoming new member states with a patronizing adjustment process, and by fomenting discourses about a stereotyped Europe and a stereotyped non-Europe in the new member state.

With my dissertation, I wanted to contribute to reflections on the global contexts and implications of Poland's claim of European identity, and the effects and meanings of the European Union for the new member states. However, distancing myself from other

identity-centered ethnographic and historical approaches, I addressed this question through the lens of landscape, agriculture, and food production, and how these form a part of global exchange and trade. What started initially as a project on privatization of sugar factories and restructuring of the countryside became a broader exploration of agricultural science and changing standards. Through an examination of these themes, I contemplated the politics of comparison, the role of success stories in neo-liberalism, and the weight of the past, which becomes enacted and performed to open new meanings in the present.

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ANR (Agencja Nieruchomości Rolnych, Agency for Agricultural Realty)

ARiMR (Agencja Restrukturyzacji i Modernizacji Rolnictwa, Agency for the Restructuring and Modernization of Agriculture)

ARR (Agencja Rynku Rolnego, Agency for the Agricultural Market)

CAP (Common Agricultural Policy)

EU (European Union)

KGB (КГБ, Комитет государственной безопасности, Committee for State Security, 1954-1991, Soviet Union)

KSC (*Krajowa Spółka Cukrowa*, National Sugar Company, Holding Company of the Polish State Treasury)

PHARE (Poland and Hungary: Assistance for Restructuring their Economies)

PKWN (Polski Komitet Wyzwolenia Narodowego, Polish Committeee of National Liberation, provisional government of Poland sponsored by the Soviet Union in 1944)

PRL (Polska Rzeczpospolita Ludowa, *People's* Republic of Poland)

SAPARD (Special Accession Programme for Agriculture and Rural Development)

WTO (World Trade Organization)

Pronunciation Guide (Polish)

a - a as in f**a**ther

ą - nasal a as in wr**ong**

e - e as in b**e**d

ę - nasal e as in v**an**

i - short e as in **ea**t

o - o as in w**a**lk

ó, u - short u as in b**oo**t

y - e as in ros**e**s

c - ts as in ca**ts**

ci, ć - tshi as in **che**er

ch, h - ch as in lo**ch** (Scot.)

dz - dz as in be**ds**

dź, dzi - j as in **je**ep with d beginning

j - y as in **y**es

ł - w as in **w**ay

ń - nasal n as in ca**ny**on

r - rolled r like in Italian or Spanish

ś - sh as in **sh**e

sz - sh as in **sh**ore

w - v as in **v**ase

ź, zi - j as in **je**ep

ż, rz - j as in vi**si**on

Abstract

After Poland joined the EU in 2004, the Polish sugar industry had to close down 59 out of 78 factories as a result of the European sugar reform following a WTO dispute with cane-sugar producing countries. This dissertation examines this process together with the earlier privatization of factories and changes in quality control and agricultural technology in the province of Wielkopolska in Western Poland. I argue that the driving force behind the privatization process was the politics of comparison within the EU and the aspirations of local farmers for recognition as equal partners with Western farmers, and the farmers' perception of dutiful nurturing towards crop and soil.

Using the concept of assemblage to trace the interaction between agricultural knowledge and practice in different thought styles, and as a narrative strategy to integrate agency and materiality, local politics and social memory, as well as post-socialist transformations surrounding those changes, I explore the ways new knowledge from the West is constructed as modern and more scientific but at the same time subject to local adaptation. Polish farmers try to produce sugar beet of matching quality by using modern scientific knowledge in farming and employing technologies of self-presentation as rational farmers or farm managers to prove that they are equally modern. They use new ways of interpreting visual signs in everyday farming – the aesthetics of fields, the quality of sugar beet, the use and care of agricultural machines.

The use of numbers in the form of statistics and arithmetic allow farmers to visualize and calculate soil nutrients and costs, and provide a means of comparison with beet farmers in other countries as well. In contrast, less visible qualities of the soil such as less calculable physical and biological qualities were not so palpable unless there was a problem. These farmers are neither consistently conforming nor steadily resistant – they are rather good at performing defiant confidence while having doubts, and performing ambivalence when they already have made up their minds. They try to overcome uncertainty with their own sense of independence by focusing on nurturing and taking care of their crops and the soil.

Chapter I

Introduction:

Sugar Beet and the Making of Modern Continental Europe

This dissertation is about the role of sugar beet in the making of modern Europe as a global industrial crop in competition with sugar cane, and more specifically, the meaning of sugar beet cultivation in the context of post-socialist privatization and socio-economic transformations in Poland, and Poland's accession to the European Union (EU). The cultivation of sugar beet and the industrial production of beet sugar in the nineteenth century contributed to the formation of ideas of national economy and industrial development, and thus played a significant role in nation-state building in modern Europe. Particularly in Poland, which developed as the granary of Europe in the early modern period, beet sugar manufactory was envisioned as a possible path to economic development based on the existing land ownership structure of agrarian estates. During socialism, the self-subsistent production of sugar was propagated as an indicator of independence and level of well-being. However, sugar beet cultivation and sugar production has been recently reduced in Poland and Europe after an extensive reform of sugar market regulations following a WTO dispute settlement in 2004 between the EU and major sugar cane producing countries which had filed an appeal against EU subsidies on sugar prices.

This rivalry between sugar beet and sugar cane has been there since beet sugar production started to become a viable industry in the late nineteenth century, and overly

competitive trade barriers to protect the beet sugar industry in European countries led to the regulation of the global sugar market at the Brussels convention in 1902. In this light, the privatization of beet sugar factories in Poland after the fall of the socialist regime is not merely a phenomenon of post-socialism, but has a deeper history of industrialization and modernization in Central Europe. Moreover, even though post-socialist transformations and the expansion of the EU have been tightly knit together in Central and Eastern Europe, the end of the Cold War itself had wider, global implications on international politics and trade. The closing down of fifty-nine out of seventy-eight beet sugar plants, leaving nineteen operative plants in Poland (as of 2009) after privatization between 1995 and 2003 and European sugar market reform in 2004 has to be seen in this light and with a deeper historical perspective.

In this project, I ask how global dimensions of post-socialism and local transformations in Poland converged, and how the local population perceived and understood these changes. For the global dimension, I focus on changes in the global sugar market and the competition between countries that grow sugar beet and those which cultivate sugar cane. Local transformations and responses will be examined among farmers and agricultural experts in the province of Wielkopolska in Western Poland, where the privatization of sugar factories took place over one decade beginning in the mid-1990s. With this approach, I aim to capture both the political economy of global changes and the cultural significance of these changes in a specific region in Poland, which shows the manifold implications of geographic location, regional politics, and memory in constructing local identity in a self-identified borderland to the European periphery during post-socialist transformations. I specifically focus on the way sugar beet cultivation was presented as a shared European tradition from both sides – the privatizing German company and local employees and beet planters – and the way European policy and regulations were perceived from the local perspective. Based on these examinations, I argue that the idea of Europe as a shared heritage and the perception of equality and

moral economy based on comparisons with people in neighboring countries is the most important mechanism that constitutes regional and European identity in the EU.

Figure 1. Political Map of Poland, 2000. The borders of the province Wielkopolska are marked in red. For the full map, see Appendix 1. Central Intelligence Agency (Public Domain, http://www.lib.utexas.edu/maps/poland.html).

For farmers in Western Poland, the meaning of Europe and what they think the EU represents varies dramatically. Some think that the EU is a political front of West European countries, which put pressure on Poland for their own benefits in trade and matters of regional security. The European sugar market reform that included gradual reduction of sugar production was see in that light, too. Others see in the EU a chance to make money by taking advantage of so-called structural funds and subsidies provided by the EU, or by choosing to diversify crop production and target the European market. In contrast to private farmers, commercial farm managers regard the role of the EU as

enabling the survival of small-holders who are not fit enough to do so in a market economy. However, what is widely shared and agreed on is the fact that Poland has always been a part of Europe. Contrary to the popular notion of Poland's "return to Europe" (Sachs 2006:113), Poles in Western Poland do not believe that the restoration of normalcy after socialism can be expressed in those terms. Especially now that the EU has come to stand for Europe, they harbor ambivalence about Europe and European identity, and feel tensions between local traditions and European identity, which is inherent in the supranational idea of Europe itself (Delanty 1995).

Thus, for farmers and farm managers in Western Poland, Europe is a floating signifier that leaves room for interpretation and contestation. They have doubts because of the indeterminate meaning of Europe, but are in a position where they have to act before they can conclusively change their doubts into beliefs. The daily life has to go on and farming tasks have to be taken care of in time regardless of other circumstances. In contrast to the so-called *Eigensinn*, the workers' stubbornness and sense of autonomy against managers and machines (Lüdtke 1993), farmers have to develop their own sense of independence and constancy against the fluctuating market and the growth of living plants and animals. Even without finalized goals or notions of Europe, the urgency of feeding and taking care of the fields takes over in their everyday life. I argue that it is in the everyday encounter with crops, soil, and machines that farmers formulate their ideas of Europe, as they perform as European farmers in front of others and interact with material objects on the European market. Imagining a European audience for their performance and the constant comparison with farmers in neighboring countries motivate them towards recognition as a worthy peer in the EU.

However, adopting new technology from the West cannot be seen simply in terms of conformity or resistance to the EU. Although there is a local tendency to use the EU as a blanket term for everything from the West, especially Western companies that privatized local factories as fronts of investment capital of an invasive EU, the very notion of resistance is a contested one among the local population. For example,

privatizing the sugar factories was at the time the only possible way to keep sugar production going and beet planters to get paid without disrupting the next sowing season and the long-term system of crop rotation on farms. Those who are against privatization complain that Western companies are gradually taking over viable branches of the industry of Poland, including those which provide daily food. Still, it is true that the privatization of the sugar factory has brought about improvement in productivity thanks to the sharing of knowledge and technology transfer from a German research network. In the case of commercial farms, it is not so much technology but ownership of the company that matters to local people, and the tendency of faster technology adaptation in commercial farms with Western capital often eludes local discourse on privatization.

In this respect, agricultural knowledge and farming technology become everyday practices imbued with political meaning, historical tradition, and national identity in the present-day EU. However, if there is contestation, the front line is not clear-cut into opposite camps of pro-EU-progressives and conservative euro-sceptics, as frequently described in the politics section of newspapers. There are multiple groups of actors who participate in this body of knowledge and share farming technology from different positions with varying agendas. Most visibly, farmers, farming managers, agricultural advisors, administrators, and researchers comprise an extremely heterogeneous thought collective. These groups form a thought collective in the sense that they are not a fixed group or social class but represent instances where "two or more persons are actually exchanging thoughts (Fleck 1981[1935]:102)." Among themselves, they distinguish different thought styles but simultaneously share a certain thought style concerning crops and soil, and even across different thought styles, they know their differences very well thanks to incessant conversations across thought styles. Their view of European politics does not always coincide with their position within the thought collective, although the politics of comparison within Europe influences their attitudes and activities. Seen in this manner, the ideas of thought collective and thought style are more resilient and suited for

synchronic analysis than the conventional idea of paradigm in science, and can also highlight the relevance of non-specialist practitioners in science and technology.

To capture the layered and overlapping multiplicities in the realms of agriculture, science, and politics in Wielkopolska, I will use the more inclusive concept of assemblage to expand my analysis to the realm of material objects and materiality, while still emphasizing the mechanisms of distinction, comparison, and shared intentionality that bears out of Ludwik Fleck's concepts of thought collective and thought style. For Deleuze and Guattari, an assemblage does not stand for but is in itself multiplicity, and while it does not contain ideological coherence, it "necessarily acts on semiotic flows, material flows, and social flows simultaneously" (1987:4, 22-23). In this vein, I employ assemblage as a theoretical framework and a methodological guideline to envision and narrate the complex material and semiotic relationships surrounding sugar beet cultivation and beet sugar production. It is a vehicle for a narrative that encompasses past memories and present conflicts, one that overcomes dichotomies without avoiding politics, and is still firmly grounded in the materiality of objects – in this case, the crops, the soil, and machines that engage in sugar beet cultivation. The material qualities of crops and soil, and in turn, tools and machines provide the pivotal ground for this assemblage and maintain its existence. While any crop or any other material object could serve as the basis of an assemblage and the spheres of multiple assemblages could largely overlap conceived in this way, I would argue that the assemblage around sugar beet cultivation in this region provides a particularly crucial connection between the process of privatization, changing structure of land ownership, and land use in terms of crop rotation and environmental considerations, which represent a unique opportunity to trace post-socialist transformations in agriculture and environment in Europe within a larger context of global agriculture and sugar production.

The sensibility of comparison within Europe is firmly embedded in perceived difference in economic development most noticeably in consumption (Fehervary 2002). In Poland, this perception forms the basis for criticisms of European agricultural and

environmental policy. As farmers and farm managers in Wielkopolska adopt new technologies from the West and start to comply with European environmental standards, they perceive the European Union as both enabling and limiting. Farming subsidies have helped them to keep a positive balance in a fluctuating market, and better production levels in the West made them work harder to improve farming. On the other hand, they feel that European policy was designed to keep them at a certain lower level in comparison to their Western neighbors, who had benefited from the long-time support of agricultural subsidies, low fertilizer prices, and relatively loosely controlled use of herbicide and pesticide. For most of them, socialism represents a period of time that they lost or wasted, making them miss those possible benefits as Europeans, which would have led to better living standards and a stronger economy. Many of them, following the general trend in Wielkopolska and Poland in general, think in terms of catching up with the West when they discuss their motivation and goal for improvement.

In a sense, this constant comparison with an idealized West is not a peculiarity confined to post-socialism or to Eastern Europe (Coronil 1996; Chakrabarty 2000). For example, the Sonderweg thesis in German history discussed the absence of a concurrent dual revolution, industrial and political, found in English and French models. The idealized West has also played a role in the anthropological theory of gift exchange, which provided the basis for categorizing gift societies and commodity societies (Carrier 1995). What makes comparison with the West peculiar in post-socialist Eastern Europe is that it bore out of high expectations of Western-level prosperity and Western-style democracy right after the fall of socialism and the resulting rapid disillusion, what Svašek (2008) refers to as the ‘morning after’ effect, as reforms towards capitalism took place and the seemingly unified dissidents started to crumble. This so-called myth of the West took the concrete form of a great illusion with high expectations of land restitution in Transylvania, Romania (Verdery 2003:364). In this regard, expectations took a more realistic and quotidian form in Western Poland due to the co-existence of state-owned land and private ownership of land. Comparisons with the West in this region have more

relied on the proximity to the border and close historical connections to the West. Because this area constituted the borderland between Prussia and Russia from 1793 to 1918, there is a strong awareness of German domination before World War I and occupation during World War II, as well as a sense of pride from the fact that the Polish population persevered through Prussian colonization efforts at the turn of the century. Viewed as the meeting point of four different ethnic cultures (Polish, German, Jewish, and Russian) in the past century, this area is often imagined as the liminal borderland with the East, rather than a cultural inland border such as the town of Kella in East Germany (Berdahl 1999).

From this borderland's local perspective, Polish tradition and European modernity are not opposed to each other or put in a straightforwardly hierarchical relationship (see Svašek 2008). Nor are the two interconnected strains framed in terms of "dual lineage," a combination of Polish spirit and European technology (Manning and Uplisashvili 2007:632). Rather, I would suggest that tradition and modernity are intertwined in a complex way reflecting the ambivalence of Poles towards Europe. What is traditionally Polish is by definition claimed as European, creating an overlap between tradition and modernity, while things European and yet foreign to Polish tradition are either immediately recognized as foreign, or recognition and judgment is indefinitely deferred. In such cases, the deciphering of material objects and elements, as well as the performance of participants and other situational variables influence the outcome of identifying something as ours, European, or completely foreign. Furthermore, the word tradition (*tradycja*) is reserved for abstract customs or rituals worth keeping and reproducing, and is rarely mentioned when it comes to agricultural technology. As I will describe in chapter 2, traditional agricultural technology is more often framed in terms of wisdom (*mądrość*) or vision (*wizja*) of pioneers than in terms of national tradition. To a certain degree, what is a tradition is by definition already assumed to be full of national spirit and widely shared and practiced. In this respect, new technologies or new agricultural knowledge does not breach the integrity of tradition, and thus allows room

for actors in agriculture to explore and experiment without the burden of carrying on older methods.

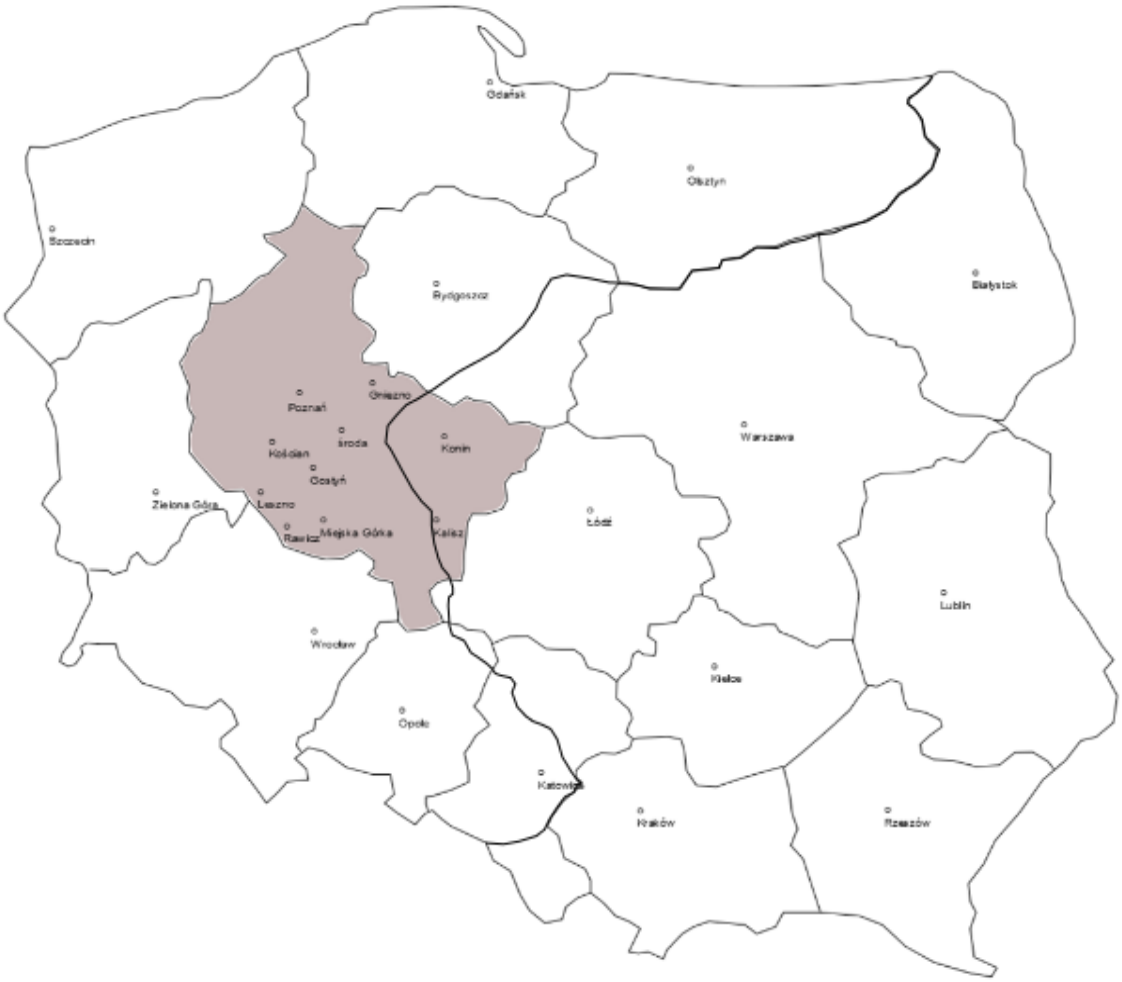

Figure 2. The Location of the Voivodeship of Wielkopolska in Poland. Old Border Marked across Present-day Poland, between the Grand Duchy of Posen (Prussia) and the Kingdom of Poland (Russia) (1793-1918).

This open-minded attitude towards new technology, the overlap between tradition and modernity, and strong claims of having a share in European modernity are more noticeable in the Western region of Poland. The distinction between Western and Southeastern Poland is a politically and culturally charged one, with implications of difference in economic development and living standards. The gap between former partitions is made visible in material form with the use of maps showing dense train

networks in the West and sparse networks in the East, or colored maps with election results showing pro-European trends in the West and right-wing nationalist support in the East. The locally propagated view that Wielkopolska constituted the borderland with the East and is now one of the most advanced parts in Poland comes with the consequence of producing Orientalist gazes on other regions in the East (Brencz 2007; Schmidt 2007).

Figure 3. Western Poland as Prussian Poland (Province of Posen), 1900 (Courtesy of the Clark Map Library, University of Michigan). For the full map, see Appendix 2.

This regionalism is nevertheless linked and intertwined with nationalist ideology through one specific notion of patriotism, which defines anyone who excels in his or her job as a respectable, decent (*porządny*) Pole.[1] This idea, in turn, provides the basis of categorizing people, communities, class, and regions, according to their attitude and achievement, which reinforces the aforementioned regionalism. In the end, this logic

[1] In colloquial Polish, farmers often use the phrase *dość porządny gość* (a guy decent enough) to express their approval of a person.

supports national identity and regionalism at the same time, giving rise to the contested question of who represents a more desirable patriot, as well as mutual categorization, fission, and fusion within the nation depending on concrete themes, events, or occasions at hand.

Against this background, there is a closely knit relationship between persons, material objects, and evaluation of success among farmers in Western Poland, and certain rules for deciphering how the state of cultivated fields, work performed on the fields, and harvested crops convey meaning and indicate what kind of person the farmer is. In contrast to the limited resources and possibilities in private farm households during socialism, there are more possible choices in the market economy and more decisions to make on questions of what to produce and how to do it. In this respect, means of production in agriculture constitute epistemic objects which make new ways of farming not a matter of learning but a process of becoming proficient in farming with new things (Knorr Cetina 1999, 2001). The visible part of the soil, crops on the field such as sugar beet, and machines working on the field provide material and visual clues about the farm, farmer, or farming manager, and how they combine older and newer ways of farming subject to evaluation by neighbors and other observers. When the crop is delivered, the indexical relationship between movable crops, immovable soil, and the delivering farmer contribute to the recognition of good and able farmers, and reinforce the relationship between producers and quality managers at processing mills and factories.

The relationship between material objects and persons and the production of meaning in that relationship have a peculiar dimension of uncertainty in post-socialist transformations. The ways crops are delivered, and the way quality management works as a form of discipline to the farmers, have changed the meaning of resources and material objects. The image of a desirable farmer or person is obscurely defined in terms of success, and uncertainty and risk force the farmer or farming manager in today's Europe to make decisions similar to a fund manager in a stock market. For private farmers, competing as an individual, the danger of risk, and the feeling of alienation have been

there all along. The difference according to them is that during socialism, they had money but there was a lack of goods in the shops, and nowadays, they do not have enough money for all the goods stocked in shops.

Still, as much as a successful farmer is appreciated as an individual, there is at the same time a sense of moral economy among farmers as well. Farmers or farming managers in Wielkopolska find themselves under the pressure to achieve, while looking to their local peers as non-conforming as possible to the standards and requirements of the EU. They sometimes have to improvise, sometimes with illicit means (*kombinować*) to get things done, or arrange certain affairs and things (*załatwić sprawy*, Wedel 1986:104) through personalized connections (*znajomości*, Dunn 2004:119). Private farmers have a strong sense of individual households because they maintained their farms almost as self-sufficient economic units during socialism. Still, farmers and their family members have multiple roles to play in the local community, and as helping hands in their own households and those of relatives. Although they stay as much "embedded" (Dunn 2004:87) in social networks as before the transformations, it is difficult to maintain that there are changes in how a person is perceived in rural Poland, especially because the descriptive vocabulary among farmers stayed the same. What has changed visibly among farmers, I would suggest, is the way they present and represent themselves in different situations and in front of different audiences (Goffmann 1959). As they became aware and conscious of the European gaze, they have started to return it with comparison, ambivalence, anxiety, and performed confidence.

Post-socialist Transformations, Land Restitution, and the Privatization of the Sugar Industry in Poland

In Polish agriculture, private ownership of land not only survived collectivization at the beginning of socialism, but had been dominant in Polish farming until the fall of

socialism. In 1989, private farms possessed 76.2 percent of farmland, and accounted for 78.9 percent of the total agricultural production.[2] The private sector was put at a disadvantage regarding support and distribution of resources in socialist planning and policies, but still played a significant role in the everyday livelihood of people who had to deal with the shortage economy (Hann 1985; Wedel 1986; Nagengast 1986; Rostowski 1989).

This peculiar situation provides the background as to why the restitution of land evokes different connotations and expectations in Poland than in other countries in Eastern Europe (see Verdery 2003). Restitution does not have to do much with collectivized land but rather more with former estates of the nobility, monasteries, and the Catholic Church. This is because socialist agriculture in Poland began with land reform that abolished the class of large landowners. In August 1944, the Polish Committee of National Liberation (PKWN) confiscated large estates exceeding 50 hectares (100 hectares in the Western territories including Wielkopolska) and redistributed the land to peasants in exchange for one year's average harvest (around 750 kg of rye) payable in installments of ten (for small-holders) to twenty years (for landless peasants).[3] Until 1946, the land was only slowly redistributed among the rural population, which received three to five hectares of land per household. In the so-called recovered lands (*Ziemie Odzyskane*, Western territories regained after World War II), the parcellation process was particularly ineffective because many landowners still resided on their land. The majority of these large estates, starting with those that belonged to German landowners, were transformed into state farms (*Państwowe Gospodarstwo Rolne*, PGR), starting in January 1949.

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[2] Rocznik Statystyczny 1990.

[3] *Dekret Polskiego Komitetu Wyzwolenia Narodowego z dnia 6 września 1944 r. o przeprowadzeniu reformy rolnej* (Decree of the Polish Committee of National Liberation of August 6, 1944, on the implementation of rural reform) (*Dziennik Ustaw* 1944 nr. 4 poz. 17). The price of land (15 metric centners of rye) was based on third class agricultural land, and as specified in the Decree, had to be converted according to the class of land.

Attempts at collectivization of private land to cooperative farms between 1948 and 1956 failed. Already in 1953, the Party officially acknowledged that collectivization had failed, allegedly due to "deep elements of capitalism on the countryside," although Korbonski suggested that it was more because it was an economic failure in terms of performance and productivity (Korbonski 1965:220). In light of how agricultural workers remember their life and benefits as workers at PGRs in the 1970s, and the nostalgia associated with it (Szpak 2005), Korbonski's early verdict has to be taken as a perspective from the Western side of the Iron Curtain. Collectivization in Poland came to a halt when the Party declared in 1956 a resolution on the abandonment of the collectivization policy, followed by the immediate dissolution of most collective cooperatives. Even in 1956, only 9 percent of arable land was administered in cooperative farms (Roszkowski 1992:215). After the abandonment of collectivization, the number of cooperatives decreased from 10,200 to only 1,700 during a one-year period (Landau and Tomaszewski 1985:262), and the area belonging to cooperative farms decreased from 1.9 million hectares in 1955 to 260 thousand hectares in 1957 (Roszkowski 1992:250).

In the so-called Gierek period between 1970 and 1980, private farming was unofficially acknowledged while officially repressed. After 1972, private farmers were freed from compulsory deliveries and were offered incentives for specialization in sugar beet or pig and cattle husbandry for sugar, bacon, and dairy export, although the inheritance and sale of private land was severely limited by state policy. Smallholders were encouraged to cede their land to the state in exchange for a retirement pension usually inaccessible to private farmers. In addition, the State Land Fund (*Państwowy Fundusz Ziemi*) prohibited the sale of land to private farmers. As a result, between 1976 and 1980, arable land belonging to private farmers fell from 71 percent to 68 percent (Roszkowski 1992:340). However, Gierek's industrial policies led to the accumulation of foreign debt, which the regime tried to offset with agricultural export in the midst of a decrease in overall agricultural production (Curry 1984:269). The resulting food shortage

led to the crisis in early 1980, which gave rise to strikes and the formation of the free labor movement under the name “Solidarity.”

The legality of the 1944 decree has been questioned since the fall of socialism in 1989, together with the legitimacy of the socialist regime itself and the way it seized power in Poland. Post-socialist governments, especially right-wing governments, had a hard time dealing with the contradiction of being unable to repeal the 1944 decree while disputing the legitimacy of the PKWN as a form of Polish government and defining it as a foreign (Soviet) occupation force. The realistic inability of the government to compensate former owners in the process of restitution was a frequently cited reason for deferring complete restitution and the referral of individual cases to the courts. Critics pointed out that it was rather the unwillingness to tackle the problem than the inability of governments which posed the biggest obstacle in resolving issues of land reform and the nationalization of industry. Moreover, in 2001, the Constitutional Tribunal (*Trybunał Konstytucyjny*) declared that it could not rule on the legality of the decree, because even though the PKWN as a state apparatus lacked democratic legitimacy, the decree provided the basis of legal property relations to the present day.

The majority of agricultural land of former state farms is still under the control of the State Treasury via the Agency for Agricultural Realty (ANR, *Agencja Nieruchomości Rolnych*), which accounted for 2.1 million hectares of arable land in 2011. Around 75 percent of this land is leased out for cultivation by commercialized farms (former state farms), which are likewise owned by the Agency. ANR auctions off land through its branches in each province, contributing the proceeds to government revenue. For example, in the year 2010, ANR sold 965,000 hectares of land for 980 million PLN (ca. 312 million USD). According to the report of the ANR, mainly farmers and current lease-holders participated in auctions to purchase land. Lease holders at the time of auction

have priority rights for acquisition.[4] The auction price varies according to the region and the class of agricultural land, but the average ANR auction price is formed on a lower level than the average market price for agricultural land in general, still reflecting the difference of price levels between provinces (see Figure 4).

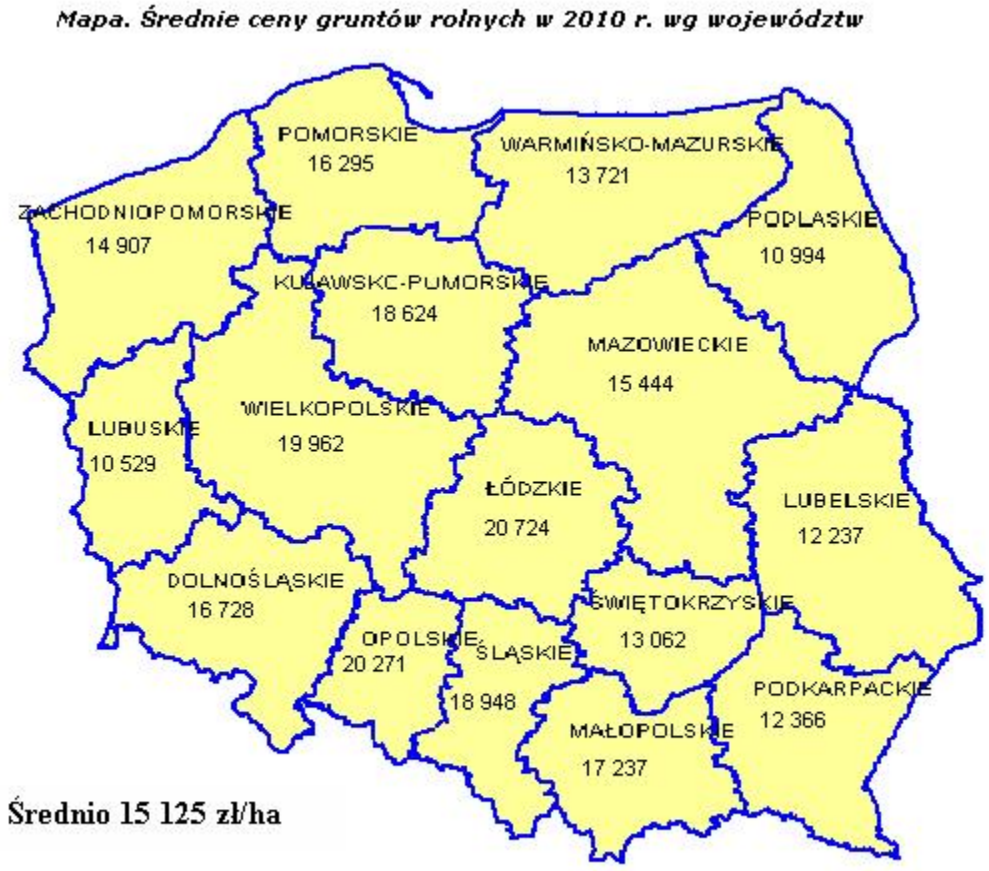

Figure 4. Average Sale Price of Agricultural Land Auctioned by the Agency for Agricultural Realty in 2010 (PLN) (http://www.anr.gov.pl/image/journal/article?img_id=63350&t=1301995172000)

Foreigners who want to purchase real estate in Poland are required to receive a permit from the Minister of Internal Affairs (*Minister Spraw Wewnętrznych*), according

[4] *Ceny gruntów rolnych wyhamowały* ([Rising] Price of Agricultural Land Brought to a Stop). April 5, 2011. News of the ANR (http://www.anr.gov.pl/web/guest/biuro-prasowe/rzecznik).

to the statute law of 1920 on obtaining land by foreigners.[5] In 2004, with EU accession, the permit requirement ceased to apply to nationals from the European Economic Area (EEA, EU plus Iceland, Norway, and Lichtenstein). However, a permit is still required for the purchase of agricultural and forest land by foreigners for twelve years after accession (until May 2016), unless the foreigner in question has resided, leased, and pursued farming in person on the land concerned for a minimum period of time (three years in central and eastern provinces; seven years in western and northern provinces). The permit requirement also applies when a foreigner obtains controlling shares in a company which is the legal owner or perpetual usufructuary of real estate. This rule had ramifications in the privatization process of sugar factories, as we will see in chapter 3.

Industry is less fraught with such historical and judicial problems in comparison with agriculture. Generally speaking, the nationalization of the industry at the end of World War II proved easier than land reform, because the German occupation had expropriated factories and organized the industry into a system of nationalized war economy, preparing a rather smooth conversion into socialist industry.

Privatization became an important politicized theme during the Cold War with the decline of the welfare state and social democracy in Europe after the 1970s, and the rise of post-Keynesian neo-liberalism and the expansion of the World Trade Organization. Corporate governance, the key term for privatization policy at the beginning of the 1990s, came to provide the basis and blueprint of Polish privatization.[6] Early writings and

[5] *Ustawa z dnia 24. Marca, 1920 r. o nabywaniu nieruchomośći przez cudzoziemców* (Statute of March 24, 1920 on obtaining land by foreigners), *Dziennik Ustaw* 1920 Nr.31. This statute was eventually revised regarding administrative procedure in 2004 before EU accession, but is still in effect.

[6] The fact that economists of the new institutional approach were gaining recognition in the late 1980s and early 1990s reflects the atmosphere and direction in which the discourse on privatization and policy took shape. Ronald Coase, who coined the term corporate governance, won the Nobel Prize in economics in 1991, and Douglass North, who emphasized intellectual property rights won it in 1993; Gary Becker, who applied the idea of the Economic Man to all realms of human behavior, won it in 1992. It is difficult to specify if the prize supported or reflected the authority of these scholars. In 2009, after the global financial crisis of 2008, two scholars of the new institutional school shared the prize - Oliver Williamson, who explained the

forecasts about privatization in Eastern Europe pointed out that the strong Polish tradition of militancy and autonomy in workplaces, in the form of workers' councils, would become an obstacle for an effective and speedy pace of privatization (Błaszczyk and Dabrowski 1993; Earle et al. 1993; Frydman and Rapaczynski 1994; Lipton et al. 1990; Szomburg 1993). In contrast, Slay (1994) was rather optimistic about the pace of privatization and the strength of workers' councils, and considered transferring assets via employee-buyout to a small group of well-defined owners a better option than confusing ownership issues with mass privatization or fragmentation of ownership with public offers (183-4).[7]

One decade later, these bleak predictions gave way to a more optimistic evaluation of privatization in Poland. For example, Stiglitz views Polish reform as a success – not because of shock therapy, but because the initial idea was quickly abandoned and supplemented by gradual, democratic privatization. Moreover, he argues that the Polish government rejected doctrines of the Washington consensus and advice from Jeffrey Sachs and the IMF, quoting former Deputy Premier and Finance Minister Grzegorz Kołodko, (Stiglitz 2002:181). Contrasting the Polish case with the Russian case, where IMF loans were intended to maintain the existing groups in power, he argues that the "liberalization-stabilization-rapid privatization formula" applied in Russia was not only ineffective but even detrimental to the economy and democracy. In a similar vein, other scholars came to view a prolonged privatization process supported with democratic means in positive light (Stark and Bruszt 1998; Woodruff 2004; Kolodko 2005; Jackson et al. 2005).

Seen from the ground, the situation in Poland was not so optimal, and the state has been deeply involved in the privatization process as owner and mediator.

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tendency of vertical integration of corporations to minimize transaction costs; and Elinor Ostrom, who had studied various institutions of commons and shared resources, concluding that there is no single scheme that works for every situation.

[7] For an argument for moderate speed and more thorough and substantial implementation of privatization, see Kornai 1990.

Statistically speaking, the state is not the majority shareholder of former state-owned enterprises any more, except for former state farms and their arable fields. However, even where the state has retained a minority share, the state still experiences difficulty in pulling out of the business of shareholding (cf. Błaszczyk et al. 2003), while simultaneously acting as a mediator between different participants and interest groups in the privatization process. In addition, the state had to correct any incoherence in legal and administrative procedure as privatization was taking place. The task has been all the more difficult because the state is seen as ultimately responsible for the consequences in the public discourse.

The contested role of the state as that between an impartial mediator and a protector of the public interest produced immense political pressure for coalition governments, but also more room for local governments in making decisions about privatization. This background context will be described and analyzed in detail with the privatization process of factories in chapter 3. Here, I want to mention that the beginning of privatization in Wielkopolska brought about varied responses and ambivalent sentiments, because a German company, *Rheinzucker*, acquired majority shares of the sugar factory in Środa in 1995, followed by another five in the Leszczyńskie region in 1996. The company acquired five more factories in the Kalisz-Konin region to reach a total of eleven factories in 2001, and closed down three of them in 2002, another three in 2004, one in 2006, and another one in 2008. The global and historical context will be examined in the following section.

Sugar, Sugar Beet, and Their Place in European History

Sugar (sucrose), which is globally produced out of either sugar cane or sugar beet, is an unusual substance that connects the relevance of global markets to the local livelihood, while at the same time serving as a vehicle of meanings embedded in local changes and

global history. On the global level, the European Union before expansion (EU-15) had been the largest sugar producer, with production around 17.6 million tons until 1996, after which Brazil and India have contested the first place with around 20 million tons (Berkum et al. 2005). In contrast to sugar beet produced in Europe and Japan, sugar cane is mostly cultivated in developing countries with less production cost thanks to the climate, the possibility of multiple harvests, and lower wages. Because European sugar beet planters have received subsidies to keep the price of sugar low enough to compete with cane sugar from former colonies and developing countries, there has been a lot of criticism that the European sugar regulations obscure global sugar prices, to the detriment of cane workers.

Sidney Mintz's work *Sweetness and Power* (1985) focused on the role of sugar in transatlantic trade and traced the beginning of capitalist modernity back to sugar plantations and slave labor in the Caribbean. Refined sugar from cane became a global symbol of modernity and industry through changes in diet and consumption, "accompanying or following on 'westernization' or 'modernization' or 'development' (Mintz 1985: 193). Despite this statement, Mintz describes cane production in the Americas and sugar consumption in Europe, creating an imbalance of accounts and simplifying the competitive relationship between sugar cane and sugar beet. By contrasting Mintz's work, which puts European power in the center of global political economy, with Ortiz's work on Cuban sugar and tobacco from a local and global viewpoint, Coronil (1995) points out the heuristic value of Ortiz's idea of transculturation (Ortiz 1995[1940]:98). From this perspective, the beginning of beet sugar production as an alternative to cane sugar was another instance of transculturation, imbued with significance in the anti-slavery movement and the making of modern nation-states by integrating mercantile concerns of trade balance with physiocratic ideas of agricultural development and the economy as a circular process (see Foucault 1994[1966]).

In contrast to cane sugar, sugar production from beet became possible only after refined sugar was established as a luxury good, through advances in agronomy, chemistry,

and the practical application of the latter in industry. In this sense, sugar beet is the quintessential modern industrial crop. In 1767, the Prussian chemist Andreas Sigismund Marggraf (1709-1782) published a study on chemical sugar extraction methods from "various plants that grow in our lands" (Marggraf 1767:70). This study was later improved and applied in practice by his student Franz Karl Achard (1753-1821), a chemist and biologist, who founded the first beet sugar mill in Cunern (pol. Konary), Silesia, with the financial support of the Prussian king Friedrich Wilhelm III in 1801. Achard grew sugar beet and produced beet sugar for the first time in 1802, based on his research on ways to enhance the sugar content in sugar beet with farming techniques on the field (Achard 1799). The ultimate goal of sugar beet agriculture and industry has been to achieve a maximum accumulation and recovery of sugar from the beet root (Karcz 1967). Napoleon's Continental System (1806) blocked the trade from Britain and its colonies and provided the circumstances for the beginning of the sugar industry in rural France and Central Europe, as so-called colonial sugar from overseas via English ports ceased to be a viable option to secure the supply of sugar (see Table 1).

Although the isolation from the global flow of colonial goods accelerated beet sugar production in Europe, the research in Prussia started years before as a way to lower the dependency on luxury goods and improve the trade deficit with Britain. The possibility to produce sugar and coffee substitute from sugar beet made it a powerful alternative to the imported goods from the West Indies, which were cultivated with the use of slave labor (Burgsdorf 1803[1799]). In the same context, the boycott of colonial goods and the beginning of beet sugar production in England and in the U.S. were motivated by the anti-slavery movement in Quaker circles (see Table 1).

Table 1. Historical Timeline in the Production of Beet Sugar

Year	Event	Place
1747	Andreas Sigismund Marggraf discovers the method for extracting sugar from sugar beet using alcohol. [a]	Berlin, Germany

1764	Sugar Act	British Empire
1801	Franz Karl Achard, a student of Marggraf, builds the first sugar factory and starts production. [a]	Kunern, Silesia
1802	Napoleon reintroduces slavery on cane-growing French colonies.	
1804	Haiti declares independence and abolishes slavery.	Haiti
1806-14	Napoleon's Continental Blockade	
1807	Abolition of slave trade (Slave Trade Act) Abolition of serfdom in Prussia	British Empire Prussia
1811 1812-13	Napoleon orders the cultivation of sugar beet (32,000 ha) and the opening of four sugar schools. 334 sugar factories produce 7,000,000 lbs of sugar. [b]	France
1818	France and Netherlands abolish slave trading.	
1820	Józef Mycielski builds in his estate Gałowo near Szamotuły the first beet sugar factory in the Grand Duchy of Posen.[g]	Posen, Prussia
1823	Teodor Mrozowicki builds in the village of Puźniki (near Buczacz, Ukraine) the first beet sugar factory in Galicia.[g]	Buczacz, Galicia (Ukraine)
1826	Henryk Łubieński builds in Częstocice the first beet sugar factory in the Kingdom of Poland.[g]	Kingdom of Poland
1827	Quakers, including Thomas M'Clintock and Lucretia Coffin Mott, form the Free Produce Society, which boycotts colonial goods produced with slave labor, including sugar, cotton, and tobacco. [d]	Philadelphia, Penn.
1830	After years of experiments by abolitionists, the Beet Sugar Society of Philadelphia starts growing sugar beet, which does not lead to sugar production. [c] Quakers Reid and Marriage build a beet sugar factory to produce sugar without slave labor, which turned out a failure. [f]	Enfield, Penn. Utting, Essex
1833	Slavery Abolition Act	British Empire
1836	Dezydery Chłapowski builds in estate Turew a beet sugar factory. [g]	Province of Posen
1836	David Lee Child, abolitionist and husband of Lydia Maria Child, studies the beet sugar industry in Belgium, France, and Germany. [c]	Belgium, France, Germany
1838-1841 1839-1841	David Lee Child produces sugar for two seasons in Massachusetts for the first time in the U.S. [c] John S. Barry, with the support of the State of Michigan, produces sugar for two seasons after returning from a study tour in Europe. [c]	Northhampton, Mass., and White Pigeon, Mich.
1837	Herman Epstein builds in Hermanów the first industrial (non-estate) beet sugar factory in the Kingdom of Poland.[g]	Kingdom of Poland
1848	Slavery abolished in French colonies.	
1865	Slavery abolished in U.S.	

1870	Eugen Langen, engineer, abolitionist, and member of the German Colonial Society, and Emil Pfeifer, engineer and entrepreneur, found together the beet sugar company Rheinzucker. [e]	Cologne, Germany
1875-1880	Industrial beet sugar factories are built in Janikowo (1875) and in Środa, Nakło, Kruszwica, and Wschowa (1880).[g]	Grand Duchy of Posen

a. Lippmann 1890. b. Geerligs 2010[1912]. c. Child 1840; Mahar 2009. d. Williams 1994. e. Bade 1977; Bückendorf 1997. f. Chalmin 1990. g. Kołaczkowski 1888, Przyrembel 1927.

In Poland, the first beet sugar mills were for the nobility a way to increase revenues from the agricultural estate. At least some of them seemed to have recognized the value of sugar beet as a break (or base) crop for four-field crop rotation, which started with turnips and clover as break crops in 18th century Britain (Perkins and Munting 1999:159-60). In 1819, when Dezydery Chłapowski returned from his journey to Britain where he learned estate management and the Norfolk crop rotation system, he brought four-years' worth of clover seeds back home (Chłapowski 1875[1835]; Kalinka 1885).

In the beginning, landowners built sugar mills as small estate (*folwark*; satellite farms to the main estate) mills using manual and animal labor between 1820 and 1826. In the Grand Duchy of Posen (Prussian Poland), Józef Mycielski built a sugar mill in his estate Gałowo in 1820; in Galicia (Austrian Poland), Teodor Mrozowicki started one in Puźniki near Buczacz (present-day Ukraine) in 1823; and in the Kingdom of Poland (Russian Poland), Henryk Łubieński opened one in Częstocice in 1826. Following these examples, 18 sugar mills were built in the Kingdom of Poland before 1841, and later another 32 between 1846 and 1852 (Chudziński 1976). In Galicia, 18 sugar mills were built before 1849 (Kołaczkowski 1888), and 11 in the Grand Duchy of Posen (Przyrembel 1927). These early sugar mills did not last long because of low productivity and high taxes levied from the year 1840, to such an extent that none of the early sugar mills in Prussian Poland survived by 1862 (Przyrembel 1927; Skrzek 1956). Still, according to Ludwik Górski, landowner and agronomist (1818-1908), the Poznań region (Prussian Poland) represented a model case of natural development, which places agriculture in the center that would round out the side effects of development in other industrial branches – agriculture would prevent a violent uprooting of mass population

and avoid the polarization of society by slowing down the formation of a working class (Jedlicki 1988:130-1).

After the failure of the early sugar mills, a controversy about the role of sugar factories in relation to agriculture and industrialization took place in 1860 in the *Gazeta Codzienna* (The Daily Newspaper), published in Warsaw. Sugar factories, in discourses on economic development at that time, were seen as examples of proper development because they were based in rural areas, bringing profits to sugar beet growers and providing remnants as fodder. Korzeniowski, a writer and political activist in Russian Poland, opposed this view, stating that "manufacturing, industry, and commerce should not absorb agriculture … but serve it as the lowest of servants, as behooves baser activities." He also added, that "as long as our agriculture and its every branch do not attain a level of complete development, it is the duty of local landowners, as well as capitalist proprietors, to direct their work and capital above all towards this development." Fudakowski, a sugar industrialist from Galicia, replied that "without the help of industry, agriculture can hardly be brought to full development on the road of natural progress. On the other hand, a road can be said to be natural when development becomes an absolute necessity – when it results from the very nature of things" (Jedlicki 1999:92).

This controversy shows the common ground of discourse *and* the difference of situations in the Kingdom of Poland (Russian Poland) and Galicia (Austrian Poland). Although the question of a proper way of national economic development was a common concern, Korzeniowski and Fudakowski faced each other from a totally different background. In the Kingdom, industrialization was already underway with the support of the state, with the whole Russian Empire as the market, as exemplified in the cotton industry (Jedlicki 1999:91). The Kingdom was the most industrialized province within the Russian Empire, whereas Galicia lagged behind every other province in the Habsburg Empire. Accordingly, the role that the state played in industrialization completely differed as well. Korzeniowski's statement is informed by witnessing the side effects of

industrialization and urbanization in the Kingdom, whereas Fudakowski cares about the rural population as a good landowner cares for the serfs, not without his own interest. In a sense, both Korzeniowski and Fudakowski expressed dissatisfaction about policies already implemented in their parts of Poland respectively, and ponder the question of what path of industrialization and development would be best for the nation and what role the gentry or the elite in general should play in those situations.

There are certain parallels between the failure of early sugar mills in the nineteenth century and the privatization and closing down of sugar factories in the last decade in Poland, not only because closed-down factories were deep in debt and in many cases could not pay farmers for beet delivery. What is more important is the larger parallel context of having to reflect on a possible new way of economic development. Intellectuals and landowners in the nineteenth century had to ponder the English way, which was based on the expropriation of peasants and capitalist large-scale rent system; the French way of establishing mid-size farms for agricultural development; and the Prussian way which fostered the coexistence of big and small farms, leaving the Junker (estate) system even after peasant liberation and land distribution (Jedlicki 1988:129-30). In the present, there is a unified European guideline that does not differentiate between these different ways of development, and this prompts many Poles to think of the EU as an obstacle to Poland's own path of economic development.

The role of sugar production in Poland is at first sight not particularly significant for evaluating the overall economic development, partly because the importance of agricultural production has gradually decreased during and after socialism. Likewise, the consumption and production of sugar peaked in the 1980s and steadily decreases while the productivity level is higher than ever. However, the productivity has vastly improved, considering the steep reduction of acreage (see Table 2, Figure 5, 6). Especially, the production of simple carbohydrates such as potatoes and sugar beet has dropped in a dramatic fashion, while the cultivation of cash crops such as triticale and canola have steadily increased. Among sugar beet planters in Poland, the importance of sugar beet as

a crop is found in its role as a break crop that contributes to soil improvement between grains, similar to the role of field peas and clover. The sugar beet improves soil structure and restores the balance of nutrients, although it does not have nitrogen-fixing abilities. A number of experts I met in Poland pointed out this significance of the sugar beet in crop rotation as the foremost reason that Poland needs to keep sowing sugar beet. They also contrasted this role of sugar beet with the monoculture of sugar cane, arguing that the sugar beet is more organically integrated into agriculture and contributes more to agriculture and the soil environment.

Table 2. Historical Trend of Sugar Production in Poland between 1970 and 2009 (In parentheses, my own calculations based on population and per capita consumption; in case of discrepancies, I followed the official statistics of the Polish Statistical Yearbook. ISO Statistical Bulletin 1982, 1986, 1992, 1996, 2003; Mały Rocznik Statystyczny 1987, 1992, 1996, 2009; Rocznik Statystyczny 2009, 2010; Rocznik Statystyczny Rolnictwa 2008, 2009, 2011)

Year	**1970**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2007**	**2008**	**2009**
Sugar Production (thous. tons)	1388	1067	1708	1971	1595	2009	2033	1857	1397	1674
Acreage (thous. ha)	408	460	436	440	384	333	286	247	187	200
Beet yields per 1ha (in dt=100kg)	312	221	336	380	346	394	416	513	465	543
Sugar Consumption (thous. tons)	(1280)	(1466)	(1531)	(1685)	(1628)	1505	1443	1420	1250	1202
Consumption Per Capita (kg)	39.2	41.4	41.3	44.2	42.2	41.6	40.1	39.7	38.4	38.8

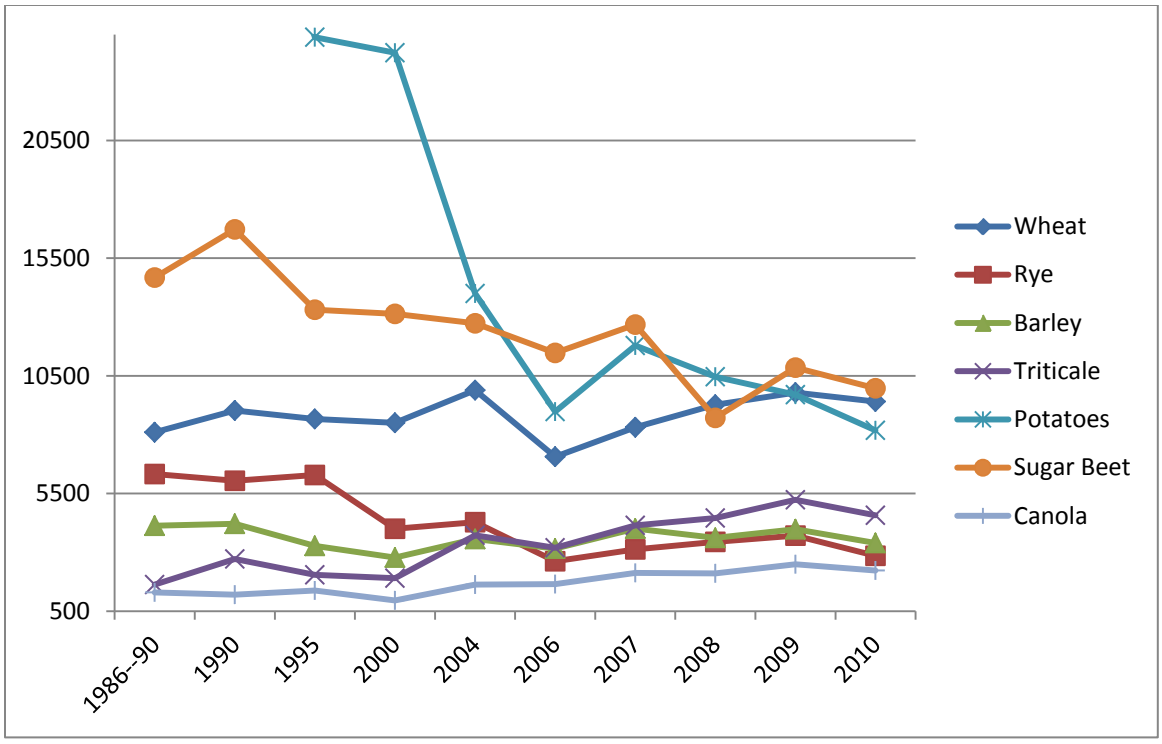


Figure 5. Changes in Crop Production between 2000 and 2009, in Thousand Tons (Rocznik Statystyczny Rolnictwa 2008, 2011).

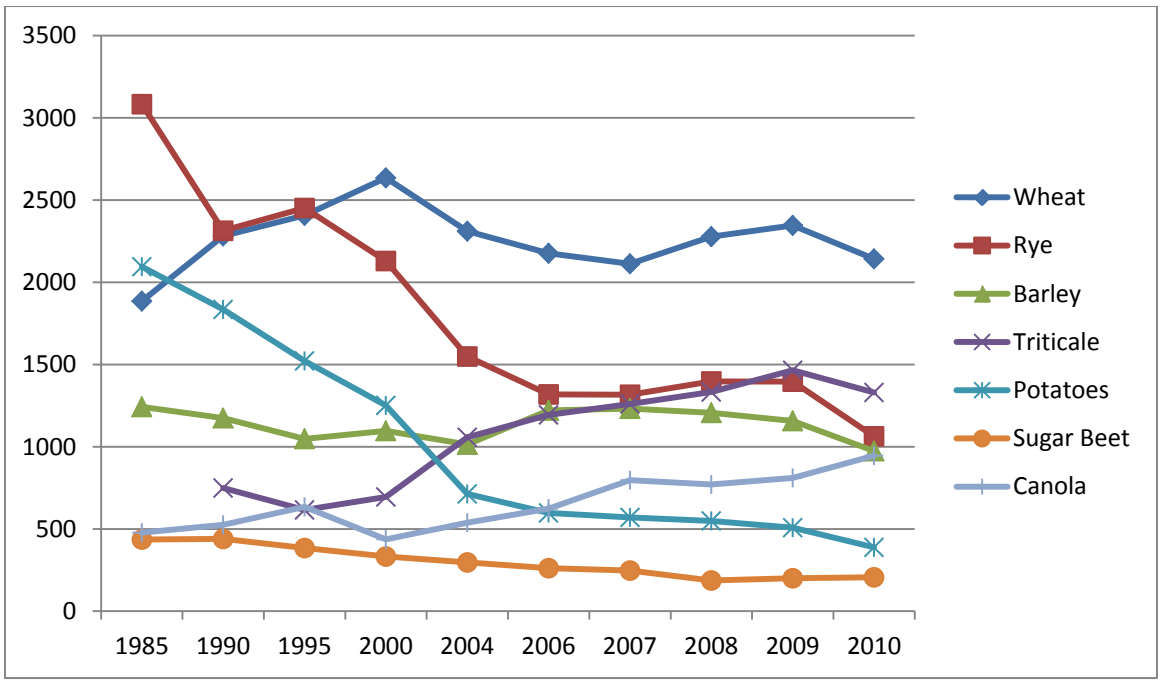


Figure 6. Changes in Acreage by Crop between 2000 and 2010, in Thousand Hectares (Rocznik Statystyczny Rolnictwa 2008, 2011)

Overview of the Region and Scope of Ethnographic Fieldwork

I conducted fieldwork for eighteen months starting in January 2008 in Kościan and Gostyń counties (*powiat*) in the southern part of the Wielkopolska province (*województwo*) in western Poland.[8] It is an intensively agricultural region that produces a considerable share of crops when compared to other regions in Poland (see Table 3, 4). The region of Wielkopolska is located close to the border with Germany, and its provincial capital Poznań lies approximately halfway between Berlin and Warsaw. In each county, there are three or more former state farms and cooperative farms with acreage of 3,000 to 5,000 hectares. The majority of these farms, including breeding stations in Racot, Kopaszewo, Szelejewo, Garyzn, and Pępowo, still belong to the State Treasury through the Agency for Agricultural Realty (ANR). A small number of former state farms have been commercialized with investments from the United Kingdom, the Netherlands, and Italy. In these cases, too, the ANR holds the land and leases it out to these companies. As for private individual farms, the average farm size in terms of cultivated land is around 13.46 ha per farm, which is slightly higher than the national average of 10.15 ha per farm in 2009 (see Appendices 6, 7).[9] A typical small to mid-size private farm in this region combines grain, sugar beet, pasture, field peas, and pig or cattle husbandry. Within this system, the sugar beet plays a central role in crop rotation while guaranteeing a steady source of cash income. The beet leaves can be fed to animals or left on the field as organic fertilizer, while pressed beet pulp after the processing at sugar factories is returned to the farmers and sold as valuable feed for cattle that increases the general health of dairy cows and the production of milk. Canola is another possible cash crop in the region, although it is rare to find it on private farms.

[8] As of 2010, Kościan County had a population of 78,457 (city of Kościan 24,053) and Gostyń County 76,164 (city of Gostyń 20,494), while Poznań's population was 554,221 (GUS 2011).
[9] Statistics from the Agency for Agricultural Restructuring and Modernisation (ARiMR) from Sept. 17, 2009. Electronic document, <http://www.arimr.gov.pl/index.php?id=38&id1=0&id2=1> (accessed Nov. 5, 2009).

Table 3. Overview of Agriculture by Voivodship in 2009, Crop Production and (Rocznik Statystyczny 2010)

Provinces (Voivodships)	Sown Area as of June (in thousand hectares)		Crop Production (in thousand tons)		Agricultural Tractors (in thousand units)	
	Total	Of which, Private Farms	Cereals	Sugar Beet	Total	Of which, Private Farms
Poland	11615	10459	24136	10849	1577	1556
Dolnośląskie	739	591	1882	1104	71	70
Kujawsko-Pomorskie	951	859	2042	1997	96	95
Lubelskie	1196	1167	2343	1588	180	177
Lubuskie	325	271	745	95	24	22
Łódzkie	846	833	1641	368	137	135
Małopolskie	402	389	643	78	128	126
Mazowieckie	1421	1391	2257	693	221	219
Opolskie	476	351	1382	824	47	47
Podkarpackie	425	414	731	225	118	117
Podlaskie	716	705	863	18	103	101
Pomorskie	595	493	1359	488	51	50
Śląskie	295	272	610	86	63	62
Świętokrzyskie	374	371	667	276	85	84
Warmińsko-mazurskie	648	565	1371	142	52	51
Wielkopolskie	1509	1280	3627	2423	164	162
Zachodniopomorskie	698	506	1973	443	38	37

Table 4. Change of Acreage in Cereal and Sugar Beet Production between 2000 and 2007, by Voivodship, in Thousand Hectares. Voivodships that have a significant share of acreage in commercial farms are marked in bold for the year 2007. (Rocznik Statystyczny Rolnictwa 2008)

Year	2000		2005		2007 (private farms in parentheses)	
Crop	Cereals	Sugar Beet	Cereals	Sugar Beet	Cereals	Sugar Beet
Poland	8814	333	8329	286	8353 (7627)	247 (203)
Dolnośląskie	566	31	562	27	**534 (441)**	**24 (16)**
Kujawsko-Pomorskie	690	58	648	49	**621 (570)**	**41 (37)**
Lubelskie	915	49	854	45	911 (890)	36 (34)
Lubuskie	225	3	239	4	241 (209)	3 (3)
Łódzkie	639	13	628	11	639 (630)	9 (8)
Małopolskie	288	2	256	2	261 (253)	1 (1)
Mazowieckie	1117	30	1014	22	1039 (1021)	22 (21)
Opolskie	345	24	346	19	**334 (255)**	**18 (12)**
Podkarpackie	298	8	285	8	279 (271)	6 (5)
Podlaskie	570	6	504	6	505 (496)	5 (4)
Pomorskie	455	16	414	13	**411 (347)**	**11 (8)**

Śląskie	228	3	229	3	218 (202)	2 (2)
Świętokrzyskie	314	11	276	9	287 (284)	7 (7)
Warmińsko-mazurskie	533	7	444	4	**438 (386)**	4 (3)
Wielkopolskie	1110	59	1108	53	**1128 (992)**	**49 (36)**
Zachodniopomorskie	522	14	523	13	**508 (380)**	**11 (6)**

The economy of scale in agriculture which can be found in this region is not a result of socialist collectivization, but rather the result of historical circumstances that led to the preservation of large estates. First of all, the law of inheritance in the Prussian partition in the nineteenth century kept the size of farms relatively intact. Secondly, large estates in the form of entail (*ordynacja rodowa, Fideikommiss*) were inherited as a whole up until World War II. Lastly, these estates were successfully fashioned into state farms when the war ended. Local historians also emphasize that Wielkopolska was the first region where modern technology was implemented in agriculture in the nineteenth century. Local farmers are still proud that Wielkopolska has been the most advanced region in Polish agriculture, even during socialism. During socialism, state farms such as the well-known Kombinat Manieczki in this region were equipped with the newest machines and technologies, and the pictures and the names of localities were widely featured in propaganda films and posters. In two counties where I conducted fieldwork, there were six research facilities and breeding stations for seed material and cattle breeding. In short, rural Wielkopolska was the pioneering region when it came to modern and scientific agriculture. Even some among the private farmers in the region could expand their farm thanks to specialization policies in the 1970s, when pork, milk, and sugar were exported to Western countries in order to lighten the national debt that was starting to accumulate (see Zielinski 1973). Statistics further support the historical peculiarity of this region, which shows a higher percentage of farmers having agricultural education on secondary level, a higher percentage of mid-size farms, and a lower percentage of smallholdings under 5 ha (See Appendices 9, 10, 11). In addition, Table 5 and Table 6 show the general changes and trends in Polish agriculture and an overview of

productivity and intensity indicators by Voivodship. These show that the production and productivity in agriculture largely coincides with the differentiation of acreage, education, and farm sizes on the map, with the western and northern parts of Poland leading agricultural production.

Table 5. Trend of Machine Use and Fertilizer Use, Calculated to the Amount of Nutrient in Fertilizer Produced and Applied, between 1980 and 2009 (Rocznik Statystyczny 2010; Rocznik Statystyczny Rolnictwa 2008, 2011)

Year	1980	1990	1995	2000	2002	2005	2007	2008	2009
Production of Mineral Fertilizer (thous. tons)	2237	1855	2414	2425	2112	2644	2835	2559	1977
Nitrogenous	1290	1303	1619	1576	1305	1735	1834	1716	1546
Phosphatic	843	467	523	539	527	596	650	536	242
Potassic	105	84.5	272	310	280	313	351	n/d	n/d
Application of Mineral Fertilizer per 1 ha of land (kg)	193	164	79.7	85.8	93.2	102	122	133	118
Agricultural Tractors (thousand units)	619	1185	1319	1307	1365	1437	1553	1566	1577
Acreage of Agricultural Land per 1 tractor (ha)	.	.	.	13.6	12.6	.	.	.	10.6 (2010)

I started preparing for this project in October 2007, when I established contact with the overseas investment manager of the German sugar company *Rheinzucker*, which is represented in Poland as *Rheinzucker Polska* in Poznań, with three operating sugar factories in the region and having a fifteen percent share of the Polish sugar market (third place). Through this connection, I met employees of this company and visited the raw material department in each factory, through which I gained access to various private and commercial farms in the surrounding area cultivating and delivering sugar beet to these factories. I conducted a combination of semi-structured interviews, ethnographic observation, and informal focus groups in factories, farms, and research stations, with managers, farmers, employees, and workers about their routine work and their

perspectives on changes in agriculture and the implications of EU policy as it related to their own work.

Table 6. Overview of Productivity by Voivodship in 2009, Yields and Fertilizer Use per 1 ha, and Tractors per 100 ha (Rocznik Statystyczny 2010; Rocznik Statystyczny Rolnictwa 2008)

Provinces (Voivodships)	Yields per 1 ha (dt=100kg)		Use of Fertilizer (per 1 ha of agric. land in kg)			Agricultural Tractors (for 100 ha of agricultural land in units)	
	Cereals	Sugar Beet	Mineral Fertilizer	Liming	Manure (2006/07)	Total	Of which, private farms
Poland	35	543	118	33	44	9.8	10.8
Dolnośląskie	40	537	159	57	15	7.5	9.4
Kujawsko-Pomorskie	38	566	176	39	55	8.8	9.7
Lubelskie	31	559	98	20	43	11.3	11.6
Lubuskie	37	467	120	36	18	4.7	5.4
Łódzkie	32	549	120	23	61	12.5	12.5
Małopolskie	31	584	62	7	44	18.5	18.8
Mazowieckie	28	479	92	16	56	10.1	10.3
Opolskie	48	603	170	100	28	8.4	11.5
Podkarpackie	31	462	55	15	32	15.8	16.7
Podlaskie	27	424	93	13	56	8.9	8.9
Pomorskie	38	462	129	37	28	6.5	7.9
Śląskie	33	627	106	24	37	13.9	14.7
Świętokrzyskie	29	475	83	5	45	14.7	14.7
Warmińsko-mazurskie	36	487	121	48	36	5.2	6.1
Wielkopolskie	40	579	155	47	68	9.1	10.6
Zachodniopomorskie	42	460	121	63	12	4.0	5.5

During fall and winter of 2008, I resided on a private family farm in the village of Babkowice in the gmina Pępowo, and commuted to the sugar factory in Gostyń. I conducted semi-structured interviews with managers of the raw material procurement department, with its main seat at the factory in Gostyń. During this seasonal period of sugar production, I also spoke with farmers and farm managers on the field as the sugar beet were harvested, mainly in the region belonging to the sugar factory Gostyń, but also at nearby factories in Sroda and Miejska Górka. After the harvest, I talked to private farmers and farm workers in the Gostyń and Kościan area about farming practices during

the socialist period, how privatization affected agriculture and technology, whether and how the EU subsidies support their livelihood, and how the role and activities of managers and local agronomists have changed over time. At the end of this period, I observed the preparation of seeds in the laboratory of the sugar factory in Gostyń, and the process of soil monitoring before the spring season. During the same time period, I interviewed farmers on the topic of fertilizers and soil nutrients, particularly focusing on the way farmers read and interpret levels of soil nutrients from various visible indices, whether and how often they use laboratory testing services, and how they solve possible problems with underuse or overuse of fertilizer.

Following connections and introductions from local managers, I interviewed professors and researchers at the Agricultural College in Poznań and at the experiment station of the Polish Academy of Science (*Polska Akademia Nauk*) in Turew. In addition, I visited the branch archive of the Polish Academy of Science in Poznań, in order to find material containing information on changes and development of the academic discipline of soil science. Specifically, documents and typescripts of Feliks Terlikowski, pioneer in soil science in Poland, and Wiktor Schramm, agricultural economist, are directly related to my interest on the politics of land during the interwar period. Material from the national archives in Poznań and Berlin provided additional information on land ownership in the past and in the present, as well as on the beginning of ecological research in Poland during the socialist period.

Organization of Chapters

In chapter 2, I explore the ramification of Wielkopolska being located between the East and the West, and examine how geographic location and historical contexts have shaped local knowledge about the soil in the last century. I focus on the way soil science distinguished different qualities of the soil in order to analyze it and cultivate it. I trace

the way these different qualities of soil let different technologies to be embedded in the landscape, and how past technologies and present practices intermingle in material forms in the landscape. I start by introducing two local viewpoints of the economic history of agriculture: private farmers view the role of big landowners in Polish history in a negative light, while commercial farm managers still praise the way the nobility took care of estate land more than a century ago. In this respect, managers of former state farms and commercial farms – regardless of their origins, ranging from party member to right-wing conservative activist – share the view that agricultural production has to go in the direction of larger scale for better development, competitiveness, and contribution to the Polish economy. Private farmers oppose this view, countering that private farmers take better care of the soil because they know their land better and can cultivate more intensively.

I examine how these competing viewpoints pivot on the notion of taking care of the land and soil, by focusing on the way soil is viewed and the way technologies based on such viewpoints get incorporated or embedded into the landscape. The most general and ubiquitous perspective is to view soil as a chemical entity, which includes adding fertilizer to the soil, and the popular practice of calculating nutrients and costs. In this context, I recount the local history of soil science and agricultural education, as well as the beginning of mineral fertilizer production in Wielkopolska. The second perspective is to treat soil as a biological entity that harbors microorganisms and relates to other elements in the ecosystem. I look into the example of midfield shelterbelts of trees, which provide diversity to the landscape as well as ecological benefits by absorbing runoff nutrients and improving the microclimate. The third approach is to view soil as a physical entity that holds water, air, and warmth, and retains a proper structure. This approach is embodied in the form of underground drainage pipes that were installed at the fin-de-siècle by landowners or water societies.

In the present, the chemical and biological approaches matter most, because the drainage pipes still work well enough to take care of the basics of the physical qualities.

There is a certain tension between private farmers and farming managers of commercial farms on the desired future of Polish agriculture. Managers of larger farms claim that the environmental management of the landscape is only possible on a certain scale. Private farmers emphasize that their mid-scale cultivation is best suited for intensive production, and more effective in terms of chemical nutrient and cost calculations. They also do not forget to mention that the EU agricultural policy intends to support mid-size family farms. In an ironic turn, former state farm managers who are now in charge of commercialized farms inherit the task of shaping the landscape, and follow in the footsteps of noble landowners. Both sides invoke competitiveness as the most important virtue in today's European Union, and champion their case for the place of Polish agriculture in Europe.

In chapter 3, I overview the privatization process of the beet sugar factories in the region that had been the Voivodeship of Leszno, but now belongs to Wielkopolska. I examine the national controversy that accompanied the privatization of the sugar industry, which took place between 1995 and 2003. As privatization was coming to an end, reform of the European Common Agricultural Policy was implemented and after Poland joined the European Union the European sugar market reform started to take shape as a result of a global trade dispute on subsidized sugar prices. I recount the story of sugar factory privatization and multiple reform processes from the viewpoint of sugar beet farmers, factory managers, and local rural experts from the province of *Wielkopolska* in Western Poland. I describe how global and European sugar market reforms affected the privatization of sugar factories, and how these regulations aimed at free trade have shaped ideas of being Polish and European within a global framework of sugar trade.

With this approach, I wanted to highlight the linkage of privatization, sugar reform, and global sugar trade, and emphasize the global context of free trade, which provides insight into the global environment in which privatization in Poland took place (Verdery 2003). I also explore how local farmers and agricultural experts perceive the reformed Common Agricultural Policy (CAP) of the European Union. Local farmers do not hesitate to voice complaints that subsidy payments barely cover the heightened

production cost, and how the CAP, in effect, makes further investment in agriculture impossible. They argue that other western countries that already have attained a developed state in agriculture prevent Poland from doing the same by limiting or prohibiting the use of cheap seed material, fertilizer, and pesticide. These accounts will show how sugar market reforms affected the aftermath of privatization and factory close-downs, and how these experiences have prompted local people to think of being primarily Polish within Europe, and only reluctantly European within a global framework of sugar trade.

In chapter 4, I analyze how farmers and factory advisors work together in taking care of sugar beet and many other crops, from the perspective that agriculture is a process of growth whereby people, animals, and plants come into being within relations with each other. For sugar beet planters and agricultural advisors, the process of growing beet is also a contestation of claims about who knows best in helping the sugar beet to grow properly in the midst of unfavorable conditions. They often discuss how to read and interpret signs from the plant or the fields in order to discern the need for fertilizer or herbicide. Farmers, advisors, and the sugar beet form an assemblage in which alliances and cooperation are negotiated through the emitting, reading, and interpreting of signs. I describe meetings between farmers and advisors, the schooling session organized by advisors during winter, and how they interact thereafter during sowing and weeding season until harvest in fall.

Although there are superficial disagreements and frictions between farmers and advisors all year, the time of delivery and harvest is especially tense for motivated farmers, who will showcase their sugar beet roadside in long heaps for everyone to see. Each farmer's sugar beet is delivered, weighed, and measured for both the rate of foreign matter (such as rocks and dirt) and for the sugar content. This process is automated for objectivity, but if the percentage of foreign matters is higher and the sugar content lower than farmers expected, they make a row with advisors at the factory, proclaiming that they will quit sugar beet once and for all. It is the season when advisors talk among

themselves about grumbling peasants (*chłop*), even though they used to compliment them as the best farmers (*gospodarz*), and farmers gossip about the deceitful advisors and pawns of the German company. On the other hand, from the perspective of the biannual sugar beet, harvesting after one year of growth means an abrupt halt of development. In a sense, the alliance between farmers and advisors prevails by betraying the sugar beet.

In chapter 5, I describe encounters with young farmers in Wielkopolska, who were fascinated with powerful agricultural machines and were so passionate about the machines' capabilities that they were willing to travel to Germany or France to buy used machines. The focus is on three instances of farmers' interaction with machines. The first one tells a story about a farmer traveling to Germany to buy a used piece of agricultural equipment. The second encounter involves preparation for the field and maintenance work, which highlights stories of the past embodied in used machines. The third encounter views specific machines in the light of competing tillage systems (conventional and no-till/strip-till), and how farmers think about changing tillage systems with a new set of machines. Through the sale of used machines, modern Europe for these farmers means and represents the free flow of agricultural technology across national borders. In work and repair, and in discussions of new tillage systems, machines from the west stand for better engineering and higher productivity in comparison to machines from the socialist past. However, the traditional tillage system is still preferred not only because of the costs involved in converting, but also due to aesthetic sensibility of the field after plowing. In the end, machines point to Europe in different and sometimes conflicting ways, which is subject to interpretation and contestation.

The very possibility of different readings of modernity and Europe out of these machines comes from the experience of enchantment during encounters with machines. If it is not as grand as a sense of awe, there is the feeling of being enchanted that farmers display ritually in machine-viewing events both in the domestic sphere and on public display. However, the everyday encounter with machines is rather dominated by a sense of care. This interplay of enchantment and care provides a better perspective to analyze

the relationship between farmers and machines than simple instrumental rationality. This approach also supplements Pine's approach to technology as the harbinger of uncanny modernity (Pine 2007). It is the gap between those experiences of qualities between awe and care which gives rise to ambiguous and sometimes contradictory readings of machines and their meaning as representations of modernity, the West, and Europe.

In the description and analysis of agricultural knowledge and practice, I found it useful to treat the crop – in this case the sugar beet – the soil, and machinery as material entities which trigger semiosis and through these semiotic processes, form social relationships around it. In this way, the sugar beet, soil, and machines are the focal point at the center of assemblages, becoming the center of attention and care (see Latour 2007). The animate quality of the sugar beet, the mixed quality of the soil, and the reverberation of the machines bring out different signs and responses from farmers, advisors, and animals. For example, the way plants react to stress such as drought or nutrient deficiencies, and how wild animals roam the fields at a specific point of plant development are good examples of sign transactions that prompt human involvement afterwards. By focusing on the qualities that attract attention of the actors involved, a semiotic approach to material things can supplement the rather mechanistic approach of science studies (see Keane 2003, 2005). In describing the material qualities, the visibility or invisibility, and the palpability of soil matter, nutrients, and crops will be of special importance (see Malinowski 1965[1935]; Martin 1994; Gell 1998). The invisibility of soil nutrients, how farmers use arithmetic to calculate the costs and necessary nutrients, and how numbers replace the laboratory in rendering them visible will be explored as well (see Latour 1987; Nader 1996; Knorr Cetina 1999; Rabinow 1999).

Another important theme throughout my work is the role of scientific knowledge in agriculture before, during, and after socialism. After the privatization of the sugar factories, the German company changed the quality control system and put more resources into the schooling of sugar beet planters, and their support through agricultural advisors. I examine the wider and deeper historical context of these changes, focusing on

the distinction between land (*ziemia*) and soil (*gleba* or *rola*), and how the focus on the latter was supported by developments in the field of organic chemistry and soil science in the late nineteenth century and thereafter. While efforts of modernizing agriculture in Wielkopolska started two centuries ago, the majority of farmers still feel in-between – not quite modern but neither quite traditional. In a similar context, James Scott (1998) pointed out the simplification that occurs in agricultural science when it becomes applied to development projects in the Third World. My viewpoint is slightly different from Scott's – based on my ethnographic data, it seems that there are always certain limitations on theoretically possible farming practices; namely cost, resources, and time. The crucial difference, then, might be whether necessary knowledge and technology are readily available or selectively censored in the first place, for example in the case of development projects. As Scott already stated, the strength and weakness of farmers lies in the fact that they are "pragmatically alert to knowledge coming from any quarter should it serve their purposes, whereas modern agricultural planners are far less receptive to other ways of knowing" (Scott 1998:264). For the farmers I met in Poland, it has to be added that they are accommodating knowledge coming from any quarter, but more importantly, while not looking like they are emulating.

In both cases of factory management and farming practices, claims of better practical knowledge played an important role in justifying the assumption of control and management of property, if not ownership per se (see Rose 1994; Verdery 2003). For example, during privatization of the sugar factories, foreign investment and new personnel and ways of management had been justified with claims that foreign capital was more accountable and transparent than domestic capital, and managers with overseas experience were needed to navigate the European market. In reverse, claims of better knowledge about local conditions and local crops justified retaining the better managers and advisors from the socialist period in former state farms. These arguments were frequently framed in terms of being modern (*nowoczesny*) or meeting European standards, of Poland being between the West and the East. Even those who were critical of the EU

and foreign investment expressed the desire to become equal partners within Europe and attain the level of regional modernity (Rofel 1999; Fehervary 2002).

Throughout the whole text, the distinction between commercial farms and private farms, and in parallel between farming managers and private farmers is a crucial one, and has certain implications when it comes to environmental care and opinions on the agricultural policy of the EU. Although not actively contradicting central government policy like local administrators in Romania (Verdery 2002), former state farm and now commercial farm managers are in a position of local power to decide on sizeable crop delivery, and have the prerogative to implement changes in agricultural practice on a large acreage of land as well as changes in the landscape. These farms have a different relationship with the sugar factory, although there are times when farming managers show similar tendencies as private farmers. Although commercial farms have a better institutional framework to oversee effective and environmentally sound farming on the fields, there are large variations even among them. The same is true with private farmers, and it is impossible to generalize and draw an unequivocal conclusion on the question of ownership and environmental care. That a farmer owns the land does not always mean that he only looks at long-term profits, nor does it mean that rented land is treated with less care than owned land. However, farmers agree that profitability is a crucial part and necessary condition of sustainability. With the economic crisis and dry summers in recent years, the monoculture of grain has become a widespread practice among small farmers. These farmers think that sustaining the environment as a morally persuasive goal has to foreground the survival and existence of farms.

Chapter II

Land and Memory:

Soil Paradigms, Modernization of Agriculture, and Modernities in Wielkopolska

Kto sprzedaje ziemię, ten nie naszej wiary,
Chcesz kupić odemnie i rolę i płoty?
A kto mi zapłaci za ten miesiąc złoty?
A kto mi zapłaci za tę jasność Bożą,
Co w moje okienka idzie z każdą zorzą?
...
Za cmentarz przy farze, zielony jak sady,
Gdzie leżą w swych grobach ojcowie i dziady?
...
Nie sprzedam ci roli. Weź kupcze talary!
Kto ziemię sprzedaje, nie naszej jest wiary.

Those who sell their land are not of our faith,
You want to buy field as well as fences from me?
Then who will pay me for this golden moon?
And who will pay me for God's bright light,
Which moves in my windows with every aurora?
…
[Who will pay] for the cemetery at the parish, green like an orchard,
Where lie in the grave my parents and forefathers?
…
I won't sell you the field. Take away the silver coins!
Those who sell their land, are not ours of faith.

- Maria Konopnicka, 1906[10]

[10] Poem in the booklet *Czarna księga, czyli wykaz szkód wyrządzonych polskości przez komisyą kolonizacyjną* (Black Book, or List of the damage done to the Polish spirit by the Colonial Commission, Lwów: Księkarnia Maniszewski & Kędzierski, 1906), p.9. This booklet warns about the Germanization strategy and land purchase of the Colonial Commission, and included a list of Poles who sold land to the Commission between 1886 and 1906, especially indicting the landowners for speculation.

Owning land has a special meaning in many places, but in Wielkopolska owning arable land has a specific historical meaning and sentimental value. It was in this very area that Germans, Poles, and Jews lived side by side for a long period of time, and where Germans and Poles competed with each other to own agricultural land (Hagen 1980). It was the land East of the Elbe, which was known as the granary of Poland and the target of Prussian colonization efforts. There are places that are known as post-German villages (*poniemieckie wioski*), where uniform houses of German settlement style from the nineteenth century are still standing. It is not a rare sight to find travel groups from Germany stop by at those villages during the summer season. Although any property rights for those houses and lands have expired because the Prussian Settlement Commission formally leased them to settlers for 99 years, and the ownership of the Commission itself became void after the Treaty of Versailles, there is a widespread fear on the countryside that Germans could massively buy the land back. This is a baseless fear, because land-ownership of arable land for foreigners including EU citizens is legally not allowed until 2016, unless they have resided and farmed the land for a certain number of years.

In this chapter, I examine the local memory of estate and land ownership and changes in the knowledge of soil as a material entity, with special attention to the history and location of Wielkopolska between the West and the East. I will discuss the history of places in the Kościan, Gostyń, and Krotoszyn area, which constituted the borderland between the Prussian and Russian partitions of Poland until 1918, and how knowledge of the soil was implemented and imbued with modernity during the time of the struggle for land ownership and Germanization. I also examine the formation of soil science at the University of Poznań and the Agricultural College in Poznań, which shows a combination of theories from the West and the East over the course of the Cold War. If modern scientific knowledge developed in the laboratory making invisible things and phenomenon visible and thus explainable, soil science in the nineteenth and early twentieth century bridged the invisibility of soil nutrients with the visibility of plant

physiology. Attention to local soil and local conditions of agriculture is also a feature in the development of soil science. In the present, farming practices largely build upon results of local experiments, but the stimulus comes rather from the West, which dominates the market with farming resources, and the varying attitude of learning and openness is regarded as a big difference between the West and the East.

In soil science, the materiality of land and soil is formulated around the amount and combination of elements and nutrients that make up different soils. This distinction does include more than just the difference between animate and inanimate things. Of course, the microbiological part of the soil is animate, but differs from plants or animals in that it is not easily visible with bare eyes. The visibility and invisibility of soil elements and their quality lead to predicaments for the caring observer. Thus, the farmer has to infer the not-readily-visible condition of the soil from recognizable signs such as the condition of plants, gauges of simple measuring devices, or reports from laboratory analysis. Signs that crops emit, and sometimes the very existence of some plants, including weeds (*chwasty*), could point to a deeper cause or a condition of the soil.

The attitude of farmers toward the soil is different from the caring concern for the living crop plants, although there is a similar emotional and caring attachment in both attitudes. While the care for plants, similar to that for animals, has more of an interactive nature with the farmer, the care for soil is less solicitous and more calculating, and almost always mediated by the crop or other plants.

In other words, because the soil speaks through the plants, or the plants speak for the soil, farmers' work to improve the soil is calculated in analytical terms, while the caring words are reserved for the plants. In this regard, calculations of nutrients and input and output of chemical elements played the single most important role in thinking about the soil. Of course, monetary calculations of input and output, cost and profit were also indispensable to farmers who had to make ends meet, especially because improving the soil involved material bought on the market, and farmers were keen on maximizing profits while keeping costs to the minimum. However, while thrift forms an important

background and justification for the calculation of costs and profits among farmers, sometimes to their own detriment (Krzyworzeka 2008), the role of analytic thinking and logic in improving land and applying fertilizer is often underestimated.

Starting from the way farmers interact with soil for improvement and a good harvest, I will describe how several ways of viewing and treating the soil coexist and are applied and invoked in different situations. While viewing soil as a chemical entity provides the easiest and most practical basis of farming practices, it is equally important to remember that soil is foremost a physical entity whenever there is heavy rain, and that soil can be a biological entity when simply adding nutrients does not end up being absorbed by crops on the field. It is in these instances that farmers and workers experience the landscape and stay reminded of past ways of soil improvement, which cannot be separated from a past that involves land ownership, struggle for land, and land reform. It is also this awareness that enables farmers to realize that cultivated land is man-made and not natural, leading them to appreciate the need for environmental protection. However, the smaller the farm, the more restricted the farmers' perspective to view their field as a landscape, as a part of the environment that needs as much care as utilization. At the same time, they tend to have a narrower perspective on being Polish farmers within Europe, and the motivation towards recognition as such, without immediate material incentive, is significantly weaker.

Drainage Pipes and Shelterbelts: A Plebeian Account of Estate Ownership and the View from a Manorhouse

"Why do you call this land *Nowina* (lit. new-land), and how do you distinguish between the old one and the new one?" I asked Arek, who was the leader of the voluntary fire brigade, and told me about the village while we were walking along the road next to Nowina. I remembered how Tomasz, a farmer in his late fifties who owns 50 hectares and works 75 hectares, complained about the state of canola in his field in *Nowa Nowina*

(lit. new new-land). Tomasz had asked Arek to show me the fire station and give me a tour of the village. We took a look at the three crosses in the middle of the village, which were erected in 1852 during the cholera epidemic. We next passed the cross next to the village hall (*sala wiejska*), near the entrance of the part of village called *huby*, where farmhouses on both sides of the road have strips of fields behind them stretching away like a striped carpet.[11] Arek told me that the cross was newly installed in 1998. The old one had to be replaced since it was too old. The old one survived the Nazi occupation by being hidden in the cemetery, because the Germans were ordered to cut it down.

When we turned into Nowina, we met Hilary, a neighbor of Tomasz's who stepped out of his tractor to greet us. They talked about the late arrival of spring this year and how it will affect the sowing season. It was then when I asked that question. Hilary was quick to answer and explained to me: "They are new lands in the sense that they did not belong to farmers but have been distributed to them in recent times." He stopped there and questioningly looked at Arek, expecting him to follow up with more detail. Although I heard about Hilary, it was the first time I met him and he seemed to know all about me when we exchanged greetings. He hardly made eye contact with me throughout the conversation, but listened and tried to give answers nonetheless.

Arek added: "Both *Stara Nowina* (lit. old new-land) and *Nowa Nowina* belonged to the estate (*majątek*) Pępowo." He continued with further information: "I am not sure which year it was exactly, but *Stara Nowina* was given to farmers when the government took the estate from a German nobleman. From a certain Oertzen. Parcels of land were distributed to landless peasants living in nearby villages. The land in *Nowa Nowina*, on the other hand, was auctioned off when they downsized the State Stud Farm and commercialized it in the early nineties."

[11] *Huba (Hufe)*, or *łan (Lahn)*, or *włóka*, was a unit for measuring land in Central Europe equaling 12 to 27 hectares, depending on the region. One Polish *łan* equaled 17.95 hectares, and one Prussian *Lahn* equaled 16.5 hectares. The unit was originally meant to represent the acreage that can be cultivated with one plow and the labor of one conjugal family.

"You mean the land belonged to a German?" I demanded further: "And when did the government take away his estate? Was this after World War II? Or was it earlier?"

Arek was quite sure that it was during communism (*za komuny*). Hilary had some interesting piece of information to offer: "The estate originally belonged to a Polish nobleman, you know. But rumor had it that he lost the estate to a German while playing cards. They used to socialize together, the nobility of course, German and Polish."

I did not know how to follow up with a suitable question after this statement but wanted to make sure: "Can you tell me the name of the Polish nobleman?" Neither of the two could remember, but Arek looked it up later at home and told me it was Mycielski. I wondered when the drainage system was installed, and got the answer from Tomasz, who was the chairperson of the water association, in charge of maintenance and repairs, for quite some time. He said that it was the German estate owner who did the drainage, and that they had difficulty finding the drainage system map, because everyone thought it was lost until they found it deep in the drawer of the director's desk at the state farm.

When we were about to turn around and leave Nowina, Arek offered a piece of oral tradition in the village. "My parents told me that they used a steam plow on Stara Nowina, with steel ropes tied where the forest meets the field."

Hilary was able to remember something, too: "When I started grammar school, the school was still in that manor house. That building had been used for grammar school and orphanage after the war [World War II] ended. Later when they moved the school to the town of Pępowo [in the 1970s], nobody really knew what the manor house was used for. Some people said that high-ranking party members visited for hunting. Even in the 1990s, there were tourists who came to shoot wild boar and deer – you know how many are around – at a very cheap price. I guess hunting attracts the rich and those who have power."

Nowina was an impressive patch of fields that stretched endlessly toward the horizon without any roads, forests, or other disturbances. To be sure, there was the small creek flowing into to the stream Dąbrocznia. The absence of any roads across it made me think that it might have been a wetland a long time ago, in the direction of Zalesie Małe. The drainage system of Nowina must have been quite a work of engineering. It was possible to discern, two days after a heavy rain, the underground pipes by the interchanging shades of wet and dry soil, which looked like veins of a leaf on the drainage map. Except for a small pond near the village, there were no forest patches and no midfield shelterbelts, the one or two rows of trees that offer protection from strong winds, usually found on the side of roads or banks. Nowina was a place to see the sandstorm in late spring that causes soil erosion, and against which mustard mulch or other remains were to protect (see Figure 7, as well as Appendix 5).

It was a patch of land that made me curious on many levels. Everyone in the village owned narrow stripes of land by the road and away from the road. It seemed that the land next to the road was the result of the propertization in the early nineteenth century, while the land away from the road was parceled out during land reform after World War II.

Given that it was a long time ago, and given the frequency of land reforms and wars, it was no surprise that it was nearly impossible to gather reliable historical information from local farmers. Nevertheless, it was intriguing that there were elements in the conversation above which somehow fit into the elements I was able to find later in the archives and libraries. One other evident feature of the conversation was how the Polish nobility came out in unfavorable light. I took this feature with a grain of salt, too, because I have rarely seen a farmer who spoke favorably of bigger landowners. Local peculiarity and socialist propaganda would have been a possible factor for this perspective as well.

Figure 7. Sandstorm in late April (Photo Courtesy of Jan Naskręt, 2009)

Polish noble families are better remembered if they were, in the local memory and oral tradition, benevolent towards others and seen as having contributed to something greater than their own family, such as the Bojanowskis of Grabonóg or the Karłowskis of Szelejewo. Still, the perspective of farmers sharply contrasted with the viewpoint of commercial farm and former state farm directors and managers, who frequently happen to work in offices in former estate manors.

The village in which Tomasz lived was a small place called Babkowice, located between Gostyń and Pępowo but much closer to the latter. In terms of location and historical formation, it was a traditional village grown out of a dispatched farming station called folwark (from Ger. *Vorwerk*), which belonged to a larger estate and served as a barn and farmhouse complex away from the manor house. The original location of Babkowice (or historically, Bobkowice) was closer to the estate manor Chociszewice, and the folwark was moved after it was destroyed in a fire. Larger estates consisted of the

manor house and several of these folwarks, and local roads connecting these components of the estate and the location and growth of villages were dependent on their function within the estate.

The manor Chocieszewice (later Pępowo) belonged to Ignacy Mycielski (1842-1884), who was a participant in the January uprising in 1863 against the Russian Empire, and later became an officer of the Prussian army. Mycielski sold Pępowo in 1876 because of financial debt and hardship to Antoni Wilhelm Radziwiłł (1833-1904), general of the Prussian artillery.[12] Radziwiłł, who had good connections with Polish noble families as well as the rich and powerful in Berlin, sold it in 1881 to Adolf von Hansemann (1827-1903), the prominent banker of the Disconto-Gesellschaft in Berlin and head of the New Guinea Company.

His son Ferdinand (1861-1900) had studied law but had aspirations of becoming a Junker fit for the modern industrial society. For Adolf von Hansemann, this estate was a quiet place to take rest from the hectic life in Berlin and enjoy hunting as old noble families did.[13] It was the son Ferdinand von Hansemann[14] who settled down in Pępowo and started to run the estate with investments in modern agricultural technology such as drainage pipes, steam plow, and seed-drills, as well as horse breeding. The scale of investment and modernization on the estate of Pempowo, including the construction of farmers' family houses and the drainage of previously uncultivated wetland in Zalesie Małe, show not only the extent of investment but also the intention to keep the estate within the family. When the son suggested something to his father, father von Hansemann decided on the costs and he practically participated in every decision made

[12] Depending on the source, Radziwiłł's name is listed as either Antoni or Wilhelm, which is confusing because there are other persons with matching names. However, the age and network makes Antoni Wilhelm the most probable person who bought Pępowo from Mycielski and sold it to Hansemann.

[13] Münch 1932:337.

[14] After settling in Pępowo, he shows up in documents as Ferdinand von Hansemann-Pempowo, as reflected in Pastor Krummacher's eulogy, read at his funeral held in the Kaiser-Wilhelm-Remembrance Church (*Gedächtniskirche*) in Berlin (October 6, 1900). The same form of fashioning one's name is found in Hermann Kennemann-Klenka (from the estate name Klęka).

regarding agricultural production (Münch 1932:337). A good example is the correspondence between father and son regarding the purchase of neighboring Czeluścin, which belonged to the Settlement Commission. Ferdinand von Hansemann wanted a railroad connection to transport sugar beet to Gostyń, where the sugar factory had started production in 1897. His father Adolf, however, denied his request because of the costs involved in buying more estate and suggested to him to consider building a short connection to Pempowo instead (Münch 1932:339).

After Ferdinand von Hansemann died early in 1900, and later when his father Adolf passed away in 1903, Adolf's grandson Albrecht (1887-1917) inherited the estate. When Albrecht died without an heir in 1917 from a wound sustained during the war, the estate passed onto Gerd von Oertzen (1910 or 1913-unknown), the son of Ferdinand's sister Ottilie Mathilde von Hansemann (1886-unknown) who was married to Joachim von Oertzen.[15] This was Joachim von Oertzen who presented horses and cows at exhibitions in Poznań, and won in June 1923 the "large gold medal" for the best horse herd at the Agricultural Exhibition (Kwilecki 1998:197). He was also listed as participant in agriculture at the 1929 National Exhibition in Poznań.[16] However, in legal terms, the owner of the estate was his son Gerd, and this name was listed in official registries throughout the 1920s. It is even mentioned that Gerd's being underage in 1924 contributed to the decision of the Liquidation Committee to put his estate (3072 ha) up for liquidation by way of voluntary sale (*drogą dobrowolnej sprzedaży*).[17]

In these interwar years, former German-owned estates were given a timeline to be sold or otherwise were confiscated or cheaply compensated for as a result of the

[15] Münch 1932.

[16] The categories in which the nobility actively participated in include, among others, hunting and horse breeding. The active involvement of landowners at agricultural fairs was a norm – at the national exhibition in Poznań in 1929, ninety-two percent of the agricultural part was prepared by landowners, including Germans who stood together with Polish landowners against land reform (parcellation) (Kwilecki 1998:149,154).

[17] *Orędownik Ostrowski* (Advocate of Ostrów Weekly), Ostrów, 14 May, 1924; *Słowo Pomorskie* (The Pomeranian News), Toruń, 17 May, 1924; List of Estates, 1925, Wiktor Schramm Papers 90, 92, Archiwum PAN w Poznaniu.

Versailles treaty. In the former Province of Posen, 59.1 percent of cultivated land was owned by Germans, and 18.6 percent of that acreage was Prussian state domain, which consisted mainly of confiscated royal (Polish) land and church land after 1793. The Settlement (or Colonial) Commission owned 9.8 percent and other private landowners owned 71.6 percent based on statistics of 1905 (Matelski 1997:175).

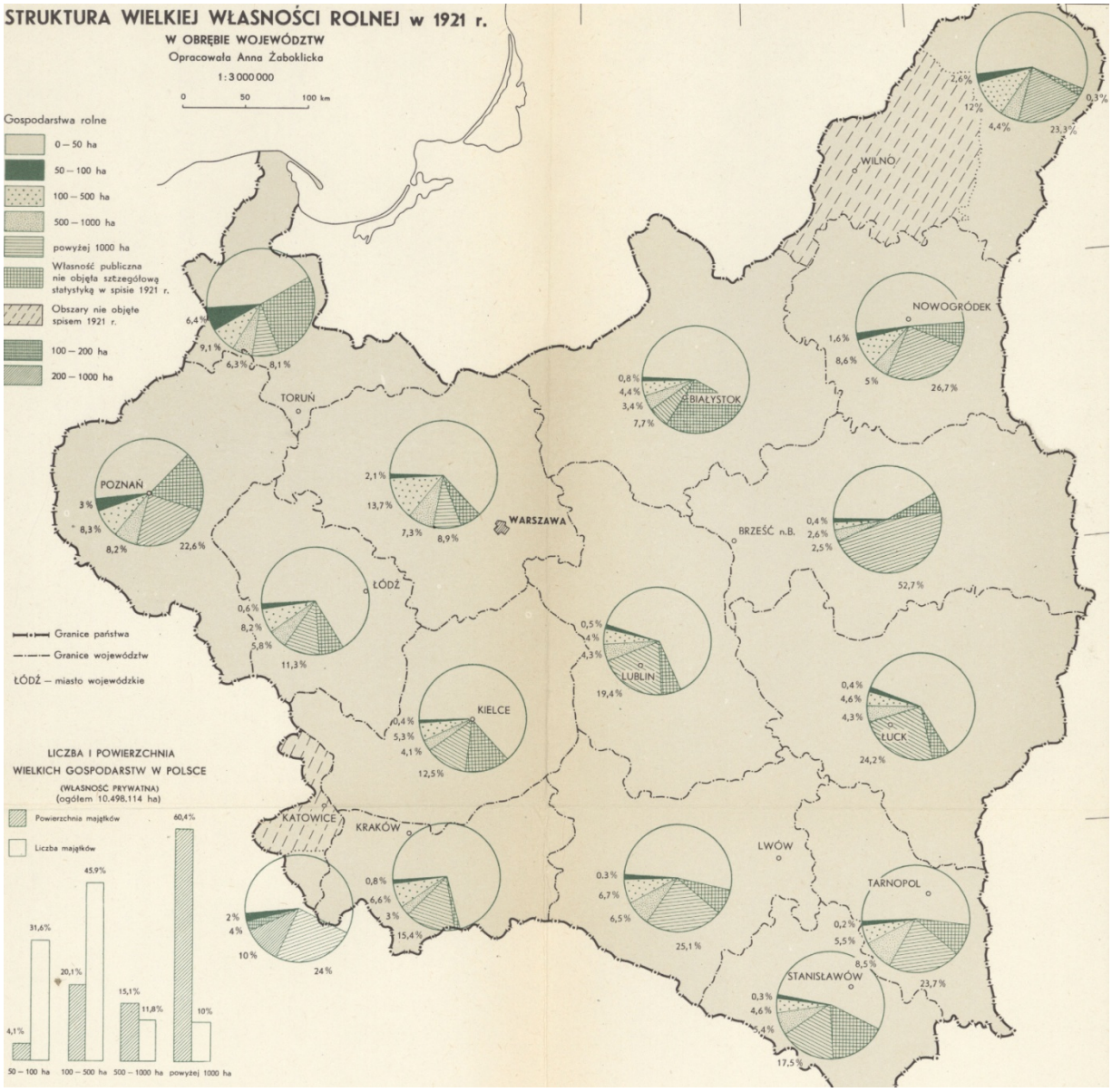


Figure 8. Big Estate Ownership Structure in 1921. The Poznań and Toruń areas, the western borderlands of the interwar period, show the highest ratio of large estate ownership in Poland.

According to the original plan of the land reform law of 1920, these estates obtained by the government were destined to be parceled up for local farmers. However, the land reform law ran into difficulties from the beginning because of potential conflict with the constitution (1921), and remained a controversial political and international issue, especially regarding the land-owning German minority in Poland. As a result, the law for land parcellation of 1925 proved to be ineffective even until the 1930s because of the lack of financial resources for compensation (Jezierski 2003; Stachura 2004:48). Against this background, it is not surprising that the von Oertzen family was able to maintain ownership and residence in Pępowo until 1939.

The resident manager of Pępowo, Ferdinand von Hansemann, was one of the three founders of the *Ostmarkenverein* (German Eastern Marches Society, 1894), a nationalist association for colonial settlement and German interest on the eastern borderlands of Prussia. The other two founders, Hermann Kennemann of Klenka (Klęka near Jarocin, 1815-1910) and Heinrich von Tiedemann of Seeheim (Jeziorki near Stęszew, 1843-1922) were retired army officers who had established themselves as estate owners. Simply known as "Hakata"[18] by the surname initials of the three founders, the Society is remembered by Polish farmers as the vocal advocate of German colonial migration. It was a political pressure group that urged the government to take more active measures to limit Polish education and culture, and to support German settlers by providing more land and other social services to ensure their survival. While their action plan included occupation of more land in the East by way of expropriation, they rather fell short in this respect due to limited support from political parties and people in other parts of Germany (Hagen 1980; Eley 1990). On the other hand, the Society remained effective as a source of anti-Polish and nationalistic propaganda, as a vital part of colonial discourse in Germany, and a die-hard followers' camp of Bismarck, the former minister president

[18] *Haka* in Wielkopolska dialect means specifically a hoe used for weeding (usually *motyka* in other regions of Poland). The existence of this word seems to have made it easier to remember the name of the Society without knowing the surnames of the three founders.

(1862-90). The foundation of the Society itself took place at the pilgrimage of "Germans from the Ostmark" in September 1894 to Varzin where Bismarck resided. While Adolf von Hansemann was a private guest at the Bismarck residence, Ferdinand was in charge of organizing the program and festivities, as well as gifts from Pępowo bestowed to Bismarck, including pheasant, lamb, and cheese from the estate.[19] The society itself and its sister organization, the German Women's Society for the Eastern Marches (*Deutscher Frauenverein für die Ostmarken*), gathered donations, supported education and ran schools and orphanages to take care of German children left behind by German settlers.[20]

The founders of the Society were landowners of considerable scale. August Bebel, lamenting the expansion of estate land and its consolidation as entail property (*ordynacja, Fideikommiss*) in the East, lists Kennemann as the seventh-largest landowner with 10,482 hectares in 1889. Adolf von Hansemann placed ninth with 7,734 hectares (Bebel 1900:320). Before the purchase of Pempowo, as it was known at the time, von Hansemann had already bought the palace Dwasieden in Sassnitz on Rügen Island in 1871 and the estate Lissa-Laube (near Leszno) in 1876, with the purpose of making them entail property. Adolf von Hansemann's purchase of multiple estates in the East was largely motivated by his desire to be recognized as landed nobility, according to his biographer (Münch 1932:336). This is one important element of Heinz Reif's definition of nobility – "nobility as a holistic way of life based on large land ownership with an age-old connection to land, anchored in realms of life which evade rationalistic changes or reshaping" (Reif 1997:8). Given that von Hansemann was a banker without connections to landed nobility, this connection to land would have had special meaning for him (see Hertz-Eichenrode 1998). This also coincides with the description of the biographer, who notes von Hansemann's love for hunting parties and the frequency he visited those estates

[19] Münch 1932:398.

[20] A similar effort on the Polish side can be found in the rural orphanages of Edmund Bojanowski of Grabonóg, who founded an order of nuns (*Zgromadzenie Sióstr Służebniczek Najświętszej Maryi Panny Niepokalanie Poczęte*; Congregation of the Sisters Servants of Mary's Immaculate Conception) to serve the poor (see Kwilecki 2001).

away from the hectic big city. The landscape suitable for hunting and the size of estates in the East would have been important factors for acquiring both Lissa-Laube and Pępowo (Münch 1932).[21]

Improving the land in the East was also a challenge and motivation for these aspiring landowners. Draining the wetland represented not only the transformation of landscape in the spirit of modern capitalism. It seems there was a deeper desire to control nature, which found resonance in the logic of inner colonization in Prussia towards the eastern provinces. The success of canalization and land reclamation (*Urbarmachung*) in the territory of the Oder river (*Oderbruch*), which now forms the border between Germany and Poland, showed that worthless marshland can be turned into fertile arable fields (Blackbourn 2006). It was the imagery of marshes transformed into productive land, described in Part II of Goethe's Faust, which stimulated imaginations of improving land and developing estates in the East. The association of marshes, swamps, and wetlands with backwardness or darkness, disease, and death has certainly played a role (Giblett 1996; Wolff 1996). The contrast between Polish wasteland and German cultivation became even color-coded in the landscape – the Slavic color was grey, always too dry or too wet, either arid or flooded, whereas the German color was green, with lush meadows and full of new shoots (Blackbourn 2007:154).[22] It was also in these fertile lands of this Oder region where Albrecht Thaer's experimental estate and farming school was located. It was in this context that both von Hansemann and Kennemann opened brickyards in

[21] Adolf von Hansemann invited local German landowners and officials to his hunting parties, and at times guests from Berlin came for socializing and business discussions. In contrast, Kennemann was more dedicated to the cause of Germanization in the region, hosting the German Day and expanding his estates not only in Klęka but in places like Pudliszki. Whereas von Hansemann's estate did not expand in acreage through time, Kennemann's estate increased in acreage through active purchase of neighboring lands (Güteradreßbuch 1912).

[22] Blackbourn uses the protagonists of Gustav Freytag's novel *Debit and Credit* (*Soll und Haben*), published in 1855, in chapters describing nineteenth-century Posen. Alwin Seifert, the leading figure of organic agriculture during Nazi Germany, held similar views and warned that excessive drainage might turn Germany into an arid steppe similar to the Eastern landscape (*Versteppung*, desertification), pointing to the example of the Dust Bowl in the United States (Lekan 2004:233; Uekötter 2006:77).

Pępowo and Klęka, where not only bricks for new buildings and houses were baked, but also drainage pipes were produced for their own use on their estates and for sale. They would have started production in the early 1880s, when drainage projects were starting to take off as the best way to improve harvest and increase the value of land.

Thus, it was not simply the ownership of land, but also a competition of improving the land that made the Province of Posen such a contested area of struggle between Germans and Poles. Contemporary observers such as Ludwik Bernhard and Max Weber, as well as Polish landowners and intellectuals who wrote in newspapers focused on the ethnicity of landowners, and how much land was in the hands of which side. The speculative land transactions of the nobility, both German and Polish, the activity of the Settlement Commission, and the rural accumulation of capital, largely due to the development of Polish credit institutions and the income of Polish migrant workers earned in the west, known in German circles as *Sachsengängerei*, were all parts of a whole picture that pivoted around the ethnic ratio of land ownership – ethnicity quantified through acreage. However, the moral cause behind this competition was rather based on improving the land and producing more on the fields for the industrializing cities. The sharp increase of land prices between 1880 and 1910 is also better accounted for with this capital investment in drainage projects, rather than simply with the rise in demand due to the activity of the Settlement Commission.

On the Polish side, landowners tried to keep up with changes in agricultural knowledge and technology as an important part of so-called organic work, which was contrasted with active armed resistance against the partition powers. In fact, the need to modernize farming and estate management was realized by landowners at a much earlier date, as early as Dezydery Chłapowski visited Albrecht Thaer in Möglin in the spring of 1817 and learned about fertilizing practices and the English or Norfolk system of crop rotation. He decided to visit Norfolk in England and Edinburgh in Scotland, and left in summer 1818 and came back at the end of 1819 (Tupalski 1983). What he brought back was the Norfolk crop rotation system on which he based his plans for changing his estate

landscape. He completely redrew the borders of fields and clustered them according to soil fertility, and planted rows of trees to improve the microclimate on the fields. These midfield shelterbelts he had seen at Holkham Hall in Norfolk when he was visiting Thomas Coke, the first Earl of Leicester. It was also there that he became familiar with melioration using rocks under the ditches, which was later to be replaced with drainage pipes (Chłapowski 1875:224). In addition to these technologies, he brought one deep iron plow or Scottish plow (*pług szkocki*), and ordered clover seeds for every year. He met some resistance back home, from peasants even on his own estate. According to Kalinka, there was a rumor among peasants that the colonel went crazy, because sowing grass instead of grain and planting trees on unusable land was unheard of (1885:68). His efforts were not without rewards and he cleared the estate from any debt by the year 1830.

The case of Dezydery Chłapowski is certainly the most exemplary and cannot be representative. Moreover, one can certainly doubt the motivation behind the idioms of patriotism and the pressure from the European market (Kalinka 1885:70-71). The latter is briefly referred to in Chłapowski's writing. He wrote that he was deeply impressed by the social unrest in London after the Corn Law of 1815 was passed while he was staying there. He thought that England was doing the right thing by protecting the estates and agriculture, and he wanted to see the same protection and self-sufficiency of grain in Prussian Poland. On the other hand, it was true that the nobility preserved a lavish lifestyle and continued conspicuous consumption without the will or possibility to invest their capital somewhere else (Kochanowicz 2006[1991]). After all, as Kwilecki ambivalently states, some noble families did well and some did not, especially due to the agricultural crisis in 1850s, and many of them had to sell part of their estate, usually to German landowners, to get rid of the debt (Kwilecki 2001:27). Pępowo is such an example, but there are also other cases.

Stanisław Karłowski (1879-1939) did not inherit any land in the family but worked in trade and finance overseas, then came back to Gostyń County to buy back the estate Szelejewo from Hugo Schönburg-Waldenburg, who had bought it from Jakub

Benas, a merchant in Poznań in 1865. Stanisław Fenrych (1883-1955) bought back the estate Pudliszki in Gostyń County from Kennemann's heir to start the successful ketchup and canning complex, which the company Heinz acquired in 1997. Karłowski also used his experience in banking to head the sugar factory in Zduny, and later for two decades of the sugar factory Gostyń. His estate was so successful that it became a popular place for farmers to visit and learn how to till the land and breed animals, and to see the steam-plowing engine Fowler-Leeds from England. He was a vocal critic of mineral fertilizer and emphasized the use of organic and natural fertilizer based on the biodynamic theory of Löhnis of Leipzig regarding the biology of the soil. In his book on soil biology, he specified humus as the most decisive actant (*czynnik*) for fertility of the fields and that to that end, required that manure be fermented with the utmost care (Kwilecki 2001:280-2).[23]

Although Karłowski's theoretical basis differed from that of soil scientist Terlikowski, who based his view on Vasily Williams' biotic soil model, they shared the focus on soil as an environment for decaying organic material, which was not an isolated entity when placed into the landscape as a whole. In other words, in Karłowski's and Terlikowski's views, the soil was not only an entity full of biological components, but the soil itself was also an important component of the whole landscape and the environment, which linked its importance to seemingly irrelevant elements such as the local climate or the fauna of the field, especially on forested isles in mosaic landscapes of this region. This ecological perspective has played an increasing role in farming activities, especially with research in Turew, which I will describe further below.

Karłowski's and Fenrych's cases, although almost a century later than Chłapowski's pioneering changes in agriculture, show that the goal of being successful and excelling in working the soil drove both German and Polish landowners. As seen in the case of drainage, working the soil made them feel that they were controlling nature,

[23] *Biologia gleby w praktyce rolniczej* (Biology of the Soil in Agricultural Practice), 1939, Poznań. Karłowski was killed in Gostyń when Nazi forces occupied the city.

or, at least to some extent, making it malleable. There was also, as Heinz Reif pointed out, a desire for rootedness in land that did not always translate into monetary interest, but rather into a sense of duty for representing land and agriculture for the interest of the country. Stanisław Rostworowski of Gębice (1888-1944), for example, combined his long-time service in the army and his study of organic chemistry and agriculture in Freiburg and Göttingen to publish a book in 1937 with the title *Rolnictwo i wojna: Strategia rolnicza – studia nad pogotowiem rolnictwa do wojny* (Agriculture and War: Agricultural Strategies – Studies on the Readiness of Agriculture for Warfare) (Kwilecki 2001:292).

Nevertheless, why are farmers so ungenerous in acknowledging the nobility's role in the modernization of agriculture? There is certainly room for blame when it comes to land ownership according to ethnic groups before World War I. When World War I ended, German landowners owned 40.9 percent of big estate land, although this decreased to 33.8 percent in 1927, thanks to the liquidation policy and parcellation during land reform (Kwilecki 2001:209). In contrast, land ownership outside of the estates looked more favorable to the Polish side – 62.1 to 66.7 percent in Polish hands and 33.3 to 37.9 percent in German hands, according to estimates of the government and the newspaper *Kuryer Poznański*, of the year 1898 (Wegener 1903:100). In addition, it cannot be neglected that the farmers are now in direct conflict with former landowners when it comes to land ownership – the land reform and liquidation of large estates at the end of World War II and before the socialist government started efforts of collectivization brought more land into the hands of farmers through parcellation, for which they had to pay installments for twenty years. The socialist government's action of confiscating and redistributing land lies in the center of many contradictions of the socialist past. The confiscation of land and nationalization of industry cannot be annulled

equivocally by repealing the decree of 1944, and neither can it be fully confirmed as a legitimate action of government.[24]

Those who remember and celebrate the achievement of noble landowner pioneers such as Chłapowski and Karłowski are ironically directors and managers of commercial farms. These managers had careers in the same or other former state farms in the region, which often implies that they were members of the communist party during socialism. Even now, those positions are subject to local politics and polemics, especially if the farm is in poor shape. In Gostyń and Kościan Counties, the larger commercial farms and breeding stations still retain the acreage of the time of noble estates, and the management offices and laboratories reside in manor buildings (*pałacy*). The Chłapowski manor in Turew is an exception, where the Ecology Institute of the Polish Academy of Science has its field station for the study of agricultural and forest environment. The terrain has been turned into a park and is under the management of the field station. The research in this field station centers on the fauna and flora of the park and fields of the former estate, as well as the ecological impact of crop rotation and shelterbelts. In a sense, Chłapowski's contributions, which were imprinted on the landscape, are celebrated with the help of ecological science. The role of shelterbelts, ranging in age from 150 years to 4 years, is investigated in relation to protecting fauna and crops, improving the soil by increasing

[24] Kersten assessed that the effect of land reform was more symbolic than substantial – that it "only partially accomplished its aim of linking potentially large numbers of rural inhabitants to the new authorities. The PKWN admittedly managed to avoid being perceived on a mass scale as an occupying power with whom cooperation would have been considered collaboration, which had, as under German occupation, been condemned. Even more, all social strata, including large groups within the intelligentsia, became involved in rebuilding the country because it was necessary for the biological preservation and social existence of the nation. Nonetheless, cooperation between the PKWN and society were limited and even when it occurred there was conflict and opposition to the Communists. Society was thus to some extent compelled to compromise, but as before it remained quite distant from capitulating and accepting the new authorities" (Kersten 1991:97). Although I strongly disagree with her practice of treating nation and society as corporeal entities entirely independent and separate from state or government, her description of the effect of land reform is realistic – whatever popularity the PKWN gained through the redistribution of land, they unmade it during the later stages of attempted collectivization. Still, the consequences of land reform have lasted longer, independently of viewpoint, into the present.

organic matter, and preventing pollution by absorbing runoff nutrients (see Ryszkowski et al. 2002a, 2002b; Jankowiak 2003; Karg et al. 2003; Karg 2004; Kędziora 2010).

The older shelterbelts trace back to the time of "the General" Dezydery Chłapowski himself, while younger shelterbelts have an age of one decade or less, planted in the near terrain of commercial farms in Kopaszewo and Choryń. The manorhouse there houses a famous breeding station, where the most popular varieties of winter wheat and rye in Poland were developed. Mr. Lewandowski, the long-time agricultural director of this farm, emphasized that it was small things on the field that made a big difference in the quality of the seeding material. He also emphasized that in his company, efficiency meant also being considerate of the environment. He was proud to point out that environmental care was also something that commercial farms know and do better because of the costs and manpower involved. As an example, he showed long-term plans for tree shelterbelts surrounding and traversing the fields, which absorb runoff nutrients, prevent soil erosion caused by wind, and contribute to the local microclimate for more precipitation. "On this part of the estate, the shelterbelts had been established already at the time of General Chłapowski, right after he obtained this estate. He resided in Turew, ten minutes from here, where he tried out shelterbelts as he had learned and seen them in Scotland. Now there is an ecological research station at the manor, and I get help there to plan shelterbelts for the coming two decades. Until now, there is no outside financial support and no EU money, but I trust that the professors at Turew and the General were right to pursue this."

Lewandowski spent a lot of time on the road in his Jeep, and barely had time to supervise work on the field. "That is why my assistant director is on the fields checking the progress of work and the stock of fertilizer and chemicals all day," he told me while sending me out with his assistant director for an overview of work on farm fields. We met again later on a field, and he was pleased that I recognized the precision in the work being done and the care that went into the operations on the field. We saw together how a tractor combined shallow plowing and harrowing to prepare the ground for sowing. On

fallow fields over the winter, green fertilizer was grown to be plowed over and evened out with a cultipacker (crumbler roller) attached on the side of the plow. The director explained that this kind of work combination is only possible when there is a sufficient number of tractor drivers and a highly efficient tractor with the horsepower to haul all the equipment. In other words, he wanted to make a point of emphasizing efficiency, contrasting his management of fields with other farms and in particular with private farms. Later again in his office, he expressed his view that the EU subsidy was actually harmful for Polish agriculture because it enabled small individual farms to survive even though they are far from being productive. In his view, this was a time when demand for agricultural products could only be met by meticulous production on a certain scale, and only commercial farms were efficient enough to make the most out of limited and valuable resources such as land, fertilizer, and machines.

The director was right to imply that large-scale landscape projects such as shelterbelts are only possible on commercial farms on former estate lands. Given that the sand storms in late spring cause soil erosion, that the draught in early summer is at least partly due to deforestation, and that nitrogen leaching is a substantial problem linked to the overuse of manure in this region, shelterbelts or any other form of forestation seem the ideal solution to many of the region's soil problems. Although drainage and forestation are in a sense operations for opposite results, they have in common a goal that reaches deep into the desire of development to transform the landscape. If drainage of wetlands had its dramatic moment in Goethe's *Faust*, forestation of shelterbelts or windbreaks had a similar moment in Stalin's Great Plan for the Transformation of Nature in October 1948, which included irrigation and shelterbelt forestation in the steppes of Central Asia and the southern plains of the Volga after the 1947 famine. It was modeled after the Great Plains Shelterbelt Project, a Works Progress Administration project in the United States that started with the planting of shelterbelts in 1934 in Mangum, Greer County, Oklahoma, and by its conclusion planted 220 million trees to reverse the draught and sand storms in the Great Plains states, or the so-called Dust Bowl. In the present day,

shelterbelts are actively recommended and implemented for crop protection in Australia where they are known as windbreaks (Sun and Dickinson 1994a, 1994b; Sudmeyer et al. 2007).

Even for a large commercial farm, installing shelterbelts is a costly measure that does not translate into immediate returns. For private farmers, transforming the landscape in such ways is not an option they can choose on their own. What they can do is install wastewater treatment systems and use well-fermented manure in moderate amounts. And they contended that commercial farms are not doing any better than private farms in these segments. They had examples of commercial farms that do not-so-well not only in terms of harvest or profits, but also in the long-term caretaking of the soil. There were fields belonging to commercial farms, where fresh pig excrement from their slaughterhouse was dumped every week in plain sight from the road. When we were visiting a commercial farm for a demonstration of beet harvesters, Staś (Tomasz's neighbor and competition) did not like the way drivers operated the machine: "If you'd be only a bit more careful, you could be more thorough around the corners and prevent losing the beet there."

On a similar commentary of a factory advisor, the farm manager said he did not mind: "We have to harvest for full three weeks, and on this scale, we simply cannot look back for those minuscule losses. And those will fertilize the soil anyway."

Staś expressed to me with a facial expression that he could not believe what he just heard. "And for that kind of sloppy work they receive so much money from the Union (*Unia* – short for EU). The bigger the acreage, the more money you get, and they still say that they want to support mid-size family farms. No, they are in it together, in this scam." I was surprised because Staś had quite some acreage of his own and rented land under cultivation, and he was counted among the best farmers in the village. His complaint would have more likely come from a small farmer. When I asked him later, he laughed and said that a small farmer would not have cared much to say such things, and he himself was also glad to receive the subsidy. It was just the sense of unfairness that he wanted to vent. I told him that the situation here is still not so bad as in the U.K., where

often large estate owners, and not commercial farms, receive those subsidies. He shook his head and said, "I thought that they would do things better than we do here in Poland. It seems that problems are problems everywhere."

Private farmers vocally express these perspectives centered on a sense of self-interest, fairness, and moral economy, which they think should be actualized in their relationship with the government and the European Union. In contrast, commercial farm directors or managers rather take the viewpoint from above, similar to the view they have from the manorhouse, overseeing the landscape and positioning themselves as leaders of the industry that involves the working of the soil – Polish agriculture. As Mr. Lewandowski said, "there are commercial farms which are in bad shape, and there are private farmers who have very impressive skills and results. I know. It is hard to say that one way is better than the other. However, I can say this – you need to have the right people in the right places [to do their job]. Honestly, it is more difficult to deal with people than to deal with problems on the fields." On his account, the care of the soil ultimately could not rest on the entity of the soil itself, but had to be concluded with the social.

The Past in the Landscape: Underground Drainage Pipes as Memory Objects

> *"Both arable field and grasslands are in principle products of culture, and always in the case of arable field… The field has no value as land as such, but only earns value through the work and costs spent on it."*[25]

> "How did the fields (*pola*) look like, years ago? In spring, when the snowfall ebbed, even lands (*role*) located high would glitter with wetness, furrows and folds were full of water and these could dry up depending on how dry March and April were, but the inside of the land (*ziemia*) still stayed wet, drenched, and sour. There could not be any word about early cultivation of land (*ziemi*) or early sowing. Barley and oat was sown only at the end of April in earnest, and

[25] Nordmann (1838), *Anweisung zur Führung der Landwirthschaft auf meinen Gütern* (Instructions for the management on my estate - Liszkowo near Inowroclaw), Bydgoszcz, p. 6.

sometimes even in May. So it was nothing strange, that the harvest was less than ordinary…

"That's what it was like years ago. How about today? On the drained fields, when the frost yields and the snow ebbs in spring, there are no puddles any more. On the contrary, dry and thick soil (*gleba*) presents itself and asks for cultivation and sowing as early as possible. And this at a time [of the year] when years ago the land (*ziemia*) still glittered with moisture, whereas nowadays the eye of the farmer pets the abundance of greenness – of barley, oats, or other spring grains…

"Whence these changes? That's because we have taught ourselves and understood that the draining of fields (*pól*; Gen. pl. of *pola*) forms the basis for a rational cultivation of land (*roli*), that without drainage there is no place left to think about intensive cultivation or artificial [*sztuczny*; chemical] fertilizer. What would be artificial fertilizer if given on wet land (*grunt*)? It is, to the fullest meaning of the word, money thrown out on mud. And every farmer knows that without the help of artificial fertilizer, intensive farming is impossible."

- Speech of L. Mocek, Member of the Central Committee, addressing the General Meeting of the Association of Farmers' Circle in Wielkopolska, 20. May, 1928.

It was on a mild overcast day in late March, when Jan and I were sitting in his van heading towards a meeting with his farmers in Staniew for contract signing. Except for one or two days, it kept raining for the early part of the month, and we could see puddles here and there in the fields. "It is not supposed to be like that," he murmured to himself and added, "that field is not going to be ready for sowing in the coming weeks. There are underground pipes (*rury*) for melioration (*melioracja, rury melioracyjne*), you know, and they are supposed to drain the water away. Maybe there is a clogged pipe somewhere. I hope they are doing something about that."

I already had a sticky experience with clogged drainage pipes in Kuba's field, but I did not want Jan to stop what he was saying and held my tongue. He explained that the soil of the region is mostly good but not without melioration: "On this side of Koźmin, the soil is good enough to plant any crops including wheat. But there are also places with

soil like sand, where rye struggles and only pine trees can thrive. A better soil would sustain oak trees. There are very good strips of soil around Krotoszyn, known as the *czarnoziem* (chernozem, black earth) of Krotoszyn. You know what *czarnoziem* is, right? But around here, when it occurs, it has only a depth of a couple of centimeters, whereas in Ukraine, they have more than six meters' depth of *czarnoziem*. The best soil in this region is probably further south near Wrocław, where the Germans brought thousands of tons of *czarnoziem* from Ukraine by train, under Hitler's orders. Some say they dumped it there according to their plans, and others say that the war ended when the train reached Wrocław and the loads stayed there.[26] More interestingly, after the war, a lot of farmers came over from across the river Bug (*Zabugowcy*), the region where probably the black soil came from. They speak a different dialect and have a totally different mentality when it comes to agriculture, not as competitive as here in Wielkopolska, probably because they are more relaxed and take good soil as a given and not something you have to keep working on. In our vicinity, they moved into farmhouses of former German settlement villages (*gospodarstwa poniemieckie*), such as you can see in Gumienice. Those farmhouses are very typical and uniform – single buildings which housed the family and domestic animals under the same roof. Of course, they are a rarity now because people built new houses to replace them, but some are still there."

Kuba was a farmer in his fifties who lived in an old house a bit away from the village of Gumienice, which Jan mentioned as a former German settlement village. Kuba's house was easily a hundred years old, built at the time when Gumienice became a settlement. He inherited the house and some land from his father, but the most of the land was still in the hands of his sick and old mother who lived with him. He spent the majority of his life in the army and did not marry, and even though he has arable land he does not have any means to cultivate it. So he earns his income by working for other

[26] I kept hearing this story from other people during fieldwork. Although having all the elements of an urban legend, it seemed that Ukrainians were familiar with similar accounts, too (see later this chapter). Norman Davies mentions it without providing concrete sources (see Davies 2008:32, 166).

farmers, and from the rent he receives by contracting cultivation of his and his mother's fields. I met him when he came over to Tomasz's to work on the farm and mentioned to Tomasz that there was water standing on his field. Tomasz was worried, because it was a field that he rented from Kuba: "That must be a clogged drainpipe, but how do we know where it is clogged?" Kuba told him not to worry – it would be obvious once we got there. The spot was indeed clearly marked by the wetness of the soil, midway from the field where the water stood on the way to the drainage ditch past the garden behind the house.

We had to dig a hole to get access to the drainage pipe, which was located 1.5 meters deep underground. After taking out one piece of pipe, which was about one yard long and had the same color as red clay bricks, we tried to clear the clogged part further down with steel wire. Tomasz examined the pipe more closely: "Look at this piece of pipe – one century old and still looking good. These probably came from the old [now closed] brick factory in Pępowo. I heard they have problems replacing these when repairing, because they are not produced any more." After recovering small rocks and pieces of tree roots out of the pipes, we were able to make water flow again only to discover that an intersection near the ditch was clogged as well. It took another afternoon the next day to clear that pipe as well, and after another day, the water on the field was gone.

"Now we can start to do something in the field," said Kuba in relief. "With the water standing, it would have been impossible to drive the tractor into the field in the first place. You would get stuck and cannot get out again. The seed drill would not work, either."

Later, when I met Jan and asked him, he gave a further reason to make sure that the field was properly drained: "It would be a problem to apply fast-working mineral fertilizer, and also make manure application more difficult because the nutrients would be distributed unevenly because of the water. Standing water changes the whole condition of the soil, and disrupts proper germination, too. The even distribution of moisture is probably the most essential requirement on the fields for any kind of crop."

This episode and Jan's explanation made it clear that the physical condition of the soil had priority over the other factors, chemical and biological. It was only because the drainage pipes did not cause trouble every year that their importance was easily forgotten. Drainage of the land had changed the landscape forever. Most of the fields had been arable before, although depending on the location of the fields there were inaccessible marshlands or wastelands, too. In arable fields, farmers had to wait longer for the water to subside after the spring thaw, and drainage made it possible to start work earlier in spring, even up to four weeks earlier. It also meant that the soil was exposed to air and sunshine earlier to make better conditions for sowing. The installation of drainage pipes contributed to the dramatic increase in harvests as well as the quadrupling of land prices over the span of half a century.

When G. Nordmann wrote his instructions for folwark managers, underground drainage pipes were not in mode yet. Still, his statement perfectly predicted the capitalistic change that was to come to the region in the form of drainage pipes, machinery, and mineral fertilizer.[27] Of course, the ways to irrigate and drain with the help of furrows and trenches were known in the region, not least because of the Olędrzy – Mennonite immigrant free farmers from the Netherlands and Friesland in the sixteenth and seventeenth century. It was not until the latter half of the nineteenth century that drainage pipes were widely installed in Central Europe and in this region, together with the regulation of rivers and large-scale drainage of moorlands.[28] In the case of Austria-

[27] I found this booklet in the Raczyński Library in Poznań. Besides that, there was not much to find out about the author himself. The estate Liszkowo was inherited by his son, Heinrich Nordmann, who sold it just to cause a fight within the family, and gradually brought the other estates down. Even after his death his intentionally unclear will caused endless lawsuits among his heirs and the remaining estate of Rojewo (Roneck) had to be sold to the Settlement Commission (Schlichting-Bukowiec 2010:76-8).

[28] In Ohio, Klippart (1861:7-8) tracked the origin of underground drainage to Frenchman Oliver de Serres's *Theatre d'Agriculture* (1600) and Walter Bligh's third edition of his book *The English Improver Improved, or the Survey of Husbandry Surveyed* (1652). Writing in Habsburg Austria, Kreuter (1887[1851]: 7) only mentioned the latter, following Englishman Josiah Parkes's view that Captain Walter Bligh, who dedicated his work to Oliver Cromwell, was the originator of

Hungary, the names of newly established towns and villages such as Theresienfeld, Josefstadt, and Josefsdorf commemorate the ruler at the time those state projects took place. In the realm of Hungary, nobility led such projects as the case of the Hansag moorland, where Count Eszterhazy and Archduke Karl retrieved 17,280 hectares around the Neusiedler See, and the regulation of the Tisza river organized by Istvan Széchenyi from 1846 to 1880 (Kreuter 1887[1851]).

Figure 9.Drainage Pipes in Nowina, Babkowice, Late March, 2009. Dry lineal patches of land are visible where drainage pipes are located underneath.

Mocek's confident speech in 1928 reflects the finalized process of spreading of underground drainage in the region, the former Province of Posen. In fact, not only did

deep drainage, in light of the fact that Bligh's book was a third edition and given the tradition of draining wetlands in the Fens in eastern England (Parkes 1848:60).

the Prussian legislature set the legal terms on water associations in 1867, but the Prussian government also provided financial means to support regulation and drainage under the title State Fund for Melioration (*Staatlicher Meliorationsfonds*) starting in 1850.[29] As a result, fourteen water associations in the Province of Posen received financial support, out of 65 in all Prussia between 1862 and 1867 (Paluch 2006:94). However, as the size of the fund became too much of a burden to the central government, the fund was transformed in 1875 into provincial funds that had to have at least forty percent of regional funding. In addition, a new law in 1879 made it possible for water associations to get credit loans for rural melioration projects through Landeskultur-Rentenbanken. Such a bank opened in Poznań in 1885, although the possibility of getting a credit loan through conventional banks, both German and Polish ones, was there before. In the region of Kościan the year of foundation of water and drainage societies ranged from 1864 to 1915; in the Gostyń region from 1890 to 1913; and in the Koźmin region from 1891 to 1911. Most of the drainage societies in the three counties were founded between 1891 and 1911 (see Paluch 2006).

In parallel with this trend, the yield of wheat and rye doubled, and barley and oat almost tripled in Wielkopolska between 1890 and 1910 (Kowal 1993:121). Historians assessing the social and economic impact of new technologies such as drainage in agriculture count the pioneering work of Polish landowners as the most important contributing factor. For example, Kowal (1993) enumerates the distribution of new agricultural knowledge by way of periodicals such as *Ziemianin* (Landowner) and *Poradnik Gospodarski* (Farming Guide); the increase of Polish students for agricultural studies in Germany from 40 in 1895 to 108 in 1914; and the role of *Centralne Towarzystwo Gospodarcze* (Central Farming Society) founded in 1861 and the activity of agricultural circles (*kółka rolnicza*) as the most important factors. Similarly, Alvis (2005)

[29] In Poland, they were called water association (*spółka wodna*) or drainage association (*spółka drenarska*), whereas in Prussia there were water associations (*Wasserverband*), soil associations (*Bodenverband*), or dike associations (*Deichverband*), according to the body of water and local environment (Herrgeist 1983; Paluch 2006).

sees mechanization, melioration, and the use of mineral fertilizer on large estates as successful practices which spread out to the general rural population by the end of the nineteenth century. In Wielkopolska, estate owners such as Dezydery Chłapowski, Włodzimierz Wolniewicz, Maciej Mielżyński, Józef Mycielski, and Stanisław Karłowski made their agricultural operations thrive in spite of financial difficulties after propertization and the agricultural crisis of the 1850s, when many estates were sold to German landowners.

From a slightly different perspective, Paluch (2006) argues that the founding of water associations and drainage projects on estates and villages had two important social consequences, both to landowners and to the farmers. The first consequence was that the land turned into capital which needed investment and maintenance, and had more value after drainage work than ever before. Given the price increase of land after drainage work, farmers who wanted to purchase more land had to learn this as well. Secondly, if the struggle for land between the German population and the Polish population had been about land ownership, the drainage projects made affairs a bit more complicated, because the founding of water associations and getting financial support sometimes necessitated cooperation between the two ethnic groups. This was true to a certain extent, but at the same time, it seems that there were places, especially near large estates and neighboring villages, where there was no water association when actual drainage projects were planned and executed. It was highly possible and plausible that the former folwarks still maintained a close relationship with the estate and the drainage was planned just like landscaping at the time of propertization. Since drainage planning has to account for the height and shape of the landscape and existing waterways, the farmers' land newly acquired from propertization would have been unavoidably included in the underground waterways. In this light, drainage pipes crossed not only borders of land ownership but in much more concrete ways borders between class and ethnicity, as we will see in the following part below.

In the end, competition under the same legal conditions as Germans was a unique historical experience for the Polish landowners and farmers, given the fact that the latter had to operate under special rules and stronger discrimination in other partitions. The drainage pipes under the fields of this region and their effect might not have been as dramatic as the drainage of the fenlands in East Anglia. However, they register the capitalistic change in agriculture that was implemented competitively by Polish and German landowners alike. The Province of Posen was not only the arena for competitive land ownership between Germans and Poles, but also the arena of struggle where modernity was performed as a new relationship between farmers and landscape, leading to newly invented representations of regulated nature. The formation of memory through objects, and their embedding in the rural landscape was achieved by shaping the landscape with underground drainage pipes, steam plows, tree roads, forested patches, and midfield shelterbelts.[30]

Soil as Chemical Entity: A Short History of Turn-of-the-Century Modernity in Agriculture

> "*Jeśli sami chcemy lepiej jeść, dajmy więcej pokarmu roślinom*."[31]
> (If we ourselves want to eat better, we have to give more food to the plants.)

> "*Achievements of scientists showed that the improvement of soil structure has no less importance for agriculture than artificial fertilizer. Without air and moisture, a plant cannot live and grow. The only way to make sure to give the soil an aggregated structure to make moisture and air accessible is to provide the soil*

[30] Shelterbelts or windbreak are *zadrzewianie* in Polish and лесополоса (*lesopolosa*) in Russian.
[31] Zając 1956:28. This farmer's basic textbook on agricultural chemistry emphasized that chemical fertilizer is indispensable in modern agriculture, especially for progress in agricultural production.

with synthetic substances, which bring about the formation of lumps of the desired size."[32]

The optimistic view reflected in these statements on the achievements in chemistry and the chemical industry was common in the Eastern Bloc after 1960. At a chemical factory opening speech in 1959, Walter Ulbricht, the East German (GDR) head of state from 1960 to 1973, said in a dramatic way that "chemistry gives bread, wealth, and beauty."[33] The quotes above are less dramatic, but have a logic and appeal that caught the attention of farmers and agricultural workers. Especially the second quote, which confidently promised that soil structure can be improved with chemical means. Although exaggerated, the statement was not made without foundation. A good example is the practice of liming, which is mixing calcium to the soil, to improve (lower) the acidity and to form lumps (*grupowanie*) where otherwise soil particles would be loose and without structure (Bojanowski and Roszyk 1959). The source of lime used in this region is also illustrative of useful chemical processes in the field of agriculture. The farmers purchase lime cheaply from sugar factories, where lime is recovered from limewater after sugar processing (see Chapter 2). Because lime is not a fast-release fertilizer, liming does not necessarily yield any noticeable quick effects. Nevertheless, liming improves not only the chemical quality (acidity) of soil, but also physical qualities such as lumping and moisture retension, and provides a better condition for micro-organisms in soil.

The rise of chemistry in agriculture started much earlier than the socialist economic policy, and dates back to the early nineteenth century. Adding mineral elements to soil as nutrients for plants was a revolutionary change in agriculture when

[32] Dębski 1956:184. This booklet shows the achievements of chemistry for a rural audience, focusing on the contribution of the chemical industry in everyday applications including agricultural practice.

[33] The phrase "*Chemie gibt Brot, Wohlstand und Schönheit*" was well known among school children in the GDR. After the Sputnik shock in 1957, the chemical industry was placed at the center of economic development in the Eastern Bloc, and agreements between with the Soviet Union and other CMEA countries formed a division of labor in chemical specialization (Jensen et al. 1983; Lesch 2000; Rubin 2008).

Justus Liebig popularized this idea in his *Organic Chemistry in Its Application to Agriculture and Physiology* (1840). Before this, the so-called humus theory was considered the right explanation for plant nutrition. According to Albrecht Thaer (1752-1828), who laid out this theory in his *Principles of a Rational Agriculture* (1880[1809]:396-7), the substance which was the degraded material after vegetation, humus, was the exclusive source of plant nutrition.[34] In other words, living plants fed on organic material that was left after living plants or animals died and broke down to humus. Thaer's student, Carl Sprengel (1787-1859) countered the humus theory and said that the mineral components in soil and humus were used as nutrients of plants in his *Soil Studies* (1838). Liebig, who refined combustion analysis and experiments in the laboratory, came to the same conclusion as Sprengel, and generalized it by integrating analyses of gases, sunlight, and mineral elements in a systematic treatise of organic chemistry. Liebig's idea that it is impossible to pull anything out of soil without putting in at least as much, and his emphasis on nitrogen fertilizer, have guided the so-called Green Revolution and still inform the practice of farmers all over the world.

In Poland, a similar development took place when Michał Oczapowski (1788-1854), a student of Albrecht Thaer and later professor of agriculture in Vilnius, published *The Principles of Agricultural Chemistry* in 1819. A follower of Thaer's humus theory, he observed that agriculture had been considered an art or "craftsmanship without principles" (*rzemiosło bez zasad*) and that it had started to be lifted up to the level of science (*nauka*) with the beginning of the nineteenth century (Oczapowski 1819:1-2). He points to England and Germany as countries that developed agriculture best at the time of his writing, and attributes this to the chemist Humphry Davy and agronomist Albrecht Thaer. He quoted Thaer when he emphasized that chemistry is necessary for knowing different kinds of ground and understanding their various qualities. Oczapowski takes the example of liming, and argues that only chemistry can give a satisfactory explanation for

[34] For a travel account to Thaer's farm and school, see chapters 118 through 120 in Theodor Fontane, 1998[1880], *Wanderungen durch die Mark Brandenburg*, vol.1, Berlin.

the way liming works on physical and chemical qualities of different soils in different conditions (1819:8-9). Actually, the mere fact that this book on chemistry was his first book of a series of textbooks on agriculture shows that he valued chemistry and fertilizer most, sharing the viewpoint with others of his time.

In early educational institutions for agriculture, the basic principles of chemistry played a pivotal role. Such institutions included Thaer's Agricultural Academy (*Landwirtschaftliche Akademie*, 1804) in Möglin, Brandenburg, the agricultural department at the University of Vilnius, and the Institute of Agronomy (*Instytut Agronomiczny*, 1820) in Marymont near Warsaw, where Oczapowski stayed as director between 1836 and 1853.[35] A comparable institution was founded in Dublany near L'viv (1856) by Galician landowners and intellectuals, which started as a secondary school but changed in 1878 to a college level institution, and also in Puławy (1869), which was the Russian-speaking teaching and research institution mentioned above. In the Province of Posen, there was no place for agricultural higher education until 1870, when August Cieszkowski founded the Agricultural College (*Wyższa Szkoła Rolnicza im. Haliny*) in Żabikowo near Luboń, a rural suburb of Poznań.[36] Unfortunately, the Prussian government tried to oppress higher education in Polish, and expelled professors and students with a passport from the Kingdom of Poland, which caused financial difficulties for the school. Despite promises of help and donations, the school was effectively closed down at the end of 1876. It was reopened much later as the agricultural and forestry division of the University of Poznań in 1919, despite opposing estate owners who would have preferred to see an institution more oriented towards vocational and practical training (Broda 1970). This move from Zabikowo to Sołacz, a part of Poznań, from an

[35] The Institute in Marymont changed names in 1840 to Institute for Rural Householding and Forestry (*Instytut Gospodarstwa Wiejskiego i Leśnictwa*), and was closed down with the educational reform of 1861 and replaced by the Institute in Puławy (Dembiński 1970). In 1919, it was brought back as the Warsaw University for Rural Householding (*Szkoła Główna Gospodarstwa Wiejskiego*, SGGW).

[36] Before that, even secondary-level agricultural education had been German-speaking institutions, for example the Provincial Gardening School (Provinzial-Gärtner-Lehranstalt, 1867) in Koźmin (Pache 1898:126).

estate to the city signaled this change from practical application towards academic research. This move of agricultural academies into the city was a trend, precedented by the move of academies from Möglin and Proskau (Prószków, Silesia) to Berlin, and from Dublany to L'viv.

If Cieszkowski's estate in Żabikowo formed the rural part of Luboń, the other side, towards Starołęka and Poznań, contributed to modern agriculture in another way – a mineral fertilizer factory was built there in 1877. Roman May (1846-87), a chemist and entrepreneur, started the factory and produced superphosphate with rock phosphate from Tunisia, while also teaching distillation at the Agricultural College. The factory was in 1920 merged with another superphosphate and bone meal factory in Luboń, Chemische Fabrik Moritz Milch & Co., which was founded by the German entrepreneur Moritz Milch in 1907 and planned in 1912 by the German architect Hans Poelzig (1869-1936).[37] It was also in Luboń, where German entrepreneurs, in coordination with the Settlement Commission, built a yeast factory (G. Sinner) and a potato starch factory (A. Koehlmann) in 1904. The yeast factory was built in the style of the secession, while the starch factory had Roman-Gothic elements in its architecture. Poelzig's chemical factory had strong elements of practical and rational consideration of the chemical processes on the whole terrain of the factory (see Bolz 2008). Not only was the suburban town transformed into a borderland between urban and rural landscapes, the very shapes of factory buildings reflected the idea of technological progress and educational enlightenment emanating out of the city and toward the countryside. Together with the factory and workshop of Hipolit Cegielski for agricultural machinery (1855) in downtown Poznań, these suburban

[37] Hans Poelzig (1869-1936) was a German architect linked to the Deutscher Werkbund and the trends of Expressionism and New Objectivity with other architects such as Walter Gropius and Adolf Meyer. Besides the factory in Luboń (1911), among his major works are the Department Store in Wrocław (1912), the Exhibition Hall and Water Tower in Poznań (1911), the terrain of the Centennial Hall (*Hala Stulecia* or *Hala Ludowa*) in Wrocław (1913), the Grand Theater (*Grosses Schauspielhaus*) in Berlin (1919), the Festival Theater in Salzburg (1920), the Radio Station (*Haus des Rundfunks*) in Charlottenburg, Berlin (1929), and the I.G. Farben Building in Frankfurt am Main (1931). On Poelzig's work in Wrocław together with Max Berg, the designer of the Centennial Hall itself, see Ilkosz 2005.

enterprises in Luboń provided industrial production and higher education for agricultural development in the region.[38]

Most important of all, the new knowledge was widely distributed by agricultural circles (*kółka rolnicze*) that were formed in towns and villages. In Wielkopolska, the circles started in 1866 and their number rose to 105 circles in 1876 and later to 385 circles in 1912, encompassing about 36 percent of the total number of peasants and farmers (Kowal 1993). Each circle had a membership of 30 to 150 farmers, headed by local leaders including estate owners and teachers, and sometimes equipped with a small library of less than fifteen volumes. They studied with the help of leaders, and later on, lecture tours were organized in larger towns. These farmers had obtained ownership of land in the first half of the nineteenth century thanks to peasant liberation and allocation of land known as "propertization (*uwłaszczenie*)."[39] Parcels of land ranging from five to fifteen hectares were distributed according to the household capacity of farming operations, in exchange for annual payments in money or grain of less than 24 years. In the municipality (*gmina*) of Pępowo, for example, this process started in 1823 and finished in 1841, and involved major changes to the layout of the estate and reorganized the landscape from one centered around the manor and folwarks to a new one that favored the villages and the location of their allocated land parcels. As a result, the village closest to the manor was relocated across to the other side of the forest to give land and space to the manor and new farmers' plots, which aroused strong resistance from the peasants (Pieprzyk 1995). Houses and barns were repaired, rebuilt, or newly erected as part of the landscape reorganization plan. The whole rural landscape had

[38] The production of nitrogen fertilizer in Poland occurred later, partly because the method of producing ammonia by Haber and Bosch was developed in 1905. The first factory on Polish territories was one in Chorzów deserted by Germans in Upper Silesia after the plebiscite of March 1921, when parts of Upper Silesia fell to the Polish side. The second factory was a state factory founded in Tarnów in 1927. In both places, Ignacy Mościcki, the future President of the Republic of Poland (1926-1939), played pivotal roles as director in the former and as founder in the latter factory.

[39] Rocznik Kółek Rolniczo-Włościańskich w Wielkim Księstwie Poznańskiem (1877-1913).

changed after the farmers and villages became separated from the estate and relatively independent.

The importance of mineral elements in soil was also propagated in newspaper advertisements marketing products of the factories Roman May and Moritz Milch for superphosphate with or without ammonia, Chile saltpeter (sodium nitrate, *saletra chilijska*), bone meal, lime, and guano. Another example is a small booklet intended for farmers from the year 1916. Under the title "Let's fertilize the soil with air!" (*Nawoźmy rolę powietrzem!*), the author lays out how to make the most out of given resources to fertilize the soil during a hard time (Zieliński 1916). Taking the most abundant gases in the air, he explains how plants use carbon-dioxide, sunlight, and water to form fruit or grain, and how to make the most by sowing in rows and not cutting the leaves too early for feed. Zieliński, the author of other booklets focusing on chemistry, recommends legumes and clover as catch crop (*międzyplon*) that fix nitrogen in the soil with the help of bacteria, and emphasizes aerating the soil for contact with oxygen and moisture. The exaggerating title notwithstanding, it is a concise and effective outline of chemical processes in plant and soil without jargon.

What I described in the above can be categorized as local or regional history, but it is not a significant part of social memory. Names such as Cieszkowski, May, Witos, and Mikołajczyk are remembered only because they are commemorated in street or school names. It is not rare that school children know those historical figures better than their parents. On the other hand, all farmers are familiar with the mineral elements of N (nitrogen), P (phosphorus), and K (potassium) in the soil and how to fertilize, having learned at home and in school. Typically, farmers in their forties have vocational school training, while the generation above has only elementary education. Having vocational training does not mean that they remember everything they learned in school, but bears out in practices like book-keeping of field diaries (*ksiąga pól*), and how systematic and detailed the inscription in those is. Taking notes while in the schooling session was another similar indicator. In fact, there were not that many schools teaching agriculture in

the region, and new secondary and vocational schools were built after the year 1960. With the exception of the Agricultural School in Czernichów (1860) near Cracow, a lower level school in Sobieszyn near Lublin (1896), and the German agricultural school in Bojanowo (1907) near Rawicz in Wielkopolska, there were no agricultural schools on the secondary level before 1918. It was only in 1918 that three schools opened in Wielkopolska for both ethnic groups in Wolsztyn, Leszno, and Rawicz (Wieczorek 1969:100). Even after the educational reform in 1948, when new vocational schools (*technikum*) were built to include agricultural courses, a lot of people on the countryside chose to take extramural courses (*szkoła zaoczna*) on weekends while working at home, instead of commuting to distant schools.

In villages near large state farms, such as the horse breeding station in Pępowo, the director and managers of the state farm organized such courses in agronomy. The long-time director during the 1970s was an agronomist of noble descent, and it was he who led the vocational agronomy courses in nearby villages. Farmers who never had the opportunity to learn the basics of agriculture learned it from him. While the relationship between private farmers and the director was potentially antagonistic during the socialist period, farmers who remember him agreed that he was more concerned with unfinished work in the fields than being chastised by party officials for working together with private farmers. Agricultural workers who remembered him joked about his naivety especially around machines. He would not let tractors stand around in the yard with the engines running, and despite of warnings from a worker, he once turned the ignition off. That tractor would not start again and had to be towed to the workshop for repair. On the other hand, they also appreciated his caring and compassionate personality, and told me an episode about him taking over the wheel of a harvester and driving it all night long because the driver was dozing. Several farmers acknowledged that it was from him that they learned the difference between various nitrogen fertilizers, that you have to match the type of nitrogen fertilizer to the crop, and that too much manure can be more harmful than beneficial.

The problem during socialism was rather the limited availability of fertilizer, or the unequal distribution of it. There was neither much support nor attention for individual farms, and available resources went foremost to state farms or collective farms. Mineral fertilizer was rarely in stock at municipal co-ops (GS, *Gminna Spółdzielnia "Samopomoc Chłopska"*), which monopolized the circulation of goods in the countryside. Even the purchase of machinery such as a tractor required party membership or a bribe. Although there was an unofficial circulation of resources originating from those state farms, private farms had to maintain themselves in a self-sufficient manner, minimizing risks by diversifying crops and by husbandry. The shortage of fertilizer, herbicide, and pesticide was reflected on the widely voiced claim that private farms had to till the land "without chemicals" (*bez chemii*), only with manure thus making every crop on their fields virtually "organic." On the other hand, some farmers had a contrasting view on the matter, stating that there was plenty of pollution during the socialist period, even when not counting the nuclear disaster of Chernobyl in 1986. The nuclear fallout caused the end of sheep husbandry in the region around Leszno and the prevalence of thyroid cancer among those who were teenagers at the time but could not get potassium iodide because younger children were prioritized, and worried local farmers that there was more pollution than conventionally acknowledged.

If the shortage of mineral fertilizer characterized soil chemistry in the last several decades, now the excess of nitrogen in the soil and nitrogen runoff has become a problem under new environmental standards and agricultural policy. Erosion and nutrient runoff has been a problem investigated by ecologists, but it became part of a policy to keep groundwater and rivers clean. Already in spring 2008, I had heard on a radio broadcast from Leszno that the level of nitrogen in the groundwater was the highest in this region in Wielkopolska. When I asked advisor Jan about it he was not surprised at all. On the contrary, he and other advisors had been struggling with this problem, because high levels of nitrogen in the soil led to low levels of sugar in sugar beet. They suspected that high nitrogen levels were due to the fact that farmers use a lot of fresh manure on the

fields without mixing or fermenting it for a sufficient time. For years, they had recommended decreasing the use of manure and applying more potassium fertilizer instead. It was a slow process, because from the farmers' perspective potassium fertilizer had to be bought, while manure was readily available for free. However, Jan and other advisors had some success in recent years in persuading farmers to use potassium fertilizer and making them see its effect in terms of quality and quantity at harvest. It has only been one or two years that this problem came to be framed as an environmental problem. How factory advisors approached this issue and other approaches to the soil will be discussed in the following section.

Chemistry and Soil Science in Wielkopolska: A Brief Genealogy

The so-called Green Revolution was made possible by the perspective of the soil as a chemical entity. And this perspective, now ubiquitous everywhere in the world, has a peculiar historical context in Central Europe, including Wielkopolska. Nowadays every farmer there knows that the mineral elements of nitrogen (N), phosphorus (P), and potassium (K) are indispensable for the growth of plants on any kind of soil. Some farmers who want a better harvest use other micro-element fertilizers such as sulfur (S), magnesium (Mg), manganese (Mn), boron (B) in addition to macro-element fertilizers. The practice seems to have started in commercial seed breeding farms, where the quality and germination rate of seeds are directly influenced by these micro-elements. In what follows, I shall explore how these elements gained their prominent place in scholarship and in agricultural practice, from the discovery of their role in plant physiology to modern explanations of the enigmatic totality of soil, intertwined with political changes in the region.

In 1905, Eilhard Alfred Mitscherlich,[40] an agronomist and soil scientist at Kiel University, wrote a handbook of soil science for farmers and foresters. In this booklet, he described soil science as a bridging discipline between geology and biology, although it had previously been considered more dependent on geological knowledge. And the connection between the two fields was provided by the two common elements: physics and chemistry. For Mitscherlich, how the soil was formed in the past was not important. What was more critical was to know that the prosperity of plants depended on the physical and chemical state of the soil in the present. He defined soil (*Boden*) as a "mixture of more or less small, solid particles, water, and air, which, furnished with the necessary plant nutrition, can serve as carrier of vegetation" (Mitscherlich 1905:1). In contrast with the conventional emphasis on fertilizing, he urged farmers to pay more attention to physical conditions of the soil: moisture and temperature in the soil and the resistance of the soil which counteracts the growth of plants were, according to his quotation of Ewald Wollny (1846-1901), equally important variables to consider for the physiology of plants.

Considering the impact of chemist Justus Liebig's (1803-1873) deep influence on the development of mineral fertilizer in agriculture, Mitscherlich belonged to a new generation of scientists who built upon chemistry to open new horizons in the new field of soil science. In contrast to the father of modern soil science in the U.S., Eugene Hilgard (1833-1916), who had a background in chemistry, Mitscherlich wrote his doctoral thesis (1898) and habilitation (1901) on water content in soil and its relation to soil temperature, which are physical qualities of soil. Mitscherlich was not alone in exploring soil science as a new, integrative discipline. Already before him, the Russian father of soil science Vasily Dokuchaev (1846-1903), who classified soil types according to geographical variations, considered soil not only as a product of physiochemical processes but as a natural body that is the result of interactions between water, climate,

[40] Eilhard Alfred Mitscherlich (1874-1956) was the grandson of renowned chemist Eilhard Mitscherlich (1794-1863), and son of surgeon Gustav Alfred Mitscherlich (1832-1911).

and living and dead organisms. He put a substantial amount of time and effort into the mapping of local soil types according to geological, chemical, mechanical, and physical criteria, and later matched with climate maps (Evtuhov 2006). Dokuchaev's left a big influence in Poland not least because he worked there in Puławy in eastern Poland (Russian partition) as director of the Russian Institute for Rural Economy and Forestry from 1892 to 1893.

That micro-organisms had a role in soil structure was an idea that already Charles Darwin (1882)[41] had presented to the Geologic Society in London in 1837 (Binkley 2006:260). The "mould" in Darwin's usage is the layer of dark material that rests on various types of subsoils, similar to the usage of the same word by John Evelyn (1676), who used it to discuss the dark layer of soil under the thin top layer of "turf."[42] Darwin suggested that the formation of soil layers as a result of worm casting deserved the designation "animal mould" rather than the commonly used "vegetable mould" (1882:4). Similarly, Robert Koch's (1843-1910) discovery of anthrax spores in the soil in 1876 provided concrete evidence of micro-organisms in soil. At the time, he was working as administrative physician in Wolsztyn, Province of Posen (Wielkopolska), from 1872 until 1880. When Louis Pasteur (1822-95) tried to find out how anthrax spores from carcasses of infected and deceased animals culled and buried deep in the soil, he noticed that earthworm casts were abundant in the pastures where sheep developed anthrax. Although the spores in grass did not cause the disease, the spores became active when they entered the bloodstream of sheep through wounds in the mouth, possibly caused by feed plants such as thistles (Binkley 2006:261).

The biological approach to soil was undertaken in earnest by Dokuchaev's peer Pavel Kostichev (1845-1895), who developed the idea that there is a flora and fauna in

[41] Charles Darwin (1882), *The Formation of Vegetable Mould, Through the Action of Worms, With Observations on Their Habits* (New York: Appleton & Company).
[42] John Evelyn (1676), *A Philosophical Discourse of Earth, Relating to the Culture and Improvement of it for Vegetation, and the Propagation of Plants, etc. as it was presented to the Royal Society, April 29, 1675* (London: John Martyn), p. 41.

soil (Gumowska 1955:23, 31). After Kostichev's early death, Vasily Williams (1863-1939), chair of soil science and agriculture at the Moscow Agricultural Academy, synthesized a systematic theory of the biological cycle of matter in soil, and the soil-forming process of organic matter in soil (Terlikowski 1950). His emphasis on biotic components in soil ecology went so far that he argued that it was not the plants that needed soil but the soil that needed plants (Gumowska 1955:38). The idea was already circulating before World War I, as can be seen by the publication of a booklet that proclaimed that "The soil lives!" (*Rola żyje!*), published in Warsaw by the Agricultural Newspaper (*Gazeta Rolnicza*), intended for enlightening and teaching farmers (Zieliński 1911).

Regarding the soil of Wielkopolska, Feliks Terlikowski (1885-1951) was the soil scientist who inherited all these traditions.[43] Born in Łowicz near Łódź, he left Poland after finishing secondary education (*gimnazjum*) in Warsaw to study chemistry and mineralogy in Geneva, Switzerland. After coming back with his degree to Poland in 1911, he worked at experiment stations of the Agricultural Academy in Dublany near Lwów. When the institution closed down after World War I, he was invited as core faculty to start the agriculture and forestry department at the newly founded University of Poznań. He also made an effort to open a branch institution in Bydgoszcz, which became affiliated with the Institute in Pulawy, where Dukuchaev had stayed years before. Until his death in 1951 in Poznań, he finished the soil mapping of Wielkopolska based on data started by scientists at a German institute (see Figure 10). He also contributed to the biological view of soil which was popularized under the political influence of the Soviet scientist and Hero of Labor Vasily Williams, but simultaneously integrated the theory of Williams with other approaches in Germany and the U.S. (Terlikowski 1950). For

[43] In the Kingdom of Poland (Russian Partition), Sławomir Miklaszewski (1874-1949) was the central figure in soil science. Being familiar with Western and Russian theories, he developed an original classification system for Polish soil and published soil maps of the Polish Kingdom between 1906 and 1912. He formulated the concepts of rendzina (*rędzina*) and borowina, the former predominant in the west and the latter in the east of the Vistula (Białousz et al. 2005:263-4).

practical application in agriculture, he emphasized the importance of humus formation. While the importance of humus (*próchnica*) was well known, Terlikowski supported this observation with theory and concrete evidence, and with practical recommendations of how to increase humus content in soil (Terlikowski 1951).

In summary, the emergence of soil science occurred in the latter part of the nineteenth century, when the influence of Liebig's contributions in chemistry revolutionized the knowledge on fertilizer. Soil science was a synthesizing field, bridging chemistry with biology, physics, and geology, mainly set to solve the problem of unavailability of nutrients despite the existence of elements based on chemical analysis. As the background of early soil scientists shows, training in chemistry was common, and chemistry remained in the heart of their methods and experiments. If physical and chemical principles had been considered early on in the development of soil science, soil as a biological entity was an idea that was added to in the later years, around the 1890s, after the discovery of micro-organisms and their lifecycles. This approach to the biological quality of the soil has to be distinguished from the interest in plant physiology, which was consistent from the very beginning of soil science, as Mitscherlich observed. These three approaches focusing on physical, chemical, and biological qualities of soil are not only distinct in emphasis and method, but show a difference in the historical development of the field of soil science in Poland, with influence coming from the East and the West.

The approach to soil as physical, chemical, and biological entities is still applied in the present. In the simplest of terms, agricultural chemists insist on proper maintenance of soil acidity (*pH*) and good fertilizing practices. Ecologists emphasize the importance of monitoring soil flora and the interaction between landscape and micro-climate. On the problem of erosion, each expert has different priorities in applying remedies designed to resist moisture loss and warmth retention. In the end, however, the chemical model of soil prevails because it provides a quantified model that informs and sustains action and improvement when compared to the other two perspectives. While the three distinct

models of soil are still valid and applicable in the present context of agricultural practices, the other two become subordinate to the chemical model and become embedded in the landscape as memory. In other words, the approach to soil as a chemical entity still provided the most important and easily accessible road to good soil and better harvests in the present.

Humus and the Problem of Visualizing the Physical and Biological Nature of Soil

From the viewpoint of the farmer, factory advisors are quite different from local agricultural advisors. During socialism, private farmers did not trust government-employed agricultural advisors (*agronom*) and usually did not follow their advice, which was oriented towards filling production quotas in the region. The strong hostility of farmers toward the policy of specialization in the 1970s, for example, shows their effort to maintain self-reliance. Even during times when there were strikes and food riots happening in cities, farmers reminisced and boasted that there was always food on the countryside thanks to the independence and self-sufficient nature of individual farms. The virtue of a true farmer, in their view, lies in the proof that he can grow anything, and has a little of everything on his farm and fields. This viewpoint was still voiced among small farmers who owned less than fifteen hectares of land, who had to cope with price fluctuations of the capitalist market. Nowadays, advisor-officials help farmers file subsidy applications and correct them, provide courses in policy changes, and issue permits for herbicide and pesticide application. To have a permit for herbicide application is a new requirement under the Cross Compliance policy of the EU, but the obligatory schooling session for this permit had mixed responses because of the use of out-of-date teaching material. For fast advice on the field, sugar beet planters prefer to consult advisors of the factory, even if they are seeking advice on something other than sugar beet. It is easier and faster to call them and they do not charge a fee every time they come

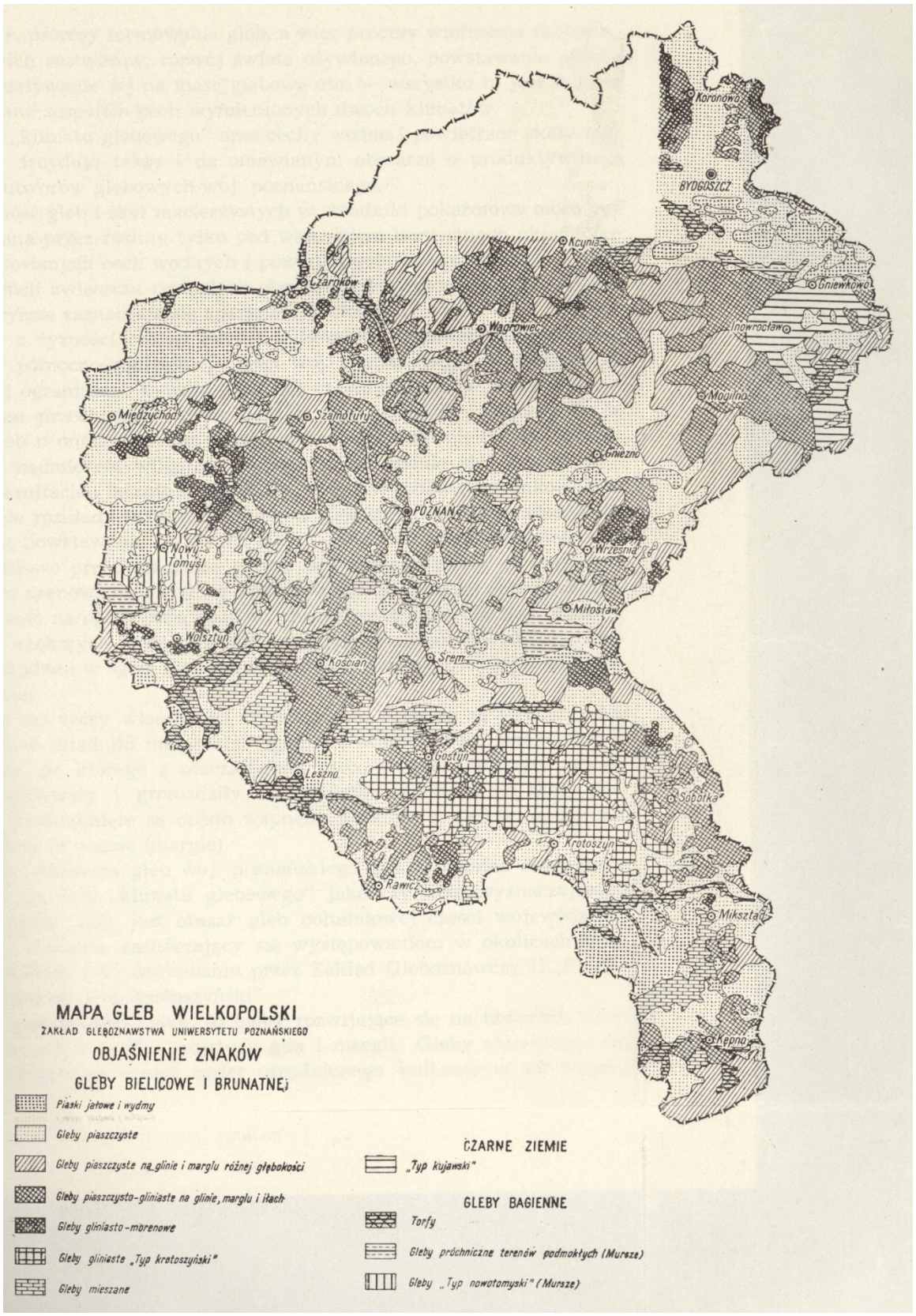


Figure 10. Terlikowski's Soil Map of Wielkopolska (Terlikowski 1958[1937]).

for a visit as officials do. For sugar beet planters, maintaining a good relationship with factory advisors proved beneficial in a lot of cases.

Before sowing season, the sugar factory organized a schooling session (*szkolenie*) for sugar beet planters. It was a key event which served as a chance for reconciliation and cooperation between advisors and farmers, especially if the relationship had suffered during a tumultuous campaign. It was basically an informative session organized by advisors of the raw material department, which included reports of the campaign results, evaluation of regional results, some things to be corrected, and prospects of the new season. Forty to seventy farmers attended each session, and they were selected and invited by their advisors, who try to rotate which farmers are invited each year. The sessions were scheduled in such a way that the head advisors, Witold and Maciej, could attend every one of them, one in the morning and one in the afternoon, for three weeks to cover all the regions. Local restaurants served as the venue of these gatherings and they ended with a meal, which was intended and perceived as a small appreciation of the farmers' effort every year.

For this year's session, Witold had prepared two short lectures that he thought would help farmers, based on what he saw during the last year's growing season and what he learned at workshops and exhibitions in Germany. The first lecture dealt with the essentials of spraying technology, which focused on the choice of nozzles and the best conditions for spraying. Witold wanted to get through his point that no matter how modern the equipment, there was nothing better than well-maintained nozzles that do their job correctly, with optimal conditions of wind, temperature, and humidity after dusk and before dawn. The second part dealt with an enigmatic question – why would there be such a difference in harvest under similar conditions and soil? Witold wanted to draw attention to the fact that it was humus, the organic substance within soil, that brings about that difference, although organic substances typically comprise only five percent of the soil. He presented humus as a mixture of natural and organic colloidal substances, which is stable but also constantly made and lost within the soil, deciding the physical qualities

of soil, and most importantly, binding carbon in the soil. Because humus holds up to twenty times its weight of water, one percent of increase in humus brings thirty percent more moisture to the overall condition of the soil while also promoting air penetration.

The way Witold presented his argument was actually meant as a critique of farmers' practices, namely that they leave the field empty after the harvest. They gather sugar beet leaves for feed and sell hay to feed or fuel companies for cash. Most farmers still prefer to leave the field bare or with orderly furrows after plowing, and let it fallow during winter. Witold explained that there are some things that farmers can do differently to promote humus in their fields. He recommended leaving crop remains on the field to preserve soil moisture and temperature, and to protect the top-soil from strong winds. This addition of organic fertilizer and the decomposition process would also promote the activity of bacteria and other micro-organisms in the soil. Even though these were physical and biological qualities, he framed and explained these points in terms of chemical components, especially in the case of sugar beet leaves. He emphasized that sugar beet leaves are comparable to good manure, and have even more potassium than cattle manure. When a farmer interjected that those who have cattle tend to have a better harvest compared to those who have pigs, Witold affirmed that such a tendency is quite possible because of the difference in potassium. He concluded with the remark that sugar beet leaves are much more valuable when left on the field than when used as feed for cattle, given the high price of mineral fertilizer.

Later during lunch, some farmers who shared this view told me that they would not use the leaves as feed because of the herbicide use these days: "Of course, they say that herbicide breaks down after a certain time period, but still. And it is not really worth the effort when there is other feed, especially the beet pulp (*wysłodki*) which the cattle really like and visibly improves milk production. Beet leaves, I have to say, not so much." Some farmers in the village had told me before that they use beet leaves as moist feed, because there is no other moist feed in season, to keep the cattle's appetite going. These farmers, in comparison with others, had less land and would not have needed much time

and effort to gather beet leaves. Of course, the need for cash often makes the decision for the farmers, too. While the size of land and farm play a certain role in these decisions, what farmers preferred to do was as much a matter of choice and priorities as a question of style and differentiation among farmers. They had to navigate between doing it differently and doing it not too differently from the neighbors when it came to decisions about work on the fields.

Witold was well aware that he had to frame his lecture around nutrients, numbers, and costs to bring his message home to the farmers. “If you really want to go farthest with the importance of humus,” he later told me, “you would have to say that they shouldn’t plow the land anymore, because doing so profoundly disrupts the physical soil structure and the workings of organic decomposition in the soil. The fuel consumption and gas emission from plowing is a considerable cost for the environment, too. But plowing and adding fertilizer is for the farmers the most essential parts of their work, of agriculture as they learned and know it. It is also true that the easiest way to improve the physical structure of soil is by adding mineral fertilizer such as lime and maintaining a balanced pH-rate. Still, there is a merit of cover crops that cannot be made up by mineral fertilizer.”

Advisor Jan told me later that there are soil bacteria fertilizers (*użyźniacz glebowy*) and so-called bio-fertilizers that improve the decomposition process in the soil and make nutrients more readily available for plants. He himself promoted the use of one such fertilizer brand, and let farmers experiment with it on their own fields and observe whether it was able to make a difference. He had a full folder of pictures taken on such fields, showing how much taller the crops were on the same soil under the same conditions with only the difference of applying this bacteria fertilizer. Not denying that there was some income from those promotional activities, he nevertheless emphasized that it was because of the difference it makes for the farmers that he came to believe in that bacteria fertilizer: “It is sound in theory, and what is really good for the farmers is that it helps visualizing those theories, the processes going on within the soil. No farmer

would believe in such fertilizer unless it makes a visible difference, especially when there are so many swindlers around to sell worthless stuff."[44]

Liebig's contribution to agricultural chemistry not only revolutionized the field of agriculture and agronomy – it also provided a model of soil that was good to think from the farmer's perspective. It was this appeal of the logic that you have to add something in order to pull out a good harvest that prompted farmers to calculate nutrients as well as costs, putting an economic model together with a soil model based on chemistry. As I will examine in the next part, not only adding nutrients and labor to the soil but an open, learning attitude is identified as a requirement for becoming a good modern farmer. The imagining of the past, based on memory and oral tradition, and seeing it in the landscape in the present are components of the land, mostly encoded into a genealogy of land ownership. However, there was always room for judgment when it came to owning the land and taking care of it. And it is this linkage of estates, memories, and scientific knowledge put into the care of soil that makes up the landscape of the present, and leaves private farmers and commercial farms in the East and the West, as I will describe below, in contestation about who took and is taking good care of the land.

Counting the Elements: Chemical Arithmetics and the Basics of Soil Improvement

On the last day of October, Marek and I headed to the sugar beet fields. The next day was All Saints' Day (*Wszystkich świętych*), a big holiday in Poland for homecoming and remembering deceased ancestors and family members. Tomasz and Ala went to buy flowers and candles, and would join us later after they stopped by the cemetery and cleaned the grave of Tomasz's parents. The next day was to be spent on visits to

[44] There were actually several cases of salesmen visiting door to door, trying to sell counterfeit seed material and fertilizer. Selling seed material with a specific variant name without a permit is illegal as well.

cemeteries and the home of parents, relatives, or in-laws, so all the work and shopping had to be done on that day.

In the fields, we had to make sure that the road was good enough for the new rental harvester and the transportation truck. It was the first time they had had sugar beet on that remote field away from the main road, and Marek wanted to make sure that the truck had good and even traction on that uneven, unpaved, and at times muddy road. He also wanted to gather sugar beet which had been uprooted by deer after the foresters investigated the damage on that day. We evened out the holes in the unpaved road with rocks that had been gathered in heaps from the fields in spring before sowing. The size of these rocks varied from small as a fist to large as a chair, making it necessary to use chains and the tractor to pull them out of the soil. Marek used to joke that the rocks fall down from the sky over the winter, since they never seemed to decrease in size or numbers in spite of the hard work to eliminate them in spring every year. Although the soil is categorized as relatively good third-class soil suitable for wheat, the soil deposit was formed as a result of glaciers which were strong enough to carry rocks along with soil particles.[45] Tomasz told me that the bigger rocks cause problems for any kind of operation with machinery, but can seriously damage a plow if it is not equipped with a feathering system that enables the share and mouldboard to yield upwards when it meets too strong a resistance.

On the next day, Marek left early with his family to visit the in-laws and joined us again in the afternoon at the parish church in Pępowo for the All Saints' Day mass and procession on cemetery grounds. In the meantime, I had been to the church cemetery in Ludwinowo with Ala and Tomasz to visit Ala's parents' grave. The graves in both towns had already been taken good care of the day before. In both places, the cemetery visit was also an opportunity to meet relatives and acquaintances who came from near and far to gather around shared graves. People also took time to take a look at the new graves to see

[45] Loamy sands and sandy clays constitute almost seventy percent of the total acreage of farmland in Poland.

who recently passed away. As soon as we were back home, all family members gathered around the table for coffee and talk about the cemeteries they visited, what was new in each town, and the people they had met. The topic ranged from caring worries about who came or who did not come to the cemetery, to gossip about how someone looked and what they wore, and with whom they showed up. Ala and Tomasz reminded me with a teasing smile that I will be quite the talk around here because I was at the cemetery with them and some people inquired if I was the future son-in-law.

Before supper, Marek wanted to review his plans for the sugar beet fields after the harvest. Part of the fields was to be sown with winter wheat, and the rest was to be plowed over after some application of natural fertilizer. Fertilizer prices had gone sharply up since spring and reached almost twice the price of one year before. Although he had stocked up on nitrogen fertilizer months ago by purchasing ammonium nitrate cheaply on a liquidation sale, he wanted to keep them for next spring and had been looking at natural fertilizer before plowing. While other neighbors had either cattle or pig manure, Marek had to procure fresh chicken excrement from an acquaintance and asked someone who had a spreader to apply it. He sighed and told me, "Until last year, the chicken guy paid me 2 *złote* per ton to take that poop away, but now even that poop has a price. He wants 15 *złotych* per ton. Can you imagine that? Of course I have to transport it myself and have to pay for application. I don't like to use that stuff because it makes my tipper [trailer] stink for weeks, but it is such an effective fertilizer that I have no other choice. With other kind of manure, I would have to procure five times the amount of chicken poop. That is why I have considered having pigs again lately, but you know how grandpa [his father] is."

The rising price of mineral fertilizer indeed had become a worldwide problem since we detected a sign of it in March, when a German farmer visited the farm

unexpectedly to buy ammonium nitrate.[46] We thought that he came this far to get a better price, but he told us that it was difficult to get any fertilizer because it was sold out everywhere. Maciej at the sugar factory confirmed that he heard about this trend in Germany, but seemed surprised himself at the fact that people have come this far to get fertilizer. On the other hand, he told me that it is possible that there is more fertilizer available in Poland because of the circulation of imported Russian fertilizer which is usually somewhat cheaper. As the price of fertilizer reached record highs over the summer, Witold, Maciej, and other advisors at the sugar factory put together a table for farmers, which showed the amount of nutrients in natural fertilizer. Based on this table, farmers could leave crop remains on the field as fertilizer and add manure to meet the nutrient demands of the crop without depending too much on mineral fertilizer (see Table 7).

Table 7. Flyer - Calculation Table for Nutrients in Alternative Organic Fertilizer

Form of natural fertilizer	t, m^3/ha	N	P	K
		kg/ha	kg/ha	kg/ha
Remains (hay) from cereals	6.5	0	15	80
Remains from canola	7.5	20	25	160
Remains from maize	12	20	30	170
Potato remains	13	10	15	120
Sugar beet leaves	40	40	40	220
Cattle manure	30	30-60	90	210
Pig manure	25	30-60	100	75
Chicken excrement	5	30-66	85	70
Cattle urine	25	15-52	0	200
Pig urine	20	16-56	20	0
Cattle waste fermented	25	24-66	50	112
Pig waste fermented	20	24-66	64	68
Chicken waste fermented	13	24-66	91	65

[46] I only learned later about the global scale of this phenomenon, after reading a report describing the rise of fertilizer prices in Vietnam. See "Shortages Threaten Farmers' Key Tool: Fertilizer." *New York Times*, April 30, 2008.

* Approximate price of fertilizer in fall 2008 (PLN/ton): N (34%, 1,000), P (45%, 5,000), K (60%, 2,000)

Leszek, Marek's field neighbor had applied pig urine a couple of days before, and other neighbors were also busy carrying manure to the fields on tipper trailers. For some of them, the rising price of fertilizer was not an urgent problem, because it was the time of the year when they used up the manure they had accumulated until then, and applied it right before plowing. Farmers often transported the manure to the field earlier because there was no more space at home. In the end, transporting, applying, and plowing occurred on different, consecutive days, even with the help of ideal weather conditions. This worried Witold, who insisted that liquid manure had to be turned over as soon as applied. Otherwise, he told me later that week, more than half of the nitrogen would be lost due to evaporation. "The better the manure is fermented, the less the risk of losing nutrients to evaporation," he explained, "but if you dump fresh manure on a mild day like this and leave it overnight, it makes no sense to put in the effort in the first place. I tell them all the time, but they just won't listen." When I mentioned this to Leszek and asked him why he would not follow that advice, he shook his head and clarified, "Listen, I don't know about others, but I am the only one in my house to do this work, and I have to borrow the applier from a friend of mine who has his own fields to take care of. Just to get the equipment and finish the work [*robota*] and return it back takes the whole day. If I had less acreage or if I had my own equipment right here at home, I would do it exactly as supposed to. And that's probably not just me, but a lot of us here are in the same situation. The way it's done here, it works well enough." Leszek's statement explains the way work is done in a lot of households in many villages, except for those households where two or more tractor drivers (sometimes sons, brothers, or fully employed workers) are available. Although the possibility of a joint operation between neighbors is always there, it is rarely actualized because such work is subject to many unpredictable variables including the relationship itself, compatibility of machines, and different work schedules. Leszek also told me that joint ownership of a seasonal machine such as a harvester was

quite common in the past, but has become a rare sight in recent years, and a simple paid rental of machines has replaced cooperative work among individual farmers.

The next two weeks flew by as farmers finished plowing or sowing winter crops such as wheat, barley, or rye or catch crops (*międzyplon* or *poplon*) such as clover, mustard, or lupine, which were sown between the main crops as animal feed and to maintain and conserve soil nutrients for the next crop in spring. Storing plowing and harvesting equipment and machines into barns also took considerable time, together with other preparations such as storing hay and procuring fuel for the coming winter.

One day when I was at the factory, Dr. Kamiński, the head of the raw material department, had told me that he was expecting a group of Ukrainian guests from a *kombinat* in the Poltava region. He invited me to the guest tour, because he thought it would be interesting for me to meet them, and for them to meet me. When I asked Maciej, he explained that this contact was established through the German chemical company Biochem, where Dr. Kamiński worked before he was called to this position when Rheinzucker began operation in Poland. The group consisted of the director and managers of the *kombinat* as well as Biochem employees from Ukraine and Poland. The *kombinat* had an acreage of 65,000 hectares with its own sugar factory, and Biochem had organized an overseas field tour for this sizeable business partner.[47] The visit included a guided tour of the factory, a briefing session to overview the operation of the raw material department, and a trip to the commercial farm specializing in animal breeding in Garzyn, followed by dinner at a nearby local restaurant. The official language was German, which was translated into Ukrainian for the group by a young Biochem employee in the group. When there was jargon that did not get through, people on both sides used a combination of Polish, Ukrainian, and Russian words to explain details.

[47] In comparison, former state farms in Wielkopolska cultivated between 3,000 and 5,000 hectares, and the total sugar beet acreage of Rheinzucker reached as much as 37,000 hectares in 2007.

The guests were most interested in Witold's presentation about the local soil conditions relevant for sugar beet cultivation. Maciej's short report on statistics and the scale of production was apparently less interesting. Maciej later told me that he expected that reaction even without knowing their statistics, because he speculated that the conditions in the Poltava region were much more favorable than in Wielkopolska, rendering a simple comparison meaningless. On the other hand, when Witold started to present about the local climate and soil conditions and how these relate to sugar beet cultivation, they seemed to pay more attention. He briefly summarized the climate by mentioning the dry seasons in early summer and the risk of drought. As fertilizing strategy based on the characteristics of local post-glacial soil he enumerated the following things: the acidity (*pH*) of the soil had to be checked every year and be corrected (*poprawić*) with calcium every other year (liming); potassium is lacking most in the clay loam (*gliniasty*) soil of this region, especially for sugar beet; and magnesium lacks in half of the acreage, but this is easy to correct with a combined form of calcium or nitrogen fertilizer.

The director of the *kombinat* expressed his desire to ask a question through the translator in a polite but firm manner, and wanted to know why sulfur was left out in the presentation. The problem was that the translator was not able to find the German word for sulfur (*Schwefel*) and it took a while until Witold confirmed it with the symbol S on the periodic table. Witold explained that sulfur (*siarczany*) deficiency rarely was a problem in this region, probably because of the abundance of manure. In my own fieldwork experience, too, the only place that applied sulfur was the commercial farm in Kopaszewo, specifically for fields growing seeding material and canola. Maciej and Witold later speculated that the director asked because they had sulfur deficiency on their lands, or that the director wanted to know how much sulfur was used in Poland, the largest exporters of sulfur in the former Eastern Bloc.[48]

[48] See Jensen et al. 1983 and Schnug 1998.

When Witold introduced the internet-based fertilizer calculation software which was offered to farmers through the sugar beet advisory website, the director wanted to know on what basis the numbers and calculations were obtained, and how specific local conditions were reflected in that software. Witold patiently explained that the software had been tuned to suit Polish conditions such as precipitation and duration of soil components, based on experiments at the Agricultural College in Poznań. The project started when the factory began to pay premiums on high sugar content, and the amount of nitrogen fertilizer had to be limited in order to increase the sugar content. Abundant nitrogen helps sugar beet develop strong leaves, but inhibits the accumulation of sugar in the root. The software recommends the amount of fertilizer based on data individual users provide about their land, previous crop, and fertilizer application of the past two seasons. In this way, even farmers who forego soil analysis, arranged through the raw material department with an outside laboratory, can simply fill out some information about past farming on the land and receive recommendations. The director asked if the use of the website and software was free. The general fertilizer recommendation software was free for any planter, while separate software for calculating nitrogen had a small fee of 10 Euro per probe. In the end, what the *kombinat* director really wanted to know was whether he could somehow obtain the software for free. Witold answered that the company had a contract for the use of these programs, and he would gladly forward the contact information for the software company. The director, slightly disappointed, smiled in return with a nod indicating that he had understood.

When the group left after dinner at the restaurant near the breeding station in Garzyn, Maciej, Witold, and I headed back to the factory. Wojtek, the vice director of Garzyn, saw us off and he was confident and proud that he was able to show the guests from Ukraine a top-level operation that had had quite a lot of success in seed production and cattle breeding. With a bit more than 3,000 hectares, he knew that he could not impress the guests with acreage, nor in terms of employment because the number of employees had shrunk from 600 to 150 in the last two decades. However, as a graduate of

the Agricultural College in Poznań in the early 1970s, he chose to work here instead of focusing on his own 12-hectare farm since 1973. Not only his education, but his experience and position even after the restructuring of the breeding station were the reasons behind his confidence when he spoke about the way they take care of things on the field. “I had the impression,” Wojtek told us, “that our guests were not as much interested in the way we do things as they wanted to know how much profit we make.” Maciej joined him and said that he had that impression already in that conference room when Witold made the presentation: “They only wanted to know what they deemed relevant and applicable for them, and did not seem to try to get the whole concept, the big idea behind the details. And I don’t want look petty, but they didn’t even thank us for the hospitality and invite us back to their *kombinat* when they were leaving.”

“You are right. As if we are ever going to visit them,” Witold agreed, “but the point is that you show mutual respect and appreciation. I think we have learned a lot about that when we visited Germany and when the German colleagues visited us.”

Wojtek shared with us what he saw on a trip to Belarus: “I was quite surprised because the conditions, the soil seemed not worse than ours, and they definitely had better and newer machines there. The problem was that they left the machinery on the spot in the field when it was time to go home. There was virtually no care, no maintenance for the tractors.” He speculated that the Ukrainians must have much better conditions, and he thought it was an irony that people in better conditions would be less demanding of themselves about work on the field and care for the machines. Witold nodded in agreement and added, “That is probably true sometimes here in Poland (*u nas*), too.”

On our way back, Witold mentioned how different Wojtek was today and how friendly and satisfied he was with the sugar beet harvest. He told me about an episode between Wojtek and himself that happened during the summer before. The month of June had been very dry and there was a lot of concern about drought damage to crops, including sugar beet. The managers of the big commercial farms came together and

demanded a revision of the contract because they foresaw that the harvest was not going to be profitable, and they threatened that they were going to stop sowing sugar beet the next season entirely. There was some tension between the raw material department and the farm managers, because the threat was a serious one, but there was no revision of contract. At that point, when Witold visited Garzyn, he told Wojtek to spray herbicide at night when there was at least some moisture, only to be rebuked by Wojtek that those were his affairs (*swoja sprawa*) and not those of Witold's or the factory's. It turned out today that Wojtek did exactly as Witold told him, in spite of his initial rejection. Witold asked me, "And did you hear today what he said? He proudly told the Ukrainian guests that their sugar beet is still very profitable. After all that drama last summer, and not a word of appreciation! That is how managers and directors do their business in Poland. Not that different from farmers, don't you think?"

The story Witold told me was a familiar one, frequently circulating in the factory, on happenings between advisors and farmers (or farm managers) that had many variations but basically the same structure and outcome. Whenever there is a bad situation or something going wrong, farmers complain that it was the advisors' fault and the factory had to do something to solve the problem. However, when the problem was solved and the results were good, farmers took credit for everything without any sign of appreciation to the advisors. This does not mean that their work was not appreciated. Showing appreciation often took the form of inviting the advisor to see the field together and proudly presenting the visible result of certain tasks or actions. When Witold advised to spray one dose of herbicide divided into two applications for the earliest herbicide application, most of the farmers were skeptical about the effectiveness of doing so. This step of spraying was crucial because it was done right after the germination of sugar beet, and the field had to be cleaned of any other weeds. As one farmer put it, "If you want to kill something, you hit it as hard as you can on the noggins, rather than trying to hit it gently twice, right?" Witold explained that the new method was counter-intuitive, but the result of field experiments was unambiguously in favor of it. Later, satisfied farmers and

farm managers asked him to stop by and admire the clean fields only with clear rows of sugar beet seedlings. As Bartek, the head advisor at Sroda, once told me, “You have to show them something concrete which they can see and touch, sometimes results in numbers or the sight of a successful crop or field. Unless you can do so, any claim is considered unproven.”

To a certain extent, this attitude can be found among farmers in different places. I would rather frame it within the context of post-socialism and the view that truth is something performed and reported rather than something to be discovered. In other words, the skepticism and inductivism among farmers make sense if we take into account the prevalent dichotomy between truth (*prawda*) and lie (*kłamstwo*), instead of untruth (*nieprawda*). Not only lie but also truth is understood as performed and communicated by actors and shown in the presence of others to be valid. When it comes to affairs on the field, visibility and palpability are the most privileged senses that serve to judge claims of truth. Numbers and calculations, while not so persuasive as the quantifiable harvest on the field, serve as indices of something not readily visible but assessable in the soil, similar to the representing power of numbers in financial markets (Zaloom 2003).

Farmers count monetary costs and profits better than chemical elements in fertilizer or the need of those elements in soil. It is not an exaggeration to say that farmers spend a lot of time on calculating, even if they do not count every important variable into those equations. The most discernible defect in farmers’ calculations lies in the fact that they exaggerate immediate costs while ignoring the long-term effect of certain costs such as slow fertilizer (Krzyworzeka 2008). The fertilizer-calculating software provided by the sugar factory was a remedy for this quandary, and solved it by providing monetary calculations together with the necessary amount of fertilizer. However, a lot of farmers still preferred to calculate the cost and amount of nutrients in mineral fertilizer according to its purity, with a pen in their own hand on paper. When they are lost in these calculations, it does not matter that the soil is a physical or biological entity besides being a chemical one. The calculations by hand on paper attribute the chemical elements a

certain reality in the soil, which outweighs other aspects and qualities precisely because it is calculable by being palpable with the mediation of the numbers.

However, as I have discussed in the section above on humus, the simple calculation of nutrients does not guarantee the crops' successful absorption of nutrients. If adding fertilizer to the soil is based on the perspective of soil as a chemical entity, the drainage system works on the physical qualities of the soil. From a biological perspective, the microflora and microfauna plays an important role in humus formation, and can cause problems or add benefits to the soil. This biological perspective also contributes to a wider framework where soil is an element of the ecological system. Past ways of soil improvement remain in the form of material entities in the landscape, as memory objects such as drainage pipes and shelterbelts, and as the invisible material of fertilizer is rendered visible through numbers and calculations. Farmers try to distinguish themselves from others – neighbors, rivals, counterparts in Western Europe – by taking one or more dimensions of the soil and acting on it. Of course, there are those who try not to distinguish themselves and do as the neighbors do, lest they should face an utter failure and embarrass themselves. However, even in these instances, they choose to do so not to fall behind of others.

In this chapter, I reviewed the history of Wielkopolska and local memories from the viewpoint of land ownership and soil science. Former estates which were transformed into state farms and now into commercial farms form a steady feature of the landscape in Wielkopolska. The contrast and tension between smallholders and mid-size farmers, and private farmers and farming managers in commercial farms resembles the controversy on development in the nineteenth century (see chapter 1). If the focus of the controversy in the nineteenth century was how to modernize and industrialize for the sake of economic development, the tension in the present is about the question how to make Polish agriculture more competitive on the European market while slimming down for efficient production. Farmers and farming managers vie for EU subsidies and government support, and the claim of better knowledge and better harvests plays a crucial role in bolstering up

their argument. By speaking for Polish agriculture, the peculiar and advantageous position of the region is already implied, which reinforces the distinction between eastern and western regions within Poland, the East and the West within the EU, and the Orientalist discourse towards the eastern neighbors of Poland.

Chapter III

Prolonged Transformations:

Privatization, Sugar Reform, and the Common Agricultural Policy

In September 2002, the biggest cane-sugar producing countries – Brazil, Australia, and Thailand – filed complaints with the World Trade Organization (WTO) against the European Union (EU). The three countries, and other developing countries that later joined in, argued that EU sugar market regulations distort the global sugar market by heavily subsidizing exports and undercutting prices of sugar producers in developing countries.[49] After the WTO panel ruled in favor of the complainants in October 2004, and after an appeal and further negotiations, the European Commission reached an agreement with developing countries in June 2006, with the promise that the European Union would reduce subsidies for European farmers and continue to allow cane-sugar from developing countries to the European sugar market at a lower price level. While African, Caribbean and Pacific (ACP) countries objected to the announced lower export price of sugar, the European Union countered that this decision towards reform was a further step towards free and fair trade in the global sugar market, and that by making this decision, the

[49] WTO dispute settlements *WT/DS265* (Australia), *266* (Brazil), and *283* (Thailand). See also *Council Regulation (EC) No. 318/2006 of 20 February 2006 on the common organisation of the markets in the sugar sector,* in the *Official Journal of the European Union 58:1-31*.

European Union was fulfilling its role and duty as a union of developed countries.[50]

Together with maize, wheat, cotton, and soybean produced in the United States, sugar beet in the European Union is among the most subsidized crops in the world. The foremost justification for this subsidy is to protect farmers, because beet-sugar cannot rival cane-sugar in terms of production costs (Jabara and Valdes 1993). And since continental Europe experienced naval blockades during the Napoleonic Wars and World War I, the beet-sugar industry took off during the former and revived itself with the help of subsidies under the war effort during the latter.[51] Once the sugar beet had established itself as a profitable and indispensable link in crop rotation, growers started to advocate for beet-sugar and the continuation of subsidies. The sugar market reform in Europe marks a new era of global sugar trade, where the goal of free trade and fair trade uniquely coincide at the present moment.

In this chapter, I will focus on the so-called rivalry between sugar cane and sugar beet, which Mintz mentioned in his book as an important moment in the emergence of the global sugar market and modern global trade (1985:195). Sidney Mintz's life history of an agricultural worker in the cane fields of Puerto Rico (1960) and his global history of cane sugar with a focus on the triangular trade in the Atlantic and slavery (1985) highlighted how crucial colonial plantations and the consumption of colonial goods were in the construction of capitalism, trade, and European modernity, and how global trade of sugar has still affected the lives of plantation workers. Although the Brussels Convention in 1902 abolished subsidies on sugar exports for a short time, the importance of sugar production during the World Wars prompted governments to regulate the production and trade of sugar to the present day. In this sense, the tension between sugar cane and sugar

[50] For a thorough explanation of European sugar market regulations and dumping charges against the European Union, see Oxfam's Briefing Papers (2002, 2004). On this matter, Oxfam welcomes the WTO resolution, although their perspective in these pamphlets makes clear that promotion of global fair trade, rather than free trade under the WTO, is the direction they support.

[51] A good example is the diversification of raw material from sugar cane to beet at refineries of Tate & Lyle and the company's expansion into beet-sugar refining over the interwar years with the help of Hungarian technical counselors (Chalmin 1990:123,199-202).

beet is a legacy of the war economy and trade relations during the Cold War. While this rivalry between sugar cane and sugar beet is frequently simplified in Europe and EU policy as the rivalry between third-world plantations and family farms,[52] or conversely, between plantation workers and European commercial farms and corporations (see, for example, Oxfam 2004), it is more a rivalry between corporate entities and governments with vested interests in tariffs, investment, and subsidies (see Tables 8, 9).

Table 8. Global Sugar Cane Production, Top Twelve Countries Ordered as in 1990, Thousand Metric Tons (FAO Database FAOSTAT Agricultural Trade; http://faostat.fao.org/site/342 /default.aspx)

Country\year	2009	2000	1990	1979	1970	1961
World Total	1668562	12574988	1052997	770245	608616	447978
Brazil	672157	327705	262674	138900	79753	59377
India	285029	299324	225570	151660	135024	110001
Cuba	14900	36400	81800	77311	82900	55886
China	116251	69299	63451	31186	19703	12416
Mexico	49493	44100	39919	34587	34651	19168
Pakistan	50045	46333	35494	27326	26370	11640
Thailand	66816	54052	33561	20561	5102	2000
Indonesia	26500	23900	27980	19083	9748	10931
Columbia	38500	35000	27791	24700	12700	13400
U.S.A.	27607	36114	25524	24069	21769	17787
Philippines	32500	24491	25482	31888	26140	17460
Australia	30284	38165	24370	21151	17645	9730

In Europe, the British aspiration for free trade has always challenged protective trade measures benefitting the beet-sugar industry and sugar beet growers on the continent. Countries which had access to cane-sugar from the colonies favored free trade, while many countries in continental Europe tried to protect the beet-sugar industry in the early stages. Within this historical context, sugar market regulations, sugar tariffs and subsidies have a special place and a distinctive trajectory going back to a time period

[52] In the UK, the first beet-sugar factory was built in Utting, Essex, where two Quakers named Reid and Marriage set out to produce sugar “free from the stigma of slavery” (Chalmin 1990:29).

even before the Common Agricultural Policy (CAP) came into existence. It is fair to say that the CAP was built upon grain and sugar market regulations which existed on the national level in the original member countries of the European Union.

Table 9. Global Sugar Beet Production, Top Twelve Countries Ordered as in 1990, Thousand Metric Tons (Eastern Europe, Japan, and Iran added; FAO Database, FAOSTAT Agricultural Trade; http://faostat.fao.org/site/342/default.aspx)

Country\year	2009	2006	2004	2000	1996	1990	1979	1971	1961
World Total	228221	253950	251567	250102	265865	309187	262753	227541	160502
Russia (USSR)	24892	30673	21848	14054	16167	82983	76212	72185	50911
France	35160	29871	30788	31121	31211	31746	26060	19968	13236
Germany	25919	20647	27159	27870	26064	30366	25035	19813	14287
U.S.A.	27019	34064	30021	32541	24204	24960	19954	24373	16263
Poland	10849	11475	12730	13134	17846	16721	14154	12557	11555
China	7179	7508	5857	8073	16726	14525	3106	2125	797
Turkey	17275	14452	13517	18821	14543	13986	8760	5956	2877
Italy	3308	4770	8473	12370	12114	11768	13236	8776	7071
Netherlands	5735	5414	6292	6798	6416	8623	5491	5024	3854
U.K.	8457	7400	9042	9079	10420	7902	7660	7869	6031
Spain	4154	5827	7175	7930	8236	7361	5124	6412	4350
Belgium	5186	5667	6216	6152	6125	6866	6462	5498	2977
Ukraine	10068	22421	16600	13199	23009				
Yugoslavia	2798	3189				5982	5924	2961	1730
Czechoslovakia	3038	3138	3579	2809	4316	5609	7647	5835	7329
Hungary	737	2454	3527	1976	4677	4743	3928	2023	2356
Romania	817	1152	673	667	2848	3278	6109	3975	2911
Japan	3649	3923	4656	3673	3295	3994	3344	2197	1136
Iran	2016	6709	4916	4332	3687	3641	3824	3772	810

In what follows, I shall not discuss the reason or legitimacy of the CAP or the European sugar market regulations as a trade policy, and its implications on the global sugar market. Rather, I am interested in how the CAP and sugar market reforms of the last decade have affected farmers in Poland as a new member of the European Union, and how they see themselves within Europe and their place within the wider world. As early as 1989, people in Eastern and Western Europe had foreseen or hoped that former socialist countries would join the European Union at some point. However, for people in

Poland, the prospect of reducing sugar beet production together with the implementation of the CAP came as a surprise. Although the sugar reforms and the CAP reforms had independent pre-histories and circumstances, the fact that farmers in Poland had to face these reforms simultaneously in the aftermath of privatization prompted them to be suspicious of foreign capital from Western Europe and the overall intention of European Union policy.

In order to highlight this ambivalence among farmers in Poland towards the European Union and its CAP, I shall borrow the metaphor of the ladder from Chang's treatise of free trade ideology (Chang 2002). Originally coming from Friedrich List's emphasis on protective measures in early industrialization, the ladder signifies 'protective duties and restrictions on navigation' constituting the path leading to the status of a developed industrial country. After achieving this degree of development to obtain clear advantage in free competition, there is 'nothing wiser than to throw away these ladders of her greatness, to preach to other nations the benefits of free trade' (List 1885 [Chang 2002:4-5]). Friedrich List had the British Empire and its advocates of free trade such as Adam Smith and William Pitt in mind when he was seeking a way to protect, develop and establish the German national economy. Drawing on the parallel emphasis on free trade between historical moments of liberalism and neoliberalism, Chang argues that restructuring national economies for facilitation of free trade merely reproduces global inequality in the present world.[53]

In my usage, the ladder captures the mentality of catch-up development and the anxiety of people as they feel themselves 'latecomers to modernization' (Eyal et al. 1998:50). By joining the European Union, the farmers in Poland started to participate in a protective agricultural policy which had already started to dismantle under the pressure of overproduction, free trade agreements and fair trade movements. While there is no doubt

[53] In my opinion, 'the ladder' is rather pulled up for recycling and later use than simply 'kicked away' to prevent others to follow. For empirical criticism of free trade and its ideological role in globalization in a similar vein, see Stiglitz (2002), Harvey (2005) and Shaikh (2007).

that farmers benefit from the subsidies and various reform programs supported by European Union funds, the whole restructuring process that coincided with privatization and economic reform has become part of what I call prolonged uncertainty, which is well-documented in past ethnographies of rural regions mostly in southern but also in western Poland (see Pine 2007, 1998; Nagengast 1991; Hann 1985 for southern Poland; Buchowski 2009, 1997 for western Poland). This uncertainty has been frequently associated with neoliberalism (see Bourdieu 1998), but without considering whether and how European Union policies reduce or reinforce uncertainty in new member countries.

From a global perspective, the CAP has been a protective measure helping European farmers to compete in the face of rising production costs. However, Polish farmers see the reforms of the CAP as a device that keeps them away from receiving the same benefits as farmers in Western Europe. They do not understand why this support cannot last longer and why they have to accept higher standards so soon, while farmers in Western Europe have had the advantage of subsidies and looser environmental restrictions for decades before. In their eyes, they were not those Europeans who had benefitted from the welfare state and protective policies, nor had they benefitted from colonial trade overseas. As much as the farmers in Poland demand parity in European Union matters, their idea of parity includes more consideration for their status as latecomers, and they are well aware of this paradox. Because they are already on the ladder of the Common Agricultural Policy, there is only one way to go before the ladder is pulled away.

The Road to the Union: Agricultural Reform in *Wielkopolska*

Local farmers agree and share the opinion of local historians who emphasize that *Wielkopolska* was the first region where modern technology was implemented in

agriculture in the nineteenth century.[54] Locals are still proud that *Wielkopolska* has been the most advanced region in Polish agriculture even during socialism. State farms and experimental stations located in this region were equipped with the newest machines and technologies, and pictures and names of these localities were widely featured in propaganda films and posters. In two counties where I conducted fieldwork, six research facilities and breeding stations for seed material and cattle breeding still function and thrive in business.

As Tomasz, a farmer who owns 70 ha of land in Pepowo, explained with fervor, the relatively bigger size of the private farms in comparison with those in the southern region of Poland is because of the regional history. He pointed out that the law of inheritance in the Prussian partition in the nineteenth century kept the size of farms relatively intact, adding that the persistence of nobility-owned and church-owned large estates contributed to this trend as well. Ethnographic accounts of this region confirm Tomasz's statement and the widespread sense of regional particularity (Buchowski 2009). After World War II, estates were mostly confiscated and turned into large-scale state farms. When socialism came to an end, farmers such as Tomasz started to buy land from neighbors who could not sustain production any longer. Occasionally, they could buy land at auctions where government-owned land from former collective farms entered the market.

A typical private farm in this region combines grain, sugar beets, pasture, field peas, and pig or cattle husbandry. Tomasz told me how they were treated better even under socialism as they followed specialization policies in the 1970s, when pork, milk, and sugar were exported to Western countries in order to lighten the national debt, which was starting to accumulate (see Zielinski 1973). Not every farmer participated in this program, but for farmers such as Tomasz who did, specialization paid well and opened

[54] The sense and awareness of the peculiarity of this region in comparison with other parts of Poland is well documented (see Schmidt 2007; Molik 2004), but there are also suggestions that values and worldviews held in this region do not much deviate from the average of Poland as a whole (Podemski 2004).

ways to purchase cars, machinery and even land without joining the party. Within this system, the sugar beet has played a pivotal role as a cash crop itself, but even more in crop rotation systems and cattle husbandry. The sugar beet is beneficial to the land because its roots penetrate deeply into the soil and restores the balance of soil nutrients exhausted after a grain harvest. In addition, every farmer who keeps cattle feeds them sugar beet by-products – the leafy heads left and gathered from the field, and the semi-dry beet pulp which farmers get back from the factory after extraction of the sap from sugar beets.

In the last years of socialism and afterwards, farmers were relatively better off than urban dwellers because they were not severely affected by rising food prices. There are farmers who have had trouble with loans and credit, especially around the currency appreciation in 1996, and in recent years because of the fluctuating prices of agricultural products. But most of them agree that before the year 2004 it was a good time to be a farmer, because every factory and company competed amongst themselves to lure farmers to their processing plants. Good prices and incentives from sugar factories, mills, granaries and the canning plant nearby left the farmers with opportunities to invest. Henryk, Tomasz's neighbor and private farmer, told me the story of how lucrative farming was in the late nineteen-eighties. He received his payment for sugar beets from one year's harvest at the sugar factory in cash. For a long time he had planned to buy a car, so he went straight to the dealership in the same town and offered to pay cash for the new car, which cost less than one year's harvest of sugar beets. Neither the salesman nor the manager knew what to do with the heap of money on the table, and had to call the bank to inquire how to proceed.

During this time period, there was an aid program established by the European Communities to support the transformations, which was called Phare (Poland and Hungary Assistance for the Restructuring of the Economy). But it seems that private farmers benefitted only indirectly from Phare's public infrastructure improvements, distribution of information and educational events. Although it was possible to apply for

funding for individual projects, farmers thought that the process was extremely complicated and out of reach. And according to them, it was easier to take out loans at a special low interest rate for farmers. When the new member countries started preparations for EU accession, European Union funds were divided into two distinct programs - SAPARD (Special Accession Programme for Agricultural and Rural Development) for rural areas and ISPA (Instrument for Structural Policies for Pre-Accession) for infrastructure investment (Ministry of Agriculture and Rural Development 2000; European Commission 2006). It was only then that individual farmers started to apply for farm modernization funds for long-term investments such as the purchase of machinery. During this period, the EU funds were preferred over the rising interest rate of bank loans.

After EU accession in 2004, another dual system was applied: subsidies as direct payments to farmers financed by the European Agricultural Guarantee Fund (EAGF), and rural development programs funded by the European Agricultural Fund for Rural Development (EAFRD). The latter finances many programs for specific purposes which farmers can apply to for financial support, whereas the former finances the Single Area Payment Scheme (SAPS; subsidy payment based on possessed agricultural land). Poland is following a gradual schedule of implementing the single payment scheme and cross compliance (*Wzajemna Zgodność*), including measures for the environment and animal welfare, which began in 2009 and will run until 2013. As the sugar production has been gradually decreased after 2007, a provisional EU subsidy for sugar beet prices and incentive for reducing the sugar beet quota made up for the declining price and rising production cost.

Tomasz and Henryk contend that EU subsidies and funding barely help them maintain a steady level of production and income in the face of rising costs and prices. Because Henryk has to observe the production quota for milk as well as for sugar beet under stricter standards, he has had to make significant investments in their facilities. With the falling prices of sugar beet, milk and pork, many private farmers focus their

production on grain, which commands a fairly good price every year, but involves a higher risk not only in terms of price fluctuation but also vulnerability to frequent harvest failure in grain monoculture. Under these circumstances, some managers in large commercial farms and former state farms blame the EU for letting these small private farms survive. Piotr, a manager of a nearby commercial farm commented, 'If they have less than 10ha, even buying a tractor is a waste of money. Their machine stands in the barn much longer than it will work on the farm or on fields. Those farms are utterly underproductive and even not good for the environment, because they cannot plan for long-term crop rotation and will sow grain after grain after grain'. In turn, small private farmers such as Henryk accuse large commercial farms of monopolizing subsidies, and complain that the CAP only helps to make 'the big farms bigger and the rich richer'.[55]

What keeps these farmers trying to improve their farm operation is not only the prospect of profit and subsidies, but rather the fact that they feel that Polish agriculture is severely backward compared to the European level. While they agree that they always had been part of the 'European civilization,' they also acknowledge that they have a long way to go in order to really feel on par with Europe, specifically, with their western neighbors. There is an inherent contradiction between these two stances: always-have-been-European and not-quite-ready-for-being-European. While the former demands recognition as an equal partner in European politics and affairs, the latter concedes that there still is a disparity, especially in economic matters. Discourses of development, far from being unitary, include alternating layers of these two stances in every layer of local, regional and national discourses, resembling an irregular form of fractal recursivity (see Irvine and Gal 2000: 38). In this vein, every conversation about Europe is over-

[55] It is difficult to assess the benefits of agricultural subsidies, because many countries keep their subsidy distribution records confidential. However, there are reports that old member countries and multi-national companies benefit most from these agricultural subsidies. See the on-line NGO project 'Who gets what from the Common Agricultural Policy (http://farmsubsidy.org)' and a description of it in the newspaper article 'So that's where the 100 billion went (*The Guardian,* Jan.22, 2007)'.

politicized in Poland, and it is not always the state that initiates this discourse of development (cf. Ferguson 1990). It is a wide-spread sentiment that crops up in everyday conversations, blaming the Soviets and their Polish counterpart for the present state of Poland. One day, Henryk countered to this kind of argument, "I am not a leftist myself, but look at those people in the government [the Kaczyński brothers' right-wing government] and how they damage our image as a country [on the European stage]. Did it make a difference after you voted that party into power? If we cannot help ourselves out of this mess there is no sense in blaming others who did something a long time ago. And were those all communists Russians and Poles following them under fear of death? No, all they wanted was power, just like them in Warsaw. We have only ourselves to blame for this mess." The sense of nervousness that is felt when Poland is represented in the European arena certainly adds to the will to catch-up, not only in terms of economic development but also in style, taste, and demeanor of politicians. In this sense, the so-called return-to-Europe entails the achievement of parity in economic terms with style, which informs the motivation and thrust behind the manner of privatization of the sugar factories, as I will examine in detail.

The Privatization of Sugar Factories

With the historical background of the region and the past relationship with Germany, it is imaginable that the privatization of sugar factories was a complicated and strenuous process. In 1994, there were a lot of sugar factories in financial trouble among the 78 state-owned factories functioning at the time in Poland. When the effort to privatize them separately failed to gain any results, the State Treasury planned to transform all sugar factories into commercial enterprises under a single holding company. The directors and worker-managers of sugar factories in this region challenged the holding company plan, because they already had formed employees' companies for a better chance in

privatization. They decided to explore further options of investment, and began talks with the regional government and potential investors from overseas.

Local factories hoped to follow the example of British Sugar Overseas' investment in sugar factories around Toruń in 1989 (see Hefner and Woodward 1997), but wanted to retain the right to participate in management decisions. Similar concerns about employees' management and other controversies surrounding privatization were widespread on a national level at the time (see Woodruff 2004; Frydman and Rapaczynski 1994; Błaszczyk and Dabrowski 1993).[56]

From the local perspective, the problem was that an acquisition by a foreign sugar company might result in diminished control by employees, and the potential closing of factories to reduce competition. Given this fear, other possibilities considered included involving hedge fund capital from the U.S., or accepting investment from foreign companies in other sectors. These options were considered safer because the capital would be 'passive', meaning that it would not partake in management decisions. This option, however, lacked the component of technology transfer and met with difficulties in the early stages of negotiation, because the regional government was sharply divided on the trustworthiness of hedge funds and their Polish representatives for long-term investment.

In the meantime, the German sugar concern Rheinzucker based in Cologne opened a branch office in Poznań, hired Polish management personnel with experience in West European companies and started to negotiate the privatization of a local sugar factory. This factory was in legal terms an employees' company, which had been commercialised with shares distributed among employees for further privatization in 1991, whereas the factory grounds and major facilities still remained property of the State Treasury. In 1995, Rheinzucker Polska, the joint-stock company (*spółka akcyjna*) registered in Poland, and the arm of the German concern succeeded in gathering support

[56] For a detailed description of the Polish economy at the time, see Berg and Blanchard (1994).

from all groups involved and successfully obtained 47 per cent of shares of the factory from the employees. The new investors had to promise to maintain employment for a certain period and distribute 6 per cent of the shares to workers and beet growers. They also had to commit to improving the factory with further investments and technological support. The remaining 47 percent remained in the hand of the State Treasury, forming a 'joint venture company.' Andrzej, the general manager for procurement who has been with the company from the beginning, reminisced how they managed to persuade factory directors and employees: 'We had to show how much we actually care about the factory, sugar, sugar beets and growers, and had to promise over and again to keep producing sugar and let growers grow beets'.

What was remarkable in this whole process was the active role of factory employees and their resolution in favor of privatization. They effectively resisted the national holding company plan, which had gathered major support from all over the country. Those who backed the national holding company plan emphasized social solidarity as a value belonging to the Polish political tradition of aspiring independence from foreign intervention, as well as to the European tradition of social democracy. And in their opinion, this key value of European civilization (*cywilizacja*) was being abandoned in Western Europe.

On the other hand, those supporting privatization argued that only restructuring and immediate investment would keep them on a competitive level with other Europeans. If the sugar industry is an important heritage, they suggested, then continuing it on Polish territory is more important than where the capital comes from, as long as the investment is not illegal. They thought that surviving in the market economy as a European system clearly had priority over helping other factories facing bankruptcy. Either way, the state had to do something concrete about privatization: one side demanded support for a speedier privatization, and the other wanted the state to keep the sugar factories in Polish hands, especially those with good potential for further production.

Figure 11. Rheinzucker Sugar Factories in Wielkopolska (o: closed factories; +: working factories)

Local actors and groups tried to enlist administrative, legal and political support of the state by appealing to its moral obligations. They expected the post-socialist state to be different from the socialist state of the past. They wanted the state to be supportive of

their will to compete on the European level, to make the market work as it is supposed to, by creating institutional structures such as property rights, tax systems and regulations on finances and foreign investment with the goal to make capitalism work (Wolfson 2003; Harvey 2005). But since the state seemed indifferent, they had to act on their own behalf 'in spite of the state' (Yurchak 2002: 313; see also Humphrey 2000). The state had difficulties moving in either direction due to the sensitivity of this highly politicized case. If there was a sense of nostalgia, it was not based on sentiments missing the paternalistic state, but rather missing the short experience of empowerment when labor unions and farmers' unions successfully claimed active participation in decisions on managing the factories, even against the involvement of the state (cf. Alexander 2000; Dunn 2004). And in their eyes, the state had to support such a democratic process, which in turn would contribute to social solidarity, a key value of democracy and European civilization.

From this vantage point, this case of post-socialist privatization shows an instance of entrepreneurial governmentality (Yurchak 2002). The alliance between factory employees and the German sugar company is not just a simple transnational investment but a concerted effort to supersede the inefficiency of the state, in some ways an attempt 'to separate property from power' (Humphrey 2000: 178) for the sake of industrial and agricultural development. It was a moment of agency, when 'hybrid technologies' are employed to obviate restrictions and obstacles frequently encountered in post-socialism (Yurchak 2002: 310). And it provided an opportunity for local people to rethink which the state should consider as foremost priority: controlling actors or enabling them. The moral demand of factory employees to the state was framed in terms of competition in an uncertain neoliberal world, suggesting a shift in governmentality from *raison d'Etat* to *raison du Monde* (Cerny 2009).[57]

By 2001, Rheinzucker had finished the acquisition of eleven factories, which

[57] Cerny's conception of the Competition State in neoliberalism as an evolving terrain of conflict between winning and losing groups provides a productive way to think about conflicts and confluences involving multiple *raisons* of governmentality (2009).

were located in Wielkopolska proper and neighboring regions. Other sugar factories in Poland were privatized, too, and some of them went bankrupt while politicians took their time with the national holding company plan (see Figure 11).

It was a legal battle on the privatization protocol that prompted politicians to act. The French company *Saint Louis Sucre* (SLS) and the Polish State Treasury signed an agreement on the purchase of ninety-five percent of holding shares of *Sląnska Spółka Cukrowa* (Silesian Sugar Company, SSC), which owned fifty-one percent in each of the sixteen sugar factories in Lower Silesia in November 2000. However, in January 2001, the Minister of Internal Affairs refused to give consent to this agreement, thus not allowing the purchase of real estate by a foreign company. The reason for this was allegedly a mistake of SLS in submitting only one application instead of sixteen separate applications to the Ministry. Moreover, the application itself was not in line with the statute on obtaining land by foreigners from the year 1920 which was still in effect at the time.[58]

As a result of the nationwide attention to this case, a new sugar market regulation bill which included the establishment of *Krajowa Spółka Cukrowa* (National Sugar Company, KSC) made its way through the legislature and was finally signed by the President in July 2001. It was in the same month that Rheinzucker formally finalized the process of capital enlargement and consequently became the majority shareholder for five sugar factories. This scenario for control over the factory through capital enlargement was carefully planned. The State Treasury had already agreed that they would not demand additional shares during capital enlargement as a condition of privatization. Furthermore, Dr. Kamiński of Rheinzucker told me, the company sought and bought out several former employees who held significant shares which they had gathered together on their own.

[58] *Ustawa z dnia 24. Marca, 1920 r. o nabywaniu nieruchomośći przez cudzoziemców* (Statute of March 24, 1920 on obtaining land by foreigners), *Dziennik Ustaw 1920 Nr.31*. This statute was eventually revised regarding administrative procedure in 2004 before EU accession, but is still in effect.

Meanwhile, the French company SLS had brought its case to the High Administrative Court, where the State Treasury argued that the company did not get the permission to obtain land from the other Ministry in time, which was a condition of the signed agreement. In March 2003, the High Administrative Court came back with the ruling that there are no legal grounds to nullify the sale to the French company and negated the case of the State Treasury. With this ruling, SLS acquired ninety-five percent of the holding company, thus securing fifty-one percent of shares in each of the sixteen factories in Lower Silesia, which produced one fifth of the national output of sugar. From the remaining shares in each factory, nineteen percent were left in control of the State Treasury and fifteen percent remained in the hands of workers and sugar beet planters. SLS also agreed to invest 405 million zlotys (around 100 million US dollars, according to conversion rate in 2001) for modernizing the factories and guaranteed forty-month employment for employees.[59]

While the case was processed in court, two of the sixteen factories in Silesia went bankrupt because they could not pay for the contracted sugar beet. Sugar factories all over Poland were suffering from financial debts and overproduction and already lost the ability to pay for delivered sugar beet. There were rumors that the bad financial state of the factories was exaggerated to lower the assessed value of the factories, accusing high-level factory managers of complicity with Western capital. However, given the lack of payment for delivered sugar beet and the fact that the assessment of assets was already partial to Western investors because it was done by Western consulting companies, it seems that the financial crisis in sugar factories was genuine. This significantly weakened the position of local governments and sugar factories in negotiating a better deal during the process of privatization. For example, the former Voivode (*Wojewoda*) of Leszczyńskie was accused of causing financial damage to the State Treasury by not including the price of land (factory grounds) when estimating the value of the sugar

[59] *Komunikaty Ministerstwa Skarbu Państwa* (Press Releases of the State Treasury), March 26, 2003.

factories in 1996.[60] He was later cleared as not responsible because the defense that the privatization process followed the path of leasing, did not formally sell the factories and the factory grounds at the point of signing the contract.[61] Dr. Kamiński of Rheinzucker further explained to me that it was a moot point blaming the former Voivide, because Rheinzucker did not trust the estimate of the local government in the first place and had their own estimate from a German consulting firm. The trouble in finances among sugar factories in other regions became all the more evident when the State Treasury itself assessed only twenty-eight factories as viable enough for further production and investments to include in the new KSC holding company. The remaining twenty-one factories were still to be sold to investors who were willing to resolve debts and modernize the plants. In the end, twenty-three factories joined the KSC because five went to the German company *Nordzucker*, after a litigation process similar to that of SLS.[62]

Soon enough, there were rumors about factory closings as early as in winter 2002, and in July 2003, *Südzucker* announced that the sugar factory in Przeworsk in southern Poland would be closed down. The factory was already on the verge of bankruptcy in June 2002 when the State Treasury intervened to continue employment and delivery of sugar beet in fall. German *Südzucker* bought the factory after last-minute efforts to transform the factory into an employees' company did not lead to anywhere. The factory stopped production in 2004, and other factories in the region followed suit.[63] There were factories which declared bankruptcy and announced liquidation before, but this was the first case for a factory to stop production and close down right after being privatized to a foreign company.

This was just the beginning of a chain of factory closings, which took place mainly among factories that had been privatized by foreign companies. In the period from 2003 and 2007, eleven factories were closed out of the sixteen that were obtained by SLS

[60] *Gazeta Wyborcza*, September 12, 2003.
[61] *Gazeta Poznańska*, December 29, 2003.
[62] *Gazeta Wyborcza*, July 18, 2001.
[63] *Gazeta Wyborcza*, Rzeszów edition, March 12, 2004.

in Silesia. In the same period, Rheinzucker closed down eight factories out of eleven in Wielkopolska. In 2005, contrary to the expectation of politicians behind the new sugar bill, the national holding company KSC started to close down factories as well. The sooner a company closed a factory down, the more compensation it could receive from the European Union for giving up and reducing the sugar production quota. As of May 2008, thirty-four factories are producing sugar nationwide out of the original number of seventy-eight in 1990.

In hindsight, the very conclusion of a decade-long affair was an achievement for the local people even though not everyone was satisfied with the final result. Andrzej the manager emphasized that the present situation, although certainly not ideal, was the only possible outcome that would possibly keep the factory running and profitable. He added that employees and farmers have learned and will still gather more from the experience of dealing with investors and better know-how in beet sugar production. The most important thing he learned during the years in Rheinzucker Polska, he said, was that he had to be ready for the challenge of him living in this time, in this age of European Union and global capitalism. While he acknowledges he had had exceptional luck, too, he was proud of his own capability to deal with the tasks at work, and took exceptional pride in having achieved record harvests of sugar beet in the last three years, together with "our farmers."

After Privatization: Being European and the Question of Dis/Parity

One has to keep in mind that this privatization process started to unfold before there was any concrete discussion on EU accession. But there was a clear awareness and sense of urgency among those who called for privatization. It was clear to them that they needed to move forward and modernise the plant and operations in order to compete on the European market. Managers in the factory worked diligently to improve the quality of sugar to meet the highest standards for beverages. Similarly, beet procurement managers and farmers explored ways to heighten the sucrose content in beets and to increase the

yield to the levels of Western Europe. Bolek, a young farmer in Mokronos, found a challenge for his farming operation: 'It is exciting to achieve better sugar beet harvests every year. When I was in school, I worked in the Netherlands on a farm participating in an exchange programme, and they harvest over 70 tonnes/ha. Well, France is the best with over 80, but for now my goal is to go over 70. Of course, you have to put into the soil more if you want a better harvest.'

Country	Number of Factories (2010)	Production Quota (tons)	Country	Number of Factories (2010)	Production Quota (tons)
Austria	2	351,027	Lithuania	2	90,252
Belgium	3	676,235	Netherlands	2	804,888
Czech Rep.	7	372,459	Poland	18	1,405,608
Denmark	2	372,383	Romania	4	104,689
Finland	1	80,999	Slovakia	2	112,319
France (cont.)	25	2,956,786	Spain	5	498,480
Germany	20	2,898,255	Sweden	1	293,186
Greece	3	158,702	United Kingdom	4	1,056,474
Hungary	1	105,420	France (overseas)		480,244
Italy	4	508,379	Total	106	13,336,741

Table 10. EU Sugar Production Quota for 2009-2010, according to Country, after European Sugar Market Reform (EU Press Release IP/09/366 of March 6, 2009 and statistics of the Committee of European Sugar Producers (CEFS), http://www.comitesucre.org/www/?menu=1&submenu=3).

This kind of enthusiasm, although still found among a small number of farmers, was partly quelled when reductions of sugar quotas were announced as a result of the European sugar market reform in 2006. As privatization was wrapped up with the formation of a national holding company, the global sugar market dispute between cane sugar and beet sugar was coming to an end and reform of the European sugar market was imminent. In 2006, the European Commission started to reform sugar regulations, and for four years provided financial compensation and incentives to companies which closed down factories, and to farmers who would withdraw from beet production entirely or

reduce their quotas (see Table 10).[64]

This was perceived as a second phase of restructuring, and the aforementioned reasons justifying it (fairness in trade and justice) seemed very distant and vague to a lot of people working in the factories. The majority of sugar factories with financial problems and low productivity all over Poland had been closed down between 2002 and 2004, and the beet growers were redirected and integrated into factories in the vicinity. In *Wielkopolska*, six out of eleven factories were closed during this period. The whole territorial boundaries of sugar factories were adjusted and transport was optimized for cost reduction. Employees in the remaining factories, for some time, were confident that they made it already once through restructuring and would do so again. But the company closed down two more factories between 2006 and 2008. The company focused on the modernization and renovation of three factories on an axial line across the sugar beet-growing region.

If the earlier closings made more sense to local people because of the debt and antiquated production equipment in those factories, the later closings left them utterly confused. For the earlier closings, the reasoning was plain and straightforward among employees and farmers: 'The EU wants Poland to produce less sugar because they want to sell more of their own.' While invoking the political pressure from the outside, they believed that the production facilities were 'still working quite well.' The more recent closings, however, did not sound reasonable to a lot of people, even among managers of the largest factory in the middle of the region. Lech, a quality inspector, threw out a rhetorical question: 'We have to give up sugar beet quotas to give developing countries a chance to produce and sell sugar. That is all well and good. But tell me in what sense

[64] See 'Council Regulation (EC) No. 318/2006 of 20 February 2006 on the common organization of the markets in the sugar sector', 'Council Regulation (EC) No. 319/2006 of 20 February 2006 amending Regulation (EC) No 1782/2003 establishing common rules for direct support schemes under the common agricultural policy and establishing certain support schemes for farmers' and 'Council Regulation (EC) No. 320/2006 of 20 February 2006 establishing a temporary scheme for the restructuring of the sugar industry in the Community and amending Regulation (EC) No 1290/2005 on the financing of the common agricultural policy' in the *Official Journal of the European Union L58, vol 49*.

Brazil and Australia are developing countries. Aren't they big and powerful economies, much better off than we are?'

Farmers echo their unhappiness as well, but in various different ways. Many of them think that the EU and developing countries chose to do this at the very moment when Poland was starting to make progress. Some think that the EU had planned to impose this restructuring even before Poland was negotiating accession terms on agriculture in Brussels. Leszek is an entrepreneur who owns his private commercial farm near Sroda, specialising in egg production alongside field farming. He is unusually well-read and prides himself on keeping up with what happens around the world. He observed that farmers try to grapple with EU policies as a dyadic relationship between Poland and the EU: 'They tend to think that there is Warsaw and Brussels, and London, Paris and Berlin are farther west past Brussels. The EU in their eyes is practically a marketing manager for West European industry.' He also added that he himself was perplexed about the scope and speed of the EU sugar reform, and the lack of any grace period for new member countries. Poland, he elaborated, 'did not have any colonies in Africa or America' and 'has not been with the EU such a long time' to deserve restructuring at this early point in time.

The time when employees achieved the alliance with the German sugar company was quickly forgotten. The moment they thought they had gained recognition as worthy partners became a memory to visit now and then, while the present was pressing against them, awaiting rapid decisions for redistribution. Even managers could not hide their disappointment, but they were relieved to still be working, and tried to make sense of it. 'It could have been much worse, you know,' explained Marek, a beet procurement manager, 'at least we get financial support for closing down factories and farmers get compensation for their reduced quota. I am happy for them and these favorable terms are only possible because we went through with privatization.'

For their part, farmers have plenty of complaints about the sugar reform and the simultaneous implementation of cross compliance, the environmental and animal welfare

standards on the basis of the CAP. Jurek, a farmer who produces milk in Krobia, told me that he had to take several loans just to keep producing milk that meets the European standard. And now that the EU imposes milk quotas because of overproduction, milk prices are not on the same level as they were, and he struggles to repay the loans he took out based on a business plan calculated with higher projected prices of milk. He is sceptical about cross compliance, although he agrees with the principles:

> "Just to produce what we used to produce costs more money now. You have to buy everything according to the rules – milking machine, containers, clean refrigerator and so on. Everything from the West. They don't have Polish ones. I doubt there will be. And now we need tags and even passports for these cows. They are going to sell that stuff to us, too. Oh, I know for sure."

Within the sugar factory, the atmosphere started to change, too, as more and more employees were dismissed. Former employees expressed their discontent with the inner circle of managers of the factory, not because of their dismissal but because they felt they were treated without respect. Sylwia, who used to work in the quality laboratory, complained about the manner in which the closings and workforce reduction were handled:

> "They [managers] didn't really explain much. You know how those guys always stick together and keep things secret. They joked and chatted with us over tea and did not mention anything. It didn't matter for me because I was going to retire anyway. But poor Ms Ania, she was the best in the lab and new technicians learned so much from her. And they fired her after she taught Jacek everything. The manager asked her to do so, and she did without knowing what was going to happen. Really, Jacek always ran to her when he did not know

what to do. Of course, the manager and that guy had some kind of arrangement. And that's what business in Europe is. It is all connections and male bonding."

This story is not only indicative of a stiffening competition among employees, but also symptomatic of the gender division of labor in this factory, where most female labor had been assigned to part-time positions and non-specialised domestic tasks. The paradox in this case is that restructuring as a result of the sugar market reform has furthered the prevalence of male employees, contrary to the hope of gender equity after EU accession (see Pine 2002).

Looking at the local response to the consequences of the sugar market reform and other concurrent EU policies, it is clear that employees and farmers are put in a position from which the intention of EU policy cannot be grasped easily or in a straightforward manner. However, once these local people achieved privatization and gained recognition as a factory, and later as Poland did the same as a nation-state by joining the EU, they could not go back to being an exception, to existing in disparity any more.

It seems true in this context that 'struggles for recognition do not promote respectful interaction across differences' (Fraser 2003: 91–92). In fact, the struggle for recognition at the time of privatization was predicated on the distinction between factories in good financial shape and those in bad shape. After this historical event of privatization, as the sugar market reform and the CAP proceed, it seems that the system all the more promotes distinguishing oneself against others. And this, I argue, constitutes the risk and limit of entrepreneurial governmentality as an agentive force against the state (see Yurchak 2002), because it contains potential elements of neoliberal agency, which promotes competitive distinction at the cost of recognizing social and cultural difference.[65] In light of the events and changes after privatization in Poland, such as the

[65] See Buchowski (2010) for a discussion about the public role of intellectual elites in propagating neoliberal ideologies in Poland, especially by classifying and distinguishing those who fit the category of civilized citizenship and those who do not.

sugar market reform and the CAP reforms, it seems that the European system promotes distinguishing oneself from all others with the goal of competition within and without.

The viewpoints and stories I have described and retold in the above show how the process of socio-economic reforms in western Poland has been extended in time and scope, and how bewildering this process is for local people who have to encounter these reforms as a changing reality in their own everyday life. Poland as a whole has gone through extensive socio-economic reform during post-socialist transformations, and had to implement additional policies and changes before and after EU accession.

I have described the way local people try to make sense of these changes based upon their agricultural tradition, and the way they understand development and globalization as a lived reality. I have paid attention to how they perceive their own place within Europe and within the world through their livelihood and through a material connection in beet sugar. With a focus on the beet-sugar industry and its privatization process after socialism, I placed this process into the wider contexts of global sugar market regulations and European sugar reform and agricultural policies. Using the image of the ladder, I have tried to shed some light on the implications of this reform to local agriculture and to local perceptions of economic development.

The farmers in *Wielkopolska* feel that they are entitled to the direct subsidies they receive under the Common Agricultural Policy. But when filling out the forms, they wonder why Brussels needs all the specifics of their livelihood, ownership of land and currently cultivated crops marked on satellite images of fields, and why every entry on the document has to be exactly at the centre of the blanks. Some farmers pay government-employed agricultural advisors to help them fill out these forms. After receiving the forms back from the regional office of the Agency for Agricultural Restructuring and Modernizing (ARiMR) in Poznan for these corrections, they wonder why they need corrections even after the advisor, who is supposed to be the specialist in these matters, filled out the forms; how long it will take for these documents to travel again to Poznan and Warsaw, and again maybe to Brussels; and then again how long until

the actual payment. Last but not least, they wonder what the exchange rate will be this year on the last day of September, according to which subsidy payments will be calculated into local currency. They sometimes suspect that this detailed survey on agricultural production somehow helps to shape the actual policies that restrain them, such as the sugar reform or the milk quota system. And these devices which were supposed to stabilise the prices seem to work against them by keeping the prices consistently low.

Farmers in Poland are still dealing with uncertainty, and they do not feel that their own interest and those of Europe are the same. There is still the ambivalence that prompts them to ask why they cannot enjoy protective trade and looser environmental standards when all the Western countries did for such a long time. Facing uncertainty in the process of restructuring agriculture along European standards, they emphasise that they need help, and that Poland needs to be granted more time as a developing country. They should be allowed to use more manure and cheap herbicides banned from the European market as long as they are in stock, and if not, other fertilisers or more expensive herbicides should be subsidized. They acknowledge that European subsidies let their small farms survive, big farms thrive and big landowners get richer. But that applies not only to Poland but everywhere else in the European Union. The problem is that the goal of policies and available advice on policy changes are inconsistent, and that the market is as unpredictable as ever.

Thus, the Common Agricultural Policy (CAP) has the effect of maintaining the distinction between new member states and original ones, which contributes to the marginalization of Eastern Europe within Europe (Dauphinée 2003). The dominant discourse of economic development in new member countries is framed in terms of 'returning to Europe' (Amsden et al. 1998; Sachs 2006). However, this rhetoric interwoven with discussions of a monolithic European-ness and the singularity of European civilization neglects the fact that the new member countries have much less time to climb the ladder following other European countries. In Poland, local farmers and

factory employees alternate between these two stances: always-have-been-European and not-quite-ready-for-being-European. While the former demands recognition as an equal partner in European politics and affairs, the latter concedes that there still is disparity, especially in economic matters. For now, for farmers in Poland looking up to the West while climbing the ladder, there is no time to look at other regions in Poland or in other places in the world. While it is difficult to form a coherent counter-narrative against agricultural policies, they exchange opinions and their own perspectives among themselves, which gives rise to an inchoate form of feedback and criticism on European policies and global politics. What makes them linger and hang onto the ladder while still in doubt is the uncertainty that overcomes them.

Chapter IV

Sugar Beet Tales:

How Sugar Beet Assembles and Divides People and Other Things and Vice Versa

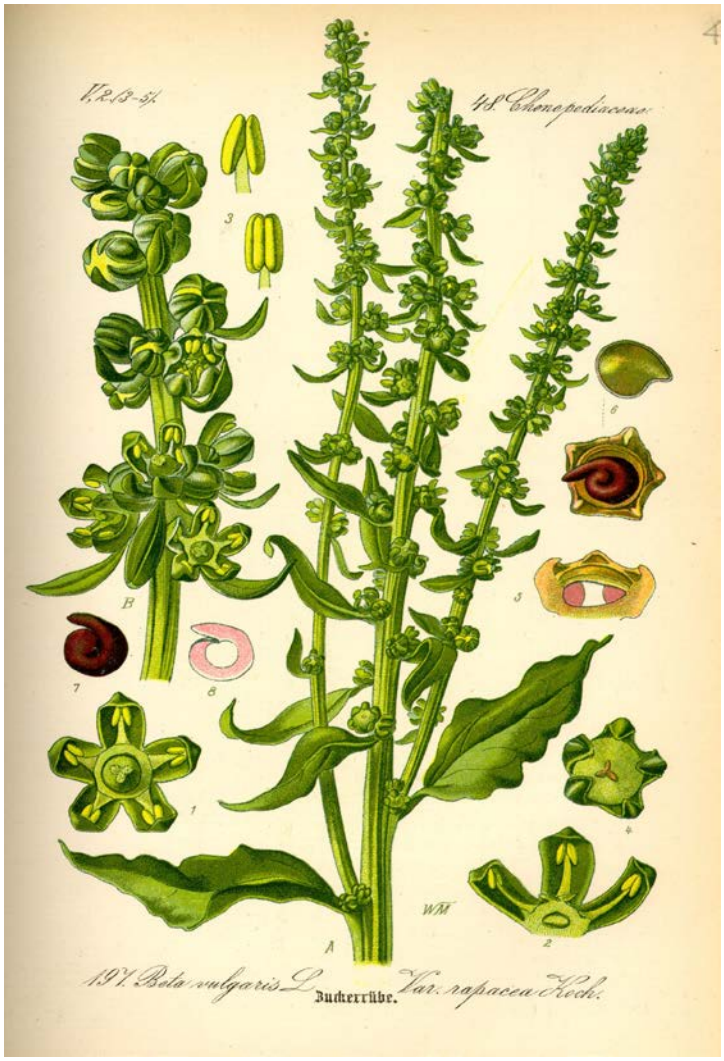


Figure 12. *Beta vulgaris* L., Flowers and Seeds (Zuckerrübe; burak cukrowy; sugar beet) *From: Otto Wilhelm Thomé (1885), Flora von Deutschland, Österreich und der Schweiz, Gera – Untermhaus (Public Domain, Source: www.biolib.de)*

Na każdej stacji czytasz, „cukier krzepi”
Spryciarz zaś z boku dodał: „wódka lepiej”
Prawda to święta jak po lecie jesień,
Obydwa artykuły krzepią, lecz... nie naszą kieszeń.

In every station you read “Sugar keeps you going”
The scoundrel nearby chimed in “Vodka is better”
The truth is sacred and clear like autumn after summer,
Both articles keep us going, although… not [the money in] our pockets.[66]

Figure 13. Sugar Posters of the Interwar Years. (Left: “Mother, don’t hold back on sugar for your kids – sugar strengthens bones.” *Nowy Kurier*, July 27, 1930. Right: “Sugar keeps you going – cook [your] fruits.” Poster by Adamczewski, Marian, 1931.)

[66] *Orędownik Wrzesiński* (Guardian of Września), Nr. 21, Feb. 22, 1936. Melchior Wańkowicz is credited as the first copywriter in Poland for this advertisement phrase, “*cukier krzepi* (sugar keeps going),” which won an open contest announced by the Bureau for Sugar Consumption in the newspaper *Nowy Kurier* in June 1930. See “Najdroższe słowa świata (The most expensive words in the world),” *Rzeczpospolita*, Jan. 3, 2011.

Figure 14. *Beta vulgaris* L., Root, Flowers, and Seeds. *From:* Amédée Masclef (1891), *Atlas de Plantes de France. (Public Domain,* http://upload.wikimedia.org/wikipedia/commons/5/56/276_Beta_vulgaris_L.jpg*)*

The importance of beet sugar as an article of consumption is clearly noticeable in everyday life in Poland at tea time, when people gather around coffee or tea, and candy or cake. As seen in the 1936 verse above, the place of sugar in Polish life is comparable to that of vodka. In addition, the practice of canning, even in urban households, made the significance of sugar all the more critical, as witnessed in the ubiquitous shopping for sugar in big volumes in early summer. On the countryside, another occasion for massive consumption of sugar was for beekeeping during the season when there were no flowers outside. Because the price of sugar is remarkably lower than the price of honey, it was a widespread practice among beekeepers. Szymon, who works as raw material manager responsible for one sugar factory, told me that he kept bees on a farm that he owns, but rents out to a farmer. He did not want to talk about it openly in the factory, but felt free to discuss his farm with his relative when we visited the latter's farm. He said that the sugar from his factory was too good for beekeeping, and that he would shop around for low quality, bargain-priced sugar that shows up occasionally at grocery chain stores such as Biedronka or Lidl.[67] He wonders where the retail store brands' sugar comes from, and speculated that it must be some lower-grade sugar from farther East, or from Southern Europe. He also added that the sugar produced in local factories has to meet the high standard for Pepsi products, and would not be circulated to such bargain retail stores.

Sugar is among the most important food items, right after bread, butter, sausage, coffee, and tea. These are items that are consumed daily and shared with others, performing a significant role in social interactions and imbued with cultural meaning as

[67] The relationship between beet sugar and honeybees has been strained in this region from at least early Spring 2008. It was rumored that herbicide recommended by agronomic advisors of the sugar factory had a detrimental effect on honeybees, and this gave rise to the suspicion that the sugar factory was planting genetically modified sugar beet (although it was illegal to do so). The concern about GMO sugar beet was baseless, because the seeds are examined by government administrators at random on the spot every year before sowing. On the other hand, sugar beet seeds coated with pesticide might have caused the death of bees, as in similar cases in 1999 in France, 2008 in Germany, and 2009 in Poland. Carbofuran, the most likely substance to have caused these problems, was banned in the EU in June 2008 (Council Regulation No (EC) 689/2008; see also Richards 2011:156), and the remaining stock of seed material treated with it was used for the last time in Poland for the growing season in 2009.

staples and daily necessities. People working in the factories and farmers who deliver sugar beet to the factories are very proud of their status and role as sugar producers. Farmers could not tell me enough about the fact that their sugar is used in Pepsi, which is according to them the best (Pepsi rhymes with *najlepszy* [best]/*najlepsi* [best people]), with the highest standards for ingredients.[68] There was a lot of pride involved when it came to the quality of sugar produced in local factories. During the privatization process, this sense of pride and self-esteem had been an instrumental factor and motivation for moving forward, as examined in the previous chapter. And the production of better sugar, local farmers and factory personnel kept telling me, depended exclusively upon the quality of sugar beet, now that the factory equipment had been completely modernized.

In the previous chapters, I examined the peculiarity of the province of Wielkopolska and how the privatization of sugar factories in the southern part of it has affected the views and lives of local people. I have also described the way narratives of local memory about land and estate ownership and traditions of improving the soil are structured around the idea of Wielkopolska as the borderland between the East and the West. Till now, my own narrative has been formed around the way materiality of land and soil was viewed, and how privatized sugar factories became the focus of discourses of contention. There was, for sure, a sense of ambivalence and hesitation to let these immobile entities, land and factory which are "heavy" (Munn 1986:80), enter the European market, the unified and dominant sphere of exchange of the European Union. But this antipathy was superseded by the desire to participate in this sphere of exchange (Bohannan 1955), not only through privatization but also through the continuing cultivation of sugar beet and the production of sugar for the European market, and to be recognized as a worthy and equal counterpart of exchange in the EU.

[68] While the company widely attributed this to the quality of sugar and used this as a morale booster, it seems that there had been a broader relationship of investments between Rheinzucker and Pepsi in the food processing sector, with both companies holding shares of a snack food company.

In this chapter and the next one, I will explore how farmers and farm managers participate in the European market, through the production of sugar beet and the sale of used agricultural machines. Although they do not directly participate in the sugar trade, farmers and factories take pride in a successful harvest, which is reflected in the average quantity (tonnage) and quality (polarization) of sugar beet. In local communities, sugar beet piled up on the edge of the fields waiting for transportation serve as an occasion of competitive display among farmers. The results of harvest, transformed into numbers and statistics, are compared within the company between factories in Poland and Germany, and serve as a measure of comparison with factories in other countries, as well. The sale and purchase of agricultural machines occurs more directly with direct meetings and interactions with farmers in other countries. While the primary goal is to obtain a good used machine at an affordable price, farmers make an effort to make a good impression as a fellow farmer coming from Poland, not necessarily to influence the immediate outcome of the transaction but to build up a good reputation, or fame, of Polish farmers (Munn 1986:115). By examining these two instances of exchange happening on the European arena with immobile goods, I highlight the way farmers' life is arranged around the temporal cycle of the crops and machines, seasons, and individual tasks in everyday life. It is these temporalities that constitute the basis of the so-called *Eigensinn* (self-reliance or stubbornness, Lüdtke 1993) among farmers and farm managers, even though the wage of agricultural workers might be calculated on the basis of work hours (cf. Lampland 1995). If work hours and floor discipline are the basis of workers' bond, self-respect, and resistance, the growth cycle of crops and nurturing calculation of nutrients and costs perform the same role for farmers.

In this chapter, I focus on the sugar beet – how it is grown and delivered to the factory, and how sugar beet planters and factory personnel work together to ensure the timely and successful production of sugar. A successful "campaign," as they call the five-month production period from September to January, is the culmination and achievement of a long-term planning and preparations beforehand, and daily round-the-clock operation

of machines and equipment and an uninterrupted flow of beet delivery. The diverse group of people involved and the multifarious machines and technology form an assemblage around the sugar beet crop, a constant process of becoming and putting together. Even though the translation into 'assemblage' loses the unfolding and contingent element of the original French word '*agencement*' (Deleuze and Guattari 2004; Law 2004), in the case of sugar production, assemblage captures the carefully planned and controlled manner in which sugar beet cultivation and processing is projected every year. Still, it is a fragile assemblage – not in spite of technology but exactly because of the uncertainty of weather conditions and the way roles of people and machines are arranged and choreographed differently according to conditions every year. From this viewpoint, the day-to-day operation is an achievement as much as it is a reproduction of the whole assemblage, including social relationships.

At the center of this assemblage is the sugar beet whose properties as a useful plant become the center of attention and care. The main mechanism setting this assemblage in motion is semiosis, which I understand as the process of interpreting and appropriating signs for the purpose of human and non-human actors (or actants) that are capable of reading signs and reacting. The way plants react to stress such as drought or nutrient deficiencies, and how wild animals roam the fields at specific points of plant development are good examples of sign transactions without direct human involvement. Not only people, but also non-human entities such as animals, soil, fertilizer, herbicide, and machines play a certain role in this semiotic process. I will analyze this process without assuming that the ultimate cause behind all this is human intentionality, because there are more detailed dynamics to discuss in human interactions with nature, be it in the laboratory, in the field, or in the woods. With this approach, I aim to elucidate the way actants are constituted in assemblages, which Callon calls performativity (Callon 1998), and the distributive nature of agency (Keane 1997; Gell 1998). In this sense, I explore the field of biosemiotics which expands beyond human communication and cognition to the whole animate part of the world (Sebeok 1992), based on Peirce's contention that "the

entire universe is perfused with signs, if it is not composed exclusively of signs" (Peirce CP 5.448n).

I will start with a description of the factory and the way it was represented by company personnel, while introducing the process of sugar production. I will discuss the relationship between raw material managers and planters, who are directly involved in planning and growing sugar beet; the way they see their work; and how the two different groups cooperate for similar but different goals. In this relationship, the quality of the sugar beet which brings them together also becomes the source of tension and conflict. As I describe this fluctuation between solidarity and incongruity, I will review writing strategies in science studies when dealing with non-human actants. Since a big part of action in this chapter involves several corporate entities, I will also reflect on the challenge of ethnographic writing in such settings, and the relevance of theoretical questions regarding corporate ethnography, economic development, and neoliberalism. In the end, I suggest that through the politics of comparison and recognition, and the divisive role of sugar beet, tension and fission within these two groups of actants (farmers and advisors) leads to categorization and differentiation according to aspiration, attitude, and performance, all of which become palpable and visible because of the sugar beet.

"Najlepsze Buraki (The Best Beet)": Shared Goal and Creed

It was on a frosty December morning after some mild winter days when Jaro, the plenipotentiary manager of Rheinzucker, and I left Poznań to visit the sugar factory in Środa. When I told him over the phone that I never had been to a sugar factory, he generously offered me a lift, insisting that the best way to start learning about sugar beet is to see how sugar is made in the factory. "The sugar beet, in Polish *burak cukrowy*, in German *Zuckerrübe*, is a very interesting plant. It is a biennial plant, which means that its lifecycle stretches two years – during the first year the seed develops leaves and accumulates nutrients in the root to become a strong-structured plant and it is only after

surviving a winter that it forms a flower stem to create seeds," he explained passionately.[69]

"The seed companies specialize in harvesting the seeds and preparing them carefully for sowing. First they polish out the rough edges so that they fit into a protective priming shell with fertilizer and sometimes pesticide. Seeds have to be perfectly round in order to fit the seed drill (*siewnik*), which sows each and every seed in a precise manner one at a time. There is a Polish seed company, too, and the quality of their seed has vastly improved in the last years. Of course, seeds produced by German, Dutch, and Swedish companies have a level of quality and germination rate that the Poles still have to catch up with. Anyway, you will see those seed drills in spring – even old Polish ones from the 70s with simple mechanical sowing are truly amazing. The seeds look like pellets and are color-coded so that you can tell different kinds apart." I could feel that Jaro, an accomplished man in his mid-fifties, genuinely took pleasure in telling a novice like me everything about the plant around which everything in his company is arranged and according to which his job is coordinated.

"They actually started to grow sugar beet in Poland – did you know that? There is a small town called Konary (G: Kunern) in Lower Silesia, where the remnants of the first sugar factory are still preserved.[70] They have put a memorial plate on a remaining wall. It was a man with the name of Achard. He worked together with a scientist named Marggraf on the refining technology and later began the factory project on his own. Of course, it was German territory at the time, but it is Polish now. So, in a certain way, the current situation where we work together with the Germans to keep the Polish sugar production going has historical precedence, in a sense. It is a historical tradition, so to

[69] For an overview of the sugar beet as agricultural plant, see Langer and Hill (1991:197-208).
[70] In 1802, Franz Karl Achard (1753-1821) started the production of beet sugar for the first time, based on his teacher's (Andreas Sigismund Marggraf, 1709-1782) discovery of beet sugar in 1747 (Langer and Hill 1991:198; Lippmann 1890:404-6; Łuczak 1981). Pounds (1979) counts maize, potato, and the sugar beet as the most important newly introduced crops between the sixteenth and nineteenth centuries in Europe.

speak, which we share with Europe, and now that we are all in the European Union, working together on this tradition makes all the more sense right now."

"I travel all over Europe, usually in this car." The inside of the Volvo sedan, his company car, was comfortable and warm. I asked Jaro when he started working with the company, and how he became the regional manager of a German company. "I always liked to make something, to work on a concrete project that actually builds something. I started my studies in physics, but my advisor let me go because I participated in the Solidarity movement. I went to another school in Pomorze (Pomerania), where I studied mechanical engineering and worked on an electric trolley-bus project. We worked hard and succeeded in building and test-driving that bus. Thanks to this project, I got to know Minister Rakowski[71] in person, who came to see our bus. He told me there were other things more urgent than engineering. Thanks to this contact with him, I had the opportunity to work for the Foreign Ministry and I was sent to the Polish embassy in Germany. I met my wife there and that is why I settled down in Germany. When Rheinzucker was looking for someone to build up the branch in Poland, I wanted to do it because it was a challenging task, to build a business. I knew it would be hard, but it would be something better for Poland, too."

"You had quite a career, with a lot of changes, too." I barely managed to react to his account, because I was not sure what to think of this life story full of changes and surprises. He certainly did spend an interesting and curious life in the 1980s, especially when he mentioned Rakowski, the last first secretary of the Workers' Party (PZPR), as his contact. I did not want to seem overly excited in this exchange, and I was still trying to learn the appropriate level of expression in various situations here in Poland. Jaro, in turn, asked me about my life and my studies. He was interested in the years I spent in the U.S., and where I plan to settle down eventually. "I understand well that your work here

[71] Mieczysław Rakowski (1926-2008), Polish politician and journalist. Member of the Central Committee of the PZPR (Communist Party; 1975-90) and Prime Minister of the socialist regime (1988-89).

is going to be the data for your thesis, right? My son, who studied economics and business at a private university in Germany did something similar, too. Would you rather work in the U.S. or in Europe? Are you going back to Korea?" I replied that nothing was definitive, and that my wife's and my own priority was to finish fieldwork in our fields – Japan and Poland respectively – and come together again back in the U.S. He was genuinely worried about the situation of my family. "Don't you miss your wife and child? It must be very hard to live far away from each other. It must be a strange feeling, too, when you meet again after such a long time. Doesn't it feel awkward?" A lot of informants and colleagues had already voiced this concern before this conversation with a lot of empathy. What caught my attention was the way they framed and expressed this concern – with words that register the loving emotions and intimate sensory feelings of marriage and family. It did not feel intrusive, but was nevertheless difficult for me to react in the beginning. I later found a way out of this uncomfortable situation by telling them that it is not that long a time to be separated when considering that other people have to do it even longer.

I was relieved by the sight of the sugar storage tower, discernible from afar on the highway. We passed the main gate and took another one farther down the street, which delivery trucks use when they arrive with sugar beet. "The main gate, originally from 1880, is under protection as a cultural heritage. I normally use that main gate and parking lot, but I will take the route of the beet right now, for you to understand how the factory works." The factory yard we reached was a wide and even surface that looked like an empty parking lot, with beet piles close to the main building, located about 180 yards from the delivery gate. On the other side of the main building were the piles of coal and mounds of lime – used in the purification process – around the 71 meter high red-brick chimney and the lime kiln towers. "This place is called the factory square (*plac cukrowni)* in Polish and the beet square (*Rübenplatz*) in German. But something is not right here – there should be more sugar beet on the square than this right now. We keep about three days' worth of reserve raw material for processing (*surowiec do przerobu*)

here for unexpected situations that interrupt the continuous delivery and transport of beet, such as bad weather. But I see that the reserve is a bit low right now." He went over to the small building located at the end of the path that ran from the delivery gate, through the weighing station, past this building, and to the canalized part of the square. The canal streamed the sugar beet to the inside of the factory while simultaneously washing and selecting rocks out of sugar beet. After a short exchange, he came back and we started to walk towards the stockpiled beet. While walking, I asked who was responsible for the reserve beet. Jaro explained that it was the raw material department, and the office was right in that building, with a small lab, and a kitchen for lab and yard workers: "Besides taking care of continuous delivery, they take probes from every truck in that building and check the cleanliness and sugar content of the beet." When I asked about the trucks, which were all the same size, he explained that a logistics company was responsible for the transport, and the sugar factory and the farmer split the cost of transportation. "The farmers are making a row out of it because in Germany, the factory pays the entire cost for transportation. They want the same conditions here, but that is impossible with the extra effort on our part to accommodate small-size planters who have their sugar beet fields at the end of unpaved roads." He added, "If we apply the same conditions here as in Germany, most of the farmers couldn't even afford the cost of buying seed material. They should know that." It was a topic that would come up later among farmers and raw material managers, too, although I did not know it at the time.

We almost reached the factory building. "As I said, the best way to understand the factory is to follow the beet. The water carries and washes the beet along this canal. At the end of the canal, the conveyor belt starts and the beets are up for the slicer." He took me through a small door in a small part of the main building, where we could see the conveyor belt carrying shredded beet upstairs to the extractor or diffuser. "This is the best place to take a look how they are cut – to maximize the surface of the cut pieces, we have a special cutter which rotates in a perpendicular manner for every cut to cut them into ridged wafers [*sznycel*] to maximize the contact surface with water during the boiling

process." There was a female worker in the room who checked the cleanliness of about fifteen beets at a time and sorted out rocks from among them and cleaned the dirt and leaves that remained on the occasional beet. "Even after the sieve mill separates rocks from beet in the canal, some rocks still make it to the conveyor belt and could damage the slicer. The green leaves have to be cut out or otherwise they will affect the quality of the raw juice."

Upstairs the diffusers extract sugar out of the beet wafers by adding boiling water, and afterwards the resulting raw juice is mixed with lime water (*mleko wapienne*, $Ca(OH)_2$) for purification. "Can you smell it?" Jaro asked as we climbed the stairs, from which we could see the beet pieces on the conveyor belt ending up in a large container. The distinctive earthy, alkaline, but sweet smell that had been lingering in the air near the building became strongest right there. "It is a smell that you cannot experience anywhere else. It is not really pleasant and only ambiguously sweet, but it is addictive. It also goes well with cigarette smoke in your nose." As I later found out, the smell lingers in your nose for the whole day, and there are moments when you get reminded of it when encountering other related, but completely unexpected smells. It is similar to the olfactory experience of a peculiar spice that was hidden in fusion with others, but creeps up again after a while in unanticipated places.[72]

We arrived at the floor where the purified juice proceeded to the evaporator, consisting of four boiler tanks where excess water is removed. The impurities in the juice – the beet pulp and the lime cake – were removed before this step, and already sent for processing of their own as livestock feed and fertilizer, respectively, for beet farmers. I took a good look at the labels on the boilers – they were produced in East Germany. "We

[72] I found a description of similar olfactory experience in Paul Stoller's ethnography among the Songhay in Niger (Paul Stoller 1989). It is my firm belief that sensory experience during fieldwork should be part of every ethnography and not a separate subject or subfield in anthropology. In the same vein, archival experience and sensory reading should be a part of every historiography (Ann Stoler 2010). For a recent review on the role of senses in ethnography, see Bendix 2005.

installed them ten years ago from a closing factory in East Germany when we modernized the factory for the first time in 1996," Jaro explained, "and we will buy new ones next year. Last year we modernized the packaging equipment. We are changing the equipment little by little." The tanks had small windows through which we could see the sugar crystals forming and the remaining juice changing color from brown to white. The crystals are separated during the next step in the centrifuge. After being processed in the four boilers and two centrifuge tanks, crystallization is finished and the beet juice reaches the form of dry rough crystals of white sugar. The sugar from the three other factories in the region is in this state when it arrives at the packaging plant here, since there is only one packaging plant for the four factories. In the packaging plant, which was recently modernized with used equipment from an Austrian sugar factory, the sugar is further refined to produce different grades of sugar according to market needs.

A group of women in white gowns passed by and one of them greeted Jaro heartily: "It has been a while, Mr. (*Pan*) M. – are you going to join us for tea?" Jaro thanked her and explained that he had to finish some other things today. He asked her instead to show me the laboratory while he talked to the engineers in the control room in front of the boiler tanks. She started to make tea for me. Ms. (*Pani*) Ola had worked for a long time in the laboratory and planned to retire after this season. "It is a good job and good work for a female with higher education in science. I think I was quite lucky to have this job, since I am from here and there are rarely any workplaces around where I can actually practice my expertise in chemistry." I asked her whether higher education is the rule among people of her age around here. She told me that it was neither rare nor the rule in her generation for a woman to have higher education, but in general, more women went to college than men, who chose to learn professional skills. She showed me the equipment used for testing beet juice and raw sugar samples for composition, impurities, and moisture. "A lot of work here in the factory is seasonal, but here in Środa the laboratory has to be open for the packaging process anyway."

I asked Pani Ola about the privatization process of the factory, and how she perceived and understood it. “There is not really a lot to say,” she began, “I think we had a chance to choose how to modernize the factory. There was also the possibility to keep it as a workers’ company, but it did not work out with all the petty politics inside the factory. Of course, there are people who are not happy with the state of affairs right now and a lot of people have been let go. The reason I am still here is that they needed someone to teach younger employees here how laboratory work is done. I have no complaint since I worked here for a long time and look forward to retiring after this season. Former colleagues who resigned had opportunities to become science teachers. I could do that, but I am going to rest at home and spend time with my grandchildren.” She was polite and her answers felt sincere, but I had to keep in mind that it was Jaro, her boss by many levels, who brought and introduced me to her. It seemed that she wanted to represent herself as distant from the so-called politics in the factory. Maybe she actively wanted to do so, or she already was excluded from such issues by others in the factory. But what this work has meant to her, and how her family needs her now, seemed to me a good way to tell her story without touching any sensitive issues, such as discontent after privatization or an on-going factory closing somewhere else. There was actually a tendency, at this time and on other occasions, among factory employees of freely expressing their opinions to me or any other people participating in the conversation.

Jaro came back and I thanked Pani Ola for her hospitality and friendly chat. She did not forget to invite both of us to stop by next time for another tea. As we headed outside, Jaro stopped in front of the administrative building and lit a cigarette, a red Marlboro known in Poland as the quintessential American brand of cigarettes. I asked him why he liked the red ones, and he said that it was because the taste was strong but pure. He inhaled deeply, savoring the smell of beet juice together with the cigarette smoke. “Whenever I am away from the factory, or during the off-season, I miss this smell. Sometimes I think that it makes me work harder for the sugar factories.” We relished the view from there of the whole factory building, which looked like an enormous

compartmentalized steel can with the backside façade of the boiler tanks and the centrifuges. “Isn’t it amazing, what people can do with a simple plant, growing it and coaxing the essence out of it to make pure sugar? This is what I like about this job – I am an engineer and it is my job to make this operation better. Being a manager does not really change the content of my work.”

Jaro had reached the end of a long narrative, his own narrative about sugar beet and its processing in the factory. To be exact, it was more a story about himself than about sugar beet and the factory. However, it did not feel as much about Jaro because our conversation took place on our way to and in the factory, with myriad contexts intermingling along and across the spatial and temporal path of sugar beet and Jaro’s life story. I only started to realize how many lifetimes and how much effort must have gone into this historical engineering project over time, and how important a role this network of – at the time four and later three – sugar factories has played in the economic viability and symbolic integration of this micro-region.

Jaro’s story was a succinct but rhetorically dense introduction to the world of the sugar beet, the beet fields, the factory, and the people who worked around the sugar beet – the farmers and the factory employees, His narrative had a story arc beginning from awe-inspired excitement for a plant that has been studied, bred, and improved against crop damage over a century, to finish with an enthusiastic confirmation of human ingenuity in agriculture and engineering. While there is no doubt that he had this story ready because he was responsible for public relations in the company, I believe that this story-line must have been chosen for a meaningful reason.

As much as his narrative felt like it had been shaped and polished for business purposes, there was a persuasive sincerity in the way he delivered it, as if he were on a mission as a beet advocate. When he talked about beet sugar as part of European history, he framed his work in terms of preserving a local tradition, a heritage worth protecting. He strategically emphasized that beet sugar was a common heritage, and by implication naturalized the partnership between the German company and the factories in Poland by

using the expansion of the European Union as reference. He did not deny that the German company had financial motivations for their investment. That is the most basic reason of doing business, he said. But he stressed that the willingness to share their expertise, technology, and profits with people in Poland cannot be accounted for simply on the basis of investment and profit. As long as Poland has joined the European Union and adopted its sugar reforms, their sugar industry shares the same fate with its counterparts in other EU countries. "Look at Ireland, for example," he explained, "they quit sugar beet entirely after they stopped government subsidies. To survive in today's sugar market, it takes more than the will or help of the government, and we are doing just that – to keep sugar production going in Poland. This is in itself an achievement."[73]

The most effective part of Jaro's narrative, however, was when he put the sugar beet at the center and used it to assign his role and define the farmers' role as helping and caring – implying that the roles of human beings are subordinate to the very existence, growth, and use of the plant. It sounded as if the sugar beet plant were on a mission to fulfill its fate by being processed and sold as table sugar. This was a powerful way of positioning himself and other human beings, including farmers, as humble subjects in face of nature, with the plant as mediator, embodying the mysteries of nature. As we will see throughout this chapter, this way of positioning oneself across nature but simultaneously in parallel with nature – that is, facing nature in a non-antagonistic way – is widely accepted and repeated among agricultural advisors and managers in the sugar factory. Furthermore, this viewpoint found resonance among farmers, especially during harvest time, when a bountiful harvest is often attributed to nature and, by extension, to God. Similarly, farmers who work with domestic animals readily admitted that the animals do the work while the farmer only helps them with the task.

[73] The sugar industry in Ireland ceased production in 2006 with the closing of the plant in Mallow. There are currently plans to revive the industry, aiming to open a plant in 2015, when the European Commission will end the sugar quota system. See newspaper articles "Sugar beet industry could create 5,000 jobs," *Irish Times*, 1 Dec. 2011; "Farmers talk about revival of sugar beet," *New Ross Standard,* 6 Dec. 2011.

By employing Jaro's polished factory tour narrative, I introduced the sugar beet as the protagonist of this chapter. In the following, I will examine some methodological questions when treating a voiceless plant, a non-human actor, as protagonist. What became immediately clear in Jaro's story was that the story, focused on the sugar beet in the beginning, quickly turned into Jaro's own story. He utilized the sugar beet as the focus of attention, as a device that allowed him to convey what he wanted to tell. This brings up a question familiar to ethnographers, although in a slightly different formulation: is it possible to write a non-subjective narrative about a being or beings that lack voice?

Writing about objects, writing with objects

> *Und ein lebloses Ding erkennen, heißt nicht, seine Eigenschaften eine nach der anderen auszuspähen, sondern es heißt, daß ein Schleier fällt oder eine Grenze aufgehoben wird, die der wahrnehmbaren Welt nicht angehören.*
>
> [To recognize some inanimate thing does not mean looking out for and examining one quality after another, but it means that a veil or barrier, which doesn't belong to the perceptible world, is lifted away.]
>
> - Robert Musil, *The Man without Qualities*[74]

Michel Callon's story about transposing scallops from Japan to the coast of Normandy in France offers insight into the viewpoint and writing strategy of actor-network-theory. He describes what he calls a holy alliance between scientists, scallops, and fishermen, which "must be formed in order to induce the scallops of St. Brieuc Bay to multiply (Callon 1999[1986]:70)." In the center of his focus are the marine biologists who use a set of

[74] Musil, Robert. 1978[1930]. Der Mann ohne Eigenschaften. Berlin: Rowohlt, p.558.

strategies to impose this agenda upon the scallops and fishermen, and enlist their cooperation. In other words, the researchers pursue their own purpose by trying to represent and speak for the other two parties on their own terms. Callon's study of power is an insight into the way the power to speak for other actors – human and non-human – is achieved through a process of what he calls "translation."

Callon's insight and trail-blazing approach to this state of affairs on the coast of France has inspired a lot of research and writing ever since. In my own project, the approach to cooperation and conflict seen through the lens of persuasion and recognition in previous chapters can be found in his concepts of "interessement," "enrollment," and "translation" (Callon 1999[1986]). Given the way researchers have to negotiate and persuade other parties to follow them in understanding what is happening as they do, persuasion fits better than translation especially if there are competing versions provided by multiple researchers, experts, and viewpoints. In a sense, the way Polish farmers have to face the process of post-socialist transformations and neo-liberalism is very much similar to the situation in which Callon's fishermen find themselves. The difference lies in the fact that the farmers in Wielkopolska have multiple versions provided by different groups of experts, factory advisors, local government-employed advisors, and company representatives, not to speak of politicians and the clergy on the local and national level. If I borrow the idea that transition is a process of translation/persuasion of diverse life-worlds (Chakrabarty 2000:71), post-socialist transformations can be understood as a process of persuasion between different versions of "where we are right now and why." Thus, the symbolic violence wielded by the researchers in Callon's case would not be so effective in my own case of Polish farmers who start by doubting any logical explanation as suspicious when it is propagated by someone they do not trust.[75]

[75] Symbolic violence (Bourdieu 1977:192), which has the power to define reality and who and what is right, emanates out of socially recognized and approved symbolic capital, but can be contested in unexpected ways with the question of who has the right – to speak on the matter, for example.

The most inspiring part of the scallop story is the way Callon treats scallops as potential partners in the fragile alliance, or to use his own expression, in generalized symmetry which does not discriminate nature and society. Although he does not specify what conditions or lures the scallops to enrollment, he treats their successful anchoring as their consent which is expressed after negotiations with the currents, parasites, and predators. What is missing in this account is the way researchers and fishermen talk about scallops, and how they impute meaning onto what they do with scallops or their larvae. If the talk of researchers at conferences deserved attention when they converted scallops into numbers by quantifying anchored larvae, the talk of fishermen deserves equal attention when the scallops eloped with them on one Christmas Eve, abandoning the researchers. While there is much criticism on attributing agency to non-human actors, I am not ready to give up on the possibility and the potential to find a language to write more effectively about material agency that stands up to human agency or forces modification in human action (see Malafouris 2008; Latour 1991; Bateson 1973).

It is this lack of talk in Callon's account that leads to another corollary – the properties of scallops and the material quality of the elements that interact with scallops are excluded from description and analysis. His postulation that there is a total lack of information from the outset is deliberate, since he does not want to privilege the researchers' account over those of the other parties involved. And maybe that was the case in reality. However, the mere experience of scallop breeding and cultivation in Japan and the United Kingdom should have been considered when Callon discussed how researchers negotiated their anchoring with scallops.[76] The symmetrical absence of any detailed description of how the researchers and fishermen operated in their own profession is hard to ignore as well. Even though the focus of analysis was on power

[76] Callon hints at the existence of Japanese experience at the beginning. Besides, there are published journal articles about the lifecycle and food habits of these scallops (*Pectis Maximus*) in Manx waters of the Island of Man (Mason 1957, 1958), Plymouth (Bryan 1973), and laboratory experiments in Wales (Gruffydd and Beaumont 1972), predating the period of Callon's project which seems in this light more as historical reconstruction rather than ethnographic observation.

during the process of alliance and representation, the very possibility of such actions could have been further explored.

The sugar beet, in contrast, is a crop plant without mobility but it equally reflects the environment and surrounding actors – in short, the whole assemblage. It is, like other crops, an indexical sign which can be read as indicating the amount and combination of elements and nutrients that make up different soils when growing. The visibility and invisibility of soil elements and soil quality lead to predicaments for the caring observer. The farmer has to infer the not-readily-visible condition of the soil from recognizable signs such as the condition of plants, gauges of simple measuring devices, or reports from laboratory analysis. Signs that crops emit, and sometimes the very existence of some plants, including weeds (*chwasty*), could point to a deeper cause or a condition of the soil. The crop as indexical sign promotes the semiotic ideology of nurturing on the part of the farmer, which leads to the dominant model of soil as a chemical entity (see Chapter 2). When harvested, the size of individual sugar beet in piles next to the road shows the quality of soil as well as the care and competence of the farmer. The farmer also takes one of the first, biggest sugar beet home for display in front of the door for his family and visitors to see. Although the piles are not intended for display but for easier transportation, the ensuing village talk and gossip show parallels with yam display and the praise given to the gardener in Malinowski's account (1922, 1935). However, sugar beet do not travel far to be presented or exchanged but simply are delivered to the sugar factory. There, after being weighed and measured in the laboratory for sugar content, they are processed. It is the numbers of tonnage and polarization rate that travel on paper or by word of mouth, which brings back fame and renown for successful farmers. Through these statistics, farmers evaluate their own results and compare them to those of farmers in other countries.

In addition, the sugar beet has various advisors, farmers, machines, and the soil which surround the crop. While there are many unknown qualities and aspects of the plant (and scientists can even disagree widely on known ones), an analysis of beet

discourse would show which ones are the most relevant for negotiation, persuasion, and possible alliances between the parties involved.

The sugar beet, through a long time of breeding, has been intentionally imputed with agency to grow its root larger than necessary for reproduction the following year. Nevertheless, the sugar beet has kept its own agency as a plant, remaining susceptible to other elements in its environment such as the lack of water, nutrients, or the interference of animals because it holds water during droughts. Martin Krampen, who builds on Thomas Sebeok's idea of zoosemiotics (Sebeok 1972) by comparing animals and plants for a semiotics of plants that he calls phytosemiotics, argues that Uexküll's idea of *Umwelt* cannot be applied to plants because they do not have effector and receptor organs for significant communication (Krampen 1981: 193).[77] Instead he suggests, quoting Uexküll, that the plant is directly immersed into its habitat and confined to its casing (Krampen 1981: 194).

To the contrary, I would suggest that agricultural crops through the process of domestication, have co-evolved with humankind to maximize the capability of demonstrating normal growth and signaling trouble through visible symptoms. The way sugar beet seedlings react to changes in weather and moisture, the way sugar beet leaves turn bright or dark green, or develop yellow spots or yellow ends, and the way the root starts to develop are all indicators of an ongoing interaction between the sugar beet and its environment (*Umwelt*). In this way, the crop's properties and qualities attract attention in different phases of development, and they are read and interpreted based on their reactions to different stimuli. And to be able to establish a pattern of how the sugar beet perceives signs and emits signs to other actors such as farmers, advisors, and wild animals, would be equivalent to the lifting of a veil that goes beyond enumerating

[77] Umwelt differs from environment in that it is made up only of elements of significance to the animal in question. For example, the tick's Umwelt is made up of three stimuli or signs that it can perceive as significant – the odor of butyric acid, the temperature of 37 degrees Celsius, and the hairy topography of mammals (Uexküll (2010[1934]:51).

qualities, in Musil's terms.[78] My view on domesticated plants is in agreement with Krampen's observation of the plant as a sign: "the plant's foremost 'receiver of meaning' is its form" "plants not only adapt indexically to their environment but also iconically portray the forces of their environment through their meaningful form" (Krampen 1981:207). He also correctly points out that plants evoke nurturance behavior in people (Krampen 1981: 206), which can be frequently observed in the relationship between farmers and crops. The idea of having to feed crops on the field is so strongly present in the thought and practice of farmers' that they tend to put more than necessary in the fields, but not exactly what is necessary. Factory advisors warn farmers all the time not to use too much manure before sowing sugar beet, but the laboratory results after harvest generally show too much nitrogen and a lack of potassium in sugar beet, which results in lower polarization rate. Advisors explained this problem in terms of the readily available manure in this region and the unwillingness to use potassium fertilizer or to leave beet leaves as organic fertilizer on the field, instead choosing to use them as cow feed.

Based on a semiotic approach to agricultural crops, I think there is an alternative way of writing about non-human actors such as animals, plants, and objects, and this alternative benefits from viewing the life-world as this process of emitting and reading signs. It still retains the characteristics of topology by tracing the process of reading signs, power, and alliances, and preserves the perceptiveness to ontologies that are brought into being "in common, day-to-day, sociomaterial practices (Mol 2002:6)." This is what Tim Ingold had in mind, too, when he redefined agriculture as the "processes of growth, in which human beings, animals and plants come into being, each in relation to the others, within a continuous field of relationships (Ingold 1996:12)." With this formulation, he captured the fact that animals and plants – as well as people – are constantly changing,

[78] In a sense, to be able to read signs emanating from a plant involves a so-called theory of mind, the ability to imagine what another living being is feeling, but this does not necessarily mean that it involves anthropomorphizing (cf. Herzog 2011:62). Based on this theory of mind, whether there is anthropomorphizing or not depends on what is being put into actual action after the apprehending act.

growing, and interacting beings, and that domestication and agriculture is not the result of the sole agency of human beings.

Relationships around the Beet: Farmers, Advisors, and Crops

> *[S]ome of these statements can be made in virtue of potentiality and others in virtue of an actuality. … and we call "corn" what is not yet ripe.*
>
> (Aristotle, Metaphysics V. 1017b)

The question of how to represent the sugar beet became all the more complicated as I started to work more closely with raw material managers and local farmers who delivered sugar beet to the factory. The employees of the raw material division, who work with farmers up front in the fields and the farms, are called raw material advisors (*doradca surowcowy*). They used to be called inspectors (*inspektor*) before privatization, but with changes in the factory personnel and a long-term transformation in corporate culture, now the relationship with farmers is put more in terms of a partnership than authoritative management. In accordance with Jaro's view of his role in the company that processes sugar beet, raw material managers and advisors emphasized their role as helping and assisting farmers in getting the best sugar beet harvest possible. As Maciej, the senior manager of the Miejska Górka factory, first told me, "I mean it when I tell you this – the company wants exactly the same thing as the farmers, and that is to have the best beet crop (*najlepsze buraki*) to make sugar." This phrase was repeatedly uttered like an incantation whenever advisors started a collective meeting with farmers, and especially on occasions when they had to meet disgruntled farmers individually to resolve a concern or a potential problem. And on many occasions I was able to observe, it seemed that the best-beet-crop spell worked effectively and reminded everyone present that their goal was the same. It was a performative catchphrase that was perceived as describing reality,

although it seemed to me that it had the persuasive power to *make* the common goal a reality.

Although my analysis of this assemblage around the sugar beet extends to relationships beyond the boundary of the sugar company, the most immanent relationships are formed within the reach of the company, including contracted farmers. As in the privatization process, the role of the company here is rather ambivalent. While it is clear that investment and profit is the ultimate goal of the company, be it the mother company in Germany or the branch in Poznań, the way this goal is achieved cannot be simplified as short-term investment as in the case of hedge funds, nor can it be seen as interfering with government policy. Far from it – the company helps to implement European Union policy and is the foremost training ground in the Common Agricultural Policy for small-size private farmers.

In this sense, the sugar company actively engages local issues and discontents in contrast to what Benson and Kirsch describe as lukewarm corporate responses to critique, which contributes to a dominant politics of resignation (2010a). In contrast, the privatized sugar sector in Poland provides a case where corporate interests and governance of the state coincide on the level of the European Union, thus presenting an example of international governmentality, which extends beyond the reach of one government or state. On the other hand, to see this governmentality as originating from a singular monolithic state or a location-specific capitalism would oversimplify how and why it works so well for corporations, as Benson and Kirsch rightly criticize as the problem of the notion of governmentality in ethnographies (Benson and Kirsch 2010a; cf. Ferguson 1994). In the Polish case, I would argue that the politics of recognition works at the heart of current developments in Poland as a new member of the European Union. The desire to work, consume, and look the same as their western neighbors is immense and palpable in the factory, on the fields, and in the streets of Poznań. Even those who were against the EU and still harbor doubts think that Poland as a country can do as well as any other country on its own. This politics of comparison is accompanied by the politics of

recognition, which is actively pursued by politicians along the whole spectrum, including Eurosceptics. What differentiates politicians along the political spectrum is the different ways they suggest to achieve that levelness and in what area.

Against this background, what looks like a depoliticized catchphrase becomes profoundly political and disciplining, although not in the vocabulary of party politics. The company's strategy to involve and actively engage farmers was to use the phrase "the best beet crop (*najlepsze buraki*)." The farmers, who were already familiar with that ritually recited phrase, either did not react at all at hearing those words or had a rather dismissive look on their face at schooling sessions or contracting meetings. It was only when they were asked individually that they acknowledged that, in the end, it is true that farmers and the company want to make money by having good sugar beet. Although I did not notice in the beginning, this pattern of public disapproval and private acknowledgement turned out to be a pattern of behavior among farmers. They preferred their alliance with advisors and the company to be tacit and private rather than publicized, lest they be taunted by their peers. If the advisor's Renault Kangoo panel van visited some farm in the village, everyone in the village knew about it and wondered why he was there, and usually the farmer circulated an explanation as soon as possible.[79] Even those farmers known as the sugar factory's "trusted man" (*mąż zaufania*)[80] in each village frequently got into such situations, and afterwards had to clarify to the curious neighbors why the advisor stopped by, and tell them about changes to the contract, new paperwork to sign, the arrival of seed materials, or any other news from the factory.

The advisor is responsible for five or more villages, or a little over three hundred beet planters (*plantator*), and his task is to make sure that the planned and contracted quantity of sugar beet is procured for every year's campaign. This includes contract

[79] There are no female advisors in all three factories, hence the use of masculine pronouns.

[80] The title and the role demanded trust from the factory and other farmers so that the person could carry out the role of mediator and head planter of two or three villages. The title is also used for senior consultants in cooperatives and for official observers authorized by the election committee during parliamentary elections.

signing in January, delivery of seeds and herbicide, arranging seed drill and harvester rental, and advising farmers throughout the growth period to the end of the campaign. Commercial farms have their own designated advisors, usually from the more educated rank of advisors. The older generation of advisors, who are in their forties and fifties, typically have a diploma in agriculture from a *technikum* (vocational high school in agriculture), while the younger generation in their thirties and early forties studied agriculture in college.

How advisors do their tasks depends a lot on the personality, education, philosophy, and attitude of individual advisors. Jan, for example, who was in his late fifties and had studied agricultural chemistry at the Agricultural College in Poznań, was very enthusiastic about teaching farmers and took his job as advisor very seriously. Even for an administrative matter such as contract signing, he prepared a lecture on how to prepare the fields and what fertilizer to apply before sowing season according to the lab results of last year's soil sample. He turned into an old-style teacher when he started his meeting, and meticulously took care of the paperwork afterwards. Natalia, a widow who runs a farm in Serafinów, told me that she really appreciates Jan's help after her husband passed away, and that without it she would have been lost when it came to taking care of all the work on the fields. Jan later told me that her husband committed suicide two years ago because of the debt he accumulated over the last decade. Although older male farmers seemed less enthusiastic about Jan, they admitted that "He is good. You have to give him that. If only he would not treat us like dumb pupils." As it turned out, Jan worked for a long time in Piaski as government agricultural advisor (*agronom*), and Marek's wife Zusia told me that farmers in Piaski call him *Pierdus*[81] behind his back, probably because he likes to lecture and tell stories regardless of the audience.

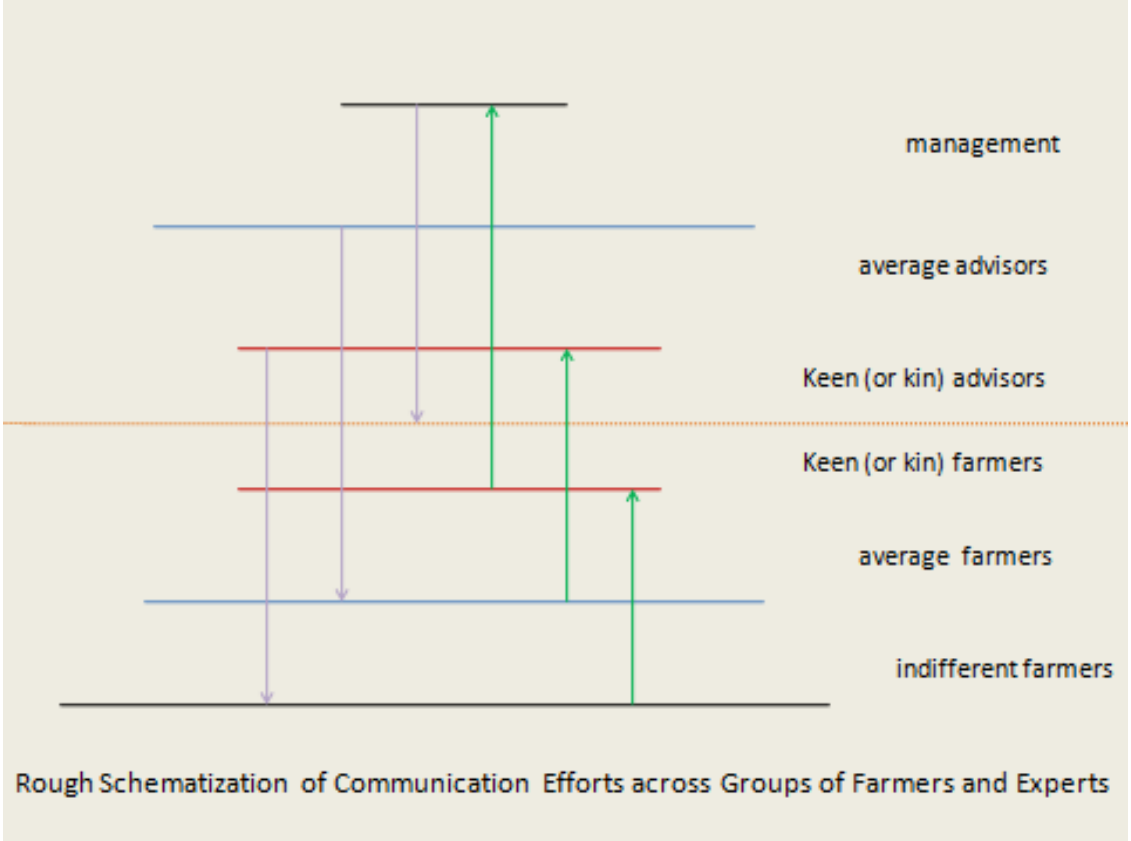
A totally different style of advising was shown by Mateusz, who was responsible for Siedlec, Zalesie, and Babkowice, where Tomasz and Marek lived. Before becoming

[81] Someone made a Latin-sounding name out of the word "bullshit" (*pierdolenie*).

an advisor, he worked in the office as accountant in a sugar factory that had to close down. He did the required contracting and paperwork without giving out agricultural advice other than the leaflets, which are circulated several times by the raw material division to all planters. These contain outlines of the seasonal work to be done, illustrated tables for identifying weeds, specific advice and recommended dosage of fertilizer and herbicide, among other things. The leaflets are updated and adapted to local conditions every year from the German version made in the company research headquarters. Mateusz does not add or correct any information on the leaflets as Jan does. He does not have the field experience as Jan does, and told me that the farmers would not listen anyway – "They know exactly that I am not in a position to advise them. They only listen to someone who knows better than they, an advisor who has concrete experience with soil and sugar beet. And for my farmers, the schooling session during winter and the leaflets are more than enough for them to go through."

Even when the farmer's own advisor is not very experienced, it is possible to call the head advisors at the factory to get personal advice. Bartek, who was the raw material manager at the factory in Środa, told me that there were farmers who called every day of March to ask whether to sow the seeds on that day: "You cannot really answer that – they are going to blame you afterwards when something goes wrong. If it rains heavily after sowing, or the temperatures go down below zero, you know, something that can wreck your effort, plans, and money. It is true that sowing early makes a big difference, sometimes a difference of two or three weeks of growing period, which easily translates into a couple of tons at harvest. So you want to sow as early as possible, but also make sure that the soil is not too cold for the seeds. It is a crucial and difficult decision – and how am I supposed to tell them to sow or not?" Raw material managers like Bartek are younger than the advisors but have better skills to work with computers and the company software, in addition to studies in agriculture and basic German language skills. Bartek considers his work as an office job, although he spends plenty of time outside to supervise beet delivery and check the work on the fields at commercial farms.

Figure 15. Reaching out to Farmers, Contacting Advisors



Consulting with a factory advisor is not difficult and most of the time takes only one phone call to ask questions or to ask the advisor for a visit. However, not every farmer initiates contact with advisors during growing season. The strong sense of independence or stubbornness (Eigensinn) on the part of the farmer plays a decisive role in this relationship. The frequency of contacting and meeting between farmers and advisors can be demonstrated according to the personality of farmers and advisors (see Figure 7). Average farmers do not contact their advisor, unless they have an advisor who is a relative or one that has been a long-time friend. Because most of the advisors come from nearby regions there are frequently kinship relations, mostly through affinity. In contrast, indifferent farmers try to gain information and advice through other farmers

instead of contacting advisors directly. Farmers with considerable acreage tend to contact managing advisors directly, who are responsible for commercial farms as well. From the side of the advisors, average advisors contact all farmers through the trusted men in villages, but do not necessarily contact them individually. Because advising is their essential task of the job, there are no indifferent advisors. On the other hand, keen advisors call every farmer once a month to check on the growth of sugar beet and in the off-season to answer any questions about other crops. However, these distinctions on the diagram fall apart during harvesting season, when every farmer calls the raw material department at the factory directly with complaints about the rented harvester, problems in transportation, and the polarization rate from the laboratory (see below).

The clear line and distinction between farmers and advisors are sometimes blurred when an advisor comes from a farming household or has a farm on his own. There are some advisors and managers who either own land or have a farm that they rent out. Michał, who was the raw material manager in Miejska Górka, lived in Kobylin where his father owned a farm with field crops and dairy cows. After the work in the factory on workdays, he helped his father out on weekends. In 2009, when the sowing season was followed by low temperatures, and the seedlings did not come out until two weeks passed, he was worried about his own sugar beet seeds. When we were on his father's sugar beet field, he was grumbling – "I should have sown them a little deeper. Even when they germinate it will take days for them to come out of the soil." When I told him jokingly that he sounded just like an ordinary farmer, he smiled and said, "That is the way it is. I know how they sound and complain that I cannot hear it any more. And here I am doing the same. When they are mine, it matters more and worries me more."

In fact, if there was a difference between advisors and farmers, I found it in the endearing way in which farmers talked about their crop on the field. Advisors were also worried about the crop, but in more general terms. Farmers always worried about specific crops according to their location and according to weather conditions. For example, when

low temperatures held for two weeks immediately after sowing, Tomasz worried that his beet seedlings might freeze overnight:

- "*Martwię się, że te kiełki mi zamarznie, jak będzie mróz*." (I am worried that those germs will freeze and perish on me if there shall be frost.)

One year later, even though the temperature was favorable, there was concern about heavy rains that might harden the soil and hinder germination:

- "*Jak będzie padał, gleb zostanie twardy jak beton i dusi kiełków*." (If it rains, the soil will become hard like concrete and smother the seedlings.)

On many other occasions, however, the lack of rainfall causes concerns from early spring to mid- or late-summer. Because certain crops need fertilization early on in spring even when it is cold and dry, controversies arise within households as to whether it is helpful to fertilize or not. I witnessed tension between Tomasz and Marek over the question of applying ammonium salt in early March. Tomasz emphasized that the canola was exhausted from surviving the winter and needed a boost to start growing again. Marek, on the other hand, argued that the ammonium nitrate fertilizer (*saletra amonowa*, NH_4NO_3) would be wasted if applied on the surface without turning the top-soil or without the help of rain:

- "*Słuchaj, Marek, powiem ci, ten rzepak jest głodny*." (Marek, I am telling you, this canola is hungry.)
- "*Łatwo ci mówić, ale jeśli nie ma wilgoci jak to będzie dobrze?*" (Easy to say for you, but if there is no water [to dissolve the fertilizer], how much good will that do?)
- "*Spokojnie, będzie trochę padał w nocy. A kto wie kiedy jeszcze będzie padał?*" (Calm down, they said it will rain tonight a little. Who knows when it is going to rain again [in the near future]?)

Caring concerns of this kind are voiced every day on farms in general, but especially often when it comes to domestic animals which require continuous attention, and expensive crops which call for repeated investment in fertilizer and herbicide. And on such occasions, when farmers are not sure whether to fertilize or to do any kind of work on the field, and wonder about the timing of work, they frequently call the advisors and ask for their opinion. However, advisors maintain an objective attitude and trivialize such complaints, much to the dismay of the farmers who asked for help in the first place. Witold, the chief advisor who wrote his PhD thesis on the use of nitrogen fertilizer on sugar beet fields, described how most farmers interact with him – "They ask for help and then I ask what they have done till then. If I correct them or point something out that they shouldn't have done that way, they always have an excuse: 'We have tried that already, but it doesn't work on my field because my field is different. Only I know how it is with that patch of land.' I know that they are just saying that so that they don't look ignorant or stupid to have asked for help. Even when they say that, they do exactly what I told them to do." In the end, although the interaction is not as cordial on the surface, the advisors fulfill the role of agronomist, working on the farmers' side and the sugar beet's side simultaneously to improve the growth and quality of beet.

The most difficult season, however, is the dry season in early summer when the sugar beet begins to grow its leaves. Because there is practically nothing that farmers can do during this time of drought, advisors tell them to take good care of the sugar beet before this season arrives – to maintain good soil structure to contain more moisture in the soil; to fertilize in advance so that the nutrients can settle down in the soil and not get carried away in sandstorms; and to get rid of weeds so that they do not compete with the sugar beet for water. Witold, the chief advisor of the raw material division, who is the manager of agronomic service and edits the leaflets and website, told me that these three tasks sum up what the farmers in this region have to do to have a good harvest. When we were examining samples of sugar beet seeds in his office, he explained that the seeds are almost always perfect nowadays – "They are bred so well after all these years that the

probability of having a defect is minimal. They even achieved a certain level of rhizomania resistance purely through breeding without transgenic technology.[82] The Polish ones used to be not up to the standard, with less than seventy percent germination rate, but now they have the same system in place as the German firms – research facilities are here, but the breeding takes place in Italy, and the quality control is much better, too.[83] So, if something goes wrong, now you can't really blame the seeds. The only thing we can do is to make sure that the farmers actually do what we teach them to do."

The role of teaching fell to the managers of the raw material division, who attended a seminar in Germany with their German counterparts and prepared the material based on that. After they returned home, they compiled a presentation going through the aforementioned three points – the importance of humus in soil structure to retain moisture and make nutrients available; how to use fertilizer based on the observations of the previous year; and how to use herbicide which would be available on the market for the coming season. Witold and Michał, the manager of Miejska Górka, came up with a mnemonics for remembering the herbicides for the year 2009 by putting the initials together – K for Kosynier,[84] G for Goltix, and B for Betanal. This combination will keep the weeds out for sure, said Michał jokingly. The schooling sessions took place at several locations on different dates in restaurants of local towns, and every planter was invited to the restaurant closest to him for the session and dinner afterwards. For the year 2009, Witold suggested a change of herbicide application strategy, instructing farmers to divide

[82] While no genetically-modified seeds could be used at the time (and to this date), the necessary transgenic technology was already there to develop varieties resistant to rhizomania (beet necrotic yellow-vein virus BNYVV) and beet cyst nematode (*Heterodera schachtii*), resistant to herbicide (glyphosate or Roundup), and those which have control of hairy roots, bolting, and sugar content (see Jung 2004:126; Ellstrand 2003). All of the above, except for herbicide resistance, had been made possible through selective breeding.

[83] In the two sowing seasons I observed, they used seeds from one Polish, two German, one Swedish, and one Dutch company.

[84] Kosynierzy (sing. *kosynier*) are peasant volunteers armed with war scythes (*kosa*), associated with the Kościuszko uprising (1794) against Russia and Prussia. It seems that this name was chosen deliberately and exclusively for the Polish market. The same herbicide is marketed in Germany under the name "Rebell (rebel)."

early application on seedlings into two dosages, with the total amount remaining the same. Some farmers were concerned about that change and asked him if it would really work. Witold answered, "It works better, according to research and field experiments – weeds actually survived one application better even if the dose was twice as much. Gentlemen, I know what you are thinking and I was skeptical, too, when I heard about this the first time. But believe me. You will have such a clean field that you won't believe it."

"Not that I don't believe you, but it sounds better when you dump it on them [weeds] as much as you can to kill them, right?" asked a farmer. "You hit them on their head as hard as you can in one devastating blow."

"Not with weeds," Witold patiently clarified, "nobody can hit their heads with anything. You know what, come spring, I will tell you where you can see for yourself – there are going to be people who do as I say and have the cleanest fields in years."

The farmer was still not convinced. He told me that he trusted Witold from past experience with his advice, but having to drive over the seedlings twice instead of once would be more expensive and time-consuming, which was his concern from the beginning of the conversation. But he also conceded that the new way might have merit. "If it really works, this might be easier for the seedlings, you know. They always need a couple of days to recover after this earliest dosage," he told me. When I met him again later in April, he told me that he did it as specified and was happy to have a weed-free field, especially after the long wet spring that caused weed problems and less-than-optimal conditions for sugar beet seedlings for a lot of farmers in the region.

In these talks about sugar beet, farmers and advisors try to enlist the sugar beet as allies, as supporting evidence of their case or as an argument to persuade each other. The outcome and aftermath of these talks have real consequences to the plants on the field, too.[85] Advisors ally with the sugar beet to coax farmers with the promise of good sugar

[85] The contract-signing meeting is more comparable to the Trobriand *kayaku* (garden council), where garden plots are assigned to each gardener (Malinowski 1978[1935]: I 421, II 125). However, the schooling session shares a similarity when one considers that the talk at the

beet harvest and better profit, so that they can fulfill their role and meet the planned quota of sugar beet delivered to the factory when the campaign begins in fall. Farmers, who think that advisors speak for the factory and company rather than sugar beet plants, assert their own claim based on their ownership of sugar beet and experience on their land to prove their independent ability as good farmers and entrepreneurs. What farmers and advisors worry about together is whether the weather will help them achieve their goals, and how the sugar beet is going to react to their alliance.

Moments of Pride and Conflict: Harvest and Campaign

It was one night after the beet harvest ended in the Nowik family, and Tomasz was awaiting the results of his last transport from yesterday. He was happy with the 72 tons/ha, a personal and probably local record, but his son Marek stayed cautious, waiting for the sugar content. Kamil, Tomasz's second son, came home after work and entered the kitchen when we were having supper.

- Tomasz: It took a while, but I'm happy that it's over. God, when I think about the amount of beet that the deer got this year, even to the last day from the piles…
- Marek: Any news from the hunter (*myśliwy*)? They should have filed that report by now.
- Tomasz: Probably not any time soon.
- Kamil: Praised be Jesus Christ. (*Pochwalony jest Jezus Chrystus.*)
- Everyone: Forever and ever. Amen. (*Na wieki wieków. Amen.*)
- Kamil: Have you heard already? Kunicki is out on his field sitting on his beet with a shotgun.

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schooling session brings about real decisions and consequences in the presence of the magician about what will happen on the soil and to the plants.

- Tomasz: Well, he does that every year, doesn't he?
- Kamil: But is his beet harvest this year really worth it? I saw the pile when I was driving by during the day – can you seriously call that sugar beet? Those rather looked like root parsley (pietruszka) to me, except for some of the size of parsnip (pasternak).
- Tomasz: You probably won't believe me, but that was everyone's size of sugar beet when I was young.
- Marek: Have you seen some decent ones around here, Vincent [DJ]? How big are they around Kościan this year?
- DJ: I would say that Sanco has definitely bigger ones on the field than last year, but they have more room between the rows, too, so it's difficult to say how the results are going to be. The sizes looked fine. That estate farm in Rogalin had a pretty good harvest, too, but they are still waiting for the transport. On my way out this morning, I noticed that Matusiak across the forest seemed to have quite good ones next to the road.
- Marek: That is probably his only beet plot on this side this year. The others are closer to the monastery. Well, Matusiak has tried for years to get a better number than ours. Let's see how it comes out – when he has the results he will definitely ask us about ours.

When the time of beet harvest returns, farmers harvest and deliver sugar beet to the factory according to the schedule specified early in the year by raw material managers. They make sure that the order is rotated every year to even out any disadvantages of having to harvest early in the campaign, since growth time can vary up to ten weeks, depending on how early winter temperatures set in. Farmers can use or arrange for their own harvester, or choose to use the harvester rental service that an equipment company offers through the factory. This company, located just outside of Gostyń, provides seed-drill and harvester service to farmers and commercial farms if necessary, and beet loader

service to the factory. Two harvesters work round the clock in two shifts for the whole harvest season. Another Gostyń company is responsible for logistics and the timely and smooth transport of sugar beet to factories and sugar to the packaging plant in Środa during the campaign.

When harvest season starts, sugar beet piles parallel to paved and unpaved roads emerge on the fields. The harvester dumps the sugar beet into piles for the beet loader[86] to move into trucks. Because these beet piles are prominent and for everyone to plainly see, farmers are very attuned to the gaze and judgment of neighbors and advisors driving by. Just like the piles of yam in the garden on the Trobriands, neighbors can see right away how the planter did this year even before hearing how many tons came out of one hectare. A good size and clean shape of sugar beet indicates good preparation in soil structure, mindful fertilizer application, and careful control of weeds with herbicide.

The piles of sugar beet stays on the field until the factory orders the transport, which is planned on a schedule (*harmonogram*), coordinated with the schedule of the harvester and the rate of production in the factory. Once the harvest is finished, farmers call almost every day to ask their advisor whether the transport is coming. Since the price of beet is determined by weight, farmers would love to see their crop to be delivered as soon as they are harvested. The managers at the factory, on the other hand, want the crop available and ready on the field, but with one or two weeks of buffering period to let the beet and the dirt on it dry up. Doing so achieves two things – the beet loader can knock off the dried-up dirt better, and the beet is not as heavy as when it was freshly dug out of the field. In other words, the crop weighs less when left on the field for a certain period. The loss to wild animals can be unnerving to farmers, too, because the forester's office does not consider compensation for crop already harvested, even if it stays on the field.

[86] The beet loader is called colloquially *mysz* (lit. mouse) because the long bars scooping up the beet look like whiskers and the angled conveyor arm looks like a tail. The sugar beet moves from whiskers through the body and on the tail into the truck. There actually was a German beet loader model that was called "Euro-Maus".

When the crop is delivered at the factory, a probe of around 20 kilograms is taken on the weighing station. The small laboratory next to the weighing station uses the beet in this probe to determine the rate of foreign matter (*zanieczyszczenia*; lit. pollution), and the sugar content known as polarization rate (*polaryzacja*). The pure weight of sugar beet is calculated by subtracting foreign matter such as dirt, rocks, and unusable heads or leaves from the total weight of the truck load. An automatic machine and a worker do this task by taking probes and weighing and washing them, and manually selecting unclean elements from the probe and weighing them again.

The rate of polarization is measured from three to four roots of beet, which are grated into porridge and formed into small saucer-shaped samples. In the lab, the samples are dissolved and measured for glucose. Polarization rate is used in estimating the weight of sugar within the sugar beet delivered, and corresponds to a price scale in calculating the delivered value. The amount of sugar beet in the contract is based on the weight of sugar with sixteen percent of polarization. If a load has a higher polarization rate, the factory pays more for the surplus sugar, and if it has a lower rate, the factory pays less than the standard price. Together with the pollution rate, polarization rate can sometimes dramatically change the amount of payment for farmers, and that is why they obsess on these numbers. Because there is only one laboratory that processes the grated samples for all three factories, it sometimes took a couple of days to get the results. Farmers can check the company's on-line service to get those numbers, and complain to their advisors right away if they think something is not right. And while not all of them are familiar enough with the internet, they have children who can do it for them.

Farmers who visited the office one day during harvest season told me that there are a lot of problems with the numbers. First, not all of the process is as objective as the managers say it is. The probe is taken by hand in two factories, and workers transport the grated samples to the only lab in Środa, leaving plenty of room for foul play. In the past, they argue, farmers successfully bribed those probe-taking workers to get better rates. Secondly, there are sudden fluctuations in numbers, which are noticeable sometimes

when two truckloads of the same crop from the same field get pollution rates with a five point difference. Managers acknowledge that the laboratory equipment has to be recalibrated at some points because the measuring parts become too dirty or dull for proper functioning. But they are optimistic that such minor glitches correct themselves in the long run, even for the farmers. On the accusation of unfair probe taking, the managers were dismissive. "That is just how paranoid they are," said Witold, who had become visibly displeased after talking to those farmers, "but why don't they tell us right away who that farmer was. He didn't suffer any harm, even if the story were true. He just wanted to make accusations without proof – as if he cares about fairness." There are sometimes tense situations like this, but in usual cases, the advisor takes care of complaints before the farmers can reach the manager.

On any day during the harvest season, managers in the factories have to fend off dozens of calls and several visits from angry farmers who believe they were hoodwinked because of the company's incompetence to appropriately measure their beet harvest. Maciej, the senior manager, complained that he cannot focus on his task at hand because of these calls: "Listen, this is a joke about Polish farmers (*rolnicy*). Do you know what peasants (*chłopy*) do when they have nothing to complain? They complain that there is nothing to complain."[87] To show my sympathy to him, I told him the story I heard about a village the week before. Marek's close friend Karol lives in a village near Borzęciczki where he runs an inherited farm with an emphasis on pig husbandry and field crops for feed. Since his father sold away beet quotas two decades ago, they do not have any sugar beet. This friend told us the other day that one farmer harvested his sugar beet in September without any reason, with his delivery date more than 10 weeks later. The strange thing happened in the next couple of days in that village – all farmers in the

[87] In Polish, the word *rolnik* (farmer) is used neutrally signifying the profession, while *chłop* (peasant) evinces the image of ignorance, helplessness, and being stubbornly behind the progress of time. Although *chłop* is used in jokes, conversations between friendly farmers, and in the usage of *Chłopie*!(emphatic expression as in "Man!"), its use by a non-farmer to designate a farmer is considered an insult. In formal conversations between landowners, the word *gospodarz* (lit. host, landlord; closer to Ger. Landwirt) is used.

village who had sugar beet hurried up and harvested the whole crop in the village. Karol said that this was the strangest and stupidest thing he ever saw in his whole entire life in that village. Marek explained to me that they probably did it either because they thought there might be a good reason behind the early harvesting, or that the neighbors did not want to stand out by not harvesting, both in terms of facing neighbors and making money.

Maciej was not surprised to hear that story but shook his head and said, "See, and I still believed that we were making a difference together with farmers for farmers." I also asked him if he knew that a Polish folklorist came upon this notion of peasant's grumbling (*chłopskie zrzędzenie*) as characteristic of Polish farmers (Kędziorek 1996).[88] He said that it made sense and that he understands exactly, especially on that day, what that folklorist had wanted to convey, but cautioned that grumbling (*zrzędzenie*) might be too strong a word because it relays a sense of superior feeling on the part of a judgmental intellectual, a dismissive air of contempt. "That word sounds much worse than *chłop*, which is bad enough if I used it on a farmer. See, because I work with farmers I know how they are and how they can be, but that doesn't mean I don't respect them. I have to admit, though, that it is tough during this time of the year – even the best farmers and the most competent farm managers behave like children."

This seasonal rift between farmers and advisors versus a volatile alliance puts the fluctuating relationship between the two parties in perspective. Moreover, these two groups are not homogeneous but much more differentiated regarding the possibility of negotiation for alliance. In the end, however, the attitude toward other actors and reaching out to others is read and interpreted as evidence of a caring about sugar beet, which leads to recognition as a member of a peer group sharing the same passion. If this process forms a core group of farmers and advisors, not necessarily as a group in which

[88] Kędziorek, Piotr. 1996. "Chłopskie zrzędzenie." *Polska Sztuka Ludowa – Konteksty*, vol.50(1-2):114-123. Kędziorek himself is well aware of the pejorative nuance of the concept, but nevertheless retains the words to highlight the way peasants speak rather than what they speak. The biggest difference between my fieldwork context and Kędziorek's is that the peasants in the Biebrza region (Northeastern Poland) identified themselves as peasants, whereas in the Wielkopolska region, the usage of the word peasant was limited, as indicated above.

everyone knows everybody, but a linear network where information and resources are shared through personal connections, the core group will get tighter whereas the outsider group will be more excluded from opportunities and access. And this differentiation and categorization has occurred, and will repeatedly take place, as a result of the key actant of this assemblage, the sugar beet.

In this chapter, I have tried to describe the growing season and harvesting of the sugar beet from the viewpoint of shifting alliances between farmers, advisors, and the sugar beet. The operation of the factory and the growing strategy of farmers and advisors are both based on the properties of the sugar beet. Because the plant is especially vulnerable during the germinating period and the early growing period as a seedling, it needs prudent care and constant attention. Farmers and advisors frequently show disagreement on how to best take care of the sugar beet, although this question is the common interest they share. In this relationship, the quality of the sugar beet which brings them together also becomes the source of tension and conflict.

The way quality is controlled in the factory is based on voluntary choice and incentives built into the delivery system. While the factory plays a role as middleman for herbicide and equipment rental services, farmers can choose other options for their sugar beet. But because the readily available options are most convenient, farmers follow the lead of the advisors. The alliance between farmers and advisors is negotiated in its strongest at the time of winter schooling session. Despite disagreement on some things, both sides share and agree on the tenet of meeting the challenge of weather, weed, and animals in the new year.

Although there are superficial disagreements and frictions between farmers and advisors all year, the time of delivery and harvest is tense for farmers who will showcase their sugar beet roadside in long piles for everyone to see. And a lot of them will make some noise about the beet pollution and polarization rates. It is the season when advisors talk among themselves about grumbling peasants (*chłop*), and farmers gossip about the

deceitful advisors and pawns of the German company. The alliance is in danger of being dissolved, but is saved by the sugar beet – from the viewpoint of the sugar beet, harvesting after one year of growth means an abrupt halt for a biannual plant. Whether this is a sacrifice of the sugar beet or a betrayal to the sugar beet remains to be seen in the next chapter after one other actant, the soil, is counted into the equation.

Chapter V

Steady Land, Lasting Machines:

Enchantment and Care in the Circulation and Operation of Agricultural Machines

On a rainy day in early March, Marek and I moved the fertilizer spreader into the garage workshop to get it ready for the first action of the season. Marek wanted to weld a longer fin to the disks so that the spreader would reach farther, thereby covering every corner of the field on the established tracks. Since they sowed canola with the larger tractor and seed drill, the distance between tracks did not match the reach of the spreader. Marek hoped to apply this small change on the spreader so that he could drive every fourth row (instead of third) of the seed drill tracks.

- Marek: Calculate, Vincent (author's fieldname). Am I right or what? To get 12 meters throwing distance, they said the fin should be calibrated to 20 centimeters. [Looking into the spreader's field manual.] The only fin we have is 15 centimeters. It would be nice to have original parts, but hard to get hands on those, not even mentioning the price of original parts.

- DK: Used parts could be cpileer, though. Do you think such used parts could be available around here?
- Marek: Sure. But not cpileer, even if they are not using them. Chances are that those who have them are making good use of it already.
- Leszek: [Leszek enters the garage.] Hey – what are you guys doing?
- Marek: [Straining under the fertilizer spreader.] This won't work. Leszek, bring me the Frenchman (*Francuz*). Should have cleaned it better when putting it into the storage last fall. The nuts are all rusty and won't budge.
- Leszek: Where is the Frenchman? I saw him yesterday around here. [Rummaging around in the toolbox.] The Swede (*Szwed*) is here.
- Marek: The Swede won't do. That's why I am looking for the Frenchman. I have to hit him with the hammer. Go look in the barn where the Zetor is. Heniu might have left him there when he was working on it last night.

Although I became aware that we were not looking for a person, the whole conversation confused me all the more because the participants used the pronoun "go" which can be taken either as "it" or "him." When asked, Marek just shrugged his shoulders and told me that it might be where these wrenches are coming from or where they were invented (see Figure 8). "None from Poland – used to be the same as now," he added briefly. He used to lament the fact that not many replacement

parts or tools were made in Poland, and even those that used to be from Poland were not produced there anymore.

Figure 16. Different Kinds of Wrenches Used in the Farm Workshop. (From left to right: *Francuz* (Frenchman), *Anglik* (Englishman), and *Szwed* (Swede); Public Domain)

These adjustable wrenches are among the most useful tools in a farmer's workshop. They are also featured on road signs in European countries, to indicate the vicinity of a repair facility. The Frenchman is featured in Germany, and the Englishman shows up in slightly different shapes in Poland, Austria, and Switzerland. In Dewey's terms, the use of tools is based on the "recognition of a thing as a set of immediate qualities" and the regularity of events following those qualities (Schmidt 2000:130). While the tool by itself already signifies the regular occurrence of repair, as a road sign it indicates a place and personnel wielding tools for needy vehicles passing by. What Marek perceived of tools as indicating a connection to nuts or bolts of certain sizes, or the names indicating nationality for patents or production are again indexical on a different level. The experience of tools, as Marek and other members of the household live through every day, is not simply an experience of immediate qualities but something more as the tools become the subject of reflection in everyday

conversations. Europe, in this sense, becomes a familiar and regular idea that is enforced and reinforced through everyday encounters with material objects of all kind, even if it is just an adjustable wrench made in China.

Whenever I followed agricultural advisors or farmers on their visits to other farms, I had the opportunity to spend time in the farm workshop or garage, where machines and equipment are parked or worked on. These are usually reserved as male-only spaces in the farmhouse, and I have seen farmers' wives bickering to their husbands that they should pick up cigarette stubs and return their empty beer bottles to keep wives from entering that space. It was these episodes of being in farm workshops that let me truly realize how extraordinary the story of Magdalena Figur was, the girl featured in the propaganda film and posters in 1949. I learned about her in the late Ewa Pięta's documentary film "The Girl on the Tractor," which recounts Figur's life in lengthy interviews. Figur's reminiscence in the form of oral history recounted the way she lived as a tractor brigade leader in a state farm, and later, after retiring, as an old woman who takes good care of her tractor and voluntarily offers repair advice to other farmers in the village. One farmer even testified in the film that she had correctly diagnosed a problem in his tractor by merely listening to the sound of him passing by.

Everyone in Poland, including the younger generation living in cities, knows this story and remembers the emblematic propaganda poster with a girl driving a tractor. The girl in a beige blouse and black skirt, the uniform of the socialist youth organization, is proudly driving a tractor with a slight breeze rustling her hair. The film version is a little different, with the girl wearing an overall and a beret. It has the effect of making people

smile and joke for various reasons: some say that it was an absurd thing that happened in an absurd time, or relate the story of how the girl drove the tractor into the wall while making the propaganda film, or recount the hidden story about the tractor itself – that it was not a brotherly gift from the Soviet Union as narrated in the film clip, but an American John Deere, model H. There was this sense of farce at the end of these conversations – how socialism tried to make people work harder with false ideals, and how reality was different from the one constructed in propaganda.

The image of the girl driving a tractor was created after the example of Pasha Angelina (1912-1959), Stakhanovite and founder of the first Soviet all-female, and ethnic Greek tractor brigade at the Machine and Tractor Station in Donetsk, Ukraine (Fitzpatrick and Slezkine 2000). Together with Maria Demchenko (1912-?), the female kolkhoz worker from Cherkasy, Ukraine, who promised to Stalin to deliver 500 quintals of sugar beet and harvested 523.7 quintals per hectare,[89] Pasha Angelina and her image of beating male tractor drivers in competition and leading her own brigade was appropriated and copied in Poland. The resulting image on posters in the 1940s and 1950s was a combined representation of the Mother-Pole (*Matka-Polka*) model and the peasant woman model, of which the abilities and qualities as worker rather than mother was emphasized (Zembrzuska 2000:7). As the Mother-Pole model gradually became stronger through the 1960s and 1970s, the emphasis on the female ability to work came to be perceived as foreign (Russian) and imposed upon the Polish nation (Fidelis 2010:241).

[89] Fitzpatrick 1996:274.

Figure 17. Propaganda Poster (left) and Picture of Magdalena Figur on a John Deere tractor (right). The caption on the poster reads: *"Youth! Step forward for the struggle towards a happy, socialistic, Polish countryside!"*

In rural settings, however, such representations were perceived among private farmers and their families as incorrect in two ways: first, the wives of workers employed at state farms or collective farms did not have to work on the field at all, with all the benefits and allocation of potatoes and milk, and spent more time on their plot, children, and shopping; secondly, the working females were rather those living on private farms, feeding animals three times a day and bringing meals to the field and helping there, too. Marysia, Tomasz's wife, reminded me that Hubert and Joanna were such an example. They came to the farm for work from time to time, and Hubert told me stories about the time he worked at the state farm. But I had noticed that Joanna was not familiar with work on the field at all. For Marysia, it was not important where the image of the female worker came from – it was rather the contradiction between image and reality that did not sit well with her, especially with the sacrifice of leaving the children at home to see after

each other: “With all the work with the pigs, on the field, and in the kitchen, I had barely time to watch my kids and check their homework.” She was convinced that the worker model definitely did not apply to women in state farm worker families but rather to women like her and her daughters who have worked since they were young, helping out with feeding animals or other tasks around the house.

Males were rather interested in the make and model of the tractor on the poster, rather than the female tractor driver, and part of the intention was to present an image of modern agriculture. In posters and propaganda films in the Stalinist period between 1948 and 1956, the revolutionary transformation of the rural landscape by machines was emphasized. There are even scenes of rural fairs where tractors race horse carriages and beat them by a large distance. While this display of technology, speed, and progress might feel blunt from our viewpoint in the present, the whole situation of that spectacle warrants lingering for a moment. Farmers in Poland told me over and again how much time they spent on the field with horses, and later with machines. To them, horses were amazing creatures as well, although having to work with and care for them every day diminished the sense of awe. Those who used to work with horses when they were young still recall the fascination they felt when they first saw a tractor.

To be exact, work on the field became more hectic with tractors, one farmer told me, because he could not enjoy the mid-day rest he needed for the animals.[90] He had to load horse feed in the morning as he left home to the fields and enjoyed a long lunch break together with his horses at the pond where the horses could drink. Of course, it took a lot longer to get the task on the field done. As tractors became part of the everyday

[90] See Rabinbach (1992:78) quoting Karl Marx: “What distinguishes the worker and the machine is that ‘the worker consumes his provisions during pauses in the labor process, whereas the machine consumes what is essential to it while it is still functioning.’”

work routine, constant caring and maintenance took the place of occasional amazement. The same farmers nevertheless love to share their excitement with rare powerful machines which easily lift up a seven-furrow plow, or harvesters that go over six rows of sugar beet at once while making the ground tremble.

In this chapter, I will explore this coexistent tension between the occasional sense of awe or enchantment and the constantly-needed caring that farmers experience in their everyday encounter with machines.[91] This encounter includes not only work on the field and maintenance in the barn-workshop, but also trips to other countries to purchase used machines and discussions with other farmers about new equipment. In this way, I can follow the way machines circulate on multiple levels of connections and meanings, both as moving physical things and things which are talked about. In the beginning, I will demonstrate the way that used agricultural machines move from Western to Eastern Europe, and how this experience of sale and purchase shapes the perspective of farmers in this region. Secondly, I will examine old agricultural machines as temporal beings that carry the past into the present, while becoming objects of caring and affection. Lastly, I will show how machines are seen and discussed as part of competing tillage systems, which are sometimes applied but mostly contested in this region.

Encounters: Machines from the West

[91] It is possible to use the idea of the technological sublime (Nye 1996) in this context, but a sense of awe or enchantment would fit better for a more frequently occurring experience. The notion of enchantment in a modern world as elaborated by Jane Bennett (2001) is more practical for both of my purposes in this article – to show that there is more than instrumental or maximizing reason at work in buying used machines in Western Europe, and that the idea of enchantment is not only compatible but indispensable with a conception of multiple modernities.

The pattern of consumption has changed in Poland due to frequent travel to other European countries and the inflow of used goods including agricultural machines. This applies to both urban and rural settings, and can be seen from shopping malls to whole rural towns that have transformed into specialized shopping towns selling used goods from Western Europe. For agricultural machines, farmers nowadays have a wide range of choices with every brand of new tractors available at local dealerships, which usually carry multiple brands. Dealerships also buy and sell used machines, but importing used machines from the West is a specialized branch of distribution, which looks more like a workshop than a dealership. These shops that import and overhaul used machines can be found in every town in Wielkopolska, but there are also small-scale domestic workshops in villages or farmhouses with a turnover of one or two machines a year as a seasonal job during the winter. But some farmers prefer to purchase used equipment directly in Germany or France and cut out the middleman. Some were also afraid that they could end up with a reassembled machine of dubious origins and questionable quality. Horror stories of reassembled tractors and cars from salvage lots known as “Frankenstein,” or stories of elaborately rebuilt cars that had been severely damaged in traffic accidents accompanied every story of purchasing experience, and people sometimes retold them as extreme examples of recycling or what kind of swindlers Polish mechanics can be these days. Since buying a new car or a new agricultural machine was rarely seen on the countryside, everyone could relate to those stories and shared the concern by listening and retelling them. It was also a sensitive issue of national pride, because a lot of farmers thought that parts for those reassembled cars come from stolen cars, possibly from the

West. They knew the stereotype of Poles as car thieves well enough to dismiss it as an overgeneralization, but were also afraid to find out whether there was some truth in it.

Tomasz bought a used sugar beet harvester in Germany and brought it home. This was the first thing I heard when riding with Ala, Tomasz's daughter-in-law, from the bus terminal to the village. "It was a long and boring trip to the West," Tomasz told me at home. It was at a farm near Hamburg where he picked up a twenty-year-old, two-row sugar beet harvester. Tomasz is fifty-eight years old; he had been to Germany in 2005 with a group of sugar beet farmers and factory managers on an excursion to a sugar factory in Könnern and seed laboratory in Söllingen. But this time, he told me, felt totally different. The last time, when he was there with his colleagues, he had found it exciting to travel across the border, and although the schedule was tight, it was relaxing, and the group members grew to know each other better than in the usual meetings at the factory or on the field. This time, this talkative farmer traveled on a truck with a taciturn driver who responded only with a short yes or no, and was not bothered in the least to let a conversation die. After half-hearted answers from the driver, such as, "I will take a break when I stop," and "I eat my own packed lunch in here when I need to," Tomasz gave up on any possibility of a meaningful conversation and tried to think about how to finalize the business with the German farmer, and the best way to get the machine on the truck.

After Tomasz spent eight hours without talking on the semi-trailer truck, he had to wait another six hours at a roadhouse for the driver to come back after unloading. Later on, after loading his precious freight, Tomasz had to endure another five hours until the driver was well rested.

It all started when Marek, Tomasz's eldest son, found a good price for a sugar beet lifter on the internet at the end of the summer. Marek spent a lot of time on the internet looking at agricultural machines. Among other things, he liked to watch uploaded videos of agricultural machines in action, such as massive tractors with giant double-wheels and heavy duty seven-furrow plows on fields in Western Europe. He also kept a tab on the price of used machines on sale in Germany and France. He explained to me once that used machines in England are expensive and too far away, so that it is not feasible to pay for transport in addition to the high price. The best machines are in Germany and they are practically nearby, but the prices are beyond what they can possibly afford. It is usually France where Marek and his friends find moderately-used and affordably-priced tractors, sprayers, planters, or harvesters. Less than a year ago, he bought a sprayer in France. What made the trip memorable was the fact that the sprayer he ended up buying was not the one he found on the internet and had in mind when he left home. It was the third on his most-wanted-sprayer list that he eventually brought home. The first one had been sold to, in his words, competition (*konkurencja*) – a farmer from Ukraine – just one day before he arrived.

They sold the machine to the person who first showed up with the money, since there was no guarantee that others will buy it based on a phone call and appointment. The second one was not to his liking because it was much more deteriorated and in poorer condition than the uploaded pictures indicated. Marek told me that it was good that he had one more alternative, and that he was nervous when the first two choices turned out to be fruitless. He set out for the trip only because there were other alternative goods in

the same region – so he had a backup plan all along. The story of this trip was the talk of the village and among friends and relatives for several months.

After the sugar beet sowing ended in April, Marek was very interested in finding a decent sugar beet planter because he was not satisfied with how the sowing went this year. The soil was too dry on some patches of land, and the planter could not cut deep enough to embed the seeds under a thin layer of soil as it was supposed to do. On many occasions, the chains of the planter got entangled, so that the burying wheel which ensures that the seed is covered with soil remained up in the air, leaving the seeds exposed. Marek said that with a bigger and heavier planter, they would not have this kind of problem. After all, the planter they owned was almost thirty years old. On the other hand, he added, if they bought a bigger planter, he would have to take planting work from other people in order to offset the cost of purchase and maintenance for the new machine. For Marek, taking work as a hired machine meant a lot more hours on the field, maintenance work, and additional dealings with other farmers. With all these considerations, he was not willing to go on another expedition so soon after purchasing the sprayer.

As the harvesting season came near, Tomasz and his sons, including Marek, pondered the possibility of buying a better and faster sugar beet harvester. The harvester they had previously owned was an old single-row model, and since they had more sugar beet that year (2009) than ever, they needed a faster way to meet the timeline of delivery to the sugar factory. The issue was all the more pressing because they were among the first villages designated to deliver sugar beet in that year's campaign. Since farmers are paid by the weight of sugar beet at the time of delivery, every farmer tries to leave the

sugar beet growing in the field as long as possible for maximum growth, and at the same time makes efforts to arrange delivery as soon as the harvesting is finished for maximum weight before moisture is lost. From the other end, the raw material managers at the factory maintain a tight delivery schedule to ensure a steady and constant supply and reserve of sugar beet once the factory starts the sugar-making season of the year, known as the campaign. Tomasz's concern was that it would take more than three weeks with the old harvester, which meant that they would have to start very early. This would mean a loss of precious time and possible rainfall for the sugar beet to grow further and gain more weight. Nor did they want to hire a self-propelled harvester from the local equipment rental company. They had hired this machine the year before, and were impressed that the harvesting was finished in a little less than three days and nights, but were utterly disappointed with the quality of the work provided by the machine and the careless driving of the hired hands.

In the end, however, it was the news that there was just the right machine on sale at the right price and in an affordable location that made the decision. Marek's discovery on the Internet triggered the earnest discussion on whether to go and buy that harvester. He asked a German-speaking colleague to call the farm to find out if the machine is still there and how the seller would like to be paid. After they had confirmed that it was still available, they spent hours trying to figure out how much they wanted to pay, how to negotiate the price, and how to arrange for transportation. They also discussed what would be necessary to get the harvester safely on the truck. Because of the uncertainty involved in loading the harvester, Tomasz asked his other son Marcin to come along on the trip. Marcin is a mechanic working for a local agricultural machine dealer and mostly

does warranty service and repairs of machines. Tomasz had previously asked Marcin to accompany him to Germany to better examine the harvester and make a decision whether to buy it or not. It turned out that Marcin's trip there was a necessary one because they had to remove the gathering bin from the base of the harvester for transportation. The French farmer was surprised that the harvester could be disassembled so easily by one mechanic with the help of two other people. Otherwise, the harvester on the truck would have been too tall to stay secure during the long ride home.

Tomasz also prepared himself by simulating the encounter in his mind beforehand. In this respect, he is not only meticulous. He also has a certain flair for situations where he can appear more formal, official, or festive without making one feel uncomfortable while simply shaking hands. He even bought a special bottle of vodka as a gift to the German farmer.

As he later told me, Tomasz expected to share a drink with the seller as soon as they reached a good price and agreed to the sale, as some farmers do at home as a symbolic gesture. A drink to seal a deal used to be a custom and tradition. The German farmer, however, preferred to remain sober for the paperwork. As it turned out, they had to go through all the paperwork and necessary things until the farmer brought out beer to mark the finish of the business. Tomasz respected the order of things and the attitude his transaction partner showed to him. And that farmer thanked him for the gift with a bright smile and placed the bottle of vodka prominently on the kitchen countertop, Tomasz told me.

The way farmers in other countries react to the bottle of vodka and how they treat it constitutes an important part of the traveling account told and retold after these

explorers return home. Marek, who had been to France three times already, found it amusing that every farmer was visibly so delighted to be given a bottle of Polish vodka, because he had noticed that French vodka was much more expensive than Polish. One farmer in France was uptight, without any facial expression, and did not even invite them inside his home. However, they managed to share a glass of soft drink in his kitchen after presenting him with the vodka, since he had to bring the bottle inside and put it into a cabinet right away. As Tomasz put it to me, that gift has the power to loosen up people and release the tension in a situation, even without drinking. And who does not like to receive a gift, whether they like it or not? But most important of all, people all over Europe like to drink. Not only, and certainly not particularly, farmers in Poland, as people in the West and in cities like to think. That is a fact he learned and confirms every time he meets other Europeans.

Tomasz further elaborated: if they know how to respect vodka, you know that you are dealing with respectable people (*porządni ludzie*; lit. tidy, orderly people). And respecting vodka includes knowing when it is appropriate to drink and when not. It might be easy to object to Tomasz's interpretation. It probably did not have much to do with the fact that the gift was vodka at all, simply that a gift was given. But whether vodka is important or liked is not the point of these stories. It is the outcome that resulted: these farmers who had to talk through an interpreter on the phone left appreciating each other's presence, and respected the way they had acted through the transaction. Tomasz prepared for the trip in a practical way, but had been very conscious at the same time about how his methods would look to a German farmer and his family. In other words, he gathered all the resources and connections he could mobilize in order to get the task done, but

wanted to do it as smoothly as possible with poise for the sake of self-respect. He had been well aware of the stereotype of Polish people in Western Europe – unrefined, unpunctual, and not trustworthy – and wanted to prevent the slightest possibility of looking that way. After all, he shared with me, he himself hates it when strangers come to his farm to buy something and are not prepared or equipped to properly examine, load, and transport the goods on their own.

It was not only the way Tomasz was prepared for the sale, but also the way he appreciated the old machine and gave signs of praise and respect to the owner who used and maintained it many years. Just as each side appreciated the gift of vodka, they each observed how the other side deals with machines and how much they know and care about them with a simple exchange of words and gestures.

Small clues of experience and knowledge are exchanged, for example by pointing to a missing part or added gadget, by asking what kind of tractor they use to pull the harvester on the field, by knowing the horsepower of the named tractor model, or by opening the right panels and investigate the most important structural parts of the machine. Based on this intense encounter involving observation and overcoming the awkwardness inherent in these situations, both parties confirmed that they are farmers worth buying from and selling to.

Apart from the everyday use of agricultural machines on the fields, buying or selling a used machine makes room for these farmers to adore and appreciate machines in a ritualized way. Particularly in this case, the sale of a used machine provided an occasion to meet and observe a farmer in the neighboring country and to realize how expanded Europe feels in the direction West, in comparison to the border-crossing

experience to the East. And crossing the border with used machines can get complicated without the right paperwork, even now that Poland is in the European Union. Still, it is incomparable to crossing the border to the East. That is why, Marek explained to me, affordable and old used machines stay or take a longer sojourn in small farms in Poland, while new machines pass through Poland toward the East, where commercialized state farms can afford them.

Not only the transaction, but also the burdensome process of preparing for the sale is a ritual in itself. By readying themselves for uncertain people, things, and events, farmers start to get familiar with or start to part from a used machine. As Tomasz told me, only thorough and detailed preparation allows you to maintain a cool head without overemphasizing or underplaying the fact that these transactions include negotiating prices. And the best way for farmers to experience delight, sorrow or regret after buying or selling a used machine, he added, is when that emotion is not just because of a good price but because of the feeling that he has gained or lost something productive, important, and dear to him.

Caring for Machines: From the Past to the Present

Figure 17. Recycling: Old and Used Machines on the Farm. (Left: Remnants of an old seed drill; Right: The “Forschmidt” with the pea harvester)

No matter which country you are in, there seems to be a consensus when it comes to recycling things on farms. A good farmer never throws away anything, said Mirek, a landowner and agricultural worker who rents out his land to Tomasz and at the same time works for him on a daily basis. You never know when you are going to need it again or use it for something else, he elaborated. Although they are similar in age, Mirek could not maintain and expand his father's farm and kept lagging back in terms of investments. Now he has to wait every year for Tomasz's rent payment in fall, and in the meantime lives on the daily wage he gets from Tomasz. Nevertheless, he never runs out of aphorisms, stories, and news he heard in the nearby town, with varying degrees of reliability and credibility. However, what he said about never throwing things away seemed to have currency among farmers no matter how they do their farming.

The first thing I noticed in rural villages in this region was the omnipresence of old rusty equipment and piles of stone and rock next to farmhouses. These are the most visible things that farmers cannot simply throw away. Next to piles of limestone, which is used for improving soil, antiquated horse-pulled versions of plows, potato diggers, and cultivators rust away in sun, rain, and wind. When I asked farmers why they still keep this kind of old equipment, they said it was not so much because there was still use for it, but rather because of the cost involved in getting rid of scrap. They recalled that years ago the price for scrap metal was good, and dealers came to the village visiting door to door to ask whether the farmers needed cash for scrap metal. They told the farmers that ships are lining up in Gdynia at the Baltic Sea to transport scrap metal and other recyclable material to China. Everyone in the village anticipated the price to rise further.

After a while, the farmers had to bear the cost for transporting scrap to the dealer, and it was not profitable to recycle any more.[92] As for the rocks, they come out of the field every year as a result of plowing, and sometimes they can sell it at a good price, they say, considering that the rock was there for free, if the rock fits artistic purposes.

Whereas those horse-pulled machines stand useless and careless in open air, old machines which are still in use receive more care than new ones. Because the majority of agricultural machines are used only once or twice a year, farmers need multiple days to perform maintenance before they put these machines to work on the field, and at least one day for cleaning and lubrication afterwards. During these days, everyone is careful and avoids rushing things. If someone kicks or curses the machine, it usually happens on the field in the midst of the action, but rarely in the garage or barn during preparation. It is a matter of course that the machine does not work after standing there in the barn for eleven months, said Mirek. In addition, a lot of times they have to put some parts back into the machine because interchangeable parts are frequently installed into other machines as necessary. It is a challenge to find everything and to put it in the right place, but a challenge that makes it worth the while, said Marcin, the mechanic son of Tomasz. He rarely has time to help out at home because he has his own work schedule, but stops by from time to time or when needed.

Preparation and maintenance of machines is an occasion where people get to meet and talk to each other, even if it is only for a short greeting on the field when they take them out for the first time of the season. Other farmers working on the fields notice. Maybe they saw people working in the courtyard when they were driving by on their

[92] Finn (2001) discusses the fast life cycle of artifacts in computer technology. Agricultural equipment has a relatively long life cycle, especially if it does not have any complicated mechanic parts or an engine.

tractors, and stopped by to talk, since the seats are high enough to let tractor drivers easily peek over the gates or the fence into the courtyards. This kind of unexpected meeting and machine-talk can last more than half an hour if nobody breaks it off.

On a rainy day in May, I arrived at Tomasz's farm in the afternoon when Tomasz and his two sons, and his neighbor Mariusz and his son were working on a combine harvester. It was a dark green harvester for field peas, which had been standing in the corner of the main barn over the whole winter. Mariusz and Tomasz, who are the only two farmers planting field peas in the village, they bought a used pea harvester together from the liquidated kombinat Pudliszki, whose field operation was liquidated and the processing factory was privatized to H.J. Heinz Company in 1997.[93] Mariusz comes over every year before pea harvesting in June to check and prepare it with Tomasz's family. They coordinate their harvesting schedule. I also noticed that the large green tractor was put in front of the harvester. I had never seen those two machines in action before, but now I had a chance to take a closer look. Everybody called the green tractor "Forschmidt," and Tomasz told me that they bought this tractor from a used machine dealer in the early 1990s. I did not think much of it and assumed that it was a popular model two decades ago, especially after I spotted another one in different color in the village across the forest. I heard that the Zetor tractor was from Czechoslovakia, and the Pronar tractor was assembled in Poland based on the Russian MTZ model.

I took a seat in that Forschmidt tractor. It was bright green on the outside, but from the inside I noticed a darker, military green color on the panel right under the windowpane. I noticed the word "Betriebsstunden" (operating hours) and "voll" (full) on

[93] Pudliszki was Kennemann's estate near Krobia (see chapter 2). It is about 12 km away from Babkowice and Pępowo.

the tachometer and fuel panel. But, most interesting of all, there was a single speaker on the right side hanging from the ceiling so that it pointed right into the ear of the driver. The speaker was made of a wooden brown rectangle box covered with black fabric in the front. I tried to turn the radio on to no avail. “Good that you remind me of that,” Marek shouted from outside. “I have to change the radio in there. Otherwise, I will be bored to death for two very long nights.”

As we worked on the radio later that afternoon, I noticed some labels on parts near the engine, which were deliberately scratched out and almost illegible. A couple of city names such as Karl-Marx-Stadt (renamed Chemnitz) and Dresden on engine parts gave away the identity of the tractor – it was an East German *Fortschritt* (lit. progress) ZT 403 series tractor with a 140 horsepower engine which was produced in the Traktorenwerk Schönebeck (TWS) in its last year of production in 1990. There was an emblem with those initials TWS on the front grill of the tractor. Marek asked me how to pronounce Fortschritt properly, but gave up after trying a couple of times. He focused again on the mounting of the radio antenna on the roof, which turned out to be more complicated than he had thought. Even after connecting all the wires, he could not tune into one audible channel, and was trying to determine whether that was due to the location of the barn. No, it was not the barn, I told him after trying the radio on the other tractor in the barn. He tried then to reroute the antenna wire around a different corner of the tractor roof, and found a channel with a loud and clear sound. “I don’t believe this,” he sighed, “I won’t be listening to this in my lifetime.”

The radio had caught the signals of Radio Maryja, a Catholic broadcast based in Toruń with a conservative nationalistic agenda, which has a lot of followers among the

older generation all over Poland. Marek's exaggerated gesture of anguish turned into total despair when he found out that this very channel was clearly and loudly audible even without the antenna. Trying to express sympathy, I interjected that this is not surprising at all since the speaker in the cabin is already there, ready for propaganda. Marek rolled with laughter and asked me if I had seen an old Polish radio. He said that they had one somewhere in the house. I told him that I had seen my share of square brown speakers and siren speakers in my childhood in South Korea, and that there was even a time when radios had preselected channels and forbidden bandwidths, to prevent people from hearing North Korean channels. He was astonished that we had a common experience to talk about in a sympathetic way even though we came from such different backgrounds and literally from the two opposite ends of the Eurasian continent. After a while, we managed to find a music channel on the radio, and Marek was happy to drive the Forschmidt tractor for two nights until dawn pulling the field pea harvester.

Old machines provide a platform for a wide range of meaningful lessons, stories, and allegorical readings because they are filled with semiotic material and because farmers spend more time and sweat to discover and interpret them. However, the past as it actually happened was not exactly within that range of meaningful readings. It was not important that the Forschmidt tractor is actually an East German Fortschritt tractor, and even though I asked around, nobody knew, or was in the least interested in, how that tractor ended up here at Tomasz's farm. For those dealing with and caring for this machine, the past in the sense of events and trajectory did not matter as much as the past as embodied in mechanical arrangements of a used machine, an indicator of changed times and things that remain the same, open to interpretation. If the past matters in a

direct way, it does insofar as it relates to the work on the field, where the relationship between man, machine, crop, and soil constitutes the most significant network of associations, which I will examine further below.

To Plow or Not to Plow: Soils, Crops, and Machines

Pulling the field pea harvester was one of the two tasks that only the Forschmidt tractor could do efficiently – the other task was to pull the new reversible plow. If the Pronar tractor could handle the task, they would rather let the Forschmidt stand in the barn, because the latter consumes more fuel than the former. That was the main reason Tomasz bought a new Pronar in 2002 with the support of the SAPARD program, the Special Accession Programme for Agriculture and Rural Development. This program financed and supported structural adjustment in agriculture to help the new member countries meet requirements of the so-called Community acquis (EU law) and prepare for the Common Agricultural Policy (CAP). However, nobody else in the village applied for this farm investment support during the program. Tomasz told me that it was because everyone was still in doubt as to whether the European Union actually wanted to help farmers in Poland. Moreover, the payment of the subsidy was in the form of reimbursement, and the fact that they had to pay in full with a loan at the beginning did not sit well with some farmers.

As Mariusz, Tomasz's neighbor and co-owner of the pea harvester explained, "The procedure and the order of doing things felt a lot like a scam. They wanted to have all kinds of personal information on land ownership and other assets, too." Tomasz was

not sure, either, but he thought that there was nothing to lose even if he did not receive the money. He was going to buy a mid-size tractor with a credit loan anyway, because the small Zetor could not haul bigger loads and the big Forschmidt used too much fuel for small tasks. He recounted the way the application form was filled with questions on future plans and how he sought to improve his farm operations. He even remembered the most intriguing and at the same time puzzling question in the application form which sounded like this – "Who is your competition?" He asked around at the *gmina* (commune) office, and consulted with agricultural advisors working there. One of them, Łukasz, after inquiring himself about the question at the Poznań office, told Tomasz that he should think and be honest because the question was not intended to have a correct answer. In the end, Tomasz filled out "neighbor" (*sąsiad*) in the blank.

Besides the distrust towards the EU, the proficiency in comprehending and filling out documents played an important role in applying for various forms of EU farm modernization funds. The SAPARD program was meant to support investment to bring rural infrastructure and agriculture to a closer level to the existing members of the EU. At the same time, the program itself was a learning experience through which farmers got familiar with filling out complicated forms and going through administrative procedures and realized that the EU actually worked through their own government administration. Although advisors working at the local government helped farmers fill out application forms for a fee, the form had to be filed with the Agency for Restructurization and Modernization in Agriculture (ARiMR) in Poznań.[94] If there had been something wrong with the form or supporting documents, the whole application was sent back for

[94] *Agencja Restrukturyzacji i Modernizacji Rolnictwa* (Agency for the Restructuring and Modernization of Agriculture)

reapplying after corrections. In the end, even the paid assistance of a local government advisor could fall short of a successful filing, and this constituted a new experience for the agricultural advisors working on the level of local government as well. Such an event also had the effect of diminishing the authority of local advisors while reinforcing the mysterious workings of the Agency ARiMR and EU funds through the branch office in Poznań, leaving out the county office in Gostyń and central office in Warsaw. The bureaucratic authority regarding these forms peaked at the Agency branch office in Poznań, which was still a part of the Polish government but worked on matters of the EU. The trail of those EU subsidy application forms created a new representation of local, regional, and central government within the relationship to the EU, creating a new graph of state authority and EU authority with the flow of graphic artifacts (Hull 2003).

Years later when Tomasz bought the new plow in 2007, he applied again successfully for a different kind of subsidy paid under the EU farm modernization program. EU funds for rural investment and restructuring are available in Poland until the year 2013, when Poland is going to participate fully in the Common Agricultural Policy (CAP). Tomasz believes that good plowing forms the basis of any crop on the field, and since the subsidy made new equipment more affordable, he bought the new plow with a loan from an agricultural cooperative bank. Based on the advice from his son Marcin, he decided on a Norwegian-made plow that had good strength and featured a spring system for evading rocks. The previous plow he owned literally broke on the field because it ran into a rock. To get reimbursed in 2009, he had to file the evidence of buying that plow with ARiMR. I was quite surprised that the reimbursement took so long to reach the applicant, but the paperwork and the administrative process I witnessed made it clear that

the subsidy would arrive only after the final installment was paid in full for the purchase, with a final receipt confirming the sale contract.

Farmers, including Tomasz, value the look of the fields in November when the winter grain seedlings have come up one or two inches, and the soil is turned over neatly and evenly with regular furrows in the remaining fields. It is even better if they managed to distribute some kind of slow-working organic fertilizer over the crop residue before plowing. They like to think that everything has been done for the remaining organic material to turn into nutrients under the new topsoil. However, as much as they believe in this rationale behind plowing, the simple aesthetics of a visibly clean field come before any scientific explanation. In springtime before sowing, many farmers even out the field not only with a harrow or cultivator, but also with a wooden beam (*włóka*) or large used tractor tires. When advisors or experts point out the unnecessary waste of fuel and time, not to mention the deranging of the soil structure, farmers still continue to admire the clean state of the field. As E.H. Faulkner, the champion of no-till farming from Oklahoma, put it in chapter four of his pioneering work *Plowman's Folly* (1943):

> "Plowing is almost universal. Farmers like to plow. If they did not get pleasure from seeing the soil turn turtle, knowing the while that by plowing they dispose of rubbish that would later interfere with planting and cultivation, less plowing might be done."[95]

[95] Faulkner addressed the problem of soil erosion after the Dust Bowl settled down in the early 1940s, and pinpointed the unnecessary practice of plowing as the main reason for erosion.

Other farmers told me similar stories about the aesthetic importance of a plowed field. Kuba, a young farmer from Kościan, told me that he had seriously considered going without plowing, but his father would not let him do so: "Our tractor and plow are not nearly efficient enough to plow well and the cost of fuel for plowing, almost half of the amount we use during the whole year, keeps rising. Still, my father said that his own father would not have been able to sleep without making sure that the fields are as clean as the table. And that he believes that his father and others insisted on plowing that way for a good reason."

Plowing as an inherited task through generations from father to son was not only a theme in the present when I talked to farmers. Ala, Tomasz's wife, who comes from the village of Ludwiniwo, about 3 km west from Pępowo, told me there was a traditional song about plowing among folksongs of the *Biskupianie* (lit. Bishop's folk). These were peasants living and working on arable land which belonged to the Bishop in Poznań, who automatically assumed the title of pastor of Krobia until 1927, and the region is called Biskupizna (see Brencz 1996).[96] Although not an ethnic group, Biskupianie try to preserve their own dialect, songs, dances, and traditional clothing (see Glapa 1964:524). Their own explanation for this differentiation is sought in history, and attributed to the lighter burden of land rent in church-owned lands and the fast pace of peasant emancipation as the land came to belong directly to the Prussian government.

[96] Ludwinowo itself is not considered as part of Biskupizna, but borders to Biskupizna territory near Rębowo and Domachowo (Gomolec 1964:30). See also the website of Biskupizna at http://www.biskupizna.pl (accessed on January 5, 2012).

Pługu mój drogi, pługu mój stary,	*O my dear plow, my old plow*
Gdy prujesz ostrym żelazem	*when you unravel with your sharp iron*
Te ziemię ojców, te nasze niwy,	*these grounds of fathers, our lands*
Jam smutny i wesół razem.	*I am sad and merry at the same time.*
***(Refrain)** Będziesz ty orał pola i niwy*	***(Refrain)** You shall plow the field and grounds*
Tak jak orali rodacy!	*Just like the countrymen did in the past!*
Bo serce ojca by zapłakało	*Because your father's heart would weep*
Jakbyś ty orał inaczej.	*If you'd plow differently.*
Pługu mój drogi, pługu mój stary	*O my dear plow, my old plow*
Niejeden rok tyś na świecie!	*You have been several years in this world,*
Tyś z siwym ojcem mym szedł do pary,	*You have gone as a pair with my gray father*
A jego dziś już grób gniecie.	*And now you(pl.) crumple [earth on] his grave.*
(Refrain) Będziesz ty…	*(Refrain)*
Tobą mój ojciec krajał zagony	*With you my father cut ditches*
i przeszedł życie szczęśliwy,	*and spent his life happily,*
A gdy mu na śmierć jęknęły dzwony	*and when the bells tolled for his death*
Tyś nam pozostał poczciwy.	*You stayed good-hearted to us.*
(Refrain) Będziesz ty…	*(Refrain)*
Kiedy płakałem przy ojca zgonie	*When I cried upon my father's death*
rzekł patrząc na mnie z tęsknotą:	*he (father) said, looking at me with longing:*
Masz pług ten stary i zdrowe dłonie,	*You have this old plow and healthy hands,*
Nie będziesz synu sierotą.	*You shall not be an orphan, my son.*
(Refrain) Będziesz ty…	*(Refrain)*

In this song from the Biskupizna, the sentiment towards the deceased father and the attachment towards the plow is evident in the text. Even further, these two elements are united in the plow and in the action of plowing, which embodies a mission that is transmitted from father to son along together with the plow itself. And in the last strophe, the plow emerges as the object that counteracts the absence of the father. There are several versions of this song with slightly different lyrics and words, but the message

remains the same – just like the plow stays loyal to us, you (the son) should do the same to the plow, and in extension, to the father.

As with other folk music transmitted in oral tradition, it is difficult to estimate how old this song actually is. However, since the plow has an iron part which "unravels" the soil, and the partial use of iron in plows, specifically in moldboards (*odkładnica*) which actually turn the soil, started after the mid-nineteenth century, it could go back to a date before there were factory-made plows widely available (Topolski 1964:227-9). And while the possession of an iron plow as inheritance is quite unusual for a peasant family in the nineteenth century, it is still possible if that family was responsible for a folwark or became independent after the Bishop's land fell into the hands of the Prussian government, according to the oral history and historical definition of Biskupianie (Gomolec 1964:30).[97] This rather unusual song reflects the pressure of staying on the farm and carrying on farming in the same way father and grandfather did, which still bears upon the younger generation of farmers to this day.

As indicated in the song above, the older generation in this region insisted on good plowing and cleaning the field because they thought that they could avoid erosion by doing so. Soil erosion has been a constant problem in this lowland region of Wielkopolska because of the light soil, and regular spring storms and windy dry summers. According to Witold, the head advisor of all sugar factories, local experiments and research in recent years have shown that the management of good soil structure is only possible when there is little to no disturbance into the deep soil structure. He explained that sowing sugar beet seeds into mustard mulch is actually better to prevent erosion,

[97] Biskupianie were sometimes called "Tasaki" from the word *tasak*, which is a heavy blade used in cutting the leafy heads of sugar beet off before harvesting (Gomolec 1964:32).

because the mulch not only holds the soil but also protects the seedlings from the spring storms. Paired together with the interest in reducing the use of fossil fuel in agriculture, how to reduce plowing has been the subject of discussion for quite some years.

In this context, there has been increasing interest in no-till or conservation tillage cultivation in recent years, mostly because a commercialized farm in this region converted entirely to a no-till system. The material and economic implication of this kind of paradigmatic change lies in the fact that the whole line-up of machines has to be changed as well. [98] Furthermore, the use of broad-spectrum herbicide, specifically glyphosate, increases because weed seed stay in the topsoil to germinate in spring whereas plowing would have disabled their germination by burying them deep into the subsoil. Some say that this new paradigm is merely a marketing campaign which fits into the latest trend of sustainability and conservation. Others, including many young farmers, follow these new ideas closely, although they are not in a situation where they can choose freely to adopt one paradigm rather than the other. Several experienced farmers and managers at corporate farms agreed that a total conversion involving new machines is only feasible at a scale of at least several hundreds of hectares.

On the other hand, even without a total conversion it is still possible to apply some elements of no-till cultivation to individual crops in the rotation. Advisors at the local sugar beet factory have put together a flexible no-till cultivation plan for sugar beet. As a result, farmers can dispense with plowing on those fields scheduled to be sown with sugar beet in the following spring. However, even this minimal no-till program for sugar

[98] I use the words conversion and paradigm together in this context because there are members or followers in each camp who are supported by scientific studies and at the same time are convinced and believe in the tillage system they promote. In reality, depending on the crop, one can mix and match elements and practices from both paradigms, except for plowing proper.

beet has problems. Since the spring temperatures tend to be low until the actual sowing days of sugar beet, there is not enough time and warmth for glyphosate to act effectively before sowing, and therefore farmers tend to spray the fields more than once and end up using more glyphosate. Additionally, most old planting machines that most farmers own would not work on these fields because they cannot cut through the crop remains or mulch that is left on the field in no-till cultivation, and a precision seed drill with cutting discs is necessary. The sugar factory arranges the hiring of such machines through local agricultural service companies. Because there are many farmers who do not own any equipment for sugar beet, this proved to be not only a viable but quite a popular option after all.

As Maciej, the managing advisor of the sugar factory told me, "We speak openly about this with the farmers – we want the best sugar beet, and so do they. So we try to offer the best advice and support to the farmers for that goal. And if the farmers come up short, we try to work together with them and help them improve." He also added that owning a state-of-the-art machine is not enough to farm successfully, and that a substantial amount of knowledge is needed to effectively use and maintain such a machine. Above all, a machine has to be appropriate in size and productivity to the scale of the farm and its operations. And this applies also to the question of tillage – every farmer is in a unique situation with different sizes of land, machines, and crops, and everyone has to consider things and decide for oneself.

In a similar vein, Tomasz told me that a farmer does not become a good farmer thanks to one good machine, and that even an old machine performs well under the care of a good farmer. Tomasz's and others' views discussed above might be typical in that

they all emphasize the primacy of man over machine. Not only care and maintenance but also good knowledge about soil and rocks and cultivating on the farmer's part is indispensable for an efficient and long-lasting machine. In other words, those moments of awe cannot take the place of the constant care, which includes learning about new tillage systems and machines. It often happens that a farmer buys a machine because of or for the purpose of awe – be it the farmer's own vanity or everyone else's admiration, Tomasz acknowledged. But that is not always a bad thing. Those ritualized moments of awe whenever farmers gather for a sale of a machine or just to adore someone else's machine and feel the tremble on the ground and in the air could be just the beginnings of the long-term constant care of a good farmer.

Farmers, Land, and Machines in Europe: Joined by Differences

Machines mediate between farmers and the specificities of the soil. Farmers use these machines as an extension of their agency, but also have to adapt themselves to the quirks of machines because machines have an agency of their own, exemplified by breaking down in the middle of the field or by refusing to start on a cold winter morning. Machines also serve as indexical signs in village life, indicating the owner's care and effort put into the maintenance of machines, in addition to the size and wealth of the farm, or the rationality or vanity of farmers. Farmers often say that a tractor should be strong enough to pull up the plow, respond gently to the operator, and answer consistently well to maintenance and repair. The sense of awe or admiration for machines is distinct from the sense of caring, and a one-sided emphasis on the former can lead to mindless

conspicuous consumption, and a lopsided emphasis on the latter can lead to a banal everyday life of a mechanic. Those who went to France or Germany to buy used machines wanted to avoid both conspicuous consumption and the trouble of having to spend too much time on repairs. They also chose to do so because they were confident enough to overcome the fear of risk that follows such an investment. The purchase of used machines is not only a realistic and rational choice for Polish farmers who cannot afford to buy new machines. It is a decision and event that can only be finalized and achieved based on the establishment of mutual trust, if only temporary, and the mutual recognition of the caring attitude and willingness to invest as a serious farmer.

In this chapter, I tried to demonstrate the way farmers participate in the exchange of used machines in a unified European market. The free flow of goods in the EU has opened alternative possibilities of purchasing used agricultural machines for farmers in Poland. However, farmers and farm managers also know that the opening of borders towards the West did not just open possibilities but also have limited possible choices in other respects. People in the region complain that the quality of goods sold in retail shops are not on the same level as the goods sold in Western Europe although they look identical on label and in packaging. They have been disappointed after realizing that there are goods specifically and separately produced for the East European market, and that retailers sometimes “dump” goods that are soon to expire. Even sugar beet seed material, sold at a lower price level in Poland compared to prices for farmers in Germany, had shown a different germination rate, according to inspection reports from the laboratory. These experiences of gaps and injustice in the market lead to speculations on the intentions of Western Europe and multinational corporations against Poland.

Nevertheless, farmers realize that this gap is still an advantage in terms of costs, which they might lose in a couple of years, when the CAP will be fully implemented and the Euro will possibly replace the Złoty.

While uncertainty of the global and European market makes it difficult for Polish farmers to plan in the long term, the material temporality of crop growing seasons, nurturing the crops, crop rotation for the soil, and the limited longevity of machines, and in many cases the debt behind all these, keep them continuing to make the best out of the given situation. It is this material temporality that forms the basis of stubbornness and sense of independence among farmers, rather than private land ownership (Hann 1985), self-exploitation (Chayanov 1925), or labor hours (Lampland 1995). Although the flow of used machines from the West to the East in the EU can be read as reflecting the temporal gap, I would suggest that the direct interaction between farmers from East and West will lead to the creation of coeval spaces in the midst of multiple temporalities of different regional histories. This is not to say that these encounters will contribute to tolerance or multiculturalism in Poland or in the EU. On the contrary, fixing the gaze on the Western part of the EU could result in a specific version of Eurocentrism with a fixed European identity that emphasizes the radical difference between Europe and non-Europe and minimizes cultural differences and economic inequality within Europe. The promise of a Europe which is "at once democratic and cultivated, both socialistic and capitalistic, Christian and humanistic, scientific and pious," as Hayden White (2000) eloquently enumerated, needs more proof in reality than in political discourse of European identity.

Chapter VI

Epilogue:

From Unfulfilled Expectations to Renewed Aspiration

In each of the above chapters, I tried to show different sides of the multifaceted assemblage of sugar beet cultivation in Wielkopolska. By describing different moments and instances of this assemblage, I provided contemporary and historical contexts to the privatization of sugar factories and European policy, as well as the attachment of local people to sugar beet cultivation and beet sugar production. With all the differences and conscious distinctions among varying local groups of people, the assemblage as a framework made it possible to put the crop and the soil at the center of my analysis of social interactions and enabled me to describe material objects and their materiality effectively. It also helped me to focus on the significance of visual signs in everyday competitive farming and prompted me to pay attention to the ways farmers and farming managers use various measures including arithmetic, aesthetics, and gazing to reduce hazards in their farming operation and to the flow of information among various groups in the region. How the cultivation of sugar beet or any other crop in other parts of Poland and other countries in the EU remains an area to be explored, but I believe that a crop-centered approach that focuses on the care of the soil as well as environmental concerns and policies in the EU would deeply improve our understanding of agriculture in this

globalized world, where free trade and fair trade co-exist, and would hold implications for the future path of agriculture in different parts of the world.

As an effort in this direction, I will provide a brief account of the newly built wind farm in the village I conducted fieldwork in, and will conclude with thoughts on this episode and future directions of this project.

Three months before I left Babkowice, construction work to erect wind turbines began on the fields of *Nowina*. A German energy company, Eternity, had chosen Babkowice in Gostyń County and Smigiel in Kościan County for their new wind park project and chose three spots on Babkowice's *Nowina*, which had the best wind flow according to their research. Eternity held a briefing in Pępowo, where representatives of the company discussed details of the construction work, transportation of turbine parts, and possible disturbances or damages with the gmina administration, including the head of gmina (*wójt*), the Babkowice village administrator (*sołtys*), and the chairman (*prezes*) of the water society Pępowo.

Tomasz, the chairman of the water society, was worried and relieved at the same time after the meeting. It was certain that the drainage pipes would be severely damaged as he had dreaded, but Eternity assured him that they will bear the cost for repairs. He had to call administrative melioration engineers from Leszno, who would assess the damage and issue an official estimate.[99] In addition, Eternity offered the gmina to bear

[99] The administrative unit is *Wielkopolska Zarząd Melioracji i Urządzeń Wodnych* (Board for Melioration and Water Management).

the costs of expanding and paving the road and crossroads on *Nowina* to the fields. Even with the expanded roads, the whole convoy transporting fifty-meter long parts would have to drive backwards from Pępowo to *Nowina* [approx. 4 km].

Eternity signed a twenty-year lease with the owners of the land, and offered compensation for one year's harvest of the surface they needed for the construction. Although there were complaints about the disturbance, trouble, and possible hazard for work on the fields, no one among those landowners actually held out from signing the lease. There were talks in the village that they actually were glad and considered it lucky themselves to have exactly the spot Eternity wanted on their land. In another instance of village talk, farmers grumbled about the fact that Germans and not Poles thought of this business first and were able to exploit the resource for profits. Staś, one of the larger farm owners in the village, quipped: "It is the same story all over again. While we are busy learning the things they have been doing for decades, they come up with new things and new ways of profiting. It is no wonder that they are here getting the better of us, and all that politicians do is to get something [money] out of it [foreign investment] in their own pockets."

The installation of the wind turbines was a spectacle which attracted a lot of spectators with cars parked and lined up on the road next to *Nowina*. Marek's wife Zusia told me when I visited three months after the installation. I just came back from the fields, taking a close look at the turbines and how they cleaned up the fields after the construction. Although I did not feel very impressed, the sheer size and height of the turbines amazed me when I walked around them and thought that I must look like a pilgrim of modern technology. When I told Zusia about this experience, she nodded and

assured me: “No matter what you think, they are still amazing. On weekends there are still people coming to see those turbines, you know,” and added after a moment of hesitation, “unfortunately at night, too – there was an incident weeks ago, when someone damaged the door lock trying to get into the turbines.” As a result, security cameras were installed next to the entrances. Farmers in the village said that it must have been teenagers or a drunkard, because it did not made any sense to attempt entering those constructions. Some of them said that it was embarrassing that such an incident happened at all, because it was clear that the vandal would have been a Pole. Such criticisms surely constituted a moment of cultural intimacy, the interplay between proud self-recognition and self-deprecating humor which paradoxically serves to confirm the borders of a nation or validate political authorities which were targeted with those very criticisms (Herzfeld 1997). This instance of cultural intimacy confirmed the border between Poles and Germans, but also reflected Europe as the frame of reference and the cultural difference of the ethnographer as the third party. What is not considered in the notion of cultural intimacy is that there is directionality in it, which directs constant measuring and comparison against the standards of Europe – western, civilized, and most developed. The smoothing-down effect of phrases such as: “It is much worse in the East;” or “Vandals are in every country, no matter how well they do,” shows that it is not merely cultural difference that prompts embarrassment.

It was all the more felt as a shameful event, because the erection of wind turbines was considered a monumental achievement not only in technology but even more so as a profitable business. One day, farmers and farm workers who lived in the nearby apartment of the former state farm, sat in front of the village grocery shop and

tried to figure out how the German company knew about local winds and the ground height of the fields. Since no one had ever seen any observation or survey activity done in the village, it remained a mystery until I showed them a copy of a topographical map (1:25.000) of the village and *Nowina* from the year 1911, based on Prussian land surveys in 1888. It clearly showed contour lines and the highest point on *Nowina*, which was close to the forest in the direction of Gumienice, as 130.4 meter over the sea level (See Appendix 4). The farmers speculated that the highest point, too close to the forest, was forgone and the company had chosen the fields open toward the East, where there were no obstacles for the wind. We later found out together that the height was not so important as the amount of wind through the whole year. A manager of the company, who came from Bavaria to oversee the installation, told us that a meteorological model was used to assess available wind resources.[100]

Although we were in error about the wind, the old Prussian map and another German map from the year 1940 made an impression on the village farmers. On the latter, which was based on a land survey in 1911 (1:100.000), there were markings indicating the direction of the underground drainage pipes and ditches on *Nowina* (See Appendix 3). Tomasz, Hilary, and Arek were impressed but not really surprised. For them, the past of the village was nothing new and the maps were just a reminder. "No wonder that they started making money out of wind," Arek said and he wondered, "what have we been

[100] After the encounter with this manager, I came to be known as "the Chinese immigrant worker who works on the fields and tutors the kids in foreign languages and also works as interpreter." Before that, there were actually farmers from other villages who asked my host how much he paid for the immigrant worker and through what kind of connections he found me. It was no wonder, because there was a well-known media exposé of forced labor of North Korean orchard workers and shipyard workers in Poland, whose wages were paid out to a manager at the consulate who had their passports (*Gazeta Wyborcza*, 24 and 27 March, 2006).

doing?" It bothered them that it was Germans in their villages who did what they considered as a monumental achievement.

To aim for something monumental is an attitude that is not shared by every farmer, but takes on a meaningful dimension when it becomes a question of achievement of whole nations. As an opus that is intended for admiration and praise, the desire for the monumental constitutes the counterpart of cultural intimacy. As Nietzsche laid out in *On the Use and Abuse of History for Life*, monumental history can be motivating and let people overcome doubt to achieve great things, whereas an excess of it has the opposite effect of false complacency and taking away enthusiasm. In addition, he warns that a simplistic comparison of the past with the present leads easily to alteration or embellishment of the past itself (1997[1874]). In the present, the same double-edged-ness applies to everyday equivalents of the monumental – success stories in neo-liberal capitalism. While they provide inspiration and hope, they can be equally demoralizing because such feats seem out of reach. Most importantly, these success stories also obliterate wider perspectives of the present world by discouraging critical views on capitalism and excluding those who are considered being without any prospect. The nostalgia of proletarian agricultural workers who used to work for the state farm and their unemployment, helplessness, poverty, and growing differentiation from farmers (Buchowski 2003, 2006), has to be understood as the flip side of local success stories, which are homologous to the global neo-liberal discourse of model cases of so-called flexibility in employment, production, and financial capital (Harvey 1991; Bourdieu 1998; Strath 2000; Ong 2006).

Besides uncertainty and ambivalence, there is not much reflection or active resistance to changes or the European Union itself. Rather, farmers try to make the best out of those changes, and their livelihood and everyday goes on under their own logic. After all this is not the first time that private farmers experience a shift in agricultural policy – they had to deal with policy changes multiple times during the socialist regime as well, as Buchowski's account on Dziekanowice also shows (2006). What sustained these farmers to live through all those changes was what Alf Lüdtke (1995) called self-reliance or sense of self (*Eigensinn*), a sense guiding everyday life in which ordinary people create their own domain and assert control in otherwise unstable and uncertain political or economic circumstance. Although the notion was coined in the case of factory workers, with a focus on their work and relationships on factory floors, it is equally useful for farmers who have to adapt to a fluctuating market with limited resources and little control over prices.

In the face of uncertainty, such as the grain price crisis in 2007 and the following fertilizer price increase in 2008 (see chapter), farmers tried to utilize every possible resource to minimize uncertain market prices. They responded with improvised maneuvers such as planting walnut trees in grain fields to maximize EU subsidies, or sowing on formerly unused or forested land, or even continuously sowing grains for which there is more subsidy from the government. Since the EU had specific subsidies and intervention prices for grain until recently, it was possible to choose such strategies that potentially had a negative influence on the landscape. With pressure from global trade and changes in the CAP since 2004, the intervention prices have been lowered to global price levels and subsidies for specific crops have been changed into a single

payment scheme so that the care of the landscape and the environment could be at the center of farming, regardless of what kind of crop is on the field. It remains to be seen how these changes will affect the landscape in the longer term.

Farmers and farming managers in this part of Wielkopolska think that the timing of CAP policy changes was unfortunate. Not only was it a point in time when farmers started to see possibilities of expanding their farms; it was also a time when the best "fat years (*grube lata*)" for the western part of Europe ended and the EU started to cut down on subsidies. In their memory, the sporadic but good harvests of the 1990s were bearing fruits when they were forced to cut back on everything. The biggest problem at the end of those years was the rising interest rate of credit loans that farmers had taken out cpilely on the basis of farm and land. There were those who managed to escape a crisis or even bankruptcy by paying off the debt at the right time, but the majority of the farmers were not so lucky to do so in time. Some say that a lot of farmers who got involved in party politics joined political parties during this period.

After this experience involving assets and financial restrictions, the meaning of means of production and material objects in general took on a new dimension. Although it was custom to appreciate the monetary value of anything on the farm even before, farmers and farming managers even tried harder to maximize out of what they already had. It was in this context that new scientific knowledge was appreciated when applied in a simple, practical way to existing farming practice. Indeed, the role of scientific knowledge, while sometimes reified as something to be learned, is a crucial one in changing everyday farming practice, most effectively spreading out through practical advice and shortcuts that use already available resources. While most of the farmers try

out new methods in a rather conservative way, once a method is shown as effective on a neighbor's field, they rapidly and uniformly follow the new way. In gossips, or tales of cultural intimacy, this commonly observed phenomenon is cited as showing the lack of creativity or a naïve sense of shared outcome – the assurance that "at least, I am not going to do worse than my neighbor."

In the comparison among neighbors and between commercial farms, the visible quantity and quality of crops play an important role. At any time of the year, farmers or experts can merely take a look at the fields from the road and point out what they would do differently. The apex of this kind of random and mutual evaluation is the time of harvest, when in the case of sugar beet the whole crop is left in piles on the fields for more than a week on display. Even without the polarization rate that represents the quality of the crop, the quantity and visible size becomes the criterion of comparison. Although farmers and factory advisors maintain a good relationship for the successful growth and sugar content of the crop, this alliance changes during this time of harvest into a haggling and negotiating relationship. This assemblage around the sugar beet repeats the annual cycle of cooperation and conflict, in which every actant has their own goal working and manipulating the material and physiological qualities of the sugar beet in one way while grown and in another way when processed.

In contrast, the manipulation of soil depends on the invisibility of soil conditions and nutrients, and various apparatuses to visualize them. The very meaning of modern, up-to-date agriculture is dependent upon making this invisible potentiality of the soil visible. Numbers and basic arithmetics which let farmers calculate soil nutrients and costs play as important a role as laboratories in which soil samples are analyzed. Work such as

adding fertilizer to the soil or evening the surface clean are considered as visual evidence of care. On the other hand, less visible qualities of the soil such as physical qualities and less calculable biological qualities are not so much in the realm of care unless soil conditions cause problems in those respects. They are rather embedded in the landscape and remain a memory hidden underground and emerge only sporadically, reminding the farmers of German and Polish landowners of the past.

Arable fields are the result of labor and not a natural environment, as I showed and described in the history of estates in this region. If the expansion of cultivated land was a result of economic development in the last century, the slowly starting efforts of diversification of landscapes and reforestation signals a new era of sustainable development. In this vein, the essential idea at the center of the reformed CAP, the stewardship of land, is a notion that was formulated after decades of unlimited exploitation of land and soil in Western Europe. This idea turned out to be problematic at the same time to new member countries. After the new member countries joined the EU, farmers in these countries have incessantly asked this question of historical justice: How come farmers in the West were allowed to use fertilizer, herbicide, and pesticide all they wanted for all those years and we have to limit their use as soon as we joined, even with a less amount of subsidy? It is a familiar but not so simple dispute between development and conservation, which will have to be examined further in comparison with other cases in Europe. In Poland generally and in this region of Wielkopolska, the logic of conservation has not yet be proven to be persuasive enough for farmers to take action besides sporadically participating in schooling sessions provided by environmental organizations in certain cities, with limited reach to the general rural population.

In this context, the role of experts such as researchers, factory advisors, and corporate representatives as middlemen is indeed an important one. Scientific studies relevant to farming practices are necessarily oriented towards new rules and directives of the Cross-Compliance scheme, which specifies in detail procedures of spraying crops, or humane treatment of domestic animals, for example. It might even be possible to say that a new chapter of biopolitics, extended to animals and plants, has been opened with Cross-Compliance. Against this background, new scientific knowledge and technologies from the West run the risk of being perceived as inapplicable or irrelevant to the conditions and goals of agriculture in Poland. Experts make such knowledge and technology applicable to local conditions and render them acceptable and practicable by converting research and marketing formats into farming advice. The role of these middlemen is comparable to those who mediate between state and general population, or religious and secular realms (Wolf 1956; Geertz 1960). The problem is that most of the effectively working middlemen are employed by companies, such as the sugar factory, seed companies, and chemical companies. In contrast, government-employed advisors work more in the administrative side of agriculture than advising on farming practice. In this situation, a farmer has to depend on the personal relationship or personality of the middleman and maintain such relationships.

Trust in the knowledge and expertise of the middleman is also an important element in these relationships between farmers and experts. Science as an abstract entity of knowledge does not appeal to farmers, as can be seen in those innumerable jokes about agronomists during the socialist period. These jokes focus on the distinction, so to say, between book smart and street smart. For example, in one such widely known joke, the

agronomist tells farmers to do what he says but cannot tell an apple tree from a pear tree. These jokes were not so much about scientific knowledge as about the ridicule towards the gap between socialism in theory and its reality.[101] It was also a criticism on the politics of what counted as scientific knowledge in socialism. Considering that agronomists were mostly themselves from rural backgrounds, it seems that the jokes are not really anchored in reality. What seemed to be true, according to accounts of agronomists in the village, was the huge gap between dedicated agronomists and those who were not. It was not so much the scientific knowledge but rather the lack of resources, distrust of the government, and discrimination against private farmers, which widened the gap between agronomists and farmers.

Nowadays, the excess of new knowledge and technology and even the plenitude of commodities is rather the problem for industrious farmers with limited resources. Since the opening of the market towards the West, there are more resources available on the market than ever. As one farmer formulated, "When we had money, there was not enough fertilizer in stock. Now that there is fertilizer abundant, we have not enough money. There were many changes I lived through, but it was always too early to celebrate a change." This attitude of ambivalence is one that has accumulated through decades of time and several reforms in agriculture under state socialism and capitalism. The politically charged field of agriculture in Europe has yet to go through the final phase of reforms until 2013, and the changing conditions of global trade and food production will further affect its fate after that. The same applies to the global sugar market and European sugar regulations. In this sense, the restructuring process in Poland's agriculture was not

[101] There is a certain sense of disdain for higher education, similar to the "lads" in Paul Willis's ethnography of working class teenagers, who rather chose to forgo further education conforming to their class identity and masculinity (1981).

only part of post-socialist transformations in the narrower sense of the phrase – it was also a crucial chapter of global transformations in free trade and food production after the end of the Cold War, which is post-socialism in a broader, global sense.

Appendix 1

Political Map of Poland, 2000, ca. 1:5,000,000

U.S. Central Intelligence Agency (Public Domain, http://www.lib.utexas.edu/maps/poland.html)

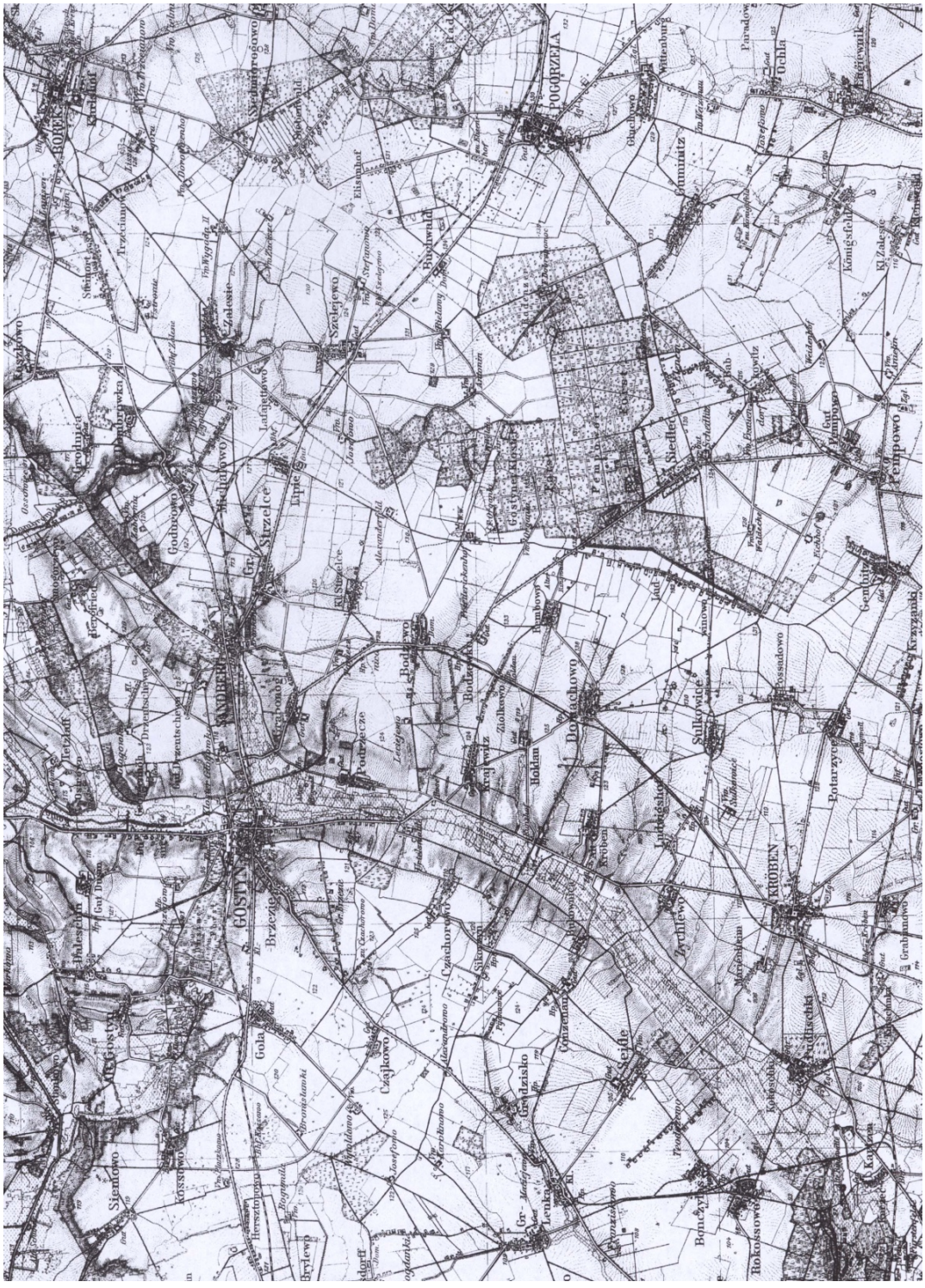
Appendix 2

Prussian Poland or Western Poland, 1900, ca. 1:2,000,000. Lemené and Rutkowski, *Ziemie polskie i ościenne* (Polish and neighboring territories). (Courtesy of the Clark Library, University of Michigan)

Appendix 3

Map of Gostyń, Województwo Poznańskie, 1940, 1:100,000

(Based on the Prussian Land Survey of 1891; Courtesy of the Staatsbibliothek zu Berlin, Preußischer Kulturbesitz)



Appendix 4

Map of Pempowo (No. 4268), Province of Posen, 1911, 1:25,000

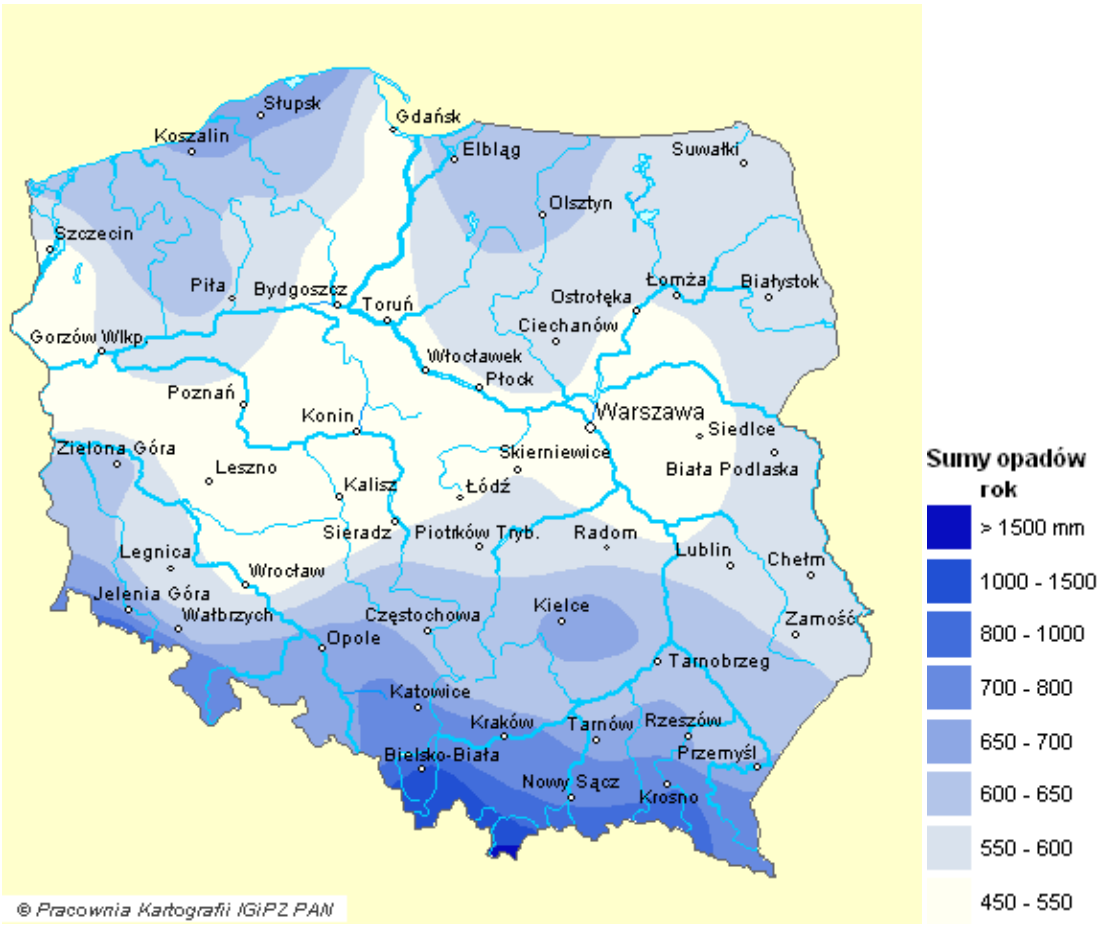
(Based on a Map Survey of 1888; Originally Published in 1889 and Corrected in 1911; Courtesy of the Staatsbibliothek zu Berlin, Preußischer Kulturbesitz)

Appendix 5

Total precipitation for the year 2002 (mm).

Internet Atlas of Poland, Department of Cartography and GIS, Institute of Geography and Spatial Organization, Polska Akademia Nauk.

(http://maps.igipz.pan.pl/aims/AIMS.dll?REQUEST=GetPage&PAGE=sg&MAP=fiz\klimat\Suma%20opadow%20roczna&width=480&height=480)

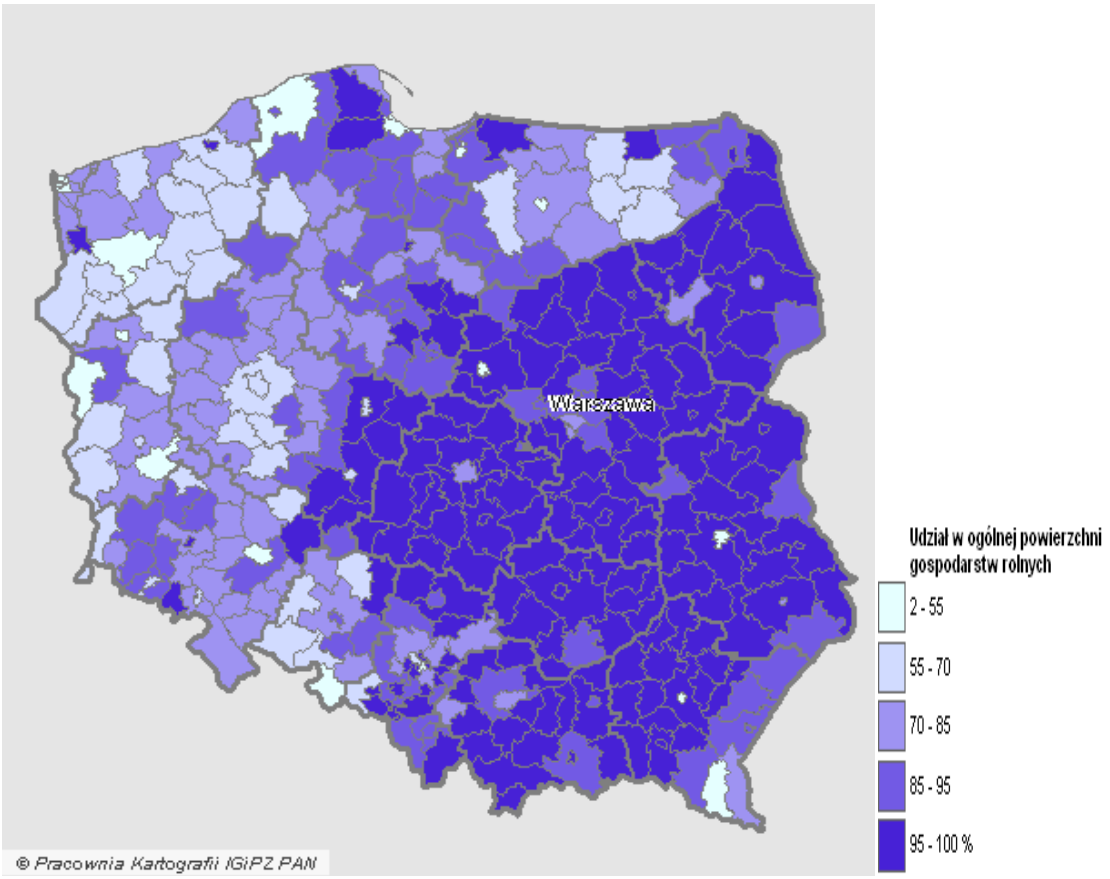


Appendix 6

Share of Private Farms out of Total Cultivated Acreage (percentage) as of 2002.

Internet Atlas of Poland, Department of Cartography and GIS, Institute of Geography and Spatial Organization, Polska Akademia Nauk.

http://maps.igipz.pan.pl/aims/aims.dll?REQUEST=GetPage&PAGE=sg&MAP=rol1\ryc_2&width=480&height=480

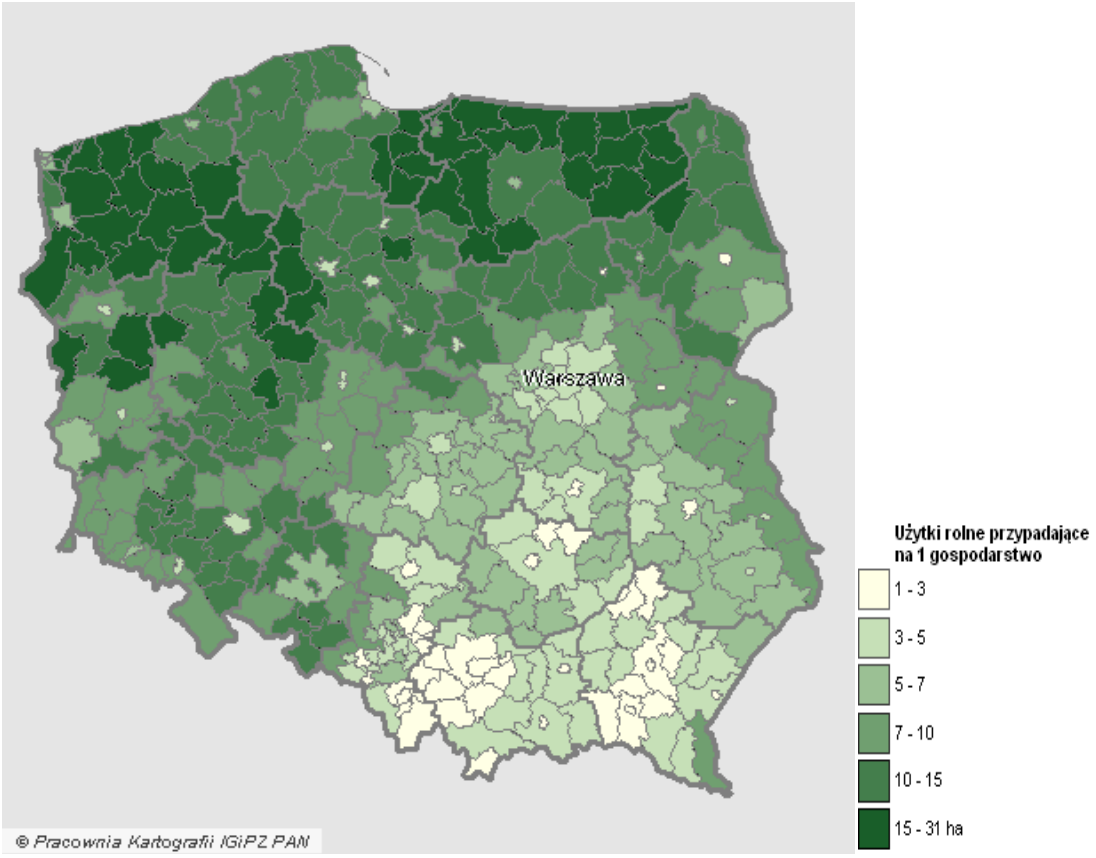


Appendix 7

Average Size of Private Farms, as of 2002 (hectares per farm).

Internet Atlas of Poland, Department of Cartography and GIS, Institute of Geography and Spatial Organization, Polska Akademia Nauk.

(http://maps.igipz.pan.pl/aims/aims.dll?REQUEST=GetPage&PAGE=sg&MAP=rol1\ryc_5&width=480&height=480)

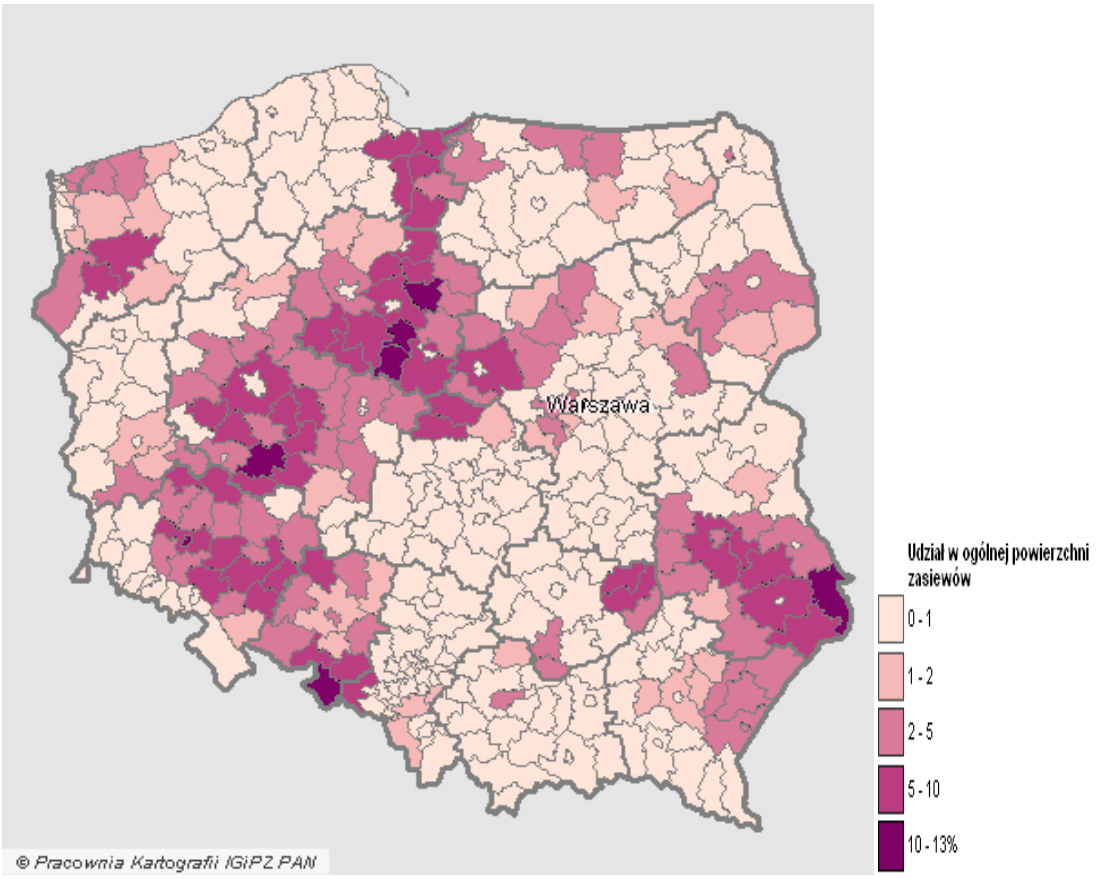


Appendix 8

Percentage of Sugar Beet out of Total Acreage Sown in Private Farms, as of 2002 (percent).

Internet Atlas of Poland, Department of Cartography and GIS, Institute of Geography and Spatial Organization, Polska Akademia Nauk.

(http://maps.igipz.pan.pl/aims/aims.dll?REQUEST=GetPage&PAGE=sg&MAP=rol1\ryc_19&width=480&height=480)

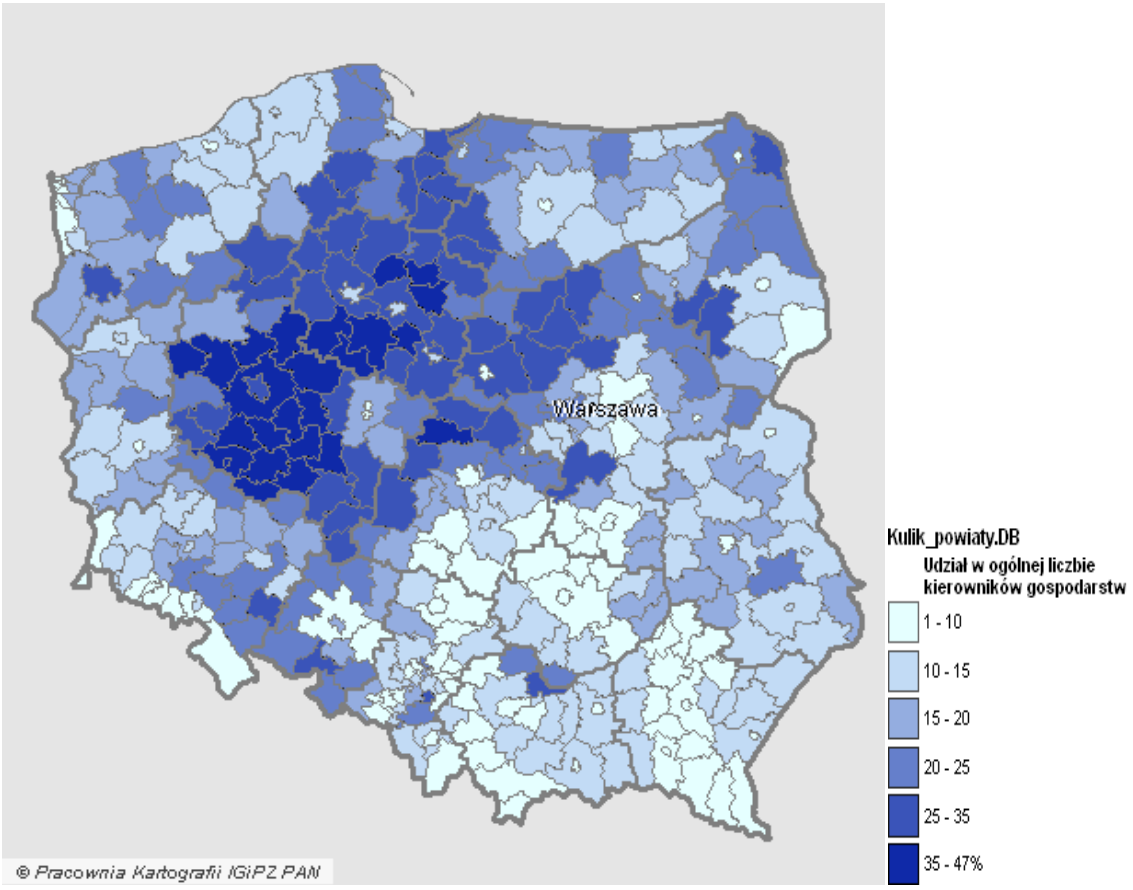


Appendix 9

Percentage of private farmers with agricultural education above primary-level education among all private farmers.

Internet Atlas of Poland, Department of Cartography and GIS, Institute of Geography and Spatial Organization, Polska Akademia Nauk.

(http://maps.igipz.pan.pl/aims/aims.dll?REQUEST=GetPage&PAGE=sg&MAP=rol1\ryc_8&width=480&height=480)

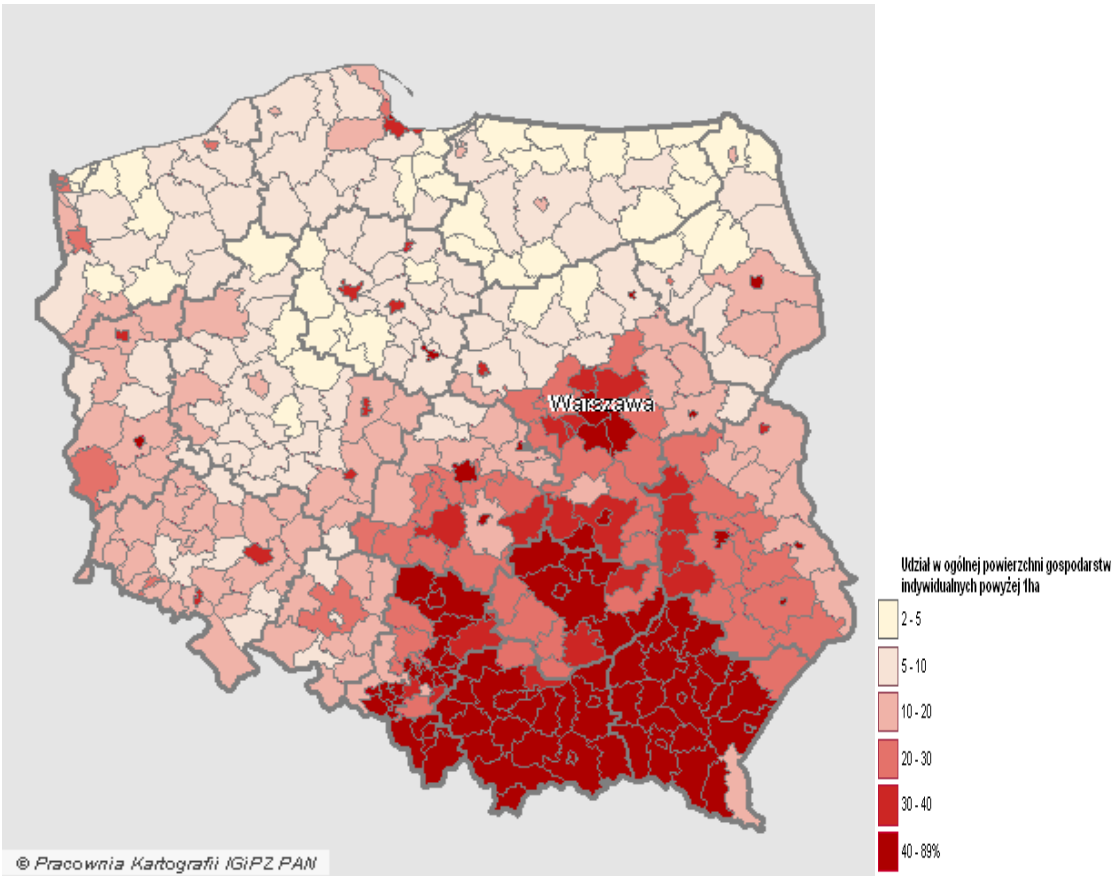


Appendix 10

Percentage of Small Farms 1-5 ha among Private Farms above 1ha, as of 2002.

Internet Atlas of Poland, Department of Cartography and GIS, Institute of Geography and Spatial Organization, Polska Akademia Nauk.

(http://maps.igipz.pan.pl/aims/aims.dll?REQUEST=GetPage&PAGE=sg&MAP=rol1\ryc_6&width=480&height=480)

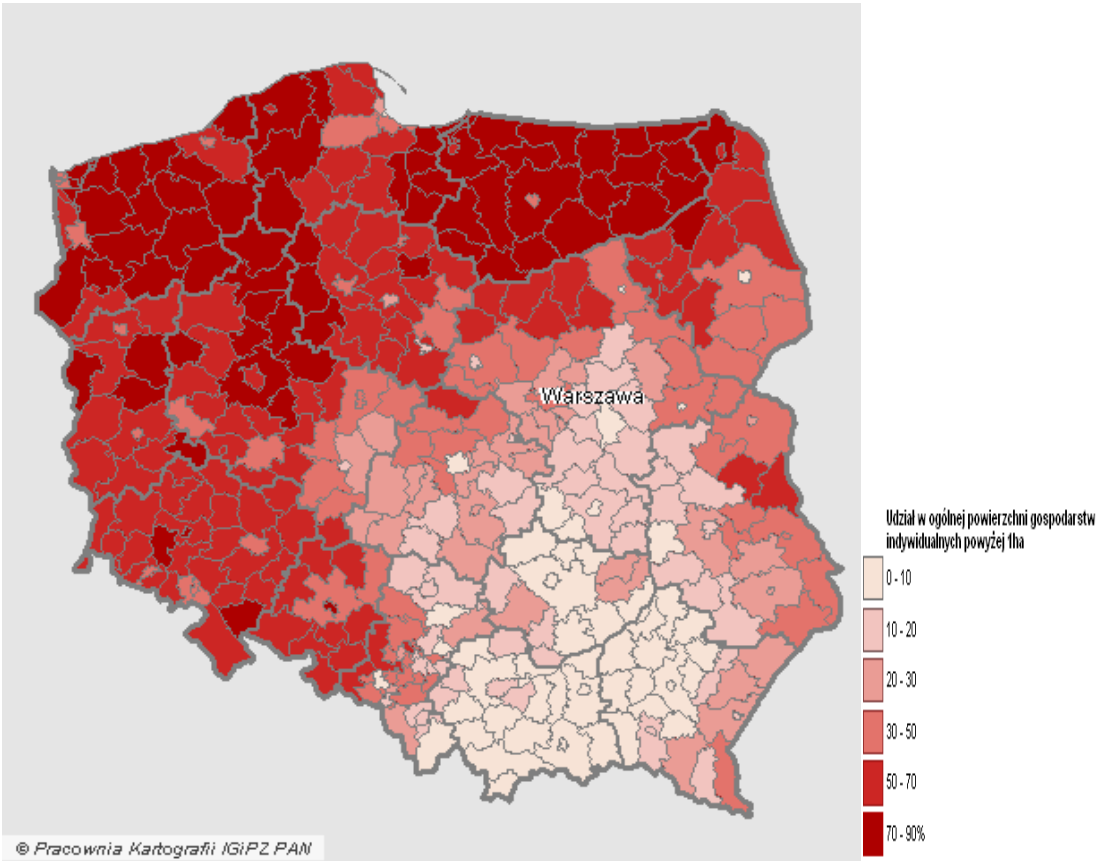


Appendix 11

Percentage of Large Farms above 15 ha among Private Farms bigger than 1 ha, as of 2002.

Internet Atlas of Poland, Department of Cartography and GIS, Institute of Geography and Spatial Organization, Polska Akademia Nauk.

(http://maps.igipz.pan.pl/aims/aims.dll?REQUEST=GetPage&PAGE=sg&MAP=rol1\ryc_7&width=480&height=480)



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